Indian Naval Expansion

Maritime Air

The Doolittle

Australia's Leading Naval Magazine Since 1938
**THE NAVY**

Volume 62 No 1

Contents

OPERATION STABILISE  
By Paul Morrison  
Page 3

THE DOILITTLE RAID  
By Dr. Ralph Hockenbury  
Page 11

MARITIME AIR WARFARE FOR THE RAN  
By CMDR John Shevlin  
Page 22

INDIAN NAVAL EXPANSION  
By Neil Davis  
Page 25

Regular Features

From the Crow’s Nest

Flash Traffic  
Page 2

Observations  
Page 15

Hatch, Match and Dispatch  
Page 21

Book Reviews  
Page 29

League Policy Statement  
Page 31

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By Paul Morrison  
Page 3

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By Dr. Ralph Hockenbury  
Page 11

MARITIME AIR WARFARE FOR THE RAN  
By CMDR John Shevlin  
Page 22

INDIAN NAVAL EXPANSION  
By Neil Davis  
Page 25

Regular Features

From the Crow’s Nest

Flash Traffic  
Page 2

Observations  
Page 15

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Page 21

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By Dr. Ralph Hockenbury  
Page 11

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By CMDR John Shevlin  
Page 22

INDIAN NAVAL EXPANSION  
By Neil Davis  
Page 25

Regular Features

From the Crow’s Nest

Flash Traffic  
Page 2

Observations  
Page 15

Hatch, Match and Dispatch  
Page 21

Book Reviews  
Page 29

League Policy Statement  
Page 31

The opinions or assertions expressed in "THE NAVY" are those of the authors and not necessarily those of the Federal Council or the RAN.
In this edition we feature the Indian Navy and its plans for two aircraft carriers, 16 submarines (eight DDGs, 12 FFGs, and 24 corvettes). We also report in our news section on the USN's need for more surface ships. We detail the RAN's need for area air defence in light of the Anzac WIP scaling back and the decommissioning of the DDGs. We look back into the past at one of the most daring raids of the war in the Pacific, 'The Doolittle Raid' and feature the naval contribution to 'Operation Stabilise'.

When historians are looking at period material such as THE NAVY in the years ahead, we will say that the RAN at the turn of the 20th century? What would we like them to say? Will they say the RAN was at its strongest? It was certainly one of its most professional points in history but what of capability? The word capability is a buzzword that seems to be used by many who don't understand its connotation. If one were to ask the question 'is the RAN and ADF fully capable of meeting all contingencies?' the answer is sadly no. This is why Ministers tend to phrase their capability statements with 'we are capable of...', or 'we have the capability to...', but never 'we are fully capable' or 'we are not capable of...'. This should be on a Minister's mind as capability translates directly into military options for government, and with the military being utilised in many different and varied tasks from their intended, means that ministers may be left wanting, just like the poor service personnel at the sharp end.

One area a government may be left wanting for military options involves the Anzac WIP (Warfighting Improvement Program) being slashed to a $500 million anti-ship missile defense package. The main WIP addition to the Anzacs was to be the provision of long range area air defence. This is another blow to the RAN's own security at sea. It was hoped that the FFGC's would receive an area air defence capability but this was technically unfeasible. This focus was the sad mistake.

The loss of an area air defence capability is particularly important given that the first of our DDGs has already decommissioned with the remaining two not long for the RAN. In layman's terms it means that the RAN's warship fleet will only be capable of defending themselves against the arrows and not the archer. Without area air defence the RAN will be unable to carry out tasks outside the very limited range of the RAAF tactical fighter fleet. The RAN needs the ability to conduct air defence as one of its wartime tasks will be to defend the RAAF's aircrafts from attack. As misery loves company, rumours persist that the RAN's SEA 1400 DDG/FFG replacement has been scaled back or may even be cancelled due to conflict with the RAAS' new fighters replacement program.

Stabilise

Recent ADF operations in East Timor have shown that the past practice of basing force structure on an academic review of countries and threats is flawed. The ADF needs 'capability before operations' as history proves conflict, or operations, will be short warning and unpredictable. Particularly unsurpassed in the numerous Strategic Reviews and White Papers preceding it. What would the ADF have done in Timor had the INCAIT Cataamaran three months prior to the referendum for autonomy or independence, now HMAS JERVIS BAY, been available for lease? Each trip conducted by JERVIS BAY is equivalent to 10 C-130 Hercules.

Another Timor example was the need for ships and sea control, currently viewed by many in Defence as unnecessary. Australian aircraft carrier proponents must have been pulling their hair out when it was revealed that small aircraft carriers, like the USS BELLATRIX, WOOD and PELLELUN, were vital to support the land element of the Timor operation. This support consisted of heavy lift helicopters, maintenance, C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance) and no less importantly for the troops, laundry services and meals. One of the attributes of an aircraft carrier platform is its unique ability to transition from war and sea control operations to peace and support missions. History already records the aircraft carrier as the most flexible and versatile weapon of the 20th century. But the fact remains that Strategic Reviews and White Papers have claimed we have no need, nor will ever have, for such a platform or capability.

In the opening stages of the Timor operation the USN's Ticonderoga class CG, USS MOBILE BAY, was vital. Its C3 capability, something that will be lacking in the RAN with the final DDE decommissioning, automatically made her 'Joint Task Force Commander Timor Operations'. Had Australia taken the Kidd class DDG option in 1998 there would have been no need for MOBILE BAY's presence.

Despite 'Operation Stabilise' being conducted within air power's reach of the Australian mainland the need for a carrier and ships on the spot was high. The point about the RAAB being able to provide the ADF with all its air power needs is one of the reasons a carrier, and to a lesser extent Kiddi, was withheld from the RAN and is the same argument being applied today.

How different would the Timor operation had been had the Militia set up machine guns on the approaches to all of East Timor's airports? This very easy option would have forced the RAAB's air bridge to be closed.

Although not wanting to be America's deputy in the region this is how we are perceived in the US. The US views Australia as the regional power, responsible for regional security matters. If we do not have a Navy with the technical capability to support this role, and the USN, then our current standing in the US may suffer. Australia's entire security strategy relies on the US military giving us intelligence and material support to continue this role. Its time to 'pay the piper'.

Mark Schweikert

An apocalyptic image of the statue of Jesus Christ on a hill overlooking Dili seen from the door gun of an ADF helicopter (Ausl Army)

The crisis which erupted in East Timor following the resounding 'Yes' vote from the East Timorese for independence from Indonesia on 30 August 1999 had been brewing for years. Developments in East Timor had been closely watched by Australia since it was first annexed by Indonesia in 1975. However, the speed with which East Timor was rushed towards this crisis, by the fast trackling of the referendum for autonomy or independence, caught Australian Defence planners not so much off guard, (the commissanting on 10 June 1999 of the 86 metre wave piercing catamaran HMAS JERVIS BAY for fast troop deployment being testimony to their foresight), but rather not at the preferred state of material readiness for heavy military sea lift and amphibious operations.

HMAS TOBRUK's ROLE IN OPERATION STABILISE

With signs of unease in Indonesia increasing as the East Timor referendum drew nearer, TOBRUK was put on short notice to move. The ship sailed for Darwin on 30 August 1999 on the very day that the East Timorese people cast their democratic votes overwhelmingly in favour of independence.

HMAS TOBRUK was awaiting a long overdue refit, her previous refit having been eight years ago, and the two LPDs, HMA Ships MANOORA and KANIMBLA, were still refitting in Newcastle.

The ship called into Townsville to embark two LCM 8s, an Amphibious Beach Team (ABT), and elements of 3 Brigade. TOBRUK arrived in Darwin on Wednesday 8 September, as the people's referendum crisis in East Timor began to mushroom, joining the growing force of international naval units gathering in Darwin Harbour. Upon berthing at Fort Hill Wharf the embarked elements of 3 Brigade were off loaded and elements of 2 Cavalry Regiment (22 ASLAVs) were embarked.

TOBRUK departed Darwin Harbour on Saturday 18 September 1999 in company with elements of TG 627.1 for passage to Dili. On the morning of Tuesday 21 September, 24 hours after H hour, TOBRUK and HMAS JERVIS BAY, under the protection of Allied escorting destroyers and frigates and watched closely by Indonesian naval vessels at anchor in Dili Roads and alongside in Dili Harbour, commenced off loading troops and equipment ashore. TOBRUK's unloading operations at anchor with BALIKPAPAN, BRUNEL, LABUAN and two LCM 8s lasted most of the day due to difficult weather conditions arriving in the late forenoon.

Despite the landing site being within the confines of Dili Harbour it was none-the-less a proper amphibious operations as troops and equipment were landed over the shore by amphibious craft at a hastily prepared beach.

This beachhead was surveyed by the Response Force (RESFOR) and Hydrographic Support Unit (HODSU) the day prior to the Task Group's arrival at Dili and was used in favour of other intended landing sites within Dili Harbour due to their congestion by Indonesian vessels. Prior to the commencement of TOBRUK's off loading operation the ABT's engineering plant prepared the beachhead to enable vehicles being landed from
amphibious craft to exit the beach through a gap made in the seawall. It was pleasing to note that this first operational landing in East Timor ran smoothly, despite the difficult weather conditions. This set the trend for TOBRUK's amphibious operations in the Area of Operations (AO) over the next six weeks.

The operation was conducted successfully, if not exactly as the actual historical record would suggest. In the event, the embarked forces and their equipment were landed over the beach from TOBRUK by the LCHs BALIKPAPAN and BRUNEI, TOBRUK's two LCVPs, and an embarked H127 Squardon Sea King helicopter, 'Shark 07'.

After the Suai Assault TOBRUK recommenced her re-supply role, conducting three return trips from Darwin to Suai during which almost 2000 tonnes of cargo and 642 soldiers were transported. Amphibious off-loading operations with LCHs and LCM 8s were conducted at Suai on October 13, 17, 18, 22, 24, 26, 29, 30 and November 14, 30. The conduct of these military Sealift/Amphibious Lodgement was definitely an Allied affair. TOBRUK transported cargo and troops from Australia, New Zealand, Canada and Ireland; whilst being escorted by, assisted by or working in concert with Australian, Canadian, French, New Zealand, United Kingdom and United States warships and aircraft.

In addition to TOBRUK's primary roles of amphibious lodgement and military sealift, the ship provided support for INTERFET forces ashore whenever the opportunity arose. Either alongside or at anchor. In the Suai Assault TOBRUK offered recuperation services to troops ashore, fresh meals, temporary air conditioned comfort, e-mail and Interfax facilities to very grateful troops. For those unable to take advantage of the hospitality aboard, TOBRUK delivered hundreds of kilograms of fruit and rations ashore.

Prior to East Timor's wet season the conditions ashore were dry, dusty and dirty, not to mention burned, vandalised and destroyed, with little water available for the 'niceties'. (most would consider them necessities), of life. TOBRUK's arrival in harbour was often described as a 'God Send' and the positive impact that the ship's support made to the morale of troops ashore was acknowledged on numerous occasions, with the camaraderie and respect for each other's Service being raised significantly.

The following figures indicate the success of TOBRUK's team in providing support for INTERFET troops:

- in excess of 1400 personnel utilised the onboard services, including meals, showers, laundry facilities, e-mail facilities and Interfax services;
- over 500 loaves were baked by the catering crew and sent ashore;
- 1250kg of fruit were distributed to those who were too far from the harbour to make use of the other services provided; and
- over 1450 snack and BBQ packs were developed and sent ashore.

As well as providing direct support to troops ashore. TOBRUK provided fuel, water and engineering repair services to Naval and Army units in the AO. Transfer of liquids ashore was achieved with the assistance of LCHs, LCM 8s and helicopters, and also road tankers whilst TOBRUK was alongside in Dili.

Operation STABILISE was an extremely busy but satisfying experience, for the ship's company of HMAS TOBRUK. The whole Operation has reinforced to the RAN the importance of the role and many capabilities of surface ships, in particular amphibious warfare ships.

The multi-national nature of the Peacekeeping mission in East Timor is as equally reflected by the coalition of nations as it is with the military.

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The Operation has also come at a time when Australian Defence planners were beginning to put feelers out to move away from the simplified notion of protecting Australia by denying the sea/air gap to any would-be adversary. The Operation has shown that Australia may be best served by a policy which enables the Defence Force to project force ashore, defend it, stabilise trouble spots before they erupt in violence disrupting the peace of our region, or, as in East Timor's case, nipping that violence in the bud before it could spread further.

TOBRUK's provision of recuperation services to INTERFET forces ashore and the corresponding boost to morale is best summarised in a poem received from 3 CER:

Never let it be said out loud, that the Anzac Spirit's dead.

The legend soldiers on TOBRUK have baked the digger's bread."

THE COALITION CONTRIBUTION

In the rapidly changing pace of the ground and air operations in a modern conflict zone it is easy to forget that the 'Silent Service' is there alongside them. Indeed, many soldiers may ruefully observe that if it weren't for the Navy they wouldn't be there at all.

The multi-national nature of the Peacekeeping mission in East Timor is as equally reflected by the coalition of nations as it is with the military.

Since the start of Operation STABILISE, in addition to the RAN, eight navies have deployed ships and other assets to the area, with more to come.

From New Zealand came the frigates TE KAHA and CANTERBURY and the replenishment tanker ENDEAVOUR.

From Singapore came the LST's EXCELLENCE and INTREPID.

From France the frigates VENDEMAIRE and PRAIRIAL and the amphibious assault ship FNS SIRICO.

HMS GLASGOW, USS MOBILE BAY, USS BONHOMME RAYE, USS SAN DIEGO and USSSS SAN JOSE provided the British and American presence respectively.

The Canadians have also joined. The tanker HMCS PROTECTOR arrived in Darwin on 29th October and on 21st October deployed to relieve SUCCESS off Dili.

These ships have played a vital role in providing long-range surveillance, protection, airlift support and long-haul logistic support to the forces on the ground and, with their replacements, will probably be there for several months to come. Indeed, East Timor may once again prove that old Navy adage "First In, Last out".

NEW ZEALAND

Generations of Australian and New Zealand sailors are used to working together all over the world. This relationship continues off the coast of East Timor.

When Operation STABILISE commenced the Anzac class frigates HMNZS TE KAHA and the tanker HMNZS ENDEAVOUR were deployed to South East Asian waters. On 8th September the New Zealand Government announced that TE KAHA would be made available. A directive from New Zealand Defence Force HQ in Wellington saw TE KAHA commence a high-speed dash for Darwin where she arrived on 9th September. Shortly afterwards ENDEAVOUR was also ordered to Darwin.

Both ships were part of the convoy that deployed forward from Darwin on 10th September.
The Singaporean LST RSS EXCELLENCE pulling away from Darwin's Fort Hill Wharf. (RAN)

On arrival TE KAHA assumed the duties of Dili Guardship and took up station off Dili, before beginning a shuttle service between Dili and Darwin of the fuel necessary for INTERFET forces to carry out their operations. A typical run saw her deliver 24 bags of mail, 38 pallets of stores, 150 tonnes of aviation fuel and 2,300 tonnes of diesel to INTERFET and then conducted two underwater replenishments with coalition combatants.

On 24th September TE KAHA departed for the Persian Gulf, prior to the arrival on 28 September of the Leaderclass frigate HMNZS CANTERBURY.

CANTERBURY was quick to make her presence felt. Her first duty was to escort TOBRUK to Dili from the wet dock. She then relieved GLASGOW as Guardship. ENDEAVOUR, initially anchored off Dili, then sailed direct for Suai. with another 60 soldiers from the 2nd Battalion, 1st Regiment, Australian Army. The New Zealand troops in East Timor were being protected by an extensive surveillance radars and communications systems.

Kiwi Amphibious Operation

Monday 19 October saw a Kiwi amphibious landing at Suai, in East Timor as New Zealand troops and equipment poured ashore, covered by the frigate CANTERBURY.

"It was a unique joint operation for the NZDF," said Major Rod Fahey, NZ media support officer in Dili. "This series of beach landings at Suai was the largest over the operation for New Zealand forces since WWII.

The New Zealand troops in East Timor were being established in the area, where the whole of their battalion is based. Victor Company arrived in their new operational area from a landing craft, covered by an Australian frigate. The bulk of the heavy equipment arrived in a larger scale amphibious landing. The whole operation began at midnight Sunday and continued through to Tuesday as the array of vehicles and equipment, including 15 APCs, 25 Landrovers, 14 Limming trucks and 47 container loads of equipment, which left Wellington in the chartered merchant ship EDENGRACHT, were delivered ashore.

The equipment was 'crosseddocked' from the merchant ship to HMMS TOBRUK in Darwin. That process was in itself a complex logistics operation for the military staff in Darwin, since the stores and equipment had to be checked, prioritised and made ready to be driven directly into the landing craft.

