Journal of the Australian Naval Institute

Winter 2003

AUSTRALIAN NAVAL INSTITUTE

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- to encourage and promote the advancement of knowledge related to the Navy and the maritime profession; and
- to provide a forum for the exchange of ideas concerning subjects related to the Navy and the maritime profession.

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Journal of the Australian Naval Institute

www.navalinstitute.com.au ***Number 109***

The Australian Naval Institute
PO Box 29, Red Hill ACT 2603

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ABN 45 988 480 239 ISSN 0312-5807

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The *Journal of the Australian Naval Institute* is printed by:
New Millennium Print 1/38 Kembla Street, Fyshwick, ACT 2609

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The Editorial Board seeks articles on naval or maritime issues for publication in the Journal. Articles may range in size from a few pages to 10+ pages - anything larger should be submitted to the Sea Power Centre for possible publication as a Working Paper. Articles concerning operations or administration/policy are of particular interest but we will consider papers on any relevant topic. As much of the RAN's operational and administrative history is poorly recorded, the recollections of members (and others) on these topics are keenly sought.

The Journal will publish articles and letters under a pen name if prospective authors so desire; the Editor will manage the list and identities of such authors.

Back copies of the Journal (where held) cost $5 for members and $15 for non-members. The Institute will take back old copies of the Journal if members no longer wish to hold them.

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ANI LIBRARY

The President of the ANI, RADM Rowan Moffitt, RAN recently inspected the ANI library (with Dr David Stevens), which is now in new premises at Campbell Park Offices (CP4-1-039). The collection, which numbers several hundred books on naval history and strategy, and more general defence matters is being managed by the Sea Power Centre-Australia on the ANI's behalf. By combining resources with the Sea Power Centre's own reference collection, ANI members now have access to an unrivalled and often unique selection of research material. The library is normally available for use 0900-1630 each weekday, but please ring to confirm this before your arrival, particularly if visiting from outside Canberra. As this is a reference collection, it is not possible to borrow the books. Contact is Mr Joe Straczek on (02) 62662641 or jozef.straczek@defence.gov.au.

The Institute thanks Captain Richard Humbley, RAN (Ret'd) and Commodore Alan Robertson, RAN (Ret'd) for their recent donations to the collection. Further donations to the collection are always welcome. Inquiries should be made to:

Joe Straczek
Naval History Directorate
CP4-1-040
Canberra ACT 2600

Letters to the Editor

Arthur Clark - Enclosed my dues to 2005 - I hope I last!

I look forward to the *Journal* (being housebound). I tend to wade through some of the articles but when historical discussions are on that's when I really settle down to read!! We have so many unrecorded feats that have never been published (Silent Service?).

I was discussing the exploits of *Vigilant* and *Kuru* who supplied the Timor Commando's and *Kuru*'s fight with enemy aircraft to be beached and forgotten in Darwin Harbour.

Many other exploits we hear when ex-Navy get together.

Sorry to ramble but I am 82. Please excuse writing - arthritis.

-The Passing of Vice Admiral Sir James Willis KBE AO RAN (Rtd)

Vice Admiral Chris Ritchie, AO RAN (Chief of Navy) - It is with great sadness that I inform the Navy of the death of one of our most distinguished admirals - VADM Sir James Willis who passed away on Sunday 15 June 2003.

VADM Willis joined the RAN College in 1937 and, during the second world war, he saw service in the Mediterranean, Indian Ocean and Pacific Ocean theatres of operations. His sea service included HMA Ships *Canberra*, *Nepal*, *Barcoo*, *Sydney* and *Warramunga* and HM Ships *Kingston* and *Valiant*. He also commanded HMA Ships *Latrobe*, *Tobruk*, *Quiberon*, *Vampire*, *Yarra* and HMAS *Melbourne*. His senior staff appointments included Chief of Naval Personnel, Chief of Naval Material and Assistant Chief Defence Force Staff. From 1978 to 1979, he was Flag Officer Commanding HMA Fleet.

On promotion to VADM on 21 April 1979, Sir James Willis served as Chief of Naval Staff (CNS) for three years. Force structure issues dominated his tenure as CNS and, during this time the first of the FFGs entered RAN service and local construction of the last two FFGs was approved.

VADM Willis was appointed as an Officer of the Order of Australia in 1976 and was appointed as a Knight Commander of the Most Excellent Order of the British Empire in 1981. He retired from the Navy in 1982 after 45 years of service during which time he saw active duty in world war two and the Korean and Vietnam wars.

Sir James' passing is a great sorrow for the RAN.

His funeral was held with full naval honours on Thursday 19 June 2003 at the Anzac Chapel of St Paul, RMC Duntroon.

Reforming Naval Planning 1977-78

(See CDRE A Robertson, pp. 14-17, Summer 2003 and Admiral Mike Hudson, pp. 4-5, Winter 2003)

CDRE Alan Robertson, RAN (Rtd) - Admiral Mike Hudson's letter commenting on my article about Reforming Naval Planning could raise a number of comments from me, but I will restrict myself to one issue, that is, his observation that my view that the RAN today is a 'sort of glorified coast guard' does not do me much credit. So, let me explain.

As I see it, the Navy's prime function is to provide most of the combat capability to implement the maritime strategy component of a national military strategy. This is not to say that the Army and Air Force should not be expected to contribute to a national maritime strategy, but that the Navy exists to contribute most of the forces required.

Now, observing that the three seapower missions of maritime strategy are:

- sea denial
- sea control (or, as I prefer, sea assertion)
- (maritime) power projection

Where does the Navy figure?

As to power projection, the Navy does not have an amphibious capability, its NGFS is limited by the small guns we now provide. And is has no carrier to provide helicopters in quantity or fighters to provide CAP over the beachhead, and ground attack to support the Army.

As to sea assertion, the Navy without a carrier cannot provide CAP for blue water air defence operations, nor AEW, and only a limited number of ASW helos. It does have surface to air missiles.

Finally, the Navy is well equipped for sea denial in its submarines armed with torpedoes and Harpoon, and its frigates armed with Harpoon, their helos with Penguin, and their guns.

Altogether then, the Navy is now a sea denial force with its frigates and patrol boats well suited for civil law enforcement at sea, and search and rescue at sea. It is, essentially, a coastal defence force as it has been directed to become because of Australia's crazy obsession with a phoney invasion "threat". In saying this, I do not disparage the professionalism of its members and the high regard in which the RAN is held - within the bounds of the ships and weapons with which it is equipped.

Is this analysis faulty? If so, how?

Appeal - Saving Lieutenant Commander George Gosse's George Cross

In May 2003 the medals of Lieutenant Commander George Gosse GC RANVR were passed in at an auction held by Sotheby's Australia. This included his George Cross awarded in 1945, his personal photo album mainly relating to his experiences in mine disposal and personal journal covering the period of his sea service as a Midshipman and Sub-Lieutenant from January 1930 to August 1932. These items are irreplaceable and collectively, an important part of our naval heritage.

The George Cross is a civilian and military decoration, instituted in 1940 by King George VI for '*acts of the greatest heroism or of the most conspicuous courage in circumstances of extreme danger*'. The George Cross ranks second only to the Victoria Cross.

Only nine George Crosses have been awarded to Australian servicemen, of these nine, five have been awarded to members of the RAN. Of these five, mine clearance specialists hold four. The Australian War memorial currently holds three of the nine crosses.

The London Gazette of 30 April 1946 reported that:

> *On 8 May 1945 divers searching Undersee Hafen reported the presence of a mine which from their description appeared to be an entirely new type. Lieutenant Gosse immediately dived and verified the fact that it was a GD pressure type, which was commonly known as 'Oyster'. As it was necessary that this type of mine should be recovered intact it was decided to attempt to render safe the mine under water and on the following day, May 9th. Lieutenant Gosse dived on it again. Using improvised tools he eventually succeeded in removing the primer which was followed by a loud metallic crash. The mine was eventually lifted on the quayside when it was found that the detonator had fired immediately the primer had been removed. During the subsequent ten days Lieutenant Gosse rendered safe two similar types of mines which were lying in close proximity to shipping and in each instance the detonator fired before the mine reached the surface.*

Since these items did not sell at auction, the family and Sotheby's are looking to sell them overseas, and it would be a great loss to our naval heritage if these items were to be sold to overseas interests.

The Naval Association of Australia in conjunction with the RAN and the Clearance Divers Association has taken the lead to raise enough funds to keep LCDR Gosse's George Cross, his medals and memorabilia in Australia. We have a very limited time to raise approximately $120,000. When we procure the items, they will be made available to the Australian War Memorial for display for all to see.

A Trust has been established where donations can be made. Cheques and money orders to the Trust should be made out to the *NAA George Medal Trust Fund* and sent to:

> *NAA George Medal Trust Fund*
> c/o National Secretary
> Naval Association of Australia
> GPO Box 711
> Canberra ACT 2615.

Naval Warfare Officers' Association

(formerly the Anti-Submarine Officers' Association)

Patron: Admiral Alan Beaumont AC RAN (Ret'd)

The Naval Warfare Officers' Association is the new name for an old Association, viz the Anti-Submarine Officers' Association, which is approaching some sixty years in existence, but with a new lease on life and new horizons.

It was formed in mid 1946 by Officers still serving or demobilised whose criteria for membership was that they had been trained initially in anti-submarine warfare at the Anti-

Submarine School - *HMAS Rushcutter*, in Rushcutters Bay, NSW.

The Anti-Submarine Association has been a tight and happy community, which over the years has developed a close association with *HMAS Watson* - that establishment having taken over the Anti-Submarine Warfare Training on the closure of the old Anti-Submarine School shortly after the end of WWII.

Over the last few years as the 'old and bold' original members 'drop off', membership of the Association has been maintained with the joining of many retired and serving RAN Officers and Reserve Officers. Also with anti-submarine warfare now embedded in Principal Warfare Officers training, the old concept of the anti-submarine specialist in its own right has ceased to exist.

Therefore, in order that the Association be modernised and maintained, it was thought appropriate to change the name, to better reflect the connection between the modern day Anti-Submarine Officers in the form of Principal Warfare Officers, with the surviving Veteran Members.

The objects of the Association are, and always have been, to honour the proud wartime record of its members and to promote and foster amongst its members, the spirit of comradeship and service to the Navy and the Nation. Additionally, we wish to maintain our connections with the past yet offer a sense of community to the younger members of the warfare fraternity.

The Association marches together each Anzac Day followed by the AGM, which is held aboard MV *Radar* on Sydney Harbour. In addition an Annual Luncheon with a guest speaker is held each November at the Royal Sydney Yacht Squadron. The guest speaker last year was Chief of Navy, VADM Ritchie. The Association newsletter, published three times per year, contains articles relating to our history, heritage and warfare issues that are of interest to both serving and ex-RAN members. All association members are encouraged to contribute articles for publication.

The cost is $15 per annum and application forms are available from the Honorary Secretary as follows:

Honorary Secretary, Naval Warfare Officers' Association
CMDR R.F. Tighe RFD RD RANR (Rtd)
Phone: 02 9948 3479
Fax: 02 9948 5100
Email: ighe@bigpond.net.au

ABCD Loring guarding a weapons cache in Basrah (RAN)

A Strategic Comparison of Naval, Land and Air Warfare in the 20th Century

By Wing Commander Stephen Osborne

In the early years of the 21st Century, there appears little evidence that conventional warfare is about to be replaced by unconventional warfare despite the increased focus on terrorism since the World Trade Center attacks and the predictions of some observers.[1] Similarly, the joint warfare operations that were essential to overcoming the geographic challenges of invading 'Fortress Europe' and defeating the Japanese Empire during WWII also remain important to Western militaries.[2] As recently as 2002, a combination of Special Forces teams, airpower and local allies were used by a US-led coalition to defeat Taliban and Al Qaeda forces in Afghanistan.[3] Joint operations continue to be relevant because of their synergistic effects in maximising the strengths, and minimising the limitations, of each of the separate military environments.[4] But if the importance of joint warfare is accepted widely, military planners are still faced with complex choices in developing, balancing and employing joint land, naval and air forces at the strategic level.

Strategic-level decisions regarding joint forces should be based on an understanding of the broad characteristics of warfare in each of the environments yet, in the words of Colin Gray *for reasons that are obscure, there is very little readily available literature on the subject of the strategic relationship between seapower and landpower.*[5] This lack of information extends to the apparently few published comparisons of the nature of naval warfare at the strategic level with that of land and air warfare. While there are numerous tactical level descriptions of warfare on the ground, in the air and at sea, there is little comparative information to guide strategic planners and thinkers on how, if at all, warfare should be considered differently in the separate environments. The Royal Australian Navy's official maritime doctrine states simply that while technology is changing the nature of warfare in each of the environments, land warfare has tended historically to be linear and focused on gaining or holding ground while air and maritime warfare tended to be non-linear, dynamic and platform focused. But little additional information is offered to expand on this generalisation.[6]

The aim of this article is to compare the nature of 20th Century naval warfare at the strategic level with that of land and air warfare. I will argue that naval warfare had some similarities with land and air warfare, particularly the latter because the sea and air environments shared some common characteristics. However, the nature of naval warfare was sufficiently different from that of the other environments to warrant consideration in its own right. This article will first compare the influence of the differing physical environments on the nature of warfare before, secondly, comparing the strategic goals of warfare in the sea, land and air environments. Having compared the environmental conditions and strategic aims of naval warfare with those of land and air warfare, the paper will conclude by contrasting the main strategic level characteristics of naval warfare with those of warfare in the other environments.