 Escorting by the frigate CANTERBURY, TOBRUK then sailed direct for Suai, with another 60 soldiers from the battalion onboard. Two heavy landing craft, HMAS Ships BALIKPAPAN and BRUNEL were assigned to the operation, to transport the vehicles from TOBRUK to shore. TOBRUK can also be on the side, in these operations the big amphibious ship remains at anchor and transfers vehicles via her stern ramp, which forms a precarious-looking bridge to the bow ramp of the smaller landing craft.

 Escorting TOBRUK, and guarding the landing area was the Kiwi frigate HMNZS CANTERBURY, whose surveillance radars and communications systems ensured that the force would remain under full control of the INTERFET commander, while also protecting the amphibious ships from the unexpected. By the end of the landing, the whole of the New Zealand Battalion was ashore, accompanied by the first of the Canadian and Irish troops who are to be attached to the battalion in Suai.

CANTERBURY continued patrolling off shore near Suai, to maintain surveillance of the area and provide support to the New Zealand troops while they extend their operations in the Suai region.

UNITED STATES OF AMERICA

The United States forces deployed to the Coalition Naval force have conducted their operations with little fuss or publicity. When the decision was taken for INTERFET forces to deploy into East Timor the TICONDEROGA-class cruiser MOBILE BAY was en route Australian waters to participate in Exercise CROCODILE 99. As soon as the American participation was agreed the ship was ordered to Darwin where she arrived in mid-September. She sailed for Dili on 18 September and was soon involved with Guardship and patrol and surveillance duties. She departed the area on 8th October.

Shortly after the arrival of the coalition forces the KILIAUEA-class ammunition ship USNS KILIAUEA joined them. KILIAUEA conducted logistics support operations until 5th October when she was relieved by the SIRIUS-class combat stores ship USNS SAN JOSE.

First Super Stallion Helo Operations For RAN

In a number of firsts for the Royal Australian Navy, HMMS TOBRUK conducted helicopter operations with the United States Super Stalk r CH-53 helicopters. On 23rd October the CH-53 was deployed from the Suai. to maintain surveillance of the area and provide support to the 11 Marine Expeditionary Unit from USS BELLEAU WOOD. With a lift capability of over 16 tonnes, the Super Stallion made light work of twenty-five ISO containers on the vehicle deck of HMMS TOBRUK. Within seven hours the Super Stallion had carried each of the containers ashore, the heaviest weighing 22,660 lbs or 10,300 kg.

In a total lift of 504,816 pounds, the Super Stallion has been able to supply the New Zealand and Canadian forces ashore in Suai with a wide variety of items including generators, tents, catering equipment, workshop equipment, jerry cans, ration packs, sandbags, stretchers, trunks, plus defence and general stores.
In order to prove the record lift wasn't a once off, HMAS TOBRUK conducted a second lift operation on the 29th October, this time working with a Super Stallion helicopter from the 31 Marine Expeditionary Unit from USS PELELIU.

During this second lift operation 17 containers were flown off HMAS TOBRUK's vehicle deck and taken inshore to the grounds forces in Suai.

This time the containers held most of the New Zealand forces medical supplies and equipment plus vehicle parts, bottled water, radios, gasoline, ammunition, pipes, and a refrigerated container with temperature controlled stores inside.

For the second lift the Super Stallion helicopter carried a total weight of 750,060 lbs or 340,000 kg inshore. With the heaviest lift the day being 22,000 lbs or 10,000 kg. The operation provided a number of firsts, including HMAS TOBRUK's first time operating with CH-53E helicopters and the first airlift of ISO containers, measuring 20 ft high, off an Australian warship's decks.

The operation also turned out to be a first for the RAN in moving a record 505,000 lbs in one day.

With the use of the Super Stallion, HMAS TOBRUK completed an unloading operation that would normally have taken 2-3 days by craning the containers into an LCH inside. As a result TOBRUK was able to offload the containers and return to Darwin to collect another load, all in all saving 4-5 days using the CH-53E helicopters.

**UNITED KINGDOM**

At the commencement of Operation STABILISE the Royal Navy's Type 42 destroyer HMS GLASGOW was exercising with Australian and New Zealand ships. She had commenced a Far East deployment in March and, consequently, was the obvious choice for the British maritime component of its East Timor forces.

GLASGOW arrived in Darwin on 14th September and sailed with the convoy on 18th September. Two days later she escorted TOBRUK back to Darwin and then returned to Dili where she relieved HMNZS TE KAHA as Dili Guardship. She was also employed in surveillance and patrol duties in the area, while her Lynx helicopter flew a number of surface search sorties.

Like their brothers and sisters in other INTERFET ships some of the ship's company were landed to provide additional medical assistance, restore electrical power, help with cleaning and reconstruction of damaged buildings and re-establish Dili's infrastructure.

On 1st October GLASGOW departed the Area of Operations and arrived in Darwin on 2nd October. She sailed for homewaters on the 4th.

**FRANCE**

After receiving the UN request for assistance the French Government decided its response would be humanitarian. Therefore, only assets that could support humanitarian efforts would be deployed.

The Navy acted quickly. Even though no decision was formally reached until 16th September, on 9th September Naval Headquarters in Toulon ordered a ship to have ships ready. On 10th September the FLOREAL-class frigate FNS VENDEMAIRE sailed from Noumea and arrived in Darwin on 15th September. With the exception of HMS GLASGOW (which had been operating with Australian units) she was the first Coalition vessel to arrive. VENDEMAIRE sailed with the Coalition Convoy on 18 September and was soon busily employed on patrol/surveillance and escort duty.

VENDEMAIRE continued operations until 19th October when her sister ship, FNS PRAIRIAL, relieved her. These ships are designed for this sort of operation and frequently respond to disaster relief tasks in the South Pacific. They have proven sea-keeping facilities and can operate helicopters in weather up to Sea State 5. They are only capable of 20 knots, however, they have a range of 10,000 nm at 15 knots and endurance of 50 days. Another practical but unusual feature for a warship is a cargo hold aft which can hold up to 100 tonnes of cargo.

France's desire to be a good neighbor is exemplified by the other ship deployed to the area, FNS SIROCO, a 12,000 tonne FOUJADE-class landing ship that is based at Toulon. Like the FLOREALs, the ship has good range and endurance. Although her maximum speed is only 22 knots, range is 11,000 nm at 15 knots with an endurance of 30 days.

SIROCO was placed on alert on 9th September and ordered to sail six days later. She departed Toulon on 16th September and arrived in Darwin on 12th October for a four-day leave and familiarisation period.

On 16th October SIROCO sailed for Timor. After anchoring in Dili Harbour she disembarked her cargo and on 18th October she transferred cargo from RSN INTREPID and ferried it ashore in her landing craft.

For operations in East Timor the ship is particularly versatile. Its amphibious lift (four LCM, an LCU and four Puma helicopters) and docking capabilities make it an excellent logistics support vessel. Also, its carrying capacity of 424 passengers and medical facilities (two full-size operating theatres) make it ideal for the uplift and resettlement of East Timorese refugees, in West Timor. Another important consideration is the ship's ability to continue operations during the Wet Season, when aircraft and smaller amphibious assets may be forced to shelter.

**SINGAPOREAN NAVY**

Among the many participants supporting the Multi-National Peacekeeping force in Dili the Navy of the Republic of Singapore has demonstrated its resolve in carrying out its allocated tasks.

The LST-511 class RSS EXCELLENCE was the first of two Republic of Singapore Navy Landing Ships Tank deployed from Singapore to Dili to support the uplift and deployment forward to Dili. She arrived in Darwin on 27th September and joined TOBRUK, JERVIS BAY, BALIKPAPAN, BRUNEI and LABUAN as the Amphibious Task Group.

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The LST SURIN arriving in Dili. (RAN)

On 30th September she loaded 30 vehicles, 10 pallets of defence stores and equipment from 7 Signals Regiment and 1 Joint Support Unit. Eleven personnel from the two Australian Army units also embarked.

Finally, in the early evening EXCELLENCE cast off and proceeded at a lonely nine knots for Dili. After disembarking her cargo and passengers, the LST returned and proceeded at a lonely nine knots for Dili. After disembarking her cargo and passengers, the LST returned

The Canadian replenishment ship HMCS PROTECTEUR. (RAN)

They have a complement of 72 officers and men and a range of 19,000 nm at 9 knots. Their lift capability is 1500 tonnes and they can also carry 125 troops in a long haul mode, more for short passages. Both ships were extensively modified in 1977 and can operate as Command platforms. EXCELLENCE also has a helicopter pad.

The personnel who volunteered were selected from the 34th, 37th and 39th Squadrons of 17th Bombardment Group and also the 89th Reconnaissance Squadron. At all times they were told only that they had volunteered for a "dangerous mission". Intense training was carried out in short take-offs and other procedures including day and night navigation, bombing and formation flying. When the training was completed and the final crews picked, the bombs were flown to the West Coast.
Bill Birch, HARI KARIER’s bombardier described the replacement bombsights used on the mission: “We substituted a manual sight reminiscent to those used during World War I. The sight was the brain child of Captain G. C. F. in and consisted of a moveable arm fitted with a see no.-blick in back and a rifle sight in front. This arm was attached to a quadrant marked off in degrees and in turn mounted to the Norden stabiliser. The bombardier preset the dropping angle on the sight depending on the projected bombing altitude. The pilot was directed to the target by the bombardier, who upon seeing the target in the open gun sight, dropped the bomb by means of a toggle switch connected to the bomb racks. The bomb loads of all sixteen B-25Bs consisted of two 500lb bombs and two 500lb incendiary clumps.”

On the morning of 18th April, fearing the Task Force had been spotted by enemy fishing boats on picket duty, it was decided to launch the bombers immediately even though the Task Force was still many miles from its designated launch area and some 600 miles from the Japanese coast. Colonel Doolittle’s plane was the first to lift off from the carrier’s deck. A rain squall and gusty winds added to the hazards but the B-25B was launched safely. The other aircraft followed, each circling to the left before heading in the direction of Japan. HARI KARIER was the eleventh aircraft on the deck. Frank Kappeler, the navigating officer recalled the events following their departure from HORNET. “Our navigation after take-off for land fall on the Japanese coast consisted primarily of drift readings when possible. We flew at 100 feet or less altitude. Shortly after take-off I discovered a potentially serious problem. My normally used navigation tables (celestial) were missing. A spare crew member had volunteered to help me carry a portion of my navigation equipment to the plane sometime before take-off. We had gone up the flight deck together and cautiously made our way to the tied down B-25s. Crossing the deck and walking to the planes was hazardous. Spray was breaking over the deck which was pitching and rolling and the stacked together B-25s were revving up their engines and the props were spinning wildly. I made my way to our aircraft and put my equipment on board. My friend was kneeling down about fifteen feet away, waiting for me to clear the plane. I then went to HORNET’s Navigation Section for a last position report and time check. For some unknown reason, my primary navigation tables never got into our plane.”

“Enroute to the coast, I spent three hours or more working out practice celestial problems... I was then ready for celestial navigation if necessary.”

Kenneth E. Reddy (co-pilot), Lieutenant Frank A. Kappeler (navigator), SSergeant William L. Birch (bombardier), and Sergeant Melvin J. Gardner (engineer-gunner) were part of the eleven aircraft launches from HORNET that attacked Japan on April 18, 1942. The B-25B had all been modified for the mission and these modifications included the removal of the ventral (tunnel) turret and the installation of a 60 gallon fuel tank. A 160 gallon tank was located in the crawlway above the bomb bay and interior compartments of the plane were stocked with additional 5 gallon fuel cans. The Norden bombsight was removed for security reasons and also because it was designed for high altitude precision bombing and not for the low altitude bombing required for the mission. Many of the radio sets were removed to reduce weight and broomsticks were inserted in the tailcone to look like machine-guns.

The crude bombsight made up especially for the raid. (National Air & Space Museum, Smithsonian Institution)
None of the aircraft launched could be recovered on deck by the carrier if trouble encountered only light anti-aircraft and fighter resistance, conserve fuel, but then boosted the airspeed to 180 m.p.h.

The Raid was still a great success. The B-25Bs flew into cloud banks when possible and navigated by visual means and map reading. At dusk we were about 300 and paralleled the coastline to the southern tip of Japan. We flew over hilltops and down into valleys, going in the general direction of Tokyo and Yokohama. We flew over many cultivated fields and some farmers stood and waved at us while others ran for cover. Several Japanese training aircraft tried to fly formation with us. After about twenty minutes we had four fighter aircraft come up close to look us over. They came close enough so that I could see their faces. We had been cruising at 160 m.p.h. in order to conserve fuel, but then boosted the airspeed to 180 m.p.h.

"About this time a possible alternate target appeared in front of us. The pilot and copilot thought the building could be a refinery and we dropped our incendiaries on it. The building area was long and narrow. It appeared to explode and large billows of dark smoke rose into the sky.

"We now flew thirty miles out to sea and then turned and paralleled the coastline to the southern tip of Japan. We flew into cloud banks when possible and navigated by visual means and map reading. At dusk we were about 300 miles away from the China coast and ran into fog and clouds. From that point to bailout time we were flying instruments. We encountered a tailwind on our last leg and at our destination, Chuuchow, we flew on for another fifteen or twenty minutes. We all bailed out and landed safely some fifty miles past Chuuchow.

"Though little military damage was done by the sixteen bombers, the Raid was still a great success. The B-25s encountered only light anti-aircraft and fighter resistance, and targets were hit in northern, central and southern Tokyo and the Tokyo Bay area, Yokohama and the Yokosuka Naval Base (where a partially completed aircraft-carrier was believed hit). Nago and Kobe. Only one of the bombers was forced to jettison its bombs, while eleven B-25s hit their primary targets and four hit secondary targets. The B-25s also shot down several enemy fighters!

"The Raid boosted Allied morale and forced the Japanese to strengthen their home defenses. Japan's aggressive military policy now began to show signs of a more defensive thinking and there were those in both the government and military who realized that this small bombing raid was the beginning of larger and more intense ones to follow. Of the aircrirs of the sixteen B-25s 64 reached safety in China, eight were captured by the Japanese, three were killed on bailing out or ditching, and five were interned in Russia. Years later, Bill Birch remembered the aircraft that had not only changed the lives of its crew but had also helped change the course of the war.

"We were able to escape from the fire and were able to continue to fly the B-25s. We landed the B-25s and walked out of the field. We were able to land safely and briefly discussed our success.

"We then set course for Japan. We flew over the Chosan Island and landed at Tokyo International Airport. We were greeted by General James H. Doolittle and his staff.

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"We then set course for Japan. We flew over the Chosan Island and landed at Tokyo International Airport. We were greeted by General James H. Doolittle and his staff.
The Pakistan Navy's new Agosta 90B class submarine relieved by a new set of watch. Every U.S. Navy ship, at the moment, will replace the four Daphane class. To be fitted with a MESMA liquid to Last Kidd DDG. French torpedoes and the sub-Exocet SM-39. The Pakistan Navy currently has absolute confidence that allowed me commander may overreact if less sure appropriate. In situations like this, a crew performed flawlessly. The threat of which could never been publicly announced prior to the ceremony. He explained that he was revealing it to illustrate how much confidence and the deck left the ship without being replaced. This procedure was one of several that both symbolically and literally ended the life of CHANDLER as a warship in the USN. The first speaker at the decommissioning ceremony was Rear Adm Steven Smith, Commander Amphibious Group Three and CHANDLER's third commanding officer. He regaled the audience with tales about CHANDLER during the tanker wars' of the 1980s. Placing her out of service today is going to be hard to do. CHANDLER is one of the finest and most capable ships in the world. Eleven years ago, this ship took me and almost 400 sailors into harm's way, and brought us home safely. When the ship in a threatening manner. Smashed her out of service today, the U.S. Navy will lose a ship that served our country well.

**China Negotiating For Akula SSNs**

Russia is considering the sale of at least two nuclear powered attack submarines (SSNs) to China, significantly boosting its capability to counter aircraft carrier groups in blue water. Russia's Naval Machine Building Design Bureau, Malakhit, St Petersburg, and Amur Shipbuilding Plant, Komsomol'sk-on-Amur, have joined forces in an attempt to offer China two Project 971 Akula class submarines through Russia's state owned arms export agency, Rosvoorouzhenie.

A senior official at the Malakhit design bureau, which developed the sub, said Moscow has already sanctioned talks on possible sale of the submarines to China.

As China has a limited defence budget dried up forcing the procurement of two follow-on carriers. Russia intends to give its carrier air group the ability to strike at maritime and surface targets with the development of a new SU-27 variant. Russia's only aircraft carrier, ADMIRAL KUZNETSOV, is limited to air defence operations as its SU-27K fighter is optimised for air-to-air missions. Only short and medium range air-to-air missiles are carried by the SU-27K.

The Russian Navy is interested in acquiring a multirole aircraft capable of carrying out air-to-surface missions. The acquisition of such an aircraft in reasonable numbers would mark a major improvement in Russian naval aviation capabilities. The new version of the Flanker is dubbed the SU-27KUB and is capable of carrying out reconnaissance missions as well as strike missions.

Russian naval aviation spent the last decade in tatters as the country's defence budget dried up forcing the procurement of two follow-on carriers to be cancelled.
SWEDEN'S GOTALLANDS ARRIVE

Sweden has taken formal delivery of the last of three A-19 Gotland-class diesel electric submarines. GOTLAND, UPPLAND and HALLAND.

ARGENTINA BUYS DURANCE

The French replenishment tanker DURANCE, same class as HMS SUCCESS, has been bought by the Argentine Navy for US$15 million. The ship was mothballed by the French Navy in 1997 after only 19 years of service and was to have been upgraded in France by DCN prior to transfer to the Argentinians, but will now be upgraded in an Argentine shipyard. The ship was towed from Brest to Argentina's leading shipyard at Puerto Belgrano for its upgrade and overhaul before joining the Navy.

USN SPEEDING UP TBMD

The USN plans to fire more than 50 test missiles during the next two to three years in order to accelerate the deployment of its two TBMD (Theatre Ballistic Missile Defence) systems. The Navy area system, designed to protect coastal and more local assets from incoming enemy ballistic missiles, is expected to conduct at least 34 missile tests. The Navy Theatre-Wide (NTW) system, designed to protect entire regions, is being prepared to fire at least 15 new missiles during this time. The Navy area system is expected to be in use by 2001. If the tests for NTW succeed, the USN would hasten its deployment to 2004 or 2005, well ahead of the current deployment target of 2007. The Standard SM-2 Block IVa missile being used by the area programme has passed most of its previous tests and is almost ready for production.

After 10 test flights at the US Army's White Sands Missile Range in New Mexico, and two each abroad two Aegis-equipped cruisers at sea, the Navy area system will be put through 25 tests that will be much more rigorous. One of these will gauge if a cruiser can intercept two ballistic missiles and two cruise missiles simultaneously.

CHARLES DE GAULLE TO BE MODIFIED

The French Navy has determined to lengthen the flight deck and install new safeguards against radiation from its reactors in its new aircraft carrier CHARLES DE GAULLE.

The additional length is required to ensure that in combat conditions the Hawkeyes can turn and clear the deck quickly after landing rather than have a vehicle tow them out of the way of other aircraft waiting to land or take off.

Other modifications needed by the carrier include new safeguards on the carrier's two nuclear reactors to comply with the new European Union standards due to come into effect in May 2000.

The total cost of the modifications could be as high as US$55 million and delay the 41,000 tonne carrier's service date by eight months.

F3000S BUILDING FOR SAUDI ARABIA

The French shipbuilding company DCN has started work on assembling Saudi Arabia's three F3000S frigates. The frigates are enlarged versions of the stealthy French La Fayette incorporating additional features for the Saudi Navy. These include an enhanced AAW capability based on the European ASTER missile and a new 3D air search radar. Initially the F3000S will be fitted with two Slyver launchers for 16 ASTER 15 missiles but can be extended to take an additional two launchers for 32 missiles. Margins exist to also take the longer ranged ASTER 30 missile.

Other weapons to be fitted are similar to the French version of the frigate except for the addition of an active towed array sonar.

The ASTER 15 missile is to be used on the Saudi ships is currently in production with the first customer being the French Navy's aircraft carrier carrier CHARLES DE GAULLE. The ASTER 15 is intended as a missile defence weapon for use against sea skimming anti-ship missiles. It has a range of 1.7 to 30 kms. The ASTER 30 is intended for long range anti-aircraft/missile defence with a range of 3 to 100 kms. It has been reported that EURSAM is further developing the ASTER 30 to fulfil the anti-ballistic missile role. Recently the missile system was criticised by some in the UK for not having this role which could have been achieved had the RN opened for the US Mk-41 launcher with SM-3 for its new Type 45 DDGs.

The USN is also expected to ask for an increase in the number of SSNs which were reduced from 73 to 50. One measure being looked into to address the problem is “buying back” decommissioning ships and submarines. Up to seven Los Angeles class SSNs could be saved from decommissioning as well as seven to 10 Spruance and or FFG-07 class ships.

LARGER ‘AIR CAPABLE’ SHIPS FOR JAPAN

The Japanese Navy will build at least four large air capable surface combatants to replace its aging ASW destroyers, which serve as the Navy's flagships in its four flotillas. The project is part of Japan's 2001-2005 Medium Term Defence Program pegged for authorisation by the end of 2000. The service currently is studying several options for the vessels, which will have a wider range of missions, including logistical cooperation with the USN in regional contingencies. The vessels may also be designed to accommodate more, and larger, helicopters than the three SH-60 ASW helicopters currently carried on each of the Navy's destroyers.

The warships now under study are to replace the two 5,000 tonne DDH-141 Haruna class destroyers commissioned in 1992 and the two DDH-143 Shimane-class helicopter destroyers commissioned in 1980 and 1981.
The replacement vessels being touted will displace about 10,000 tonnes. If a new helicopter carrier is approved it is expected to be at least 15,000 tonnes.

Analysts believe the Japanese Navy's 2000 budget request, which includes funding for a 11,500-tonne combat support vessel, is a first sign that construction of larger warships is imminent.

The new warships will be planned as a part of Japan's own capability of projecting power in areas such as international peacekeeping operations under UN command. The Japanese Government is already preparing to allow troops to participate in such undertakings.

Prime Minister Keizo Obuchi and other political leaders, including those of opposition parties, recently have lent their support to the idea of restraining or reversing legislation that prohibits deploying armed naval personnel.

The Department has recommended proceeding at this stage with a modified upgrade of the Anzac anti-ship missile defence capability.

The Department has also ordered the investigation of alternative options for providing a long-range air warfare capability.

In a release from Defence Headquarters in Canberra it was pointed out that Defence has been investigating with industry an upgrade to the Anzac frigate fleet.

The original concept for the upgrade included improvements to their anti-ship missile defence capabilities and the addition of a long-range air warfare capability.

Anzac Upgrade

The RAN's Anzac class ships are to get their anti-ship missile defence upgrades but not their long-range air warfare capability.

The Defence Department has recommended proceeding at this stage with a modified upgrade of the Anzac anti-ship missile defence capability.

The Department has also ordered the investigation of alternative options for providing an appropriate level of this capability in the surface fleet.

The Government is committed to maintaining a highly effective surface fleet and recognises that close collaboration with industry is vital to achieving this aim.

A Surprise Appointment

In the fifty-two years since Vice Admiral John Collins became the first graduate of the Royal Australian Naval College to head Australia's Navy as Chief of the Naval Staff (CNS), fifteen of the sixteen officers appointed to head the RAN commanded the seagoing forces beforehand — until Maritime Command was established in 1988 exercising their command from a flagship, usually a cruiser or aircraft carrier until large warships were considered to be unsuitable (or unaffordable) for the RAN.

The sixteenth CNS — or Chief of Navy (CNS) as he is now titled — had a background different in several ways from his predecessors. David Shackleton was born in the United Kingdom in 1948 and entered the RAN in 1966 as a Supplementary List Seaman Officer. Following his initial training he was at sea almost continuously until 1979, serving in ANZAC, STUART, SYDNEY, VAMPIRE, CURLEW, QUEENBOROUGH, MELBOURNE, PERTH, twice; and HOBART (twice); he also undertook training in the United States and exchanged duty in the Royal Navy.

As a junior officer the CNS-to-be qualified as a warfare officer specialising in combat systems and aircraft direction (PWO D) and as his career progressed went on to command DERWENT in 1988-9 and BRISBANE in 1992 the latter posting in the rank of Captain; Promoted to Commodore in 1993 a Navy Office appointment followed, together with completion of the 1994 Senior International Defence Management Course in the United States, then Defence HQ appointments, promotion to Rear Admiral in July 1996 and finally to Vice Admiral on becoming Chief of Navy.

Along the way, in addition to graduating from the RAN and Joint Services Staff Colleges, David Shackleton became an Associate Fellow of the Australian Institute of Management, a Master of Business Administration and received a Diploma in Corporate Management. One might assume the management qualifications in addition to his Service experience were a not-unimportant factor in his selection by the Government to be the Navy's chief.

It would not be surprising if this was so. Extensive and seemingly never-ending changes in the defence organisation in the last decade, plus many years of career service, have inevitably led to the establishment of a Maritime Command together with a new direction of responsibilities throughout the Department of Defence. Have we really had an effect on the responsibilities and authority of the CNS/CN. While together with the Chiefs of Army and Air Force he is a member of the Defence Executive. CNS does not direct the activities of his Service in the way his predecessors were able to do prior to the functional changes in what has become a very complex bureaucracy.

Vice Admiral David Shackleton will need all his skills in the coming months.

Final Inquiry?

From time to time over the years reference has been made in this column to the efforts of a group of naval men who served in HMA ships involved in the Malayan Emergency anti-terrorist campaign and the Vietnam war to seek similar benefits to those awarded to their Army and Air Force colleagues.

Incredible though it may seem, satisfaction has not yet been achieved although the inquiry due to be completed on 31 December 1999, conducted by Major General the Honourable R. J. Mohr, with the assistance of retired Rear Admiral Phillip Kennedy, will probably be the last of several inquiries into what appears to be a relatively simple issue.

One can only hope the activities of sailors, soldiers and airmen undertaking specific tasks in the East Timor peacemaking engagement, do not become the cause of similar argument and bitterness at some future date.

Mr. Mervyn Cooper OAM QFSM

Several hundred people attended the funeral of Mervyn Cooper, President of the Tasmanian Division of the Navy League since 1981, who died in Launceston on 23 August 1999.

Apart from the Navy League, Mervyn Cooper was involved in a large number of Tasmanian community based organisations, almost always as president or an officer, holder; he was in every sense a leader in his local community. This was recognised by the award of the Queens Fire Service Medals and the Order of Australia in 1979 and 1985 respectively.

In the Navy League Mervyn was fortunate to have his wife Joan as Honorary Secretary of the Division. In fact it was Joan who's tireless work kept the Navy League functioning in Tasmania especially in the north of the island State. Mervyn Cooper will be missed by his many ex-Navy and other friends but fortunately his wife will continue with her invaluable work.

By Geoff Evans

Observations
In a news release on 16 November 1999 the Federal President of the Navy League of Australia expressed concern at, amongst other things, "the inability of the ADF, including Navy, to provide adequate air defence for deployed ADF units. These comments struck a chord with many in Navy, the ADF and community who have recognised the looming gap in Australia's air warfare capabilities that will become a reality with the retirement of the last of the guided missile destroyers (DDGs) in 2001.

Against this backdrop, the Minister for Defence's announcement in late October 1999 not to proceed with the announcement offers a practical example of the 'knowledge edge' at work. It simply stated that the task for Defence planners is to match actual capabilities and resources to the desired battle position and noted that the balance would likely shift over time in response to a range of external factors, especially changing technology. Thus, it recommended that priority should be directed towards 'the knowledge edge,' the effective exploitation of information technologies to allow us to use our relatively small force to maximum effect. Arguably, an effective maritime air warfare capability offers a practical example of the 'knowledge edge' at work.

The second priority was identified as 'defeating threats in our maritime approaches.' The Navy's ability to provide sufficient coverage for the force to use the air environment effectively is essential. Thus, the priority appears tailor-made for maritime air warfare.

The Minister's announcement to continue with the modified upgrade to the ANZACs' anti-ship missile defence and to explore other options for providing a long-range air warfare capability for Navy is therefore good news. It provides the opportunity to acquire a strategic defence capability that should serve the ADF well into the new millennium. A number of alternative options are being explored and the results of these efforts are expected to be provided to the Minister in the first quarter of 2000. However, it is not my intention to speculate on the possible outcomes of this process here. Instead, I believe it is more appropriate to review why a maritime air warfare capability must be a critical component of tomorrow's ADF.

**Extant Strategic Guidance**

Australia's Strategic Policy (ASP97) was released by the former Minister for Defence in December 1997. ASP97 reaffirmed the fundamental requirement to maintain a balanced force noting that 'success in war will depend on having the appropriate balance of capabilities.' It stated that the task for Defence planners is to match actual capabilities and resources to the desired battle position and noted that the balance would likely shift over time in response to a range of external factors, especially changing technology. Consequently, a fleet without this capability could impose significant limitations on the government's capability to undertake maritime operations within reach of an enemy air threat and would introduce serious military risk should these operations never become necessary in circumstances we cannot yet foresee. It is therefore an essential capability.

**Maritime Air Warfare Capabilities**

What, though, constitutes an effective maritime air warfare capability? In its rawest sense, air warfare is about being able to conduct air attacks that are either feasible or useful. It is about exploiting the means to combat any would-be aggressor. Control of the air environment demands such a capability. To suggest that it is to deny the very real operational limitations of the Air Force's fighter force.

Current strategic plans seek to achieve strategic control and combat air patrol coverage but, even then, the outer limits of the patrol area would not bridge the sea gap west of Timor. Cognizant of the advances in missile technology and effectiveness that supersonic missiles could be seen within the regional Defence inventories within the decade, accepting such an incomplete coverage would be unwise and imprudent.

Maintaining an effective maritime air warfare capability in Navy would address this potential problem. Conversely, a fleet without this capability would impose significant limitations on the government's capability to undertake maritime operations within reach of an enemy air threat and would introduce serious military risk should these operations never become necessary in circumstances we cannot yet foresee. It is therefore an essential capability.

Reference to the issue of posture. Indeed, it commented that this focus 'does not mean that we adopt a purely defensive strategy, but it does mean that we want to undertake high-profile offensive operations in defence of our country and it does not impose a ceiling on our capabilities -- rather it sets the irreducible minimum capability that Australia needs to maintain.' Maritime air warfare capabilities must be part of this equation.

Current strategic plans seek to achieve strategic control over Australia's maritime approaches. This demands that the ADF is able to use this area for our purposes and deny it to any would-be aggressor. Control of the air environment is an essential precursor for strategic control. This requires the capability to deny intelligence to the enemy, to provide warning to your own forces, to maintain a layered, defence in depth and, finally, effective command and control.

Parts of this equation will be satisfied by contributions from each of the warfighting Services, Navy, Army and Air Force. However, for a maritime island nation such as Australia, it is unlikely that the modern fleet should not be at the vanguard of these efforts. A maritime air warfare capability provides the practical means by which this requirement can be satisfied. Australia's strategic geography demands such a capability.

To suggest that the command of the air could be achieved by air power alone is to deny the very real operational limitations of the Air Force's fighter force.

The string of bases in our north offers only an incomplete coverage of our northern maritime approaches. The availability of air-to-air refuelling would extend the patrol coverage, but, even then, the outer limits of the patrol area would not bridge the sea gap west of Timor. Cognizant of the advances in missile technology and improvements in accuracy that supersonic missiles could be seen in regional Defence inventories within the decade, accepting such an incomplete coverage would be advisable and imprudent.

Air Sm-2 MR missiles are fired from the forward VLS of a USS Arleigh Burke-class DDG. The SM-2 MR missile has a range of 74 km and can be used against ballistic missiles (USN)
strategic benefits. A Task Group that includes an Air Warfare destroyer is able to be deployed more freely and is able to control its immediate air environment. This reduces the Task Group’s reliance on fighter aircraft and would allow these aircraft to be released for other tasks or, alternatively, for their capabilities to be better directed where they can have the greatest impact.

Importantly, Air Warfare destroyers would also maintain the capability to effectively operate with US Forces and to make a notable and effective contribution to alliance operations.Mindful of our obligations under ANZUS and the desire to be viewed as a valued and reliable strategic partner, the Air Warfare destroyer would also provide Government with an appropriate, ready-made solution to future requests for Australian participation.

Opportunities for Future Growth and Development

A maritime air warfare capability does not come cheaply. The costs associated with it are a real challenge, particularly at a time when the ADF is struggling to come to grips with a forecast of long-term investment projects that is clearly unaffordable. At the same time, short-notice operational demands are increasing and the balancing act between resource allocations is becoming more daunting.

This reality was central to the decision not to proceed with the full scope of the ANZAC WIP. The planned upgrade simply did not represent value for money. It offered an effective medium-term air warfare solution but provided no opportunity for future growth and development. This must be a fundamental consideration if multi-billion dollar investments are to be supported. Such expenditure should not deliver an end but, rather, should be a part of a structured long-term strategy for maintaining required defence capabilities.