Before any worthwhile comparison of naval, land and air warfare can be made, the dual nature of airpower must first be considered. Airpower became a critical enabler of victory in support of naval and land forces during the 20th Century.[7] Air superiority was considered such an essential prerequisite for controlling the sea that seapower and airpower were described as indivisible.[8] Similarly, tactical airpower has been a vital component of land warfare since WWII.[9] However, between WWI and WWII, airpower theorists led by Giulio Douhet, Billy Mitchell and Hugh Trenchard began to argue for an independent role for airpower. The strategic bombing campaign of WWII made a major contribution to the Allies' eventual victory but the campaign was not decisive in its own right.[10] Airpower's potential to play the leading role in a conflict was not realised until the Gulf War of 1991, although ground and naval power still played essential supporting roles.[11]

Nevertheless, for the purposes of this article, naval and land warfare include the use of tactical air support while air warfare is confined largely to the 'independent' use of airpower.

The Influence of the Physical Environment

Wars in the 20th Century were seldom confined to a single environment and instead were usually a combination of sea, land and air warfare. That said, the different geophysical characteristics of each environment directly affected the nature of warfare. Whereas naval warfare, and to an even greater extent air warfare, was largely unaffected by considerations of terrain; terrain was of fundamental importance to land warfare. Terrain limited the manoeuvrability of armies and, by extension, the distances over which land warfare was planned and conducted. Terrain also provided cover and concealment to ground forces as well as usually providing the goal for which armies fought.[12] Conversely, the featureless sea and air provided a largely obstacle-free medium of movement in which the range and manoeuvrability of ships and aircraft were limited primarily by technological considerations.

The warship was the primary tool of seapower and had no land-based equivalent in mobility and tactical and strategic independence. Warships carried most of their logistics support with them and so conducted sustained operations for long periods at long distances from their bases.[13] Even aircraft could not compete with warships in this regard. While the reach of airpower became global by the latter half of the 20th Century due to air-to-air refuelling and improved aircraft design, the aircraft's presence remained highly transient and its load capacity relatively limited.[14] Nevertheless, the 'platform-focused' naval and air forces enjoyed greater mobility than did ground forces and this resulted in naval and air warfare being fought across far greater distances than was the case with land warfare. The seas of the world have been described as being one and allowed warships access to 70% of the earth's surface.[15] Conversely, geography denied land power the ability to serve as the basis of a global strategy and land warfare was normally confined to campaigns within defined theatres.[16]

The largest land campaign in history, both in terms of the distances and the size of the armies involved, was the German-Soviet conflict of WWII. Germany embarked on Operation *Barbarossa* in June 1941 with three million soldiers against the Soviet Union's two million defenders. By the end of the war, around eight million Soviet and two million Axis soldiers had been killed. At its greatest extent, the front line was almost 3000km wide and 1000km deep.[17] Yet despite the massive scale of warfare on the Eastern Front, the distances involved were often dwarfed by those associated with 20th Century naval operations. For example, in December 1941, Japanese naval forces conducted operations in Guam, Malaysia, North Borneo, Hong Kong and Hawaii.[18] More recently, in 1982 the Royal Navy supported the recapture of the Falkland Islands from Argentina at a distance of over 13000km from the United Kingdom.[19] But the global nature of naval warfare did not alter the relationship between the land environment and the sea and air environments.

Sea and air warfare were conducted to affect events in mankind's natural environment, the land.[20] The sea is an alien and inhospitable environment and while the natural condition of the land is to be controlled, the natural condition of the sea is to be uncontrolled. States sought to control the sea to control activities on land and major sea battles were normally associated with events on land.[21] A similar relationship existed between the land and the air environments. *The purpose of naval operations is usually much more limited than that of land warfare; as a rule navies exist chiefly to aid and sustain armies and air forces.*[22] This is not to say that naval operations were less important, as they were often essential to victory throughout the 20th Century.

The Aims of Naval, Land and Air Warfare

The sea is militarily important as a medium for movement rather than for its intrinsic value. Naval warfare was usually conducted in order to secure the use of the sea for friendly forces or to deny its use to the enemy and so tended to contribute indirectly to war aims. Land forces on the other hand, usually sought to occupy territory to pressure the foe directly. Territorial goals could be both a means to an end and an end in themselves.[23] The true aim

of war according to Clausewitz was first to defeat the army that defended the enemy's territory.[24] Consequently, land warfare tended to focus on destroying the enemy's armed forces and his will to fight in order to seize that territory.[25] Conversely, the primary aim of air warfare was similar to that of naval warfare in that it served an enabling and indirect function; securing or denying the use of the air medium.[26]

As befitted their similar aims, naval and air warfare used similar terms to describe their primary purpose; command of the sea and command of the air respectively. However, command of the sea implied an ubiquity and absolute level of control that was seldom realised. Command of the sea was often in dispute, rarely denied the enemy use of the sea entirely and was only achieved in unusual circumstances.[27] Absolute command of the air was rarely achieved for similar reasons and so normally aimed at denying the use of the air to enemy forces while facilitating its use by friendly forces.[28] Command of the sea was a similarly relative term and was best described as the degree to which friendly forces used the sea for their own purposes while denying its use to the enemy.[29] The role of naval forces in controlling the sea lines of communication led to naval warfare being associated more closely than land or air warfare with economic or trade disruption goals.

The great majority of the world's trade goods are transported by sea.[30] So important is merchant shipping that it has even been described as the 'ultimate key to victory' in global war.[31] If seapower can therefore be considered as a method of transferring land-based production power at the time and to the place of strategic choice, naval warfare can be considered as ensuring the security of that transfer process.[32] Such security was particularly important to maritime powers such as Britain that relied on maritime trade for their economic strength and survival. Commerce raiding, or the *guerre de course,* was a strategy frequently used by states to deny stronger naval powers the use of the sea for trade. While ultimately this strategy did not succeed for Germany during its U-boat campaigns of the World Wars, both campaigns posed a serious threat and came close to success.[33] The WWII American submarine campaign in the Pacific was also highly effective. American submarines were primarily responsible for the crippling blockade of Japan and eventually sank 4.8 million tons of merchant ships, which represented over 56% of Japan's total merchant shipping losses. Notably, aircraft accounted for 32% of these losses thereby demonstrating airpower's related, if lesser, involvement in economic warfare.[34]

The Characteristics of Naval Warfare

While this article is concerned primarily with the nature of warfare at the strategic level, a brief overview of warfare at the tactical level is relevant. Tactics affect the nature of warfare at the strategic level because military strategy ultimately rests on combat power and combat power is generated at the tactical level.[35] In naval unlike land warfare, prepared positions and/or terrain cannot aid the defender and so no rule-of-thumb attacker-to-defender ratio was required to overcome the defender's advantages. At sea, swamps or mountains did not guard friendly flanks and nor did rivers impede the attacker's advance. Accordingly, successful naval tactics were inherently offensive and aimed to strike the enemy first. As opposed to land warfare, tactical reserves were seldom used.[36] Given the similarities of the sea and air environments, air warfare was likewise offensive. But history has demonstrated that, unlike air and land warfare, even a small superiority of force was usually decisive in naval battles and that the slightly weaker force usually inflicted little damage in return.[37]

Such one-sided affairs as the 1914 battles of Coronel and the Falkland Islands, the 1941 Battle of Cape Matapan and the 1942 Battle of the Java Sea are less common in 20th Century land and air warfare history.[38] For example, the Royal Air Force lost 915 aircraft in winning the Battle of Britain[39] and the Germans suffered almost 100,000 casualties in their successful encirclement of the Russian Southwestern Front in 1941 that inflicted 400,000 casualties and yielded 600,000 prisoners.[40] As a stronger fleet could decisively defeat an even slightly inferior fleet, the weaker fleet usually avoided major battles unless some compensating advantage could be found. This *is one great difference between naval and land warfare, since in the latter a great superiority in strength is almost always capable of forcing a decision.*[41]

The ability of major capital ships to control the seas combined with their small numbers

meant they were in effect strategic assets, and not usually risked unnecessarily or for minor gains. This contrasted with the use of air and land assets that were usually risked more readily. Naval battles could be highly decisive and for that reason were often avoided.[42] For example, during the largest naval encounter of WWI, the Battle of Jutland, the German High Seas Fleet broke off contact once Admiral Scheer realised he confronted the entire British Grand Fleet. On the other hand, the British commander, Admiral Jellicoe, did not press home his advantage because he dared not risk his fleet because of its critical importance to Britain's survival.[43] In any case, the German fleet never again went to sea in force for fear of a repeat encounter and effectively abandoned control of the sea to the British.[44] This approach contradicted the Germans' original plan to surprise and destroy a portion of the Grand Fleet and so improve the odds for a major fleet encounter.

The offensive was the stronger form of combat at sea and so an aggressive, if weaker, force could still be effective. Again, the physical differences between the sea and the land meant that the defender could not exploit the defensive nature of terrain and nor was the attacker confined to predictable routes. Given the unhindered mobility of fleets on the open ocean, there was also considerable uncertainty as to the opponent's dispositions and movements. These characteristics presented an attacker, even a weaker one, with the opportunity to surprise the enemy and to engage and defeat isolated parts of his forces. Also, as capital ships were few in number and of strategic significance, there was added reason to act aggressively and try to sink them.[45] In contrast to Clausewitz's observation that the defensive is the stronger form of land warfare, Admiral King, one of the most successful naval commanders of the 20th Century, had different ideas. He stated at the nadir of American naval fortunes in early 1942 that the Japanese enemy must be fought *where he is to be found, to seek him out rather than to husband our fighting strength at home and wait his coming.*[46]

The successful use of that peculiarly naval strategy, the fleet-in-being, was closely associated with the offensive nature of naval warfare. This strategy involved exploiting the options provided by the existence of one's own fleet while limiting the enemy's options in the use of his. The fleet-in-being was used to deny the enemy the use of the sea by threatening his shipping or to protect friendly shipping by forcing the enemy fleet to remain on guard against the friendly fleet.[47] The fleet-in-being strategy is often and mistakenly equated with passivity. Julian Corbett wrote *a naval defensive means nothing but keeping the fleet actively in being - not merely in existence.*[48] The German fleet in WWI adopted a passive fleet-in-being strategy and, as already mentioned, abandoned the sea to the British.[49] Conversely, even though the US fleet was markedly inferior to the Japanese after Pearl Harbor, Admiral King adopted an aggressive fleet-in-being strategy. This strategy of attacking the Japanese whenever a reasonable chance of success was offered and of avoiding the enemy's main strength led to the 1942 strategic victories of Coral Sea and Midway.[50] In both cases, surprise was a major factor in the American victories.

Sea power's mobility provided a high degree of agility that could be exploited to achieve surprise.[51] The capability of naval forces to remain undetected in the vastness of the sea, at least until the introduction of surveillance satellites in the last decades of the 20th Century, further increased such forces' capacity to achieve strategic surprise.[52] Amphibious operations in particular could achieve surprise by massing out of sight of the enemy and disembarking forces anywhere along an enemy's coastline.[53] For example, the 1944 D-Day landings in Normandy achieved strategic surprise even though an invasion was expected.[54] Land forces had to be massed within striking distance of the enemy and so were more likely to be observed. They could achieve strategic surprise, such as during Germany's invasion of the Soviet Union in June 1941. But this well known case was more the result of Stalin's refusal to listen to his military advisers than the result of German secrecy and deception.[55] While the speed of aircraft made achieving surprise relatively easy, they generally lacked the combat effectiveness to have a strategic effect unless they used nuclear or precision guided weapons.