An Air Warfare destroyer provides this future growth path. Critically, SM-2, long-range phased array radars and Link 16 represent the core elements of current US plans to enhance the effectiveness of its surface fleet. The inclusion of these same systems in the Air Warfare destroyer would enable Australia in piggy-back on these technological advances and, importantly, would retain the ADF’s regional capability edge.

US efforts are currently focused on what has been variously termed network-centric warfare or ‘cooperative engagement capabilities’ (CEC). In simple terms this means sharing and distributing information in a seamless, integrated environment. CEC is designed to provide a clear, uncluttered, common airspace picture to facilitate faster reaction times to threats. It distributes sensor detections (radar and IFF) from and between equipped units where onboard processors generate a fused and continually updated airspace picture. The update rate and quality of this data is sufficient for a unit to achieve a fire control solution on a target and then engage it, without ever having detected that target with its own sensors. Effectively, CEC offers the potential to achieve a single force-wide distributed combat system.

Significantly, CEC also represents a primary building block for future Theatre Ballistic Missile Defence (TBMD) SM-2 Block IV+ missiles, with their greater range and altitude ceiling offer a realistic avenue towards a capable TBMD capability. TBMD is currently outside the capabilities of all the world’s air forces. Indeed, an Air Warfare destroyer equipped with SM-2 Block IV+ missiles could develop a defensive missile intercept envelope around a Task Group that is comparable to the level of protection now afforded by land-based fighter aircraft.

However, while fighter support is limited in range and is dependent on weather conditions and air-to-air refuelling capability, it is not currently able to engage air targets. Certainly, a full squadron of F/A-18s could be required to sustain around 50 on-station control of the air environment. Whereas a full helicopter control solution on a target and then engage it, with or without ever having detected that target with its own sensors. Effectively, CEC offers the potential to achieve a single force-wide distributed combat system.

The costs associated with it are a real challenge, and while fighter support is limited in range and is dependent on weather conditions and air-to-air refuelling capability, it is not currently able to engage air targets. Certainly, a full squadron of F/A-18s could be required to sustain around 50 on-station control of the air environment. Whereas a full helicopter control solution on a target and then engage it, with or without ever having detected that target with its own sensors. Effectively, CEC offers the potential to achieve a single force-wide distributed combat system.

Conclusion

Air Warfare destroyers represent a highly desirable capability that would not only enhance ADF operational effectiveness but also reinforce the inherent flexibility and versatility of destroyers. I would contend that their breadth and capability would not only enhance ADF tactical air and surface fleet. The inclusion of a part of a structured long-term strategy for maintaining the capability to effectively operate with US Forces and to make a notable and effective contribution to alliance operations.

The Indian Navy destroyer INS DELHI The class has a considerable anti-ship capability previously only seen in the USN Iowa class BBs and Russian Kirov class cruisers (RAFAE 82 WLG 1998)

The Navy’s current acquisition program is a combination of local construction, or indigenous, and Russian built equipment. Self-reliance is the goal despite the fact it can take up to ten years to build a ship in India, such as the case with INS DELHI, and about three years to build in Russia. Where it is deemed desirable, Russian industry is used to fill gaps left by local construction. As a result, Indian industry has been very successful at integrating Russian equipment, usually weapons and propulsion, with local and western systems.

Submarines

India’s 10th Shidhagosh class submarine (a Kilo 877EMK class) has been launched in Russia and due for delivery in June 2000. These submarines are proving very popular amongst many navies. India’s version is equipped with shoulder-launched SA-N-8 Igla IR anti-aircraft missiles, permanently stored in the conning tower, to give them some protection from P-3 Orion type Maritime Patrol Aircraft. India has also acquired the P-10 Afaa supersonic cruise missile, known by its NATO designation as the SS-
The INS VIRAAT, ex HMS HERMIONE of Falklands fame, is currently undergoing a refit to keep her in service until her replacements arrive.

**AirCraft Carriers**

It was recently announced (THE NAVY Vol. 61 No. 41) that a 32,000 tonne aircraft carrier had been approved with work starting in 2000. By using a modular approach in building, it is expected to reduce the construction time down to six years. It will be 250 metres long and will have an angled flight deck and a ski jump allowing STOBAR (Short Take Off But Arrested Recovery) operation. While a navalised version of the Light Combat Aircraft (LCA) project could be included in the air group, it looks likely that the MiG-29K will be selected. The air group is expected to include MiG-29K multi-role fighters and 20 helicopters. This ship will replace the Majestic class carrier INS Vikramaditya, which was decommissioned in 1996. Negotiations are still progressing for the purchase and conversion of the 44,500 tonne ex-Russian Navy Kiev class VTOL aircraft carrier, ADмирAL GORSHKOV to replace the INS VIRAAT (former HMS HERMIONE). A Memorandum of Understanding was signed between the two countries in 1998 that stated Russia was to provide GORSHKOV free of charge and India would pay for the conversion but in a Russian shipyard. It is expected that the conversion will involve the removal of the torpedoes and the fitting of a bow ski jump as well as arresting gear and other equipment to support STOBAR operations. The carrier could support up to 24 MiG-29K fighters and six helicopters.

For use on the two carriers orders have already been placed for four AEW & C Ka-31 helicopters. It is expected that both the AEW&C and ASW versions of the Ka-31 will be acquired. No deals have been struck yet regarding the MiG-29K. But it is believed that part of the deal for GORSHKOV includes purchasing the fighter. The MiG-29K also in service with the Indian Air Force.

**Destroyers**

The third and final ship of the Type 15 Delhi class is due to be commissioned into the fleet in June 2010. These are the largest locally built ships of this type ever built in India and are exceptionally powerful destroyers. These 6,700 tonne DDGs and are optimised for air and anti-submarine warfare. They are armed with 16 SS-N-25 (9M38 35mm - Harpoon's) anti-ship missiles, a 100 mm gun, four 30 mm CIWS, five 533 mm torpedo tubes; for the full range of torpedoes used by the IN submarine fleet and two SA-N-7 Gadfly SAM launchers for 48 Gadfly missiles with a range of 25 kms. The class also embark two Seaking ASW helicopters.

There are reports that plans to modernise the three Rajput class destroyers with Ukrainian assistance. These three are to be modified to take MiG-29K helicopters.

**Corvettes**

For littoral operations the IN also has a large corvette construction program. The first of the 1,350 tonne Type 25A Khukri class, INS KORA, entered service in 1998. This design is a modification over the earlier Type 25 class. A total of four ships are planned with the last one entering service in 2003. These are armed with 16 SS-N-25 anti-ship missiles, SA-N-5 SAM's, and one 76 mm and two 30 mm guns. They also have a helicopter pad and can carry one HAL Caretter helicopter. They were intended to replace the ageing Petra II frigates.

The last of the 455 tonne Russian designed Taranat 1 class of 12 corvettes is expected to enter service in 2001. Four modified Taranat 1's have also been ordered. The original Taranat's are armed with SS-N-20 Styx anti-ship missiles, SA-N-5 SAM's and one 76 mm and two 30 mm guns. The modified version will carry the Kh-15 ASM and will have an additional deeper deck.

There are also a number of other projects for small craft and support vessels. If the stated programs progress as planned the fleet in 2010 should comprise the following:

- Sixteen submarines consisting of 10 Kilo class, four Type 1500 class and two Project 75 class. One nuclear powered submarine armed with nuclear tipped cruise missiles.
Conclusion

By 2010 the IN will not only be able to dominate and strangle Pakistan's sea ports, but it could also impact on the US Navy's freedom of operations in the Arabian Sea/Persian Gulf area. It would also be able to deny any freedom of movement to any Chinese incursion into the Bay of Bengal or Indian Ocean via the Malacca Straits. Its ships, submarines and long range patrol aircraft could operate off the IN's northern and western coasts with ease.

As India considers that China is its number one potential enemy, especially when China is increasing its influence in Bangladesh and Myanmar, the Malacca Straits could quickly become the focal point for future tensions and diplomatic activity. This area is clearly in the middle of Australia's zone of strategic military interest. As some in the defence establishment will testify, our force structure on the premise that the RAN is the best Navy south of China and east of India, we could quickly find that the RAN is outclassed and outgunned in almost every area of capability. Our naval task groups would not be able to operate effectively for long in such an environment. Without an adequately equipped Navy we could find that we could also lose the diplomatic battle for influence within the region.

MATCH

HMAS MANOORA

In a brief ceremony at Forcass, Newcastle, HMAS MANOORA was formally handed back to the RAN after extensive modification. Although not falling under the banner of MATCH in this section, given that she commissioned sometime ago, we felt that as she is practically a new ship we should showcase her to our readers.

MANOORA and KANIMBLA have been rebuilt from their original Newport class LST configuration and fitted with a helicopter hangar amidships, capable of housing up to four Seahawk/Blackhawk size helicopters or three of the larger Sea King helicopter. The hangar is also high enough to accommodate a Chinook helicopter. The after helicopter spot is being expanded to be a two spot deck capable of handling two Blackhawk sized aircraft simultaneously. A third spot on the forecastle is also available. This was achieved by extending the deck 12 m and raking the stern.

Three dual-use compartments have been added on 03deck providing a classroom and a briefing room that seats 26, a classroom with 15 work stations and a General Purpose room with another 10 work stations. These compartments can either be used as command and control areas for embarked amphibious forces or for general training at sea. A boat deck has also been constructed on the port side for two 7.2 metre RHIBs (rigid hull inflatable boats).

To ensure enough space is provided for either the forward operating helicopter or for the carriage of two LCM 8 class landing craft, the ship was modified by removing the 34 m bow ramps and horns. The deck area has been expanded by the addition of 'flaring' to the hull. A 70 tonne crane is installed forward of the bridge to launch and recover the LCM 8s.

The tank deck, accessed through the stern door, the ramp to the forward flight deck or the hatch of the after flight deck, provides 840 square metres of storage space for vehicles and equipment.

A medical facility has been installed to provide initial surgery and allow medical support personnel ashore. The facility contains two pre-operating tables, two operating tables, two post operation recovery beds and six high dependency, intensive care beds. Three existing embarked force mess decks have also been modified to provide a 32 bed low dependency medical ward. Medical equipment such as X-ray machines and surgical systems are permanently fitted, however, the personnel to activate the facility will only embark when required.

The extensive aviation facilities including bulk JP5 (aviation kerosene) storage, 10071 and F band radars, FHF interrogators and transponders and a new flight control facility provide a cost effective platform for the training and exercising of ADF helicopter personnel in shipboard operations.

An enhanced Command, Control and Communications (C3) capability has been installed. This allows progressive upgrade or operation of the system using a combination of fixed and portable equipment to support the embarked force commanders. Equipment includes the Battle Command Support System (BCSS) and a mix of Navy and Army HF, UHF and VHF radios. The BCSS provides land theatre picture compilation with command and control systems for the embarked force commander. The BCSS has multiple outlets and is available in all embarked force planning and briefing compartments on 03 deck. Naval communications have been upgraded to RAN standard and the Army RAVEN Combat Net Radio have been installed.

Selected ship systems have been improved to provide greater operational efficiencies. One major change in all steam driven systems having been replaced with electric powered systems in areas such as water making, cooking and internal heating. This has necessitated the installation of a fourth generator. Machinery control systems have also been upgraded in many of the engineering compartments.

MANOORA conducted extensive harbour trials before leaving Newcastle for sea trials. It is hoped that the ship will be ready in time to relieve HMAS JERVIS BAY in the Timor Sea.
The Americans called her the “jolly green giant,” her code name was “gunpowder” and her captain called her the “quiet achiever.” She was PERTH, the RAN’s oldest ship.

Her White Ensign was drawn for the final lime on October 15 1999 as the 34-year-old Adams class destroyer. She was PERTH, the RAN’s oldest ship, and remembered their lime aboard before they marched down the gangway for the final time.

John Moore said: “HMAS PERTH was Australia’s first submarine. His descriptions of storm and tempest, cold and ice, heat and oppression, are vivid and real. Above all the writing is as fresh as though this gallant little ship and her ship’s company had just returned to harbour. At the same time it is not without genuine humour.

As the WAST WATER was a converted whale cacher equipped with a 4 gun and ASDIC (nowadays called sonar). This is her story related by her ‘Jimmy’ or First Lieutenant, an Australian Rhodes Scholar who was commissioned into the Royal Navy Reserve at the outbreak of war in 1939. It is a very human story of personal tragedy, drama, courage and humour. It is no ordinary story because the author conveys, albeit in an unassuming and understated way, what it really was. His descriptions of storm and tempest, cold and ice, heat and oppression, are vivid and real. Above all the writing is as fresh as though this gallant little ship and her ship’s company had just returned to harbour. At the same time it is not without genuine humour.

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The strategic background to Australia's security has changed in recent decades, and in some respects become more uncertain. The League believes it is essential that Australia develops capability to defend itself, paying particular attention to maritime defence. Australia is, of geographical necessity, a maritime nation whose prosperity strength and safety depend on the security of the surrounding ocean and island areas, and on seaborne trade.

The Navy League:
- Believes Australia can be defended against attack by other than a super or major maritime power and that the prime requirement of our defence is an evident ability to control the sea and air space around us and to contribute to defending essential lines of sea and air communication to our allies.
- Supports the ANZUS Treaty and the future reintegration of New Zealand as a full partner.
- Urges a close relationship with the nearer ASEAN countries, PNG and the Island States of the South Pacific.
- Advocates a defence capability which is knowledge based with a prime consideration given to intelligence, surveillance and reconnaissance.
- Believes there must be a significant deterrent element in the Australian Defence Force (ADF) capable of powerful retaliation at considerable distances from Australia.
- Believes the ADF must have the capability to protect essential shipping at considerable distances from Australia, as well as in coastal waters.
- Supports the concept of a strong Air Force and highly mobile Army, capable of island and jungle warfare as well as the defence of Northern Australia.
- Supports the acquisition of AWACS aircraft and the update of RAAF aircraft.
- Advocates the development of amphibious forces to ensure the security of our offshore territories and enable assistance to be provided by sea as well as by air to friendly island states in our area.
- Advocates the transfer of responsibility and necessary resources for Coastal Surveillance to the defence force and the development of the capability for patrol and surveillance of the ocean areas all around the Australian coast and island territories, including in the Southern Ocean.
- Advocates the acquisition of the most modern armaments and sensors to ensure that the ADF maintains some technological advantages over forces in our general area.
- Advocates measures to foster a build-up of Australian-owned shipping to ensure the carriage of essential cargoes in war.
- Advocates the development of a defence industry supported by strong research and design organisations capable of constructing all needed types of warships and support vessels and of providing systems and sensor integration with through-life support.

As to the RAN, the League:
- Supports the concept of a Navy capable of effective action off both East and West coasts simultaneously and advocates a gradual build-up of the Fleet to ensure that, in conjunction with the RAAF, this can be achieved against any force which could be deployed in our general area.
- Believes it is essential that the destroyers/frigate force should include ships with the capability to meet high level threats.
- Advocates the development of a frigate force sufficient for two task forces, including supporting operations in sub-Antarctic waters.
- Advocates the acquisition at an early date of integrated air power in the fleet to ensure that the ADF deployments can be fully defended and supported from the sea.
- Advocates that all Australian warships should be equipped with some form of defence against missiles.
- Advocates that in any future submarine construction program all forms of propulsion, including nuclear, be examined with a view to selecting the most advantageous operationally.
- Advocates the acquisition of an additional 2 or 3 Collins class submarines.
- Supports the development of the mine-countermeasures force and a modern hydrographic/oceanographic fleet.
- Advocates the retention in a Reserve Fleet of Naval vessels of potential value in defence emergency.
- Supports the maintenance of a strong Naval Reserve to help crew vessels and aircraft in reserve, or taken up for service, and for specialist tasks in time of defence emergency.
- Advocates the acquisition of a strong Naval Reserve Cadet organisation.

The League:
Calls for a bipartisan political approach to national defence with a commitment to a steady long-term build-up in our national defence capability including the required industrial infrastructure.

While recognising current economic problems and budgetary constraints, believes that, given leadership by successive governments, Australia can defend itself in the longer term within acceptable financial, economic and manpower parameters.
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2000

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You are invited to attend

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Australia’s largest and most prestigious Maritime Exhibition

When: 1 - 4 February 2000
Time: Tuesday 1 February: 10am - 6pm
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Friday 4 February: 10am - 4pm

Where: The Sydney Convention and Exhibition Centre, Darling Harbour

What: The most comprehensive commercial maritime and naval defence exhibition ever held in the Asia Pacific region.