The inherent flexibility and mobility of naval and air forces allowed such forces to engage and disengage the enemy far more easily than was the case with land forces. Consequently, naval and air warfare tended to be a series of encounters while land warfare

tended to involve continuous contact with the enemy.[56] The USN's island-hopping campaign of 1943-45 that usually bypassed strong centres of Japanese resistance demonstrated a high degree of flexibility that was particularly difficult to find in land warfare.[57]

Paradoxically, while naval forces were the epitome of manoeuvre elements, naval combat was attritional in nature. Naval forces could not be destroyed by encirclement or by being isolated at sea, they had to be destroyed in battle. Therefore, naval warfare was characteristically associated with attrition rather than manoeuvre.[58] That said, no form of warfare was entirely attrition or manoeuvre-based and each of the three environments can furnish examples of both types of warfare. Manoeuvre-based naval strategies included the 1915 Gallipoli amphibious operations aimed at knocking Turkey out of the war by threatening Istanbul and the WWI and WWII Allied convoy operations that aimed to avoid enemy submarines rather than destroy them. Land warfare examples included the WWII German Blitzkrieg campaigns, the 1941-42 Japanese Malaya campaign, and the 1973 Israeli Suez offensive. For its part, air warfare was predominantly attritional for much of the century. However, by the 1990s, air warfare was increasingly associated with precision or manoeuvre-based strategies such as those of the Gulf War and Kosovo rather than the WWII strategy of area bombing.[59]

Conclusion

Throughout the 20th Century, naval, land and air warfare were each shaped by their respective environments. While all forms of warfare were conducted for the eventual effect they had on mankind's natural environment, the land, land warfare was constrained by the effects of terrain to a degree unknown in naval or air warfare. Consequently, naval and air warfare exhibited a far greater level of mobility than did land warfare. Given the far greater endurance, load capacity and range of warships compared to those of 20th Century aircraft, naval warfare in particular showed these characteristics at the strategic level. Similarly, whereas land warfare was usually fought to destroy the enemy and so obtain territorial goals, naval and air warfare were normally conducted to secure or deny the use of the sea and air environments. Naval and air warfare tended to achieve indirect results by providing the 'means' rather than the 'ends'. But even more so than air warfare, naval warfare had a strong economic purpose in securing *the use of maritime lines of communication for the effective interconnection, organisation and purposeful application of the war-making potential of many lands.*[60]

The combination of environmental conditions and strategic aims led to the characteristics of naval warfare having a variety of similarities to, and differences with, those of land and air warfare. However, naval warfare had far more in common with air warfare than with land warfare. They were both offensive in nature because their similar environments allowed them greater mobility and flexibility, if less defensive benefits, than the land environment provided ground forces. But unlike the other environments, even a small superiority of force could be decisive in naval battles and so the inferior force usually avoided major encounters. Instead, the weaker naval force often pursued commerce raiding, fleet-in-being strategies or attempts to surprise and defeat parts of the enemy's fleet. Naval warfare at the strategic level had, therefore, to be planned and conducted differently to land and air warfare.

The ongoing relevance of joint operations in the 21st Century will continue to require Western naval strategists to not only understand the characteristics of warfare in their own environment but also those in the other environments. This is a more difficult task than during most of the previous century because these other environments now include space and the electromagnetic spectrum in addition to the air and land environments.[61] Nevertheless, many of the characteristics of the land, sea and air environments remain the same despite technological advances and, while predicting the future is largely guesswork, historical experience allows strategists to make at least educated guesses.[62] Arguably, the greatest benefit of historical experience is the recognition that

> *the supreme test of the naval strategist is the depth of his comprehension of the intimate relation between sea power and land power, and of the truth that basically all effort afloat should be directed at an effect ashore.*[63]

About the Author

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Clearance Diving Team Three's Contribution to Operation *Falconer*

By Lieutenant Commander Scott Craig, RAN

Navy Clearance Divers have always been the Australian Defence Forces' specialist divers and have, since the inception of the Branch, operated all in-service diving equipment to the full extent of its operational capacity. Nevertheless, the primary focus of a diver is to perform Explosive Ordnance Disposal (EOD). This role is conducted at sea in ships, in the oceans (particularly the vulnerable approaches to ports and anchorages), and onshore in port facilities, installations and the littoral environment associated with amphibious operations. The Clearance Diving community represents the largest single ADF organisation with a direct and primary interest in the conduct of EOD.

The RAN established its Clearance Diving Branch in 1951. Initially, the Branch drew on experience of the Royal Navy Combined Operations Pilotage (or P Parties) of WWII, that had been responsible for clandestine reconnaissance and obstacle clearance in a maritime environment. Similar combined USN and RAN units operated in the South Pacific theatre and also provided further examples of potential tasking and methods of operation. In its infancy, the Branch also found inspiration in the exploits of many RANR officers who served with British forces during WWII. Pioneers in render safe and disposal of enemy sea mines and other ordnance, these officers were amongst the most decorated of all Australian servicemen in the war. Several of these men served on in the RAN after the war and were directly involved in establishing the Branch.

Between its inception and the war in Vietnam, the Branch was kept busy growing its numbers and meeting the demands of domestic diving and peacetime EOD tasks. In Vietnam divers served from a base in Vung Tau providing specialist EOD and diving support to the Australian and Allied forces. Apart from the more recognisable tasking of providing ships with defence against enemy swimmer attack, these personnel were frequently assigned in support of US operations in the Vietnamese delta region. They conducted numerous operations in the field, often coming under fire. Several divers were decorated for, amongst other things, capturing an enemy diver and conduct of high-risk tunnel clearances. Clearance Diving Team Three (CDT3) received a United States Congressional Unit citation for its conduct during the Vietnam War.

In peace and wartime, the Branch continued to provide support to the RAN's non-warlike activities. Most notably, it often responded at short notice to calls for specialist high-risk and psychologically demanding dive tasks such as deep diving in the high altitude dams of the Snowy River project and body recoveries post the West Gate and Tasman Bridge disasters and Cyclone Tracy. Following the 1978 Sydney Hilton bombing, and the establishment of an ADF counter-terrorist (CT) capability in 1980, divers were tasked with performing CT duties with the Special Air Service Regiment (SASR). This was to prove an enduring task that would extend for the next 15 years and result in over 120 sailors and officers serving in SASR CT Squadrons. In 1988 Minewarfare and Clearance Diving Officers were attached to the RN Mine Countermeasures force in the Persian Gulf during the Iran-Iraq War. The force was expanded to include other European nations and tasking included the clearing of the Shah Allum minefield, located with a mine strike on the USS *Samuel B Roberts*. In 1991, with war imminent in the Persian Gulf, a CDT was tasked with support of coalition forces involved in planning for amphibious operations. The USN specifically requested Australian divers whom they recognised as world leaders in conduct of clandestine reconnaissance and clearance operations in a shallow water mine-threat environment. Like its predecessor in Vietnam, the CDT that deployed to the Gulf War was recognised with a Unit Citation as well as many individual decorations for conspicuous service.

Diving detachments and individuals have supported almost all post-Gulf War ADF operations including: the search for and destruction of chemical filled ordnance in Iraq and RAN operations in the Persian Gulf, Somalia and Bougainville. CDTs conducted

clandestine reconnaissance and explosive ordnance disposal operations in direct support of Australian led UN Forces in East Timor. Several divers were also decorated for their efforts during the early days of the UN deployment. In 1999 the first *Huon* class coastal minehunter entered RAN service. These ships represent a major contribution to the war fighting capability of the ADF and incorporate state of the art technology for conducting mine countermeasures operations at sea. Each ship has one Minewarfare Clearance Diving Officer (MCDO) and five divers posted as part of the ship's company; these officers may also be posted to any of the other officer billets in these ships, including CO and XO. Following the terrorist strikes of 11 September 2001, the Australian Government moved to establish a second counter-terrorism Tactical Assault Group. This unit mirrors that maintained by the Special Air Service Regiment and is part of 4RAR Commando. Like their predecessors of two decades ago, young divers and officers are meeting the selection criteria for service in this Special Forces unit and are contributing to the defence of Australia against terrorism.

Only the most dedicated of the Navy's personnel choose to pursue the path of a diver. Sailors transferring from any other Navy category must revert in rank to Able Seaman if they want to become a diver. Additionally, all personnel joining the Branch, including officers, must undergo acceptance testing and complete the arduous requirements of the Clearance Diving qualification course. These demands placed on potential applicants to a category are probably not seen anywhere else in the ADF outside of the Special Forces. In the present international climate of uncertainty and widespread threat of terrorism, divers represent a valuable and extremely flexible asset for both the ADF and the nation.

Operation *Falconer*

Not surprisingly, when faced with the risk of conflict in Iraq, the ADF again called upon divers to meet the challenges of war. As has often been the case since Vietnam, CDT3 was formed to meet the demand. Team Three is a composite team created, in time of conflict or other great need, with personnel from each of the two standing Australian Clearance Diving Teams. CDT3 served in Vietnam, in the early days of diving support to the SASR counter terrorist Squadron, and in Kuwait during the 1991 Gulf War.

The men of the latest CDT3 deployed in support of Operation *Falconer* by RAAF C130 on 22 February 2003. Before this, the same personnel had attended an exercise with coalition units on the US west coast. Having left for the exercise six days into the new year, and only managing to achieve one week at home before the re-deployment, the Team was essentially away from home for much of the first half of 2003.

The Team's operations can be divided into two phases, the pre-war deployment and operations during the war. The Team staged through Bahrain arriving on 24 February to be met by an advance party who had pre-deployed. There they linked up with over 40 tonnes of equipment and stores that had been shipped to the theatre onboard HMAS *Kanimbla*. Coupled with over 20 tonnes of equipment that had travelled with the Team by C130, the mere scale of equipment to be sorted and re-packed represented the first challenge. Over the course of six days the Team broke down the entire load and re-palletised it for staging north.

Much of the load was embarked in the LPD USS *Gunston Hall*, that would house the majority of the coalition mine countermeasures divers. However, with the exception of the Team storeman who boarded as caretaker of the equipment, CDT3 was destined to use a less orthodox mode of transport into war. In early March, the Team staged into Kuwait by air and took up residence at the Kuwait naval base on the coast not far from Kuwait City. Here they plunged into a constant stream of equipment preparation and training; a significant amount of the training involved chemical detection, decontamination and explosive ordnance disposal. At one stage during this phase, *Kanimbla* closed the coast and the Team's Army four wheel drive vehicles and fast insertion craft were landed, along with two divers who had been embarked to sort through the considerable explosive stores that were earmarked for use by the Team.

The Prime Minister committed Australian forces to support any action taken by the coalition against Iraq on 18 March. The Team was ordered to move north that night and the next day joined a convoy snaking its way through the outskirts of Kuwait City and into the desert plains south of the Iraqi border. At tactical assembly area BULLRUSH, a former US Marine Corp desert camp surrounded by

berms, the Team began the tense wait for commencement of hostilities.

When the war commenced, the divers were in the path of Iraqi missiles that were fired south in an attempt to strike coalition forces arrayed in the desert. Over the course of several days the Team adopted full protective measures against chemical attack, donning respirators (gas masks) and charcoal impregnated clothing eleven times in the first 24 hours. On many occasions, the shock wave of missile impacts rocked the divers huddled within the flimsy accommodation tent. Rotating through duties manning observation posts and vehicle checkpoints as they were, most personnel witnessed at least one or two explosions in the night skies indicating soft-kills of in coming missiles by Patriot anti-air missiles.

While their mates were ducking missiles in the desert, other divers were embarked in a frigate in the Navy's Task Group sailing the Northern Arabian Gulf. On 20 March, this detachment of four men staged forward from *Kanimbla* in support of a boarding party that had made the unexpected discovery of an entire barge full of concealed anti-shipping mines. The divers drew alongside in a fast boat and quickly linked with USN EOD personnel, who then made short work of searching for booby traps and certifying the mines safe for transport to Kuwait for further research.

Meanwhile, the Team in the desert were ordered further forward and made their way, again by convoy, across a rough road hewn from the desert by British Army Engineers. There followed a short respite at another assembly area, this time bearing the name Viking, within sight of Iraq. A spectacular series of explosions lit the evening sky and staccato reports of contact over the US Marine radio operations net confirmed to all present that they were about to enter the war. On the morning of 24 March, the Team crossed through a breach in the berms and tank traps marking the border of Iraq.

In a short time, the Team had established their headquarters and accommodation in a decrepit warehouse within the old port at Umm Qasr and had linked up with the remainder of the Coalition mine countermeasures diving force. The American and British units had been embarked in *Gunston Hall* for almost a month and had finally been inserted into Umm Qasr in USN MH53 *Sea Stallion* helicopters after the Australians had arrived by road. In the dark hours of the morning after their arrival, a number CTD3 divers slipped below the coffee coloured surface of the harbour and by touch alone located a sunken minelayer with four live ship-killing mines onboard.

Over the course of several days, fighting against extreme tides and sub-surface conditions of zero visibility, a number of divers proved their endurance and courage as they wrestled mines into position for lifting and transportation to a safe detonation site. When the job was done and a series of spectacular explosions marked the mines' disposal, the Australians could rest happy in the knowledge that they had located and cleared the only mines to be found in the waters of Umm Qasr harbour.

While some of their mates were risking the murky waters of the harbour to allow the passage of humanitarian aid, other divers from the Team joined British Commandos in the town of Umm Qasr to clear unpredictable ordnance that threatened the lives of the local populace. In one memorable task, a patrol of divers helped sweep a schoolyard for ordnance and located a hitherto undiscovered cache of mortars. The mortars could be moved, but a pair of rocket propelled grenades also found in the school were too dangerous to move. The Australians quickly cleared a huge crowd of Iraqis, mainly women and children, to create a safe area for demolition of the rocket-propelled grenades. After a successful clearance, they moved on to several other explosive ordnance disposal tasks, including the discovery of a cache of twenty-five sea mines hidden in the deserts to the north of Umm Qasr.

As the remainder of Umm Qasr harbour was cleared by divers, and the grain terminal was checked for ordnance and booby traps to allow the flow of Australian wheat, a series of patrols participated in rendering safe and disposal of most of the sea mines that had been located in and around Umm Qasr. Clearing a disposal site for this task proved a unique challenge when some of the men had to turn their hands to droving and move a large flock of local sheep to safety before setting their counter-mining charges.

Soon after arriving in Iraq, another patrol of divers encountered the challenge of dealing with a civilian populous deprived of reliable food and water supplies. Called upon to escort a defence media liaison team, the patrol found themselves the only coalition presence at the first water distribution in Umm Qasr post the invasion. Several hundred desperate Iraqi civilians of all

ages crowded around the men and their vehicles, scrambling for the water and begging for food. Scuffles broke out in the crowd and were it not for the calm, disciplined response by the divers, the situation might easily have escalated.

Early in the task at Umm Qasr, the divers who had been embarked in ships and had helped clear the barge-load of captured Iraqi mines, joined the rest of the Team ashore. Consequently, on 27 March the Team became the biggest CDT3 to ever be deployed with a total of 32 personnel. Apart from divers, the Team has a robust support structure including a logistics officer, storeman, communications specialist, PO Bosun and underwater medic.

All of these personnel encountered the challenge of operating in an environment seldom faced by naval personnel. Although the port of Umm Qasr was considered secured, the nearby townsite was not and Ba'ath Party loyalist continued to operate there. Most nights were punctuated by gunfire and extensive fighting continued on the nearby Al Faw peninsula for over a week after the Team took residence in the port. Personnel soon grew used to the pressure waves from artillery and mortar fire rocking the sheet metal walls of the warehouse.

Before long, only the frequent missile alerts and associated gas alarms generated a quick reaction. The Commander of the RAN Task Group at that time, Captain Peter Jones, RAN experienced one of these when, five minutes after his helicopter touched down for a visit to the Team, an incoming missile alert was sounded and all personnel rushed to don full protective equipment. Subsequent coalition reports indicated at least one missile had impacted in the vicinity of Umm Qasr during these early days.

To much international fanfare, the port of Umm Qasr was declared 'green', or open, on 9 April. The divers had no time to rest though, because this announcement merely heralded the start of their second task. Having stepped up a headquarters detachment on 9 April, the Team staged forward on 11 April. In one 24 hour period, they manhandled their entire fifty or so tonnes of equipment onto several trucks and convoyed it twenty kilometres north to the port of Khawr Az Zubayr, known to the resident British Commandos as 'the KAZ'. Here they took up residence in another, less worn warehouse, shared with several hundred British Royal Marine Commandos.

Once established on the ground, the Team again linked with American and British mine countermeasures divers to clear the harbour. Concurrently, the Australians engaged in a constant round of explosive ordnance disposal patrols on the Al Faw peninsula. These tasks were completed in a tactical fashion, as the Al Faw was a coalition 'go zone', meaning the threat justified ground forces having the ability to call in air strikes if they were under attack. The divers prepared for these patrols with detailed planning and complex orders before they drove from the British camp where they lived and made the long haul out to Al Faw.

When they reached their area of operations, they trod carefully wary of the land mine threat and used minor infantry tactics to cover each other as they searched for and disposed of unpredictable ordnance. It was challenging work but the divers lapped it up, seeing this as a great chance to employ well-rehearsed skills. The Khawr Abd Allah flood plain, running the entire southern coastline of the Al Faw peninsula, was cleared by the Team and reported as complete on 28 April.

Subsequently, 1 UK Divisional Headquarters requested the Team's specialist knowledge to deal with a massive maritime ordnance cache located 20km inland from the KAZ. The vast bunker system lay adjacent to the KAZ helicopter facility and included the Iraqi Navy's mining school. Every bunker in the complex contained ordnance and extensive stockpiles also lay within sand berms scattered indiscriminately throughout the area.

Like transits to the Al Faw, movement to the KAZ helicopter facility required patrols to transit in convoy and in a tactical fashion. At the site, security was always a consideration as fencing had been looted and the local populace wandered unhindered throughout the area. The Team Command Group and patrol commanders kept close watch on threat assessments and adjusted the force protection posture accordingly. Nevertheless, the threat from paramilitary forces and terrorists did not recede throughout the deployment in Iraq so patrols were always obliged to maintain readiness.

With mechanical handling equipment at a premium, much of the work at the KAZ helicopter facility was done by hand. While one patrol established a perimeter for security, another patrol would spend a long, hot and arduous day lifting, shifting and stacking heavy pieces of ordnance like Russian manufactured

anti-submarine mortars. This task, along with rendering safe a selection of captured enemy mines for recovery to Australia, kept the men busy until 8 May when the Team finally completed operations. Following their extended field deployment the divers then required four days to de-service and load-out for the final departure from Iraq by road on 12 May 2003.

A less publicised but possibly very important achievement of the Team was their contribution to intelligence gathering. After entering Iraq, CDT3 identified, rendered safe and recovered an assortment of enemy equipment that was prized and highly sought-after by Australian intelligence. Electronic devices, communications equipment and hard to acquire threat weaponry, including numbers of missiles and their components, were obtained by the Team and passed into the hands of intelligence specialists.

Conclusion

A number of pertinent statistics reflect the scale of CDT3's achievements in this war. The distance covered in convoys during two tactical lodgements was 213km, taking the entire Team and their extensive equipment load from Kuwait naval base, through TAA BULLRUSH, into Umm Qasr and then on to Khawr Az Zubayr. They endured over 30 missile alerts and spent seven days in chemical protective clothing. Mine countermeasures diving resulted in a total searched area of 2,550,000 square metres and the Team were the only unit to locate mines in an Iraqi port. These four mines were destroyed and another 20 unknown contacts were countermined as the Team responded to USN unmanned vehicle or marine mammal searches. In total, 34 tactical explosive ordnance disposal patrols were completed, with 2100km travelled during the patrols. The Team's patrols eventually cleared unexploded ordnance from 135 square kilometres of Iraqi territory. Over 4000 items of ordnance were located and destroyed in addition to hundreds of thousands of small arms ammunition rounds.

- Projectiles up to 155mm - 2490
- Missiles: SSM - 8, manpads - 2, Milan launchers (UK) - 150
- Sea mines: Manta - 6, LUGM - 35, limpets - 4
- RPGs - 72
- AS Mortars - 796
- Land mortars - 90
- Grenades - 548
- Land mines: anti-tank - 11, anti-personnel - 4
- Rockets - 2
- Bombs: US - 1, Russian - 4
- Weapons: AK47 - dozens
- Small arms - hundreds of thousands.

About the Author

Scott Craig joined the Navy in 1987 and completed a Bachelor of Arts degree at ADFA in 1989. He served in HMAS Brisbane during Gulf War I whilst undergoing Seaman Officer Training and completed Bridge Watchkeeping Certificates on HMA Ships Betano and Perth. He completed Clearance Diving Officer's Course in February 1995, which was followed by a posting to AUSCDT4 in Perth. Scott was then posted as second in command of the RAN Diving School at HMAS Penguin and then of HMAS Hawkesbury during build, explosive shock trials, commissioning and initial deployment. He worked for the MCD FEG prior to assuming command of AUSCDT4 in December 2001. Scott was posted as the Commanding Officer of AUSCDT3 for Operation Falconer from February-May 2003 and has returned to AUSCDT as the Commanding Officer.

Australia's First all Welded Warship

By John Jeremy

A little over fifty years ago, on 1 March 1952, the first all-welded warship to be built in Australia was named *Voyager* and launched at Cockatoo Island in Sydney. The first of an intended class of four *Daring* class destroyers, *Voyager* introduced cafeteria messing, air conditioning and alternating current to the fleet.

Design Origins

The *Daring* class destroyer design evolved from a Royal Navy staff requirement of 19 June 1943 for a fleet destroyer. Initial sketch designs forecast a ship with a standard displacement of 3500 tons, a deep displacement of 4500 tons and a waterline length of 420 feet (127.27m). By the time the design was approved on 9 February 1945, the standard displacement had been reduced to 2630 tons, and was further reduced to 2610 tons by the decision to adopt all welded construction, aluminium alloy for minor bulkheads and braided instead of lead covered cables.

The new destroyers were to be armed with six 4.5 inch (114.3mm) guns in twin Mk6 RP 41 mountings, six 40mm Bofors guns in two STAAG and one MkV mounting, two sets Pentad torpedo tubes with ten torpedoes, and depth charge throwers and rails for seventy depth charges. The depth charges were later replaced by one Squid Mk4 ahead-throwing mortar.

A new design of propulsion machinery was approved to improve efficiency over the *Battle* class destroyers' plant and to provide a speed of 32kn with an endurance of 4400nm at 20kn.

Sixteen ships were planned, and orders were placed on 29 March 1945. Eight ships were subsequently cancelled. J Samuel White & Company were given the task of preparing the working drawings for the class, which were to be built from about 100 prefabricated units although the builders of four ships were allowed to employ composite construction.

Construction of the *Daring* class was delayed by the priority given in the early post-war years to merchant ships and it was not until 1948 that approval was given to proceed with the construction of all eight ships.

The RN ships were completed between 1952 and 1954, and all exceeded their designed displacement by some 220 tons, mainly due to increases in the weight of machinery.[1]

The Australian *Daring* Class Destroyers

In April 1946 the Australian Government gave approval to the RAN for the construction of four destroyers of the *Daring* class, in addition to the two *Battle* class destroyers (*Anzac* and *Tobruk*) then under construction. The destroyers were to be built by Cockatoo Docks & Engineering Co in Sydney and HMA Naval Dockyard, Williamstown, Victoria. Modernisation of the facilities in the two dockyards to enable them to build fully welded ships was also approved.

Preliminary drawings for the new ships were provided to the shipbuilders in the following month and formal orders were placed in December 1946.

The Cockatoo Dockyard order was placed under the conditions of the Wartime Agreement between the company and the Commonwealth, which provided that the shipbuilder be paid the actual cost of construction. Under the terms of this agreement (terms that continued with only slight modification until 1972), the company received a management fee based on turnover as reward (or profit). The contract conditions were largely the same as those for the construction of the *Tribal* class destroyers during WWII, and it was a condition of the order that the second destroyer not be laid down until the first was launched.

The shipbuilders were also advised of the conditions that applied to the building of these ships, as specified by the Department of Treasury:

> *The approval in principle given by Cabinet to the building of four additional destroyers of an advanced type may be regarded as authority to proceed with the placement of*

[1] Edgar J March, *British Destroyers: A History of Development 1892-1953*, Seeley Service & Co, 1966

orders to ensure the maintenance of shipbuilding capacity in Australia.
The main consideration involved in the maintenance of this shipbuilding capacity is its relation to the ultimate strength and composition of the post-war Australian forces, and the balanced allocation between the Service and Supply Departments.
Until a decision is reached on these matters orders to be placed under the Cabinet approval should not exceed the essential minimum necessary to maintain production capacity from time to time. The necessity to continue the work of constructing the destroyers should also be reviewed at regular intervals.[2]

These conditions were to have a significant impact on the pace of the project in coming years.

In addition to the order to build *Daring* class destroyers No's 1 and 2, Cockatoo Dockyard also manufactured the boilers and turbines and many other parts from kit lockers to watertight doors for all four ships. Working drawings were supplied by J Samuel White for the RAN ships, with Australian modifications incorporated by the shipbuilders.

Much of the armament and equipment for the ships was also to be made in Australia and the guns and torpedo tubes were manufactured by the Department of Defence Production in Bendigo.

Progress on Construction

In December 1946, it was intended that the first ship would be laid down at Cockatoo Island in July 1947 for completion in December 1949. Construction of the second would follow between July 1948 and July 1950. This programme was soon changed with the first ship to be laid down in March 1948, launched in March 1949 and completed in June 1950. Even this revised programme proved to be wildly optimistic, and progress was slow.

Work began in the mould loft at Cockatoo on 1 April 1947. By January 1948 there were delays due to the lead time required for the supply of turbine forgings, and although cutting of steel for the first ship began on 1 June 1948, by then the programme had already been extended for several reasons. These included the failure to obtain increased manpower in the numbers anticipated; the strike of Cockatoo Dockyard employees in February-March 1948 which involved all adult employees in a stoppage of one month and caused two months disruption; protracted deliveries of structural materials; delay in receiving working drawings from Britain, and extended deliveries of important forgings and castings for machinery.