Why: An opportunity to network with more than 200 Australian and international manufacturers and suppliers (from 15 countries) as they demonstrate their products, services and capabilities.

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The Royal Australian Navy will stage a two-day conference titled: Fighting the Maritime War in the 21st Century – the Medium and Small Navy Perspective. Featuring internationally recognised speakers, it will cover issues including the navy of the next century, naval aviation, the naval role in expeditionary warfare and regional naval developments.

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Email: David.Wilson.135076@navy.gov.au

The French Australian Chamber of Commerce will host a seminar on High Technology and Research and Development. The conference aims to foster contacts between the Australian industry and its French counterparts. Speakers will include top officials from the defence and commercial maritime sectors from the two countries.

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The US-Australian Maritime Co-operation Conference will investigate the recent program of change that has revolutionised the United States’ maritime industry. Speakers will include senior representatives from the US Department of Commerce and Defence as well as the United States Coast Guard. Australian issues are likely to include the nation’s fast ferry industry, a world leader in passenger and freight transport.

Tel: +61 7 360 0762 Website: www.ideca.com

For more information on the exhibition, contact Pacific 2000 on:

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The Navy League was established in Australia in 1901, initially in the form of small branches of the United Kingdom Navy League (established in 1897) and since 1950 as an autonomous national body headed by a Federal Council consisting of a Federal President and representatives of the six States, the Australian Capital Territory and the Northern Territory.

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

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

OBJECTIVES
The principal objective of the Navy League of Australia is “The maintenance of the maritime well-being of the Nation” by:

- Keeping before the Australian people the fact that we are a maritime nation and that a strong Navy and a sound maritime industry are indispensable elements of our national well-being and vital to the freedom of Australia
- Promoting defence self-reliance by actively supporting manufacturing, shipping and transport industries
- Promoting, sponsoring and encouraging the interest of Australian youth in the sea and sea-services, and supporting practical sea-training measures
- Co-operating with other Navy Leagues and sponsoring the exchange of cadets for training purposes

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

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

Member participation is encouraged in all these activities

JOINING THE LEAGUE
To become a Member of The League, simply complete the Application Form below, and post it, together with your first annual subscription of $22 (which includes the four quarterly editions of The Navy), to the Hon Secretary of the Division of the Navy League in the State in which you reside, the address of which are as follows:

VICTORIAN DIVISION: PO Box 1303, Box Hill Delivery Centre, Vic 3128.
QUEENSLAND DIVISION: C/- PO Box 549 Bulimba, Qld 4171.
SOUTH AUSTRALIAN DIVISION: GPO Box 1528, Adelaide, SA 5001.
TASMANIAN DIVISION: C/- 42 Army Road, Launceston, Tas 7250.
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If you live in the Australian Capital Territory or the Northern Territory, please post the form to the Hon Secretary of the New South Wales or South Australian Division respectively.

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

THE NAVY LEAGUE OF AUSTRALIA
Application for Membership

To The Hon Secretary
The Navy League of Australia

Division

Sir or Madam,
I wish to join the Navy League of Australia, the objectives of which I support, and I enclose a remittance for $22 being my first annual subscription to 30 June next.

Name (Mr) (Mrs) (Ms) PLEASE PRINT CLEARLY (Rank)
Street Suburb State Postcode

Signature Date

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

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

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

Uniforms are supplied free of charge.

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

Parades are normally held during a weekend day or on Friday evening.

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

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

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

For further information, please contact the Senior Officer in your State, using the address provided below:

NEW SOUTH WALES: Cadet Liaison Officer, HMAS Watson, Watsons Bay NSW 2030. Telephone: (02) 0337 0560.

QUEENSLAND: Senior Officer NRC, Naval Support Office, Bulimba Barracks, PO Box 540 Bulimba QLD 4171. Telephone: (07) 3215 3512.

WESTERN AUSTRALIA: Cadet Liaison Officer, HMAS Stirling, PO Box 220, Rockingham WA 6168. Telephone: (06) 9550 0460.

SOUTH AUSTRALIA: Cadet Liaison Officer, Naval Support Office, Keswick Barracks, Anzac Highway, Keswick SA 5035. Telephone (08) 8305 8708.

VICTORIA: Cadet Liaison Officer, Naval Boathed, Nelson Place, Williamstown VIC 3016. Telephone: (03) 9389 0820.

TASMANIA: Cadet Liaison Officer, Naval Support Office, Anglesea Barracks, Locked Bag 3, Hobart TAS 7001. Telephone (03) 8237 7240

AUSTRALIAN CAPITAL TERRITORY: Commanding Officer, TS Canberra, HMAS Harman, Canberra ACT 2600. Telephone: (02) 8280 2782

NORTHERN TERRITORY: Cadet Liaison Officer, HMAS Coonawarra, PMB 11, Winnellie NT 0821. Telephone: (08) 8980 4448.

THE NAVY

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The new face of Naval Gunfire

The RNZN in the next century
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During last February at Sydney’s Darling Harbour a naval conference entitled Maritime War 21 was held. It attracted the world’s leading naval experts and provided a very interesting forum for their views and perceptions of the situation the RAN finds itself. The Federal Vice-President of the Navy League of Australia, RADM Andrew Robertson, details some of these insights in his article.

One of the most interesting insights was provided by two of the speakers, Dr Eric Grove and Dr Norman Friedman. It was interesting to hear them speak separately, yet in complete agreement with each other, about the need for a navy such as the RAN to have an organic air capability, or, loosely translated, an aircraft carrier. It was ‘unfortuitous’ that when these speakers addressed the issue they were speaking to converted, and not, the authors of the new White Paper who had left for the day.

The new RN LPH HMS OCEAN. Notice the number of helicopters that can be accommodated on the deck alone. (RN)

An aspect raised by Eric Grove that was less than five years ago nobody in the RN would have thought possible: 40,000 some aircraft carriers would be on the table to replace the INVINCIBLE class. The UK’s new White Paper has identified the need which is now being acted upon. This should give hope to the RN but the constant government stringing of defence’s budget, the anti-surface community within Defence, the military illiteracy of our local media and the scare campaign over the carrier question from the early 1980s will unfortunately not see this issue resurrected except in these pages.

Eric Grove’s lecture on air support is reproduced in this edition with the permission of the RAN’s Maritime Studies Program. It forms the first part of a series of articles on maritime air power for Australia.

A nail in the coffin of the RN Carrier is the RAAS view that the FOB (Forward Operating Base) is a viable strategic option, also accepted by senior Defence strategists. This is despite the vulnerabilities of a large static air base that may not only have to be fought for, but built and then defended before support could be provided to deployed expen-ditory forces. History demonstrates that air bases make attractive targets for commandos and ballistic missiles as the best way to kill aircraft is whilst they are on the ground. The USAF has identified this as the lesson of the Gulf War for potential adversaries of the West. History also records more aircraft being destroyed than aircraft carriers sunk.

An example of how expensive this anti-carrier stance can be seen in the LPA project, MANOORA and KANIMBLA. Had the RAN been allowed to explore the aircraft carrier option, without a permanent government gag on Navy investigating the issue, then the $400 million for the LPAs could have been spent on a new light aircraft carrier similar to what the RN is introducing. HMS OCEAN was built using commercial standards for many design aspects and military specifications for others thus significantly reducing the cost. This light aircraft carrier, the LPH, carriers more than three times the number of helicopters than the two LPAs with more troops, storage and support facilities in a new platform that will last three times longer and with $80 million left over.

Another view to come from the Maritime Warfare 21 conference was the need for surface ships to branch out into offensive weapon systems. Currently, most of a warship’s weapons and systems are in the defensive mode with a self-protection objective. An article by Kevin Dunn examines the development of new technologies such as the United Defense Mk-45 Mod 4 gun and the Raytheon ERGM (Extended Range Guided Munition) which go a long way to instilling the surface ship’s offensive role. The new gun which could be easily installed into an Anzac frigate gives the ship a greater standoff range with conventional ammunition. Nearly 1.2 km is compared to 1.2 km. The addition of ERGM allows the ship to apply precision firepower to a range of 6.3 km or 116 kms with varying payloads with GPS accuracy.

Elsewhere in this issue we read about the re-emergence of the old Soviet era KIROV class nuclear powered guided missile cruisers. The re-introduction and modification of these four powerful battle cruisers along with Moscow’s new Foreign and Military Policy will make them a planning consideration for any Western naval operation. HMS OCEAN allows the ship to apply precision firepower to a range of 6.3 km or 116 kms with varying payloads with GPS accuracy with a very pro land forces policy. How this affects the RNZN is the subject of our final article. What it doesn’t is how this affects the RNZN and ADF who have very close operational day to day links with the RNZN. A consequence of NZ’s pro land forces stance is the need to transport troops and equipment by sea. If NZ is to provide a balanced force to Australia for the purposes of collective security then the addition of another amphibious warfare ship, HMNZS CHARLES UPHAM, at the expense of an Anzac frigate will provide an additional amphibious warfare ship and land forces at the expense of one. HMNZS CHARLES UPHAM will add another amphibious warfare ship, HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. HMNZS CHARLES UPHAM, at the expense of one. 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From L to R. The Chief of Navy, Vice Admiral David Hneleton; author and Federal Vice President of the Navy League of Australia, Rear Admiral Andrew Robertson; and the Deputy Chief of Navy, Rear Admiral Geoff Smith at the Maritime War 21 conference.

In Mr White’s view, Asia will be the focus of maritime developments in 21st century and these will depend on how Asian economics develop.

Much attention has been given in Australia to recent events including in East Timor, but lessons need careful evaluation. There is a need for a balance of current and future capabilities; a balance between maritime and land capabilities; a balance between war fighting and peacekeeping.

The challenge is to offer the Australian Government a range of options, but he couldn’t imagine any option without heavy reliance on maritime capabilities. Australia faced the problem that it must deny its approaches to unfriendly sea and air forces, but what was the scale of threat to meet? What would be the future growth of forces in our region? What will technology produce in areas such as surveillance and targeting? What is the best balance of forces to contribute to future situations?

In answer to a question on the possible limitations to US power posed by the acquisition of nuclear weapons by China, India and Pakistan, he acknowledged the uncertainties which these developments posed.

During the conference, presentations were given by representatives from New Zealand, Canada, Malaysia, Holland, Japan and Singapore, including concern over the problems of interoperability, particularly in CHI with the USN, posed by rapid changes in technology.

Major Kum Chee Meng outlined the developments of the Republic of Singapore Navy with its small, heavily-armed vessels, and the close joint interoperability now achieved by Singapore’s armed forces (see Flash Traffic news item ‘Six La Fayettes for RSN’).

Mr J N Mak of the Malaysian Institute of Maritime Affairs outlined the internal interoperability problems of the Malaysian Navy due to possessing ships and equipment from several countries.

He opened that the navies of South East Asia were not orientated for war fighting, but were regarded as constabulary forces. Singapore alone had a unique maritime strategy, and only Singapore and Vietnam took external threats seriously.

Of particular interest was an address by Dr Eric Grove, the Deputy Director of the Centre for Security Studies of the University of Hull in England on Medium Navies and Organic Air. He outlined the growing interest in aircraft-carriers of various types following experience in the Falklands and Gulf Wars, and in Bosnia and Kosovo. In this light the UK had changed its policy and had now approved the construction of two medium-sized carriers of advanced design.

The UK now considered that aircraft-carriers were of major importance, given the new emphasis on littoral warfare. Their advantages of near invisibility in this situation: speed of response: likely freedom from the problems of over-firing rights and the need for overseas bases: high rates of effort due to proximity to target areas; and their ability with escorts to provide area air defence for ground forces when far from allied air bases, made them most valuable assets.

The Indian Navy is likely to acquire the Russian carrier Admiral Gorshkov (see THE NAVY Vol 61, No.41) and was also building a carrier in India. China was thought to be considering acquiring a carrier and Brazil had just updated hers.

In recent decades Russia, Spain, Italy and Thailand had all acquired aircraft-carriers. France has built a new nuclear-powered vessel and Italy plans to build a 22,500 tonne through-deck assault ship.

Dr Lee Willett from the University of Hull and the Royal Navy Maritime Strategic Studies Institute spoke on Cruise Missiles and Medium Navies. He felt that these weapons with their range, power and precision provided an unmatched capability and constituted a very effective deterrent for use by medium powers. Submarines and surface vessels were most suitable launch platforms.

Though capital costs were not inconsiderable, through-life costs of these missiles were very small when compared with similar costs for manned high-performance aircraft.

It was, however, very important to be quite clear on the purpose of acquisition of such weapons.

Of considerable relevance to Australia was also a presentation by Sir Robert Wallsley, the Chief of Defence Procurement of the United Kingdom. He outlined the large British defence procurement programme (about AS15 billion per year) covering new ships, aircraft and weapons.

New procurement systems and contracts had been put in place to save funds while preserving commissions and speedy delivery, using private finance in numerous cases.

The UK was investigating the naval applications for new hull designs. Following initial research from 1991, DERA, an agency of the UK Ministry of Defence, is now conducting research into the performance of trimaran hullforms for warships.

A demonstrator steel-hulled, diesel-electric-powered research vessel RV TRITON, now under construction by Vosper Thornycroft Ltd, will be delivered for trials this year. TRITON displaces 1,100 tons, has a length of 97 metres, a beam of 22.5 metres, a speed of 22 knots and a crew of 12 civilians plus scientists. She will have a large flight deck capable of accommodating helicopters, Unmanned Air Vehicles (UAVs) and containerised equipment. The side hulls are about a third the length of the main hull. Various forms of propulsion can be fitted.

While current trials are for frigate applications, DERA will also study other roles such as for offshore patrol vessels, mini LPH, fast to-deployment and air capable stealth vessels.

Commander Magnus Soderholm of the Swedish Defence Materials Administration spoke on Smaller Ships and gave an overview of the VISBY class of six vessels now ordered for the Swedish Navy. These were full stealth-designed high speed vessels of 625 tons capable of anti-submarine, anti-surface, anti-shipping, and mine countermeasures operations. They were of carbon fibre construction with a PVC core and had a very low signature in all areas. In his view Sweden leads the world in this type of stealth vessel.

Commander Timothy Cox, Director General Maritime Development, gave An Australian View of Surface Warfare and Surface Combinations. He felt that the RAN must be offensive. It must also now consider the impact of Theatre...
Ballistic Missiles on naval development. With the phased withdrawal from service of the three DDG's the RAN had an urgent need for new ships with a high capability for Area Air Warfare. This demanded new long-range surface to air missiles with appropriate detection and control systems. A hull size of at least 80,000 tons would be needed.

Lieutenant Commander Michael Lapage of the US Coast Guard spoke on 'The Integrated Deep Water System' of the US Coastguard. This was particularly relevant in view of the current debate on coastal surveillance in Australia and the number of agencies presently involved.

The US Coastguard is a formidable but costly organisation with two ice-breakers, 41 Cutters, 85 Patrol Boats, 1,500 smaller craft, 54 fixed-wing aircraft, 135 helicopters and six Port Security Units. Personnel number 35,000 with 8,000 reserves. The Coast Guard is responsible for ice-time to the Department of Transportation and in war to the US Navy.

Its main roles include Maritime Law enforcement, Search and Rescue, Environmental Protection and Defence. There are growing problems in the ocean areas with the effects of the world population explosion, declining fish stocks, the search for mineral resources and post-cold war conflicts.

The US Coastguard now faces a major problem of mass obsolescence due to a shortage of financial resources over many years.

Other topics covered at the conference included Undersea Warfare, C4I and the problem of interoperability and a presentation on the Joint Environment and the Littoral by Army, RAAF and NAVY representatives.

The Chief of Navy, Vice Admiral David Shackleton gave a final summing up, drawing together the many strands of maritime development and ideas.

The conference has, like its predecessors, done much to stimulate thought on development of the ADF and particularly its maritime elements, as well as cementing friendships with overseas organisations.

To the Navy League it was encouraging that the issues of Coastal Surveillance, cruise missiles, fleet integrated air power, area air defence, interoperability and new warship designs received prominence and discussion.

Australia is not currently threatened but it is arguably more exposed in a strategic sense and more on its own than it has ever been.

Posessing an advanced vibrant economy, nearly 19 million people and a trusted work-force, Australia is expected to stand on its own feet in all but the most serious defence situations. It seems clear that this cannot be done effectively without an increase in the size and capability of the Australian Defence Force, which means the allocation of more resources. Defence cannot just be turned on and off like a tap, for many years are required to build ships, aircraft and other equipment and to recruit and train the required personnel for all arms of the Defence Force.

The pity is that our national media has taken little interest in these major international conferences and exhibitions which are of considerable relevance to our defence and maritime industries. How can Australians be reasonably informed in order to play their part in a home girt by sea?

The definition of organic air power I will be using means air assets that are actually carried in ships. These assets can be fixed or rotary wing and the vessels that carry them either optimised for the task or have a more general capability of which the aviation component is a part, e.g. a frigate or supply ship. All this is fairly straightforward. A definition of medium navy, however, is more tricky. Clearly it is based on certain characteristics including a range of capabilities: amphibious, air, surface combatant, submarine, etc. It is perhaps best to put these towards the top end of our category which can then be brought down via China to navies with strengths of about 10,000 and significant fleets of surface combatants and submarines. Australia comes out as a middle of the middle of this group to which the rest of this paper will primarily refer.

It is part of the definition of a medium navy that it has at least some organic aircraft. Virtually all modern major surface combatants have at least one helicopter as part of their weapons suite. This is a key asset both for anti-submarine warfare (ASW) and countering fast attack and similar surface craft. In the latter role missile firing helicopters have decisively called the bluff of the missile boat that had its brief moment of glory from 1967 to 1991.

In the ASW role the active dipping sonar helicopter is even more useful than that with an increased emphasis on the conventional submarine threat in littoral waters. It seems strange now that the original specification for the new RN helicopter, the Merlin, did not include such capability. These users are extremely impressed with the performance of the AHS-66 dipping sonar that was added to supplement the sonobuoys of the original. Even the largest ASW helicopter can be embarked in a frigate designed for the purpose, while the supply ship also lends itself as a platform for such aircraft.

Helicopters are also vital components of amphibious capability in an era of Ship To Objective Manoeuvre (STOM). It is this that has brought even the Japanese MSDF to procure flat-top ships and helicopters, which of course form an important part of the capability of HMAS KANIMBLA and MANGORA.

There seems to be broad consensus that the helicopter is a natural organic component of fleets. Not so the ship based fixed wing aircraft. Indeed rarely has there been such controversy over the role of a single military capability. The prophets of 'air power' (i.e land based air power) have almost always tended to argue that ship based aircraft are unnecessary and expensive luxuries, especially when land based aircraft also lends itself as a platform for such aircraft.
A RAF GR7 Harrier lands on HMS ILLUSTRIOUS. The use of RAF aircraft on submarines and has only four surface combatants fully capable: the weather over you is gin clear, but the airfield and you can manoeuvre your carrier to areas of good weather, in particular running behind weather fronts then spiriting back through them to clear air on the windward side, thus minimising lost flying time. Finally, if the weather is bad it is also bad for offensive operations against you. The situation would be the same if you had carrier capability: the weather over you is gin clear, but the airfield providing your fighter cover is socked out is a very uncomfortable one. The only way you can guarantee fighter cover at sea is ashore but also reassuring to the John Major government. The desire to transfer such a scenario to this region. This is not to say that small is necessarily beautiful in carrier design. As in many things, to quote the Renault principle of war and a real battle winner if you get it right. As in many things, to quote the Renault principle of war and a real battle winner if you get it right. As in many things, to quote the Renault principle of war and a real battle winner if you get it right. As in many things, to quote the Renault principle of war and a real battle winner if you get it right. As in many things, to quote the Renault principle of war and a real battle winner if you get it right.
strategically offensive even if operationally defensive, as the Japanese found to their cost at the Battle of the Philippine Sea and as the Soviet Naval Air Force might have found out if the Cold War had gone hot in the 1980s.

As with all weapons platforms and systems the way they are operated has much to do with a carrier's vulnerability. The carrier has one fundamental advantage over a fixed airfield: as a mobile platform it is very hard to locate and hit. Anyone trying to prevent you achieving your objectives will need an 'at sea warfighting capability' of some sophistication. The further over the horizon you are, the more sophisticated that capability must be. It may be that this is virtually all you need do to create a near benign environment from the less sophisticated air and surface threat.

Even if there is some danger of attack the carrier's mobility can be turned to advantage. Captain Waite once more: "Don't be there when that attack happens. Maneuver your carrier group within the battlespace so you are forward attacking the enemy during the peaks of your cycle and well back out of range during your troughs. Move in, punch hard, move out: conduct your maintenance and repairs, then reappear again at a time and place of your choosing and where least expected to hit him again. The timing of this cycle should be such as to be forward and therefore vulnerable within the reconnaissance/deception/action cycle of the enemy. Unless he has a sophisticated and well practised war at sea capability, this is a very difficult tactic for him to counter."

The emphasis above on the level of capability needed to counter a properly handled carrier group is noteworthy. It might be doubted whether many nations in the Asia Pacific region have the required combination of assets for effective anti-carrier warfare. Indeed, lurking weaker forces into the attempt at anti-carrier warfare might be a fruitful means of destroying them.

Carriers, therefore, offer secure mobility for their aircraft. Small to medium-sized carriers generally operate one type of fighter attack aircraft. Currently these are Harrier derivatives in STOVL ships, and variants of more conventional aircraft in France's CHARLES DE GAULLE and Russia's KUZNETSOV. It is currently expected that the Harrier replacement in both Britain and with the US Marine Corps (who operate STOVL fighters from their flat topped assault ships) will be a STOVL variant of the JSF (Joint Strike Fighter). This is likely but far from certain for the Harrier replacement in both Britain and with the US Marine Corps (who operate STOVL fighters from their flat topped assault ships) will be a STOVL variant of the JSF (Joint Strike Fighter). This is likely but far from certain for the Harrier replacement in both Britain and with the US Marine Corps (who operate STOVL fighters from their flat topped assault ships) will be a STOVL variant of the JSF (Joint Strike Fighter).

Ski jumps and the high thrust to weight ratio of contemporary fighters makes STOBAR operations a practical half-way house between STOVL and CTOL operations that more or less dictate nuclear power, at least if size was a problem. Its aircraft could be a practical half-way house between STOVL and CTOL operations that more or less dictate nuclear power, at least if size was a problem. Its aircraft could be a practical half-way house between STOVL and CTOL operations. The British have formed Joint Force 2000, a mixed force of RN Sea Harriers and RAF Harrier GR-7s, both of which will be replaced - if all goes according to plan - by the same JSF. Indeed there is nothing to stop the entire fixed wing component of the air wing being part of the Air Force if that prevents the latter service taking refuge in trenchardian ideology to kill the programme. There are some potential disadvantages in this, notably the lack of naval officers with fixed wing aviation experience but secondment of Naval officers to carrier squadrons might solve this. No one is more aware than this author of the defects normally attributed a similar system in the UK in the period 1918-39 but this period is still to be satisfactorily analysed historically for the lessons to be properly learned. Certainly the problems such as those the RAN faced in obtaining aircraft from the RAAF in the inter-war period need to be avoided at all costs. It is to be hoped that our experience with Joint Force 2000 can be turned to good account in vindicating the idea of Air Force units treating a carrier as another airfield. Navies and Air Forces must, if at all possible, shed their cultural prejudices - which are not all on one side - in the national interest. Organic maritime air power is potentially too useful and important to be sacrificed on the altar of service theology.

Any small carrier needs organic airborne early warning capability to operate its aircraft effectively. This can be provided on non-catastrophic ships by helicopter. The latest helicopters have both data links and overland search capability. Further improvements are planned with a possible MV-22 Osprey derivative allowing a pressurised cabin for higher altitudes beyond 10,000 feet. As with STOVL or even STOBAR capable fighters the expanding carrier market makes relatively cheap 'off the shelf' procurement a possibility for the upper level medium Navy.

I conclude with the obvious question at which I have already hinted. Should Australia have organic maritime air power beyond her existing helicopters? To my mind the answer is an unequivocal "yes". As her national anthem reminds her Australia is surrounded by sea which is her primary mode of access to the region. A mobile self-contained air base that can move in this medium would give Australia's air power greater flexibility and deployability. Given the regional threat environment such a floating base might well offer the greatest possible security for the deployed aircraft. The latter could be mixed and matched according to the mission required and they could come from whichever service was deemed most appropriate as is done with helicopters today. The growing fashion for maritime aviation will provide a number of assets that can be obtained off the shelf at relatively limited cost. Perhaps even a second-hand ship capable of being given a service life extension refit (the Invincible spring to mind). A through deck ski jump ship added to the existing LPDs would provide an expensively whole that is definitely greater than the sum of its individual parts. A carrier type vessel would also enhance significantly the utility of the frigate and destroyer force that might have to be reduced a little in numbers over time to provide personnel for the extra ship.

East Timor may be only the first of a number of conflicts of Indonesian succession into which Australia cannot help but be drawn. The lessons of the Balkans are that carrier based air can be almost indispensable for peace support operations in such circumstances giving a range of contingent options to support - or evacuate - forces deployed ashore. A carrier type ship also gives opportunities to make contributions of greater political and military significance to coalition expeditionary operations in support of common western interests throughout the Asia Pacific region.

It will soon be fifty years since HMAS SYDNEY (III) made her vital contribution to the war in Korea. It would be an excellent way of marking the anniversary to make at least a commitment to the resurrection of a capability that it is surprising Australia has gone on so long without.
The year 1999 may become one of the most memorable years in the post-Soviet history of the Russian Navy. Reports from Russia suggest that three former KIROV class nuclear-powered guided missile cruisers, the most remarkable examples of the Russian Navy blue-water capability, will undergo refit and modernisation, with two of them being already towed to naval shipyards. They are: ADMIRAL USHAKOV (former KIROV), ADMIRAL NAKHIMOV (former KALININ), and the Pacific Fleet unit ADMIRAL LAZAREV (former FRUNZE). If the Russian Navy is able to get these three battle cruisers back into operation, its striking capabilities will be significantly improved, especially in the Far East.

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The development of the Kirovs

KIROV was the first Soviet nuclear-powered surface warship. Known as project 1144.1 (codename Oklad) the ship was developed as a nuclear-powered combatant with powerful strike capabilities, capable of sustaining independent long-range operations. The idea to build a nuclear-powered surface strike warship reflected the desire of the Soviet Navy to upset the unilateral monopoly of the seas, held by the United States after 1945. The design work began in 1968 and immediately gained full support of the Soviet military-political leadership, especially Admiral Sergei Gorshkov, the creator of the Soviet blue-water Navy.

Originally intended as a 8,000 ton vessel, armed with 6-8 missiles with a range of up to 150 km, the tonnage was later expanded to 20,000 tons. In 1973, the Baltic shipyard in Leningrad started the development of the first sections of the ship. In 1980, after trials in the Baltic Sea, KIROV, the first ship of the series of heavy nuclear-powered guided-missile cruisers (CGNs) was commissioned to be the Soviet Navy and transferred to the Northern Fleet. The second KIROV class CGN, FRUNZE, was commissioned in 1984, and was deployed to the Pacific in 1985. KALININ, commissioned in 1988, joined KIROV in the Northern Fleet. YURI ANDROPOV was launched in April 1989 and expected to be operational by 1992. The fifth ship of the series was laid down but later was scrapped before being launched in 1989. By the time of the collapse of the USSR, the Soviet Navy had three operational Kirovs (two in the North, one in the Pacific), with one improved CGN (Project 1144.2) under construction.

After the collapse of the Soviet Union, the construction of YURI ANDROPOV was virtually put on hold due to insufficient state funding. The maintenance and overhaul of major surface warships has become increasingly painful for the cash-strapped Russian Navy. In the case of the Kirovs, this problem got even worse due to the high costs in repairs and refit of the ships of this class. They are also very expensive to operate. As a result, by 1997, all Russian Kirovs, now known as the Ushakov class CGNs, were placed in reserve. They were still accountable by the Russian Navy, though they remained non-operational. Western experts were almost certain that at least ADMIRAL USHAKOV and ADMIRAL LAZAREV would never go to sea again, and would be inevitably scrapped. Even doubted the future of the PIOTR VELIKHI (former YURI ANDROPOV), commissioned by the Russian Navy in 1998 after almost twelve years of construction. However, by the end of 1999, the situation changed dramatically. In 1998, Commander-in-Chief of the Russian Navy Admiral Vladimir Kuroyedov approved a resolution to refit ADMIRAL NAKHIMOV. In August 1999, Nakhimov was towed to the Severodvinsk shipyard and Zvezdochka to undergo a major refit.

For the first time in the history of the Russian Navy, a cruiser will be repaired and modernised with finance provided by public contribution, not by the State. The completion of PIOTR VELIKI was also possible partially due to public donations.

It is expected that USHAKOV's three-year refit will cost approximately 3 billion roubles with 10 million already being allocated for repair work. It can be expected that if the initiative goes well, the Navy may also make a contribution.

A Battle Cruiser

There is no doubt that the Ushakov class CGNs occupy a special role in the order of battle of the Russian Navy, since the ships of this class were designed to engage enemy task forces in remote areas of the world's ocean. The ships of this class are the largest surface combatants (other than aircraft carriers) built since the end of the World War II. With a full displacement of over 24,000 tons, they have been labelled by Western experts as 'battle cruisers' due to their impressive size and heavy armament.

Similar in concept to the US Navy's cruisers, the Ushakos also serve as group flagship. Ushakos can also provide a defensive screen in high-threat environments through the employment of powerful layered anti-air and air weapon systems. Project 1144.1/2 cruisers were intended to destroy enemy SSBNs (nuclear powered ballistic missile submarines) and large surface combatants (mainly aircraft carriers), and to escort convoys and amphibious forces and were optimised for surface strike operations in various environments.

The design of the Ushakov class CGNs is capable of maintaining its combat potential via its sophisticated layered air defence (AD) system. The AD armament comprises two vertical launch missile systems. An S-300F Rif (SA-N-6 Grumble) AD underdeck missile complex is installed on the ship, with 12 launchers containing 96 vertical launch SAMs capable of intercepting airborne targets at altitudes ranging from 25 to 30,000 meters and out to 90 km. PIOTR VELIKII is equipped with the modernised S-300P FM anti-air missile complex. The AD armament also comprises 2 Kinzhel (SA-N-4 Gecko) underdeck two launchers with 40 vertical launch missiles capable of engaging targets at a range of up to 1.5-12 km at altitudes between 25 m and 5,000 m. The cruisers' AD and anti-missile defence comprises two Kashtan missile gun CIWS (Close In Weapon Systems), two command and a support element. The system can engage up to six targets simultaneously, one target for each combat module. The point defence missile's range is between 500 m and 5,000 m.

The ships' defences are also supplemented by one Kashtan missile/gun CIWS (Close In Weapon Systems), two command and support elements. The system can engage up to six targets simultaneously, one target for each combat module. The point defence missile's range is between 500 m and 5,000 m.
The antishubmarine warfare (ASW) capabilities consist of a combination of ASW torpedos, missiles and ASW rocket systems (Udav-I with 40 anti-submarine rockets and two RBU-1000 anti-submarine rocket launchers with 102 rockets). Three Ka-27PL helicopters, capable of operating at a distance of up to 200 km from the ship, further enhance the class's ASW and SSM targeting capabilities.

PIOTR VELIKII, initially built for the Pacific Fleet and even manned with the crew from the Pacific, was anticipated to join the fleet by 1997. However, after sea trials in 1996 it was transferred to the Northern Fleet. The likely reason for this transfer was the concern of the Russian military and political leadership about the weakening state of the Northern Fleet, in particular when both USHAKOV and NAKHIMOV became non-operational. The Northern Fleet has become increasingly important in the system of Russia's defence in Europe, especially after NATO's eastward expansion. But with the prospective return of USHAKOV and NAKHIMOV into operational service in two-three years time, the transfer of PIOTR VELIKII looks like becoming a reality. Still, the refit and return into operation of only one USHAKOV class CGN, ADMIRAL LAZAREV, will significantly increase the combat potential of the Russian Pacific Fleet, by up to 179.

The heart of the KIROV's armament is the 20-under shock armament (five SS-N-19 Shipwreck superfiring anti-ship missiles (SSMs)).

The arrival of HANGZHOU heralds a significant leap in capability for the Chinese. The Sovremenny's more noteworthy armament consists of eight supersonic sea-skimming SS-N-22 'Sunburn' ASMs and two launchers for 44 SA-N-7 Gadfly' SSMs, giving the Chinese their first area air defence capability.

The deal between China and Russia for the two ships was signed in late 1996 and is estimated to be worth US$600 million. It is probably no coincidence that earlier in 1996 the Chinese faced off against two US CGBs over its live missile firings near Taiwan and that the Sovremenny's were originally intended as anti-US carrier platforms using the SS-N-22 'Sunburn'.

Both of the new ships were initially ordered for the Russian Navy but financial problems suspended work. HANGZHOU will be joined at the end of the year by the second Sovremenny with talks already underway with Russian officials for three more.

The PLA-N (Peoples Liberation Army Navy) has taken delivery of the first of two Russian SOVREMPENNY class DDGs.