By March 1950, further serious delays in the receipt of drawings, materials and equipment, together with more industrial disputes and manpower shortages in both shipyards extended the programme by a further year. Delays to the drawings were so bad that it was suggested at one time that the drawings being prepared by White's should be taken over and completed in Australia.

By January 1951 it was apparent that the delays would be felt for some time. Manpower was still a problem, and only one satisfactory steel casting, that for the HP turbine casing, had been received. At Cockatoo priority for labour was given to the reconversion of *Kanimbla* for commercial service, the modernisation of the *Tribal* class destroyer *Arunta* and the conversion of the destroyers *Queenborough* and *Quiberon* to Type 15 anti-submarine frigates.

By 1953 the financial limitations imposed by the Treasury were having a major influence on the speed of construction and the availability of funds was largely determining the rate of progress. It was not until the following year that recurrent shortages of labour were eased by the transfer of *Quiberon* to Garden Island for completion. The dates forecast then were close to those finally achieved, although there were still doubts that the armament being built at Bendigo would be ready to suit the outfit programme for the first ship.

Construction of the First Ship

Following the construction plans for the all-welded RN ships, the Australian *Darings* were constructed from three-dimensional prefabricated units. Lower hull units were constructed upside down, commencing with the forebody. After fabrication the units were separated and turned right side up for erection on the slipway. More extensive use was made of panels for the upper shell and decks.

Extensive use of aluminium was made for minor bulkheads and for some external

[2] Navy Office letter No. 117353 dated 19 December 1946 to Cockatoo Docks & Engineering Co.

bulkheads in the superstructure. This aluminium was riveted. The rivets work-hardened and tended to be brittle, with broadsides producing many flying rivet heads in later years. Whilst faying surfaces between the aluminium and the steel curtain and coaming plates were insulated with barium chromate tape, corrosion between the dissimilar metals was also to become a major problem.

Daring class destroyer No 1 was laid down on the No 1 slipway at Cockatoo Island on 10 October 1949. She was named *Voyager* and launched by Mrs RG Menzies, wife of the Prime Minister, on 1 March 1952. With the delays to the manufacture of equipment for the ships, *Voyager* was largely a shell, with a launch weight of 910 tons. Fitting out proceeded at a leisurely pace, with the ship finally completing contractor's sea trials in September 1956. She was handed over to the RAN on 11 February 1957 and HMAS *Voyager* was commissioned the following day.

Voyager had the following general particulars:

Dimensions

Length overall:	390ft (118.18m)
Length bp:	366ft (110.9m)
Breadth mld.:	42ft 10⅞in (13m)
Breadth ext.:	42ft 11¾in (13.03m)
Depth mld.:	22ft 6in (6.82m)
Lightship:	2606 tons
Standard:	2840 tons
Full load:	3532 tons

Machinery

English Electric geared turbines and two Foster Wheeler boilers driving two shafts.

Steam conditions:	650 psi, 850° F
Propellers:	12ft (3.64m) dia, 14ft 4in (4.34m) pitch, three blades.
Designed SHP:	54 000
Designed RPM:	300
Designed max speed:	33kn.

Armament

Main:	Six 4.5 inch guns in three Mk6 RP 41 Mod 1 turrets.
Secondary:	Six 40mm guns in two STAAG mountings and one MkV mounting.
Torpedoes:	Five in one Pentad mounting.
ASW:	One Mk10 mortar (Limbo).

On trials *Voyager* achieved 56364shp at 307.8rpm for a maximum speed of 33.34kn, an above average performance when compared to the RN ships. Fuel consumption at full power was 0.725 lbs/shp hr, 18.05 tons per hour or 1.842nm per ton. She was built without the benefits of the accuracy of the computer-driven plate cutting machinery available to shipbuilders today. Plates were cut from full size templates with the aid of a Travograph burning machine, and knowledge of welding contraction was less extensive than today. As built she was 3¾ inches (95mm) short on length between perpendiculars, and ¾ inch (19mm) narrow in beam, which is not a bad achievement for a first welded ship.

Voyager was the first RAN ship with air-conditioned accommodation and the first with cafeteria messing, a considerable advance by the standards of the day. The second two ships in the class were further modified and improved, notably by the deletion of the two 40mm STAAG mountings. The STAAG (Stabilised Tachymetric Anti-Aircraft Gun) mounting was a remarkable weapon. The mounting was fully self-contained with its own radar and fire control. It weighed 17 tons, was a maintenance nightmare and was somewhat unreliable. *Vampire* (completed in June 1959) and *Vendetta* (completed in November 1958) mounted six 40mm guns in two MkV twin mountings and two MkIX single mountings. The fourth ship, *Waterhen*, was cancelled in March 1953.

The three destroyers completed were expensive ships by the standards of the day. When the original sketch design was approved in 1945, the cost per ship was estimated to be £950,000. The Royal Navy ships actually cost about £2,282,000. *Voyager* cost £A2,949,092 (excluding government furnished equipment). The cost of preparatory work at Cockatoo for all ships (mainly working and as fitted drawings, lofting etc) was £A439,085. *Vampire* cost £A3,309,856 (excluding GFE). The boilers and turbines (four ships) cost £A1,946,715. The high cost is not surprising in view of the construction history.

Service Life

Voyager served with the Far East Strategic Reserve on six occasions and frequently escorted the aircraft carrier HMAS *Melbourne*, a role often undertaken by the RAN *Daring* class destroyers. She was sunk in collision with

Melbourne off Jervis Bay on the night of Monday 10 February 1964 with the loss of 82 lives. Her sister ships had much longer and happier lives, and today *Vampire* remains a popular exhibit at the Australian National Maritime Museum in Sydney, a fine example of the last British destroyer design of WWII.

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About the Author

John Jeremy was the last Chief Executive Officer of Cockatoo Dockyard. He spent his working life on the island, beginning in 1960 as an apprentice ship draughtsman and then qualifying as a naval architect at the University of New South Wales. By 1978 he was in charge of all technical and production activities and was appointed Managing Director in 1981.

Maritime Interception Operations Screen Commander in the Gulf

Part 1 - Operation *Slipper*

By By Captain P.D. Jones, AM RAN

On 30 October 2002 I joined the *Arleigh Burke* class destroyer USS *Paul Hamilton* with a staff of fifteen officers and sailors to take over from Captain Peter Sinclair and his hard-worked team as Maritime Interception Operations (MIO) Commander in the North Arabian Gulf (NAG). Within twenty miles of *Paul Hamilton* were half a dozen Australian, British, US and Polish warships in some meaningful formation that was as yet indecipherable to me. While months of preparation and planning had been involved in our arrival I still felt daunted by this assignment. My first reaction to Peter's thorough handover was surprise at the amazing command task the RAN had garnered. This was mixed with the realisation that it was a job of unremitting pressure. Just as the all too brief but none the less complete handover was completed, and Peter and his team were whisked off by the ubiquitous Desert Duck helicopter all hell started to break loose with the sortie of an Iraqi patrol boat into our area.

Like many incidents I had been involved in my naval career, the training of all involved kicked in. After a few hours we had dealt with our first 'crisis'. In taking stock of the situation it was clear we had a lot to learn. There were more acronyms and procedures that you could poke a stick at. The concept of a battle rhythm for the staff had to be gripped as did the novel means of command and control called *chat.*

Chat involved ships using commercial software with all my ships joining in a *meeting room* with the CTG where reports would be made and orders given. Chat is great for shared situational awareness but there are complications. The staff of the next two levels in my command chain were also in the meeting room. In order not to encourage too much higher level scrutiny of the Task Group goings-on, one-on-one whisper boxes would be used between MIO Commander and individual ships. Finally, chat can be a bit of a vortex that draws eyes away from radar screens.

In initially taking stock of my new position as MIO Commander I was conscious that I had experienced similar feelings of when I took command of HMAS *Melbourne* back in 1998 - and things had worked out. In addition I had done MIO twice before, albeit in less demanding capacities. The other issue was That I was the Commander and so I better just get on with it.

While the first week proceeded at breakneck speed with Iraqi patrol boat activity in our area becoming daily fare and mass dhow breakouts to contend with at night, my primary aim was to get to know the key players. First, there was the Captain of *Paul Hamilton.* He was the thoughtful and most gracious Commander Fred Pffermann. He was much respected by his crew and was at the time demonstrating commendable leadership in the wake of the recent suicide of his Executive Officer. For all my team *Paul Hamilton* holds a special place, it was a terrific ship and our time in her was all too short.

In the carrier USS *Abraham Lincoln* resided my immediate superior Rear Admiral James Kelly, USN, Commander Cruiser Destroyer Group Three who was supported by Commander Destroyer Squadron (COMDESRON) 31 Commodore 'Buzz' Busby, USN. Buzz had the look of an old sea dog and was loved by all in his squadron. Although I was now also called a *Commodore* - being a Task Group Commander within the USN - Buzz still seemed like a father figure to me. Among other things we had a nightly chat by keyboard on the daily events. These became important introductions for me into the USN command system.

The USN command philosophy is quite different to the Australian. It is much more serious, focused, unremitting and with a no stuff-ups approach to operations. It was therefore important to get attuned to this. The one thing that I did not change was applying our philosophy of delegation. It is too ingrained in our ways and it works well. My relationship with Admiral Kelly would develop primarily through discussions on a secure voice circuit.

They would invariably revolve around the tactical assessment of the commander on the scene of an incident. In the early weeks there were many - the attempted Chinese built patrol boat imports into Iraq, the removal of Indian sailors from a smuggler because they feared physical violence from their Master, and the ramming of our beloved *Paul Hamilton* by a smuggler. The most common incident though, was Iraqi naval activity. These sorties were unprecedented and their intent was unclear. As such, all precautions were taken including missile-armed helicopters shadowing their every move. During all this one thing became clear. That to the USN, a new RAN command team was a completely unknown quantity. Only through your actions could confidence be built up with you and your team.

The other key plays in the NAG were the ships of the Maritime Interception Force (MIF). We were blessed by having the well seasoned *Melbourne* (Captain Steve McDowell) and *Arunta* (Commander Ray Griggs) still in theatre. Both ships were to complete over 300 boardings and were quite brilliant. They were soon joined by the oldest ship in the Royal Navy, the destroyer HMS *Cardiff* (Captain Tim Fraser, RN). *Cardiff* with her Royal Marine boarding parties and a capable operations team quickly gained a reputation for being a very smart outfit. I was to give Tim some potentially awkward tasks and his ship carried them out with style.

At the southern end of my patch was the UN holding area COMISKEY where merchant ships would be inspected. This was usually the preserve of a USN FFG. We initially had the USS *Reuben James* under Commander Ed Lester, USN. We called him the 'Professor' and his ship the COMISKEY university. The *Reuben James* team knew their way around every false bottom in the regular smuggler fleet, and we had them introduce new MIF ships to the delights of boardings. Ed was also quite astute and a fine seaman. He could be relied on to judge which ships had to be moved on before foul weather blew through, and what ships were trying on some scheme to be let go. Early in our time the tug *Gardennia* sank in very poor weather and his boat's crew did a fine job taking off the *Gardennia* sailors while they still could. Fortunately for me, *Gardennia* sank just before it drifted down onto the Sirius oil field.

The other players on the team were the Polish support ship *Kontraadmiral Xavier Czernicki* and the shore-based SEALs and Polish GROM Special Forces who would come out on assigned evenings from Kuwait and conduct boardings. *Czernicki* had been in the Gulf for a year to support the War on Terrorism and had acted as a mothership for SEAL teams. We refined her role to include assisting the COMISKEY Guard ship. A USN boarding team from one of the larger US ships would embark in *Czernicki* and this worked extremely well.

The ships in the MIF were therefore a polished group, with not one weak link among them. I was to learn that one of the strengths of a multinational force was that it was rare to be sent a dud ship. It was important, however, to work out their particular strengths.

For my command team the learning curve was steep indeed and they stuck to their tasks admirably. Very early in our tenure it became clear that we were going to be at sea for an awfully long time. Our rotational relief was Commodore John Peterson, USN, and his DESRON 50 staff, but they were hunkered down in Bahrain planning for the possible war against Iraq. It was only the first week of November and the earliest we could expect to get some shore time was in January. This meant that my team members had to go to Bahrain by helicopter for a weekend break every now and again. Unfortunately this did not extend to me, since it did not fit in with the USN view of command. Instead the issue had to be managed in other ways, such as having a weekend onboard and letting my deputy, Commander Mark McIntosh, run the show. I watched with considerable pride as my scratch team, which included no watchkeeping PWO, gained confidence in employing multiple ships, aircraft and seven different types of boarding teams to counter mass dhow breakouts. In a slightly surreal touch, from my cabin I could watch the boardings of smugglers at sea or the movements of trucks on the roads of the Al Faw Peninsula from a helicopter-borne video camera.