Table 1

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<th>CURRENT AND POSSIBLE FUTURE DISTRIBUTION OF THE RUSSIAN MISSILE CRUISER FORCE AMONG THE FleETS</th>
<th>1999</th>
<th>2003</th>
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<td><strong>NORTHERN</strong></td>
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<td>ADMIRAL GOLOKOV (Kynda class)</td>
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The PLA-N (Peoples Liberation Army Navy) has taken delivery of the first of two Russian SOVREMPENNY class DDGs.
With the announced changes came a number of important senior command promotions. Other promotions were announced by signal around the same time. Those appointed to lead the new organisations within the RAN included: CDRE Mervin Davis as the commander of Naval Systems Command (COMNAVSYSCOM); CDRE Steve Hooke as the Surface Combatant FEG manager (SCFEGMGR); CDRE Peter Clarke as the Submarine FEG manager (SMFEGMGR); CAPT Stephen Borto as the Amphibious and Afloat Support FEG manager (AASFEGMGR); CAPT Perry Clarke as the Patrol Boat FEG manager (PPFEGMGR); CAPT Geoff Geraghty as the Hydrographic FEG manager (HYDROFEGMGR); and CAPT Mike Angus as the Mine Warfare FEG manager (M长城DFEGMGR).

Other important changes announced included the rolling together of the Personnel and Training organisations under CDRE Louis Rudge (DGPN and T). The aim of this move is to make more clearly align training and personnel management. Navy Headquarters will be reorganised, placing a greater emphasis on strategic issues, and there will also be changes in Maritime Headquarters and in Support Command.

As well as structural changes, a number of other initiatives have been implemented as a result of the work done by the Tomorrows Navy Team (TNT). CAPT James Gault is developing a business case to move to class basing over the next decade as the FFGs are retired in Sydney. The primary reasons for class basing are to provide more stability for Navy families and centres of excellence for each class. A new team has been formed in HQ to look at personnel issues. The Personnel Action Team (PERSAT), under the guidance of CAPT Marcus Peake, is looking at ways to reduce the Navy’s wage rate and increase recruiting levels. The PERSAT is mainly looking at issues concerning job satisfaction and working levels. The TNT has now completed its work and has handed over to the Tomorrows Navy Program led by CAPT Simon Woolrych who had been with the TN Team since its inception. The former members of the TNT will have key roles in the new Navy organisation.

CDRE Lee Corder will lead the new Strategic Policy and Futures Branch within HQ. CAPT Drew Mcinnis will lead the new Naval Certification and Safety Agency within Systems Command. CAPT Malcolm Wright will be the Director for Business Process Improvement in HQ.

The Gloucester Cup, presented to Capt Russ Worrell of HMAS SUCCESS by the Governor General Sir William Dean (RAN), was awarded to CAPT Nigel Perry who will head up the new C4IEW (Command, Control, Communications, Computers, Intelligence, Electronic Warfare) branch in Systems Command and LCDR Sue Scott returns to DID. WOCSMSSM Greg Stroud will provide the continuity from the TNT and has joined the TNP staff. Among those to be promoted were: CAPT Lee Conside who becomes a commodore, as does CAPT Paul Greenfield. CAPT Lou Ragg becomes a commodore along with CAPT Denis Mole. Other captains to become commodores are CAPT Syd Lemen, CAPT Ken Joseph Cdr Pataky, CAPT Peter Clarke and CAPT Rowan Moffet.

1999 Navy Awards

The 1999 Gloucester Cup, the award for the best operational effectiveness, has gone to HMAS SUCCESS (Capt Russ Worrall). HMAS ARUNTA (Capt Greg York) was runner-up while the submarine HMAS FARNCOMB (LCDR Greg Sammut) received a special mention.

The Maritime Commander, RADM John Lord announced the Gloucester Cup winner as part of a list of 1999 fleet awards. Other awards were: McNeil Trophy (air squadron efficiency); No 723 Squadron. Kelly Shield (patrol boat overall efficiency); HMAS GERALDTON, runner-up HMAS GAWLER. Kelly Shield (MCV overall efficiency); MSA WALLAROO, runner-up MSA BANDICOOT. LCCH Proficiency Shield; HMAS BETANO, runner-up HMAS BRUNEI.

RAM Ready

The US-German RAM (Rolling Airframe Missile) Block I is now ready to enter service after extensive modifications and testing by the USN. RAM is produced by Raytheon Missile Systems in the US and the German RAM System GmbH consortium. It is used as an inner layer fire and forget missile interception system to counter threats such as Exocet, Harpoon or Sunburn at up to 5 kms away. The original Block 0 missile, currently in service with the US and German Navies, used a dual IR/FFIR seeker to intercept its target. This dual seeker would home in on an incoming missile threat's own radar and heat source in order to achieve a kill. Although providing greater accuracy against ASMs (Anti-Ship Missiles) some criticised RAM as it required the incoming threat to be emitting radar energy for the final terminal phase of the interception.

Hydrographic Excellence Shield; HMAS SHEPPARTON, runner-up HMAS BENALLA.

Ortona Trophy for gunnery; HMAS ARUNTA, runner-up HMAS CANBERRA.

Voyager Trophy for ASW proficiency; HMAS DARWIN, runner-up HMAS ARUNTA.

DARWIN, runner-up HMAS ARUNTA.

Collins Trophy for embarked flight proficiency; flight from HMAS SUCCESS, runner-up flight from HMAS SYDNEY.

Submarine Fighting Efficiency Shield; HMAS FARNCOMB, runner-up HMAS WALLER.

Commodore Waddle Cup for communications proficiency; HMAS MELBOURNE, runner-up NAVCOMSTA Darwin.

Wormald Shield for NBCD proficiency; HMAS ARUNTA, runner-up HMAS DARWIN.

Austalian Cup for marine engineering efficiency; HMAS DARWIN, runner-up HMAS HOXBOR.

Supply Excellence Award; HMAS ARUNTA, runner-up HMAS BRISBANE.

Silent Platter for excellence in food service; Major units HMAS ARUNTA, runner-up HMAS DARWIN, submarines HMAS OTAMA (no runner-up) smaller vessels HMAS BETANO, runner-up HMAS GAWLER.

To alleviate this deficiency the Block I variant was fitted with a new IR seeker which can detect ASM interception without the target using its radar. The new seeker head also provides better interception of crossing targets as well as the capability to engage fixed and rotary wing aircraft.

During the USN’s test, 23 of the 24 test missiles used successfully intercepted and destroyed their targets. The test conducted on the RAM Block I was considered one of the most rigorous ever conducted on a ship self defence weapon system to date. After the successful tests, Raytheon announced that the Republic of Korea Navy had chosen RAM for its new KDX-II destroyer program. RAM would provide the KDX-II with the middle layer of its layered defence against anti-ship missiles. Raytheon’s RAM was selected over two competing systems – the Israeli Barak and the French Crotale.

A RAM missile leaves its launcher and streaks towards its target (Raytheon).
Under a direct commercial sale contract, Raytheon is to deliver RAM Block 1, 21 round launcher systems beginning in 2001 and sell new logistics, technical and integration services. The missiles will be procured at a later date under a separate contract.

The Canadian VICTORIA (former Upholder) class SSKs development of the Mk 2 installed a total of five AIP equipped SSKs. Work on the Mk 3 installation is expected to be complete by 2003.

AFN delayed
France has delayed production of its new ASM (Anti-Ship Missile) as it believes the threat posed to its ships by others does not warrant the new high cost weapon. The ANF (Anti-Navire Futur) was to be powered by a liquid fuelled ramjet engine giving it supersonic speed and a range of 150 km. Over 300 missiles were to have been supplied at a cost of US$651 million.

Northrop Grumman and General Atomics have both been awarded contracts for project definition studies into the new aircraft carrier launch system. Both companies will develop a land-based prototype that will use a 93 in linear motor to accelerate a 147 tonne aircraft to over 130 kts and a lighter aircraft up to 200 kts.

The new catapult will equip the new CVN-X-1 aircraft carrier due to start building in 2006 and to enter service in 2013.

Electric Drive for DD-21
The key design element of integrated power and electric drive is a single source generator for the requirements of all ship's power needs, including propulsion. One of the most attractive elements of the design is the resultant elimination of the drive shaft and reduction gear found in traditional Navy ships. The Department of the Navy decision to team DD 21 with electric drive for its propulsion comes after careful consideration among several possibilities studied by the two contractor teams involved.

Singapore chooses to arm and equip its FFGs with:
Singapore was in the market for such vessels. Details about the ships intended weapon, sensor, helicopter and systems are yet to be released, but it is known that the ships will be partially scaled down versions.

This is the fourth nation to buy the stealthy French ship along with France, Taiwan and Saudi Arabia (see

First Type 42 DDG retires
The RN has decommissioned its oldest Type 42 class DDG, HMS BIRMINGHAM entered service in 1976 and was decommissioned at Portsmouth on 10 December 1999. Two of her sister ships, SHEFFIELD and COVENTRY, were sunk during the Falklands (Malvinas) conflict. The Type 42s are becoming increasingly expensive to operate and their Sea Dart missile system is approaching obsolescence. The
retirement takes the RNs anti-air warfare DDG fleet to 11 ships despite the first Type 45 DDG replacement not due into service until 2007.

The UK MOD has stated that the remaining Type 42s will remain in service until late 2006 where they will then decommission at six-monthly intervals.

Super torpedo revealed
Information is slowly coming to light about a Russian developed rocket-powered 200 knot torpedo known as the Shkval.

Shkval is a rapid reaction counter-fire torpedo developed to protect Russian SSBNs during the cold war.

Given the Russian realisation that Western submarines were far quieter, and thus able to close with their Russian counterparts without long range detection, meant that the Russian’s would lose vital minutes in counter detection and thus reaction time to the Western sub. The Western sub would thus fire at a greater range than Soviet sub could detect.

To remedy this sonic reaction deficiency the Shkval was developed. It would be fired down the bearing of an incoming torpedo at a depth of 30m with a speed of 200kts to a distance of 8-10kms and then detonate its nuclear warhead, hopefully in the area of the attacking Western submarine.

The Shkval rocket motor is believed to burn for 90 seconds. The passage of the Shkval in the water creates a super-cavitation bubble a few millimetres thick allowing it to pass through the water with little to no surface drag. Its range is thought to be approximately 10kms but given that detection ranges and accurate targeting data could be difficult to obtain it would be fired with much closer ranges giving the target even less time to react.

Intelligence sources suggest that the Shkval-E version is thought to be a conventional anti-ship torpedo with a 500 lb warhead.

It is understood that China has purchased an unknown quantity of Shkval E.

BAZAN wins Norwegian frigate deal
Norway’s government has recently decided to award the Royal Norwegian Navy’s new escort vessel programme to a team led by Empresa Nacional Bazan, ending a protracted industry battle between the Spanish shipyard and its German rival Blohm+Voss.

The frigate design was recently displayed at the Australian Pacific 2000 exhibition.

The design is 132m long with a beam of 16.3m. It displaces nearly 5,000 tonnes and has maximum speed of 26kts with a crew of 146. Its most unique and advanced feature is the SPY-1F phased array radar. At least three frigates are expected to be ordered.

The price is the lowest the US Government is permitted to sell the ship under US law.

USS JOHN A MOORE is the sixth FFG-07 class frigate sold to Turkey.

Navy League Award

The Chief of Navy, VADM David Shackleton, presented the Navy League of Australia National Efficiency Shield to T.S. HAWKESBURY at Gosford, NSW, on 21 November 1999.

T.S. HAWKESBURY was awarded the Peter Ballamy Trophy for the Most Efficient Unit in the NSW and ACT for 1999 and received the State Colour at a parade on Spectacle Island in July 1999.

Despite having to prepare for and be subjected to four inspections in five months, the enthusiasm and spirit de corps shown by the cadets of T.S. HAWKESBURY on the parade ground and whilst sailing earned them the highest accolade any unit can receive.

The unit is grateful for tire support received from the community and especially ex-service organisations, such as the Navy League of Australia.

The unit also notched up another first when cadets from T.S. HAWKESBURY were part of the commissioning ceremony of the new minehunter HMAS HAWKESBURY (see Hatch, Match & Dispatch) on 12 February 2000. The unit has developed a close relationship with the new ship since her keel was laid.

On display at the recent Pacific 2000 exhibition was BAZAN’s new successful competitor for the Norwegian Frigate contract. This ship is stealthed and has SPY-1F radar system.
Observations

COASTWATCH - NO MORE INQUIRIES PLEASE

By Geoffrey Evans

Although most of its operations take place out of the public’s sight and in some of Australia’s most remote regions, few organisations have received such close scrutiny and media attention in recent years as Coastwatch.

Policing the country’s main points of entry - established ports and airports - to prevent the entry of unwanted people, narcotics, illegal goods etc. has for long been established practice, officers of the Customs Department being the most visible sign of authority.

The late nineteen-sixties appears to mark the time when the first serious steps were taken to extend surveillance and interception operations, principally to detect trespassers in the then declared area of a greatly expanded (200 nm) Australian Exclusive Economic Zone (AEEZ).” In 1973, declaration of a greatly expanded (200 nm) Australian Fisheries Zone (AFZ) and of an Exclusive Economic Zone (EEZ) in 1974, led to greatly increased pressure on surveillance/interception resources.

During the period 1975 to 1977, two important issues discussed at the major inquiries were the need to establish a semi-independent Agency with an Executive Director to direct, co-ordinate and manage civil coastal and offshore surveillance operations, and the question of provision of surveillance-interception resources. The effect on the RAN, already short of personnel and equipment, was a hard-pressed operator, particularly when unannounced visitors suddenly arrived in the more heavily populated areas of the country.

Delays were probably inevitable given the large number of government authorities involved: Apart from Primary Industry and the Fishing Services, Customs and Defence, organisations such as the Australian Federal Police, the Quarantine Inspection Service, Transport and Communications, Immigration, Health, Foreign Affairs, Environment and of course the States and Territories, all had an interest in guiding Australia’s sovereignty.

Two important issues discussed at the major inquiries were the need to establish a semi-independent Agency with an Executive Director to direct, co-ordinate and manage civil coastal and offshore surveillance operations, and the question of provision of surveillance-interception resources. The effect on the RAN, already short of personnel and equipment, was a hard-pressed operator, particularly when unannounced visitors suddenly arrived in the more heavily populated areas of the country.

The present government has gone a stage further and in 1999 after further reviews and inquiries appointed an experienced senior naval officer, Rear Admiral Russell Shalders, as Director-General of Coastwatch, seconding the officer to the Customs Department for the purpose.

The pride of the Coast Watch air fleet is the radar and F111R equipped Dash 8 aircraft (Customs)

A Coast Watch Bell 206L patrolling a beach. (Customs)

FROM OUR READERS

Dear Sir,

I enjoy your magazine very much particularly the way it keeps me informed on the happenings of the senior service. I am an ex-naval rating and served in many ships, SYDNEY, ARUNTA, AUSTRALIA, VOYAGER etc. I wish to know if you would be interested in some of my casual snaps taken during my time in the Navy? I would however, like them returned as they come from my album.

Leslie Napper
Ashwood, Victoria

Editor: - Leslie

I would be keen to use your images, from the period you served in the Navy. Producing THE NAVY from Australia's only landlocked, capital makes locating images of modern ships hard enough let alone images that the RAN doesn't keep handy any more due to age. I will certainly keep you in mind as a source of images for future articles and all images will be returned.

Many thanks

Mark Schweikert

THE NAVY

THE NAVY
The Royal New Zealand Navy is faced with shifting to a new force structure - after several years of politically-imposed uncertainty. For the last ten years, the RNZN had worked to a consistent plan centred on a future Naval combat force of four ANZAC class frigates. But political events have halted this plan - first the previous coalition government failed to take up the option for the final two new frigates, then the election of a left wing government has put all of Defence under close and critical scrutiny. How then is the RNZN placed to face the new century?

Today New Zealand's Navy is the smallest since 1947 - when the post WWII demobilisation had gutted the wartime fleet. Today the RNZN operates two Anzac frigates and one 29 year-old LEANDER class frigate, a critical review of the Air Force's F-16 acquisition project, and an Army of two battalions but with a ready reaction force of only one infantry company. Despite its flaws, the Select Committee Report was quickly adopted by the Labor Party as the basis of their defence policy.

The political environment for the NZDF, and especially for the RNZN, is unsympathetic. What then is the Navy doing?

The Navy's first priority is to ensure that the two modern frigates TE KAHA and TE MANA are fully manned and worked up to be ready for operational duties. TE KAHA achieved this in August last year, after a year of trials and helicopter trials (interrupted by a Southern Ocean deployment in February 1999). TE MANA is currently operating off Western Australia and should undergo her ORE in late May.