Within a few weeks the first of the many changes in the guard took place. I shifted to the destroyer USS *Fletcher*, while *Anzac* (Captain Peter Lockwood) and *Darwin* (Commander Aaron Ingram) replaced *Melbourne* and *Arunta*. In early December the carrier battle group changed out and the USS *Constellation* arrived. In short order I had a new boss, Rear Admiral Barry Costello, USN, assisted by COMDESRON 7, Commodore Mark Balmert, USN. In addition there was a new clutch of ships - *Valley Forge, Milius, Thatch* and

Higgins. It is a naval truism to say that there are dramatic changes when a new battle group arrives. It is a testing experience, and one I would not like to do often. But on the whole it was an experience that we benefited from. Among other things we ended up with some new procedures and changes to communications. By this stage of course the perception of the MIO Commander was different. He and his team had effectively been in the NAG forever. This brought a bit more freedom to manoeuvre in decision making, something which is always seized upon and jealously guarded.

Operationally the effect of Ramadan was to dramatically slow the smuggling traffic. In addition the new carrier group had a more relaxed view of Iraqi patrol boat movements, which now had all the hallmarks of routine sovereignty patrols. This relaxation was just as well, for my team commenced a major leave swap out and multi-skilling became the order of the day. In mid December we joined *Milius* as *Fletcher* finally left the Gulf for Fremantle and a crew swap.

Milius, under Commander Jeff Harley, USN, was an eye-opener. She was a reduced manning trials ship and carried 23% less crew. To still achieve operational effectiveness work practices had been reviewed from first principles, while labour intensive equipment had been replaced where possible. Some of the spare space had been turned into additional gyms and an internet café. Although the bells and whistles one normally associates with the USN had gone, the ship was the cleanest I have ever seen, with even brass fire nozzles gleaming. This was achieved by everyone from Lieutenant Commander down owning a part of the ship and cleaning it for 30 minutes each morning. The CTG staff got swept up in this and we also had our space to maintain.

Operationally, *Milius* was important for us. Commodore Balmert was keen to let the USN boarding teams board dhows. Until now this had been the preserve of the US Coast Guard or SEALs. This had been a major limitation and placed a huge burden on the RAN and Royal Marine boarding parties. So began, very slowly, the introduction of USN boarding parties into the front line. Great care was taken not to alarm the more conservative elements in the USN about this development. As time went by we quietly accelerated this process with USN teams operating with RAN teams and they were even hosted in *Anzac* for a couple of days. This development brought great flexibility. Once, when assets were short and *Anzac* had an unserviceable radar, I embarked *Anzac*'s boarding party in *Milius*, left *Milius* in the front line and sent *Anzac* into COMISKEY.

By mid December it was clear to many in the MIF that war with Iraq was a high probability and we had better start preparing ourselves. In Part 2, I will discuss the MIF's preparations and our execution of combat operations.

About the Author

Captain Peter Jones joined the RAN in 1974 as a Cadet Midshipman. He is a gunnery officer by specialisation. His postings have included Director of Doctrine, Tactics and Operational Analysis at the Canadian Maritime Warfare Centre, Commanding Officer HMAS Melbourne and Director of Navy Strategy and Futures. He is the Commander Australian Surface Task Group and in that capacity he commanded the RAN Task Group in the Gulf from October 2002 - April 2003.

The Royal New Zealand Navy – Looking to the Future

By Rear Admiral Peter McHaffie, OBE RNZN

I recently addressed the new staff course at the NZDF Command and Staff College. I started by explaining that as CN, my command role is to guide our Navy into the future. The higher up the command chain we go, the further ahead every leader must look. All leaders, throughout the Navy, must strive to adapt and shape our Navy for the future.

NZ is a maritime nation and the RNZN will continue to play a full part in the present and future security of our nation and our region. We are in a business where there is a 30 year cycle for capabilities. There is a similarly long cycle for human capital. Although we are guided by government policies (which may last for, say, 6-10 years) and even though there is a Departmental focus on Base-line Funding and annual Purchase Agreements, the responsibility for the long term stewardship of the RNZN, still rests with those of us in the Navy.

Even though the *Anzac* Ship Project is still turning out new frigates for the RAN, for us in the RNZN it is time to stop thinking of our *Anzac* frigates as new. HMNZS *Te Kaha* is already over 5 years old, and *Te Mana* is into her fourth year since commissioning. In addition to our *Anzac* frigates, our Government is committed to acquiring a new family of ships for the Navy - the ships of Project *Protector*.

The new ships haven't begun to take shape yet, but the project has progressed a long way. In October, an important milestone will be the delivery of tender documents from the 6 potential contractors, for the project team to assess and compare. With 20 year lifetimes (at least), the *Protector* ships will be with us for many years ahead. The junior officers and ratings of the Navy of 2030, have yet to be born, which underlines for me the importance of the RNZN planning and preparing for its future.

Asymmetric Warfare

The War against Terror continues and the NZDF is making contributions from all three Services to this campaign. In the RNZN we are proud of the effectiveness of our frigates and embarked *Seasprites* during their deployments to the UN-sanctioned multi-national Maritime Interception Operation. The MIO task group included Canadian, French, Greek, Dutch, Spanish, British, Italian and American ships, at times. Obviously the presence of our frigate, and now an RNZAF P-3K *Orion*, means NZ's flag is on the table among the nations committed to this campaign.

The task of the ships in the MIO is to search for and detain Taliban or Al Qaeda personnel who may be attempting to flee from Afghanistan or the neighboring regions. Our ships had to maintain constant radar and electronic surveillance of the sea around them; they had to track all the contacts, identify them and report them to the task group commander. Ships are then assigned to board and search the vessels. That means our frigate goes in close to the suspect vessel, demonstrating overwhelming potential firepower. They send a Boarding Party to muster the crew, search the ship's compartments and check the vessel's paperwork. For each Boarding Party, this places a premium on boatwork, face-to-face communication, cultural sensitivity and initiative.

Our frigates have a particular claim to make - we are one of the few navies among the MIO task group that undertook night boardings. This means the ship uses its own infra-red optics to watch the suspect ship, while our boarding parties wear individual night vision devices. An individual boarding may take as much as two hours to complete; our ships have been achieving seven boardings a day. That is, up to 14 hours per day may be taken up by conducting the actual boardings; the remaining time, of course, being spent on surveillance, reporting, then steering to intercept the next target.

For the RNZN the deployments were long, hot and professionally demanding. It was a high-tech task, and there was risk involved. It placed intense demands on our people. The key policy point is that our ships and people are relevant to an operational task that was not foreseen prior to 11 September 2001.

In fact it is interesting to look back at the number of times that NZ's ships have served on

operations in Middle Eastern waters. Starting with *Philomel* in WWI, and counting *Diomede* at the time of the Abyssinian Crisis in 1936, on average once every ten years the RNZN has had to deploy ships for operations in that region. This rather surprising statistic underlines the importance of events in the Middle East to NZ, but also underlines the versatility and responsiveness of our warships.

It is important to remember too, that in our own Pacific region tensions also exist. Our ships have been called on before, and may yet be called on again, to enforce peace and build security among our nearer neighbours. The Navy provides our nation with a very flexible series of options when crises occur.

Today's Navy

To illustrate this point about versatility, let me quickly run through what NZ's ships are doing this austral winter:

- *Te Mana* has completed a naval diplomacy visit to India, on her way home from the MIO.
- *Te Kaha* is working up again, after her post-deployment maintenance availability.
- *Canterbury* had been working around NZ and the South Pacific; combining training with regional diplomacy.
- *Manawanui* and the Operational Diving Team are now returning from Singapore, where they took part in Exercise *Flying Fish* and a number of bilateral MCM and diving exercises. The Five Power Defence Arrangements, incidentally, remain one of NZ's major on-going defence commitments.
- *Endeavour* is under (unscheduled) maintenance - after operating in South Pacific and Australian waters.
- *Resolution*, our survey ship, remains hard at work surveying - and training - around our coasts.
- Our Inshore Patrol Craft were active in support of other government agencies - the Ministry of Fisheries, Customs, Department of Conservation and on occasion the Police. Fisheries enforcement is a major part of their work. The IPCs also continue to support our Volunteer Reserve Divisions in the main cities.

This range of tasks illustrates the demands placed on the RNZN by other branches of government, in addition to the demands of on-going naval training and joint operations.

Maritime Policy Development

The NZ Government's key defence objectives are:

- to defend NZ, our territory, EEZ, resources and infra-structure
- to maintain our close defence partnership with Australia
- to maintain security in the South Pacific
- to play an appropriate role in Asia-Pacific region, including fulfilling our FPDA commitments
- participation in the full range of multi-lateral peace support and humanitarian operations

These objectives have been reasonably consistent over the past 15 years, through several changes of government. The policy background that leads to Project *Protector* stems from the *Defence Policy Framework* (June 2000) which set out the Government's defence policy objectives and provides high-level guidance as to the roles and tasks of the NZDF.

Subsequently the *Government Defence Statement* of 8 May 2001 called for a practical naval fleet, matched to NZ's wider security needs. The *Statement* directed a study to identify the optimum composition of the future RNZN, taking into account the requirement for inshore and offshore patrol and the need for a sealift capability. The *Maritime Force Review - Key Findings* was promulgated in Jan 2002. It confirmed that the RNZN was comprised of five distinct naval force elements:

- the naval combat force
- the naval support force (*Endeavour* and the future MRV)
- the naval patrol force (the IPCs and future IPV/OPV)
- the mine countermeasures and diving support force (*Manawanui* and the Operational Diving Team)
- the hydrographic survey force (*Resolution* and the deployable SMB Adventure)

The *Maritime Patrol Review* had underlined the need for a more capable surface patrol force. It then identified the gaps in naval capability and proposed that these capability requirements could be met with a Multi-Role Vessel (MRV) and a number of Offshore Patrol Vessels (OPVs) and Inshore Patrol Vessels (IPVs).

Project *Protector*

This review process has been accepted by Government, which approved an ambitious new ship project, Project *Protector*. Cabinet directed

the Ministry of Defence (MoD), in consultation with the NZDF and other agencies, to canvass proposals from industry to meet the requirements at a cost not to exceed $NZ500m.

Work to date has involved developing requirements documentation, getting registrations of interest from industry, short-listing six potential suppliers of ships, and preparing tender documentation. The new ships will bring new capabilities and new opportunities for the RNZN. But it important to realise that they are not replacement ships; rather, they are additional ships to fill in the capability gaps of our present fleet.

There are a large number of stakeholders in Project *Protector*. In addition to the NZDF, some ten different government departments and agencies all have an interest in the project. Consultation with the stakeholders has been an important process for developing the user requirements documentation - and consultation will continue throughout the acquisition process.

Capabilities Required

Tactical Sealift - to provide both military and civilian sealift to support NZDF operations and disaster relief/humanitarian assistance activities. The term tactical sealift is best described with an example: the transport of Army vehicles, equipment and stores from a NZ port to Darwin is considered to be strategic sealift, the transport of troops, vehicles, equipment and stores from Darwin to the beach at Suai, Timor Leste was an example of tactical sealift.

Emergency Response - the capability to respond to search and rescue, medical evacuation, Civil Defence assistance in NZ and disaster relief/humanitarian assistance requirements. The capability to respond to these types of incidents is part of what the Navy does already, however the *Protector* fleet will provide greater capacity to respond through providing more hulls and the sealift capability.

RNZN Sea Training - the retirement of *Canterbury* in 2005 will mean in the loss of the RNZN's primary sea training platform. This training role will be taken on by the MRV (and to a limited extent the OPVs) for generic sea training: damage control, seamanship and mariner skills, aviation and navigation. At-sea combat training will need to be conducted in the *Anzac* frigates.

Inshore and Offshore Patrol - the *Maritime Forces Review* concluded that NZ has an annual requirement for 950 sea days for inshore, and 420 sea days for off-shore patrol. This number of sea-days may be achieved by the new vessels with, perhaps, adopting a multi-crewing concept.

Antarctic Waters - there is a requirement to protect NZ's interests in the Ross Dependency and to meet our obligation to the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). Deep South patrols will require a vessel with a degree of ice-strengthening, to safely navigate in that environment. The cost of ice-strengthening will be sought and a final decision on this capability will only be made after this information is available.

Acquisition Process

At the end of May these six short-listed companies received the Project *Protector* Request for Proposal (tender) document:

- British Aerospace Systems
- Blohm and Voss
- Damen Schelde ADI
- Singapore Technologies Marine
- Tenix Defence
- Vosper Thornycroft

In September 2003, the 3-4 month evaluation process will commence. This will be a complex exercise as there are three different vessel types to evaluate, a funding cap to work within, and a large number of stakeholders each with their own expectations. It is expected that the evaluation will be completed in early 2004, at which time contract negotiations can commence. Contract award is envisaged to take place in mid-to-late 2004. The delivery schedule for the *Protector* fleet will not be known until the contract is finalised.

***Protector* Fleet - Ship Specifications**

Rather than prescribe a product, the functional and performance specifications describe what we want to do, and where we want to do it.

Project *Protector* Fleet Characteristics

MRV	OPV	IPV
Operating environment includes NZ EEZ, Southern Ocean, SW Pacific, Australia, SE Asia and the Asia Pacific region	Operating environment includes NZ EEZ, Southern Ocean, SW Pacific and Australia	Operating environment is the coastal zone (0-24nm) of the NZ EEZ
Range 6000nm	Range 4000nm	Range 2000nm
Endurance 40 days	Endurance 21 days	Endurance 7 days
Max speed 17-20kts	Max speed 22-24kts	Max speed 22-24kts
Capable of underway replenishment	Capable of underway replenishment	
Surveillance ops to top of sea state 7	Surveillance ops to top of sea state 6	Surveillance ops to top of sea state 5
Two sea boats (RHIBs)	Two sea boats (RHIBs)	Two sea boats (RHIBs)
Sea boats ops to top of sea state 4	Sea boats ops to top of sea state 4	Sea boats ops to top of sea state 4
Full aviation facilities	Aviation capable	Vertrep capable
25mm gun plus 50 cal MGs	25mm gun plus 50 cal MGs	50 cal MGs
Day/night surveillance	Day/night surveillance	Day/night surveillance
C2 suite consistent with MRV roles	C2 suite consistent with OPV roles	C2 suite consistent with IPV roles
Training bunks for 35	Additional 30 bunks for contingency ops or training	Additional 12 bunks for contingency ops or training
Military sealift - based on an Army Heavy Company and associated vehicles, equipment and stores support for 30 days - 250 personnel, 315 lane metres and up to 33 containers		
Ship-to-shore transfer system to enable offload to shore of embarked force and cargo		

Support Arrangements

The tendering strategy places more emphasis on contractor delivery to a capability-based user requirement. The introduction of the *Protector* fleet will provide the opportunity to look at alternative and innovative approaches to the business of maintaining and supporting our ships.

- Extensive use of COTS technology: as the *Protector* vessels will not be required to meet the stringent standards of combat ships there is more scope for the use of commercial designs and commercial equipment fits.
- Use of Classification Society Rules: these ships will be built to a Classification Society set of rules and maintained in class, as the RNZN does with *Endeavour*. Project *Protector* marks a significant move away from Naval Engineering standards to a more generic Classification Society Rules that are administered by Lloyds but include safety considerations like SOLAS and MARPOL but also naval requirements like shock, weapons and sensors safety considerations. At the moment *Endeavour*, *Resolution*, and *Manawanui* are in commercial class.
- Option for Tenderers to offer through life support options: we will be seeking a high availability from these vessels, and the responses to the Request for Proposal will include proposed maintenance and support arrangements to achieve this availability.

Sailors for the Future Navy

The immediate challenge is the increase in our fleet, by the acquisition of the Project *Protector* ships. The planned ships are **not** replacements; they are **additional** ships, to fill gaps in our capabilities. That means from, perhaps 2006, we will have more ships at sea. New technologies

can reduce the overall manpower requirement, yet the likely operational tempo may mean multi-crewing of these ships. And high-tech ships don't need a lot of untrained ordinary seamen, they need well-trained and experienced Leading Hands and Senior Ratings. We continue to strive to build our pool of suitable future crews.

- **Innovative manning solutions:** high availability means lots of time at sea, therefore we will need to explore ways of achieving the required sea days and also work within the 'Pers Tempo' guidelines. Whilst overall personnel manning numbers are not expected to increase greatly, the overall skill level required will increase. Multi-crewing is an option. Innovations could include use of the new Non-GLX bridge watchkeeper scheme, where WO's and JO's of all trades are given Grade 3 watchkeeper training to allow them to fill limited watchkeeping positions.
- Technology will be used to reduce watchkeeping requirements at sea but there will be a tradeoff ashore eg flats cleaning is now done by commercial cleaners in the *Anzacs*; the *Protector* ships will have even smaller ship's companies, but still the same cleaning and general duties. The use of technology to maximise remote engineering - ie video links to assist diagnostics, remote log-on to machinery control systems - will move support services ashore and may provide an opportunity to re-design the concepts of support branch structure.
- **The Role of the RNZNVR:** let me note the importance of the RNZNVR; a small but nationwide source of willing staff. The RNZNVR currently has two key roles: NCS and MCM, but their future is under study. Perhaps the new Reserve task could be to provide 15% of the future OPV & IPV crews. The VR is likely to change focus and alter their current patterns.

Naval Excellence

Change is happening and happening fast. Therefore in every part of the RNZN, we must continue to aim to achieve our best. We share a corporate goal of achieving excellence in our own business practices. Our ships are regularly tested - and found to do well - with our operational abilities. And it is on operational tasks, such as Operation *Enduring Freedom*, that the effectiveness of our training and preparations is proven. Our capacity to achieve our best has a direct impact on the value and capability of our nation's Defence Force.

The Far Horizon

Air Marshal Ferguson, the CDF (NZ) has pointed out that contemporary military operations are now much more complex, and across a wider range of activities than ever before. Jointness has implications and benefits for the NZDF's part in international military operations. Perhaps we need only look at Iraq, where the coalition forces have had to change from full scale, three-dimensional warfare to nation-building and internal security, with no lessening of their alert state - and, it must be said, a huge increase in uncertainty. Military roles and missions now include:

- broader efforts to defuse crises
- peacekeeping is wider than just cease fire monitoring
- transnational security challenges
- confidence building

Jointness means a trend to reduce the boundaries between military services, but it also has benefits for inter-agency activities with other branches of our own government. Yet the military way ahead for the NZDF will continue to centre on the three armed Services undertaking:

- realistic testing, training, and exercising
- a range of military tasks
- peace enforcement & combat
- providing mission-capable units

This deserves to be emphasised: the way ahead for the NZDF is still a military way ahead. We are not becoming a force of tree-hugging, school-painting, friendly policemen. The NZDF has distinct military tasks and the demands of the future will ensure our requirement to train and prepare for combat operations remains at our core.

Of course, the Navy is already playing a full part in jointery; we have made postings to the HQJFNZ a priority for our career managers; we have committed additional people to joint activities whenever possible and our operational ships are permanently assigned under command of the HQ Joint Forces NZ. However, the joint arena is still a new and developing area for the NZDF, hence I aim to encourage the Navy to find more ways of seeking the welcome synergies that lead to the Joint Effect. A couple of examples:

- the RNZN has a long-established relationship with the RNZAF for the operation of our maritime helicopters
- earlier this year, the former Hydrographic Office was transformed into the Joint Geospatial Support Facility, with the responsibility for maps, charts and geographic intelligence throughout the NZDF

Also, *Canterbury* embarked a Forward Observer Party from 16th Field Regiment for TASMANEX 03 in an opportunity to practice and improve Naval Gunfire Support doctrine. Naval gunfire support proved effective in Southern Iraq, of course. It is possible that there may be future developments for the Navy's fire support capability for forces ashore. The Government's *Defence Policy Framework* included the need for fire support capabilities, and, the need to remain up to date in technology and doctrine. The possible acquisition of PGM for our frigates' 127mm guns could go a long way to meeting the indirect fire support requirement, for example.

It is relevant then that in the RNZN we also lift our sights to the more distant horizon and think of the Navy beyond Project *Protector*. The Navy in 20 or 30 years time is likely to have highly automated warships with small ship's companies - ocean-going, blue water ships capable of serving our nation throughout the Asia-Pacific region.

Equally as importantly, the Navy itself is likely to change - shore-based simulators, perhaps multi-crewing for the future ships, and different rank structures. The difference won't be so much in visible material - some of our ships will still look familiar.

To attain this Vision there are some things we have to do much better tomorrow than we are doing today. We are going to build an excellent family of ships, which are better suited to NZ's broader needs. But in parallel we will need to drive **systemic** excellence throughout our systems - Human Resources, Capability Development and into our Business Processes - that journey has begun. But beyond Project *Protector* there is also a significant **stretch goal** just out there on the horizon. We are trying to take a long view, and bring that something just over the horizon into focus. The size and shape are not yet particularly clear, but we start with the assumption that the Government of that future day - in 2020 or after - will still want a blue-water, warfighting, naval capability.

My personal vision is that the RNZN of 2020 and after may have:

- two updated *Anzacs* in service, but perhaps two replacements under discussion
- *Endeavour*, or a double-bottom hull replacement
- the, by then, 12-year old, MRV
- 2 or 3 OPVs and a hydrographic survey ship based on the OPV design
- a diving support ship - possibly an IPV or OPV derivative?
- and at least 4 of the new IPVs.

My aim is that the Navy of today will discuss those things we can and must reshape if we are to achieve that future, and remain a credible and viable navy. The coming changes won't alter the fundamentals - NZ is an island nation and the RNZN will remain relevant to our nation's needs. Our nation's direct responsibilities at sea remain vast - stretching from the Antarctic to the Equator and from mid-Tasman Sea across to nearly Tahiti.

The RNZN is an important component of the NZDF; our tasks are relevant to the government's goals and our ships are versatile. Our people are flexible and hardworking - we are achieving a lot with relatively few people. We have a clear track record of responsiveness and capability, and we have a proud heritage of multi-national operations and proven high standards. If we are to retain the concept of a blue-water, war-fighting navy as part of NZ's future, then we will have to keep our vision clear and our sights high.

About the Author

Rear Admiral McHaffie is the Chief of Navy, Royal New Zealand Navy.

Naval Gunfire Support for the Assault of the Al Faw Peninsular

By Lieutenant Commander Ivan Ingham, RAN

The purpose of this article is to provide a brief insight into events leading up to and the NGS firings conducted by HMAS *Anzac* during Operation *Falconer*.

Anzac departed Fleet Base West for passage to the Middle East Area of Operations (MEAO) and a second deployment to Operation *Slipper* at the end of October last year (2002). Following our return to the Gulf theatre, it was soon obvious that the nature and conduct of these Maritime Interdiction Operations (MIO) against Iraq had changed. Whilst the surveillance and boarding tasks undertaken by the RAN, RN and the USN in the Northern Arabian Gulf (NAG) remained broadly the same, the types of vessels, traffic patterns and the tactics employed had continued to evolve. As such, *Anzac* and the other vessels involved in Boarding and MIO were kept extremely busy during the harsh Gulf winter through Ramadan, Christmas and the New Year. Shortly thereafter, it soon became evident that significant developments were occurring on the international stage and that the political and military landscape was about to undergo some fundamental changes. This led to a flurry of attempts by vessels to trade (whilst some of this was authorised, the vast majority of this activity was illegal trafficking) and a sharp increase in Iraqi and Iranian naval movements. This challenging level of MIO activity was tackled concurrently with unit preparations for an impending conflict with Iraq and whilst countering a developing threat from asymmetric attack and sea-mines.

Table-top tactic sessions and contingency planning in January led to a busy internal training programme during February and early March. Designed to ensure that all our final organisational, materiel and personnel preparations were tested and correct. Individual training covered a wide variety of activities. NGS, Close Range, Small Arms firings, Damage Control, First Aid, Rules of Engagement, International Law, the Geneva Convention and countering the increasing risk of Biological and Chemical Attack were all key areas for our focus.

In early March, our expectation of NGS tasking in the event of conflict increased with a visit by Major Peter Boyce RA(V). Appointed as the UK Naval Gunfire Liaison Officer (NGLO) from 148 Forward Observation Battery, Peter was attached to 3 Commando Brigade (UK) for Operation *Telic* (the UK codename for our Operation *Falconer*). Arriving by *Lynx* helicopter from the Type 22 frigate HMS *Chatham*, we discovered that he had come to provide us with a detailed brief on the UK concept for future land operations and outline the over-arching Artillery Plan and their requirements for NGS. Afterwards, we took the opportunity to highlight the strengths and advantages of the *Anzac* class frigate in NGS. Gun reliability, weight of ordnance (NEQ), and maximum effective range were all obvious significant advantages our 5 inch system enjoyed over the RN Vickers 4.5 inch gun. Additionally, *Anzac* had a greater magazine capacity than HM Ships *Marlborough* and *Richmond*, the two RN Type 23 frigates already earmarked for NGS tasking, and a shallower draught than the Type 22 frigate *Chatham* (the other RN unit identified to participate) and both Type 23 frigates. I believe it is fair to say that although Peter was unfamiliar with our Gun and Combat System, he was soon impressed by our fine ship and its people and after spending a few periods with us soon became a great supporter and friend of *Anzac*.