The Navy's second priority is to maintain seaworthy high endurance ships that cannot only patrol and monitor our sea areas, but also contribute in the event of Naval combat contingencies. That of course means vessels like frigates, but in the present climate such ships are simply not acceptable to the new government.

The lessons of the East Timor operation should provide an endorsement of the value of navies. The multinational fleet that began gathering in Darwin, early last September as the East Timor crisis deepened, had an obvious deterrent effect on Jakarta, validating the international community's concern. TE KAHA was ordered from the South China Sea to join the force, the first NZDF unit to be committed. Our tanker ENDEAVOUR soon followed, after topping up with fuel for INTERFET at Singapore. The initial expectation

24 VOL. 62 NO. 2 THE NAVY

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24 VOL. 62 NO. 2 THE NAVY
was for a Services protected evacuation, but as the UNAMET personnel got safely the Naval task changed to provide for the eventual insertion of the international force.

When the INTERFET Naval force sailed from Darwin on 18 September 1999, TE KAHA, like the other warships in the task force, was fully ready for possible combat. The Naval component had to provide air defence for the operation, including the vulnerable air landing of the initial wave of troops, maintain surveillance across the Area of Operations, and escort the amphibious ships and chartered merchant ships into what were then Indonesian territorial waters. Much defence diplomacy ensured the operation, the largest amphibious operation in the region since WWII, took place without combat. But as the UN Secretary General has previously observed, diplomacy must be backed by credible force.

That lesson from last September will be self-evident to THE NAVY readers, yet incredibly, some commentators in Wellington are discounting the Naval role in East Timor. In part this is a result of the inter-Service tensions that have built up after years of declining defence budgets, with commentators who desire a strengthened Army seeking to redirect funding priority to re-equipping the land force but the severe limitations evidenced with this gun (and others) became obvious. With its range being only 23 km (14 miles) it was severely hampered by the existence of minefields and the threat of land based ‘Silkworm’ surface to surface missiles which prevented the ships getting close to shore. This is why the much loved veterans, the IOWA class battleships, were called upon once again to provide fire support and attack by way of their much larger 16-inch (406 mm) guns.

As discussed in a previous issue (Vol 61 No. 4 THE NAVY), the battleships could not go on forever in this role. They were too costly to run and maintain. What was needed was a very long range, very accurate (at least conquerable with the role of anti-surface and fire support. As a consequence a new emphasis has been placed on the importance of NGS (Naval Gunfire Support) support. The history of this project can be traced back to the USN's policy document of 'Forward...From the Sea', which stresses the new emphasis being placed on littoral warfare and joint service with other services combined operations. Together with the end of the Cold War came the realisation that blue-water operations and warfighting was (at least in the short term) a thing of the past. The new doctrine is concentrated on power projection from the sea by way of amphibious operations. The USN doctrine was followed up swiftly by the USMC's policy document entitled Operational Maneuver from the Sea.

The USMC require a more aggressive use of accurate gunfire to engage any opposition the landing forces may encounter. As a consequence a new emphasis has been placed on the importance of NGS (Naval Gunfire Support) support. It was only during the Gulf War that the severe limitations evidenced with this gun (and others) became obvious. With its range being only 23 km (14 miles) it was severely hampered by the existence of minefields and the threat of land based ‘Silkworm’ surface to surface missiles which prevented the ships getting close to shore. This is why the much loved veterans, the IOWA class battleships, were called upon once again to provide fire support and attack by way of their much larger 16-inch (406 mm) guns.

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This represents a massive increase in distance over existing capabilities. The Marines already utilize a rocket- assisted projectile from their land based M198 155 mm howitzer, though its range is a relatively low, 16.3 km.

In December 1994 the USN formulated the requirement for the new era in naval guns, adopting the existing 5 inch standard munitions capability but with a revolutionary five fold increase in performance. This advance consisted not only the development of a new gun but also a new type of projectile far in advance of standard munitions or rocket- assisted munitions.

**The Mod 4**

The basic United Defence Mk-45 mount provided scope for improvements to meet the USN and USMC requirements, particularly by way of barrel length. The strength of the combination chamber and breech mechanism of the Mk-45 was such that it was determined the barrel length could be increased to 62 calibres.

The lengthening of the barrel combined with an increase in propellant charge enabled more pressure to act upon the projectile for a longer period of time before being expended from the barrel. This increases velocity and thus range of the standard projectile from 23 kms to approximately 40 km, the only downside being the need to re-work the recoil mechanism to allow for the increased recoil pressures.

Other improvements to the gun include strengthened trunnion supports, and ERGM initialisation interface, round identification ability, stealth shielding and an enhanced control system. All of which means a more reliable gun which costs less to operate and which can still be fitted to other ships of the class.

In conjunction with these developments came the examination of a rather more revolutionary type of gun: the vertically launched 155 mm ‘Advanced Gun System’ (reliable gun which costs less to operate and which can still be fitted to other ships of the class).

**ERGM**

In 1996 a US $44 million contract was awarded to Raytheon Systems Co in Arizona for the development of the new projectile. The requirement stated a need for the projectile to be available to deploy to the fleet initially in 2001, but this was soon revised to 2003. As could have been predicted the adoption of such an advanced munition would prove very challenging.

The concept for the performance of the projectile is that it be initially fired from the gun, the booster rocket fires launching it to a point where it engages the Global Positioning System can ascertain a lock to a satellite. The canards deploy and the GPS guides its descent to a point where it’s own Inertial Navigation system takes over (due to either jamming or loss of GPS lock).

At an altitude of about 250-400 m it ejets its payload of 72 M-80 sub munitions within 20 m of the target area. However, the sub munitions can comprise various types of lethal, non-lethal, hard or soft target munitions. Each M-80 can penetrate 76 mm of armour plate.

Early problems with ERGM stemmed from the fact that in reality they are firing an extremely sophisticated mechanism (missile) from a cannon. The requirement for distance and accuracy of the projectile meant that it must contain within it’s diminutive size (under 2 m), deployable canards (wings) for directional stability and control, a sophisticated inertial navigation system and an even more sophisticated Global Positioning System (GPS). This is combined with an ability to resist electronic jamming, provide it’s own power for the electronics and deploy sub- munitions. Also required is the rocket motor and propellant for its boost phase. All of this is then subjected to the extreme pressures involved in being fired through the barrel of a gun at 80,000 lbs, per square inch and experiencing 12,000G’s.

The initial design baseline for the ERGM round was provided by an existing 5 inch semi-active laser guided projectile known as DEADYEYE. This provided the basic airframe which had already completed flight and firing tests successfully. The only drawback is the length of the round requires the gun to ‘double ram’ the projectile which in turn halves the rate of fire to 10 rpm. However, accurate and reach, 63 km or 116 km, more than compensates for this when using ERGM rounds.

**Problems**

As with all such developments getting at the actual status of the new system and technology is extremely difficult due to cost over-runs, in particular with regards to the projectile. Congress requested via the General Accounting Office, a review of the status of the program and costs be produced. This review was presented to Congress in June 1999. The only cited problem indicates a gas leak problem from the obturator (the sealing device) which surrounds the projectile, this would increase the barrel wear. The obturator allows the projectile to engage the barrel’s rifling and at the same time provide a seal around the projectile to stop gas pressure leaking out around the projectile’s body and thus reduce it range and velocity.

One of the major problems in the project seemed to come from the re-location of the company from Texas to Arizona part way through the project. This involved considerable loss of staff with an estimated one-year disruption to the overall implementation.

Also the costs involved in development have blown-out to an alarming degree. In November 98 the original contract price was increased by US$77 million. Currently, the project team are requesting a further increase bringing the overall contract up to US$191 million.

A very tempting offset against this is the potential return on development of these new projectiles. Many options beside the conventional munitions have been hypothesised, the development of improved terminal seeker heads creates the possibility of either infrared, TV and microwave guidance. Also suggested is an expendable reconnaissance version, FASM-Forward Air Support Munition, complete with either an inflatable wing or composite swing-wings enabling a longer time of some 3 hours over the target area.

**The Future**

The Mk 45 Mod 4 gun is to forward fit on the remaining Arleigh Burkes (DDG1- DDG107). The new gun will also be retrofitted to TICONDEROGA Class cruisers (CG5 - CG73).

In a further effort to allay the Marines concerns re fire support, the USN has also had several other programs in development. Their much hoped for Advanced Land Attack Missile, a variant of the Army Tactical Missile, program has had a chequered career. Initially to be fitted to all the Arleigh Burke destroyers and Ticonderoga cruisers, it was put on hold in 1998 in face of a modification of 801 existing Standard SM-2MR surface-to-air missiles into a land attack configuration. Although this would provide a short fall in range from the initial requirements, it was considered a more economical proposition.

To combine with the new missile systems a new fire control system is being developed for fitting to all new and most existing combatant ships, equipped to handle the Tactical Tomahawk and Land Attack Standard Missiles, as well as ERGM. Under consideration is also a replacement of the Advanced Land-Attack Missile Program as well as a new larger 155 mm gun.

**Conclusion**

Through a recently announced deal between Raytheon, the US Navy and Army the schedule for introduction has been stepped-up as well as the development and production costs have been substantially reduced by a revision of the ECM capabilities. This is estimated to save approximately US$37 million and has brought the estimated introduction to 2004.

Meanwhile here, the RAN while taking the new system under consideration have yet to commit, however, at least the new stealth type gun structure is being adopted on all new build ANZACS. The first of the new look turrets is currently in evidence on the RNZN's HANZES TAHU. It is envisaged that all future RAN operations will be conducted in the littoral, as has been the case historically.

The new system would give the RAN a new found offensive strike role. Combine the strike possibilities with the coming on-line of our greatly re-vamped MANOORA and KANIMBLA would no doubt provide greater security and flexibility to our own amphibious operations.
Match

HATCH

GASCOYNE launches

The fourth of six Huon Class minehunters ADI is building for the Royal Australian Navy was recently launched at Newcastle. The on schedule, within budget launch of GASCOYNE follows the commencement of service by the first two ships, HMAS HUON and HMAS HAWKESBURY, and the advancement of sea trials by the third of the class, NORMAN. The fifth minehunter, DIAMANTINA, is currently being outfitted and the sixth, YARRA, is completing construction. The $1 billion project will provide Australia with the world's most advanced mine warfare capability. GASCOYNE was launched by Ms Victoria Peel, daughter of Captain John Peel who commanded the first HMAS GASCOYNE during World War II.

The newly launched minehunter GASCOYNE (ADI)

The Navy

BOOK REVIEWS

THE ROYAL NAVY IN WORLD WAR II

By Robert Jackson

Published by Airlife Publishing Ltd., England
Distributed in Australia by Periboh Pty Limited, 58 Beaumont St, Mt Kuring-Gai, NSW 2080
Hard cover, RRP $57.95
Reviewed by Vic Jeffers

This is a detailed account of the Royal Navy's crucial role in World War II, written by Robert Jackson, who is commended for doing so, presenting a most informative account.

THE ROYAL NAVY IN WORLD WAR II

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SHACKLETON'S CAPTAIN

A biography of Frank Worsley

By John Thompson

Published by Allen & Unwin, PO Box 8500, St Leondards, NSW 2065
Soft cover, RRP $29.95
Reviewed by Vic Jeffers

This is the first biography of New Zealander Frank Worsley, was an extraordinary man, a master mariner with a keen sense of humour, he was known for his pranks.

Worsley, together with Sir Ernest Shackleton, undertook one the greatest adventures of the 20th Century exploring the Antarctic. They saw their ship ENDURANCE crushed by Antarctic ice in 1915; they survived four months adrift on an iceberg, with four companions in a flimsy lifeboat sailed the worst ocean in the world. It is now history how Worsley, proving his skills in navigation and seamanship, managed to sail the lifeboat to Georgia some 800 miles away and with every member of the expedition surviving.

In 1919, Worsley was sent to Russia as part of the British expedition, which engaged the Bolshevik Army, Worsley commanding the monitor HMS M32. He was later awarded his second DSO, the citation reading “In recognition of the gallantry displayed by him at Pucka, in North Russia between the 2nd and the 5th of August, 1919. This officer formed one of a large patrol which, in circumstances of great danger and difficulty, penetrated many miles behind the enemy lines, and by his unfailing cheery leadership he kept up the spirits of all under trying conditions. By his assistance in bridging an unfailing river between the enemy lines, he greatly helped the success of the enterprise”.

He was also awarded the Russian decoration, the Order of St Stanislaus for his escapades at this time. Another award Frank Worsley received at a later date was an OBE. Postwar Commander Worsley engaged in a little spirit-running to North America, searched for lost Inca gold off Costa Rica and navigated perilous Arctic regions in a sailing ship.

Supported by nearly 100 photographs and maps, this is a fascinating account of a true 20th Century buccaneer, a man who seemingly knew no fear - Frank Worsley.
The strategic background to Australia’s security has changed in recent decades and in some respects become more uncertain. The League believes it is essential that Australia develops capability to defend itself, paying particular attention to maritime defence. Australia is, of geographical necessity, a maritime nation whose prosperity strength and safety depend to a great extent on the security of the surrounding ocean and island areas, and on seaborne trade.

The Navy League:
- Believes Australia can be defended against attack by other than a super or major maritime power and that the prime requirement of our defence is an evident ability to control the sea and air space around us and to contribute to defending essential lines of sea and air communication to our allies.
- Supports the ANZUS Treaty and the future reintegration of New Zealand as a full partner.
- Urges a close relationship with the nearer ASEAN countries, PNG and the Island States of the South Pacific.
- Advocates a defence capability which is knowledge-based with a prime consideration given to intelligence, surveillance and reconnaissance.
- Believes there must be a significant deterrent element in the Australian Defence Force (ADF) capable of powerful retaliation at considerable distances from Australia.
- Believes the ADF must have the capability to protect essential shipping at considerable distances from Australia, as well as in coastal waters.
- Supports the concept of a strong Air Force and highly mobile Army, capable of island and jungle warfare as well as the defence of Northern Australia.
- Supports the acquisition of AWACS aircraft and the update of RAAF aircraft.
- Advocates the development of amphibious forces to ensure the security of our offshore territories and to enable assistance to be provided by sea as well as by air to friendly island states in our area.
- Advocates the transfer of responsibility, and necessary resources, for Coastal Surveillance to the defence force and the development of the capability for patrol and surveillance of the ocean areas all around the Australian coast and island territories, including in the Southern Ocean.
- Advocates the acquisition of the most modern armaments and sensors to ensure that the ADF maintains some technological advantages over forces in our general area.
- Advocates measures to foster a build-up of Australian-owned shipping to ensure the carriage of essential cargoes in war.
- Advocates the development of a defence industry supported by strong research and design organisations capable of constructing all needed types of warships and support vessels and of providing systems and sensor integration with through-life support.

As to the RAN, the League:
- Supports the concept of a Navy capable of effective action off both East and West coasts simultaneously and advocates a gradual build-up of the Fleet to ensure that, in conjunction with the RAAF, this can be achieved against any force which could be deployed in our general area.
- Believes it is essential that the destroyer/frigate force should include ships with the capability to meet high level threats.
- Advocates the development of afloat support capability sufficient for two task forces, including supporting operations in sub-Antarctic waters.
- Advocates the acquisition at an early date of integrated air power in the fleet to ensure that ADF deployments can be fully defended and supported from the sea.
- Advocates that all Australian warships should be equipped with some form of defence against missiles.
- Advocates that in any future submarine construction program all forms of propulsion, including nuclear, be examined with a view to selecting the most advantageous operationally.
- Advocates the acquisition of an additional 2 or 3 Collins class submarines.
- Supports the development of the mine-countermeasures force and a modern hydrographic/oceanographic fleet.
- Advocates the retention in a Reserve Fleet of Naval vessels of potential value in defence emergency.
- Supports the maintenance of a strong Naval Reserve to help crew vessels and aircraft in reserve, or taken up for service, and for specialised tasks in time of defence emergency.
- Supports the maintenance of a strong Naval Reserve Cadet organisation.

The League:
Calls for a bipartisan political approach to national defence with a commitment to a steady long-term build-up in our national defence capability including the required industrial infrastructure.

While recognising current economic problems and budgetary constraints, believes that, given leadership by successive governments, Australia can defend itself in the longer term within acceptable financial, economic and manpower parameters.
HMAS WALTER (foreground), HMAS OSMAN (leading), and USS LOS ANGELES (center) proceeding to sea for Exercise Lumpfish '97 off the Western Australian coast. HMAS FARNCOMB (not pictured) also participated. (POPH Scott Connolly, RAN)
Did you know Navy nautical charts are available on CD?

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