As March drew on, we practiced our drills, refined our procedures and spent a great deal of time proving our communication nets, paths and equipment. The maintainers progressed with important fine-tuning and some lengthy negotiations resulted in the resupply of a quantity of 5 inch HEPD war-stock ammunition from the USN which ensured that our magazines were optimised at their maximum capacity.

We also took the opportunity to host an overnight visit by a team of five specialist spotters who had been embarked with elements of the Amphibious Forces in the RN aircraft carrier HMS *Ark Royal*. These spotters, also from 148 Battery had been assigned to 3 Commando Brigade and would provide the interface between bombing aircraft, artillery units from shore and naval bombardment units at sea. For the next 24 hours, we conducted a

variety of NGS drills whilst we conducted boardings and patrolled the mouth of the KAA. This period practising advanced training provided us with the ideal opportunity to demonstrate our skills and allowed to us to make strong bonds with this specialist team.

On Thursday 13 March, we departed the northern most patrol area and returned to the UN stop and search area COMISKEY to assist with UNSCR 986 compliant boardings of large merchantmen. Two days later on Saturday 15 March we departed COMISKEY to rendezvous with the UK tanker RFA *Orangeleaf* for what was likely to be our last opportunity to replenish fuel and water prior to conflict. Afterwards, we passed through 'the Dugout' live firing area to conduct a final live NGS and Alarm Barrage practice firing.

Further signs of the impending conflict occurred on the afternoon of Monday 17 March when 40 cargo dhows responding to reports from the BBC and CNN that offensive action was about to commence, attempted a mass-breakout from Iraqi territorial waters. The Indian crews later told our Boarding Teams that they were escaping Iraq in fear for their lives. Our task for the next 24-36 hours was to check all these vessels to ensure that none were carrying Iraqi military personnel or contraband (particularly mines, weapons, ammunition and explosives). Once boarded and deemed clear, the vessels were instructed to proceed south and clear of the NAG.

During the morning of 18 March we learned that our Prime Minister had announced the Government had authorised CDF to activate those ADF units already deployed to the Gulf, as part of any future US-led coalition operation against Iraq. Later that day, the Navigating Officer (LEUT Brendan Horn), NGLO and I visited *Marlborough* to call on Captain Anderson RN and his warfare team to discuss the conduct of any NGS tasking. (Although *Anzac* was considered the primary NGS unit, *Marlborough* had national communication paths vital for connectivity with UK Land and thus not available in *Anzac*. Therefore as the senior UK ship, *Marlborough* was nominated as the lead unit for any NGS tasking.) The meeting allowed ideas to be exchanged and plans for the transit north-west through the KAA waterway into the Fire Support Areas (FSA) to be finalised. The meeting also proved crucial for determining our plan with respect to the timeline and tactical aspects including command, control and communications.

On Wednesday 19 March *Anzac* was directed to conduct a surveillance patrol of Iraq's two large installations, the Min Al Baker Oil Terminal (MABOT) and the Khawr Al Amaya Oil Terminal (KAAOT). This was an important task, as it was believed that Iraq had placed a sabotage team, probably Special Forces, onboard the terminals. (Sabotage of these platforms would almost certainly lead to a massive environmental disaster that would affect world opinion and impact adversely on coalition maritime operations). *Anzac* remained between the terminals until late on 20 March when we witnessed coalition Special Forces successfully assault and secure these installations. During this period we also witnessed the start of the Tomahawk land attacks and return Scud missile firings from Iraq towards Kuwait. Against this background the NGLO provided a final brief for the Command team on the plan to capture the Al Faw Peninsular by 40 and 42 Commando Royal Marines (UK).

At approximately 2100 we were informed that H-Hour (the start of the pre-planned timeline) was at 2200 when we were to be at 30 minutes notice for NGS. A few hours later at 0050 on Friday 21 March we were detached to rendezvous with *Malborough*, *Chatham* and *Richmond*. Shortly after, at 0130, a sitrep pipe informed the Ships Company that we would soon be closing up our Cable Party, SSD and assuming Action Stations before starting our transit into the KAA for our passage up to Fire Support Area Juno.

By 0240 we were in NBC State One, Condition Patrol Alpha and had taken up a station 1000 yards astern of *Marlborough* who was employing her mine avoidance sonar. Both units then started to creep slowly north. Earlier, *Chatham* and *Richmond* had begun their journey up to the nearest FSA, Sword. A third and most northerly FSA called Gold was also available for activation if required. (Historians will recognise the names Sword, Juno and Gold from the D-Day Normandy landings of WWII).

Shortly afterward, at approximately 0330, an AC130 Gunship reported that it had detected an Iraqi PB90 patrol craft tracking south in the KAA towards us, which it subsequently engaged and sunk. We arrived in Juno at 0436 and after establishing communications with Spotter Number 1 from B Coy 40 Commando RM, who was located very close to the oil installation on the south-eastern tip of the Al Faw Peninsular,

passed ship on station, guns up, ready for call for fire. In response, the spotter reported that Bravo Company had *Good eyes on the area, that little resistance had been encountered, no movement on the military installation had been observed and that they had 2 Iraqi dead and taken 13 enemy prisoners of war.*

At 0558 *Anzac* received the first 'call for fire' against a military installation with 'own troops danger close' to the south of the target. We fired 6 ranging salvoes followed by a burst of 5 rounds for effect. Afterwards, the spotter reported 'Good Shooting' and that 'all rounds had landed effectively inside the installation'. About thirty minutes later, we were directed to conduct a 'Re-fire' mission at our previous target. We immediately re-engaged this target with a burst of 3 rounds which was also reported as 'successful'.

Shortly afterwards, *Chatham* received a fire mission at another target inside the same military installation. However, this mission was interrupted at 0655 when she experienced a stoppage resulting from a misfire. As we had been monitoring and shadowing this mission we had taken the precaution of entering and processing *Chatham's* target data and with our gun already assigned were able to immediately report 'ready on target'. We then followed with two bursts of 5 rounds when we were told to engage at 0656. Again, the spotter reported 'good shooting with the target successfully engaged'.

For the remainder of the day we remained on station in Juno with the Officer of the Watch working hard to provide weapon arcs across the bombardment area so that we could provide immediate back up to missions allocated to *Chatham* and *Marlborough*. Meanwhile, a large number of LUGM and Manta mines had been discovered in a tug and barge lying about two miles to our north-west, so we were ideally placed to act as a staging point for helicopters and RHIBs carrying EOD and boarding teams.

Shortly after sunset, the spotters reported that the marines were preparing their defensive positions and would only call upon us if they were attacked overnight. They informed us that they were going to secure their radios to save their batteries but asked us to maintain a good listening watch and requested that we stay at short notice to respond and be at immediate notice by first light the next day.

Early on the morning of Saturday 22 March we again closed up at Action Stations after receiving a report that three very fast moving contacts were closing from the north. Later, we learned that the contacts were US Special Forces and so we reverted to our modified defence watch manning. Later at approximately 1050, we were again called upon to provide fire support. This time the target was an Iraqi Type 59-1 field artillery piece that we engaged with 1 ranging salvo and a single burst of 3 rounds before receiving a report that we had destroyed the gun. Number 2 Spotter who was supporting D Company on the western side of the Al Faw Peninsular reported that '*Anzac's* rounds were again very accurate and very effective'.

Later that afternoon we received notice that the elements of 3 Commando Brigade were moving in very close to the main part of the Iraqi military installation and requested that we be ready to provide further fire support. Then at 1514, we were allocated a target in the Iraqi bunker complex, which we fired 7 single salvoes against before recording our data for future engagements. About fifteen minutes later, we were given a 'New Target' which we engaged by applying a correction from our previous target. A total of 3 ranging salvoes followed by a burst of 3 rounds were fired for effect. We then received notice that the Royal Marines were moving into position in readiness for a final assault on to the military installation.

Soon after we received instructions to Re-Fire against the bunker complex. However, after our first burst of 5 salvoes for effect, an error in the loading procedure resulted in a stoppage and a short interruption to our engagement. Nevertheless, the marines were able to continue advancing on to the target position, which they secured quickly and effectively without the requirement for any follow on bombardment. As the bunker complex was now secure, no further tasking was received and thus, *Anzac* had completed her last firing and the final NGS engagement of the conflict.

At 2150 that night the OC of the troops ashore sent the following message to *Anzac* and the three RN frigates:

> *Callsign P7O, Q0V and my manoeuvre callsign have now completed all initial tasks. The Al Faw Vegetation Belt has now been successfully cleared of all enemy and the Airfield and Military Installation are now both secure with no enemy resistance. Success was largely due to aggressive use of Indirect Fire assets and swift response of respective units that had a huge impact on the ground and shattered the enemy will to fight. Elsewhere on the Peninsular, friendly forces have achieved similar success although resistance was greater than anticipated from isolated pockets of enemy. On behalf of my C/S and P70, thank you for your swift response to 'Calls For Fire' and accurate shooting. Best Wishes to you all for a safe transit home. Bravo Zulu and Bon Voyage.*

In order to have a unit available for any contingent tasking, *Anzac* was asked to remain on-call in Juno overnight whilst *Marlborough*, *Chatham* and *Richmond* departed their respective FSAs and headed south. We remained on the Gun-Line for a second night before departing the next day to rejoin the coalition task force. Firing the first and final NGS rounds of this conflict, *Anzac* also fired the most missions and remained on the gun-line in the Fire Support Area for the longest period.

About the Author

Lieutenant Commander Ingham is the Gunnery Officer and AWO aboard HMAS Anzac.

An Elusive Lady: Darwin's Floating Dry Dock

By John Betty

There never were and, no doubt, there never will be, enough combat ships for a conflict involving seaborne forces deployed over the world's oceans. Having ships return to distant home bases every time they need docking for emergency or routine repairs is a luxury that no navy can afford. This was the challenge faced by the Allies during WWII in the conflict ranging over the vast reaches of the Pacific. The story of Darwin's elusive floating dry dock is a small part of the Allied response.

The Challenge

Before WWII, most navies were able to conduct their operations within easy reach of well-established bases to which they could retire to refit and replenish supplies. The Royal Navy had access to a worldwide network of dockyards and bases at strategic points such as Aden, Alexandria, Hong Kong, Malta, Simonstown, Singapore, Sydney and Trincomalee. The United States Navy was able to use naval bases at Pearl Harbour and at Cavite in the Philippines.

The nature and speed of the Japanese onslaught in December 1941 took the US, Great Britain and their allies completely by surprise. The Japanese occupation of the Philippines, Indo-China and the East Indies and their attempted expansion into the islands of the Central and South-East Pacific, meant that the Pacific Ocean itself, covering an area larger than the entire land surface of the globe, would become the main theatre of operations for the Allies in their strategy to defeat Japan by blockade, bombardment and direct assault.

With the loss of Cavite, Hong Kong and Singapore there were now no established bases for the Allied navies in the Pacific west of Pearl Harbour and north of Sydney. Initially this did not present too great a problem but as the Japanese expansion was contained and the focus of the conflict moved closer to Japan itself, the Allies were faced with difficult logistics and maintenance situations.

Development of the Modern Fleet Train

It was necessary, therefore, to progressively establish advanced bases in undeveloped harbours, supported by a seaborne logistics system that would allow the battle fleet to operate without having to return to home bases. The USN faced the challenge in the Pacific by expanding the earlier concept of a Fleet Train so as to provide all the facilities required to support a whole fleet operating in remote areas away from established bases. So was developed the modern Fleet Train comprising a large number of diverse ships and auxiliaries, such as replenishment aircraft carriers; aero engine and airframe repair ships; oilers carrying black oil boiler fuel, distillate and avgas; victual and armament store ships; submarine and destroyer depot ships; radio maintenance vessels; tugs; hospital ships; personnel accommodation ships; and, significantly, floating dry docks.

Advanced Bases

Some of the Fleet Train vessels, particularly oilers, carried out their replenishment tasks at sea with the Fleet but in the Pacific the Fleet Train, for the most part, occupied advanced fleet bases and anchorages within easy reach of the front line to which vessels could readily retire for servicing. On shore, temporary buildings such as hospitals, warehouses, wharves, repair facilities, workshops and accommodation for administrative staff, crew replacement, maintenance and stores personnel, were built to provide the land-based backup to the Fleet Train.

The Floating Dry Dock

The need for floating dry docks came into prominence with the development of these new Pacific Fleet Trains. At the time of the Japanese raid on Pearl Harbour, the US Naval Shipyard had only three such docks in service. By the end of hostilities, they had 156 floating dry docks with lifting capacities of up to 100,000 tons.

Routine dry docking is a normal requirement for all ships, whether military or commercial. The construction of permanent fixed dry docks is a time-consuming and expensive task, and in wartime the practical alternative is the construction of floating dry docks.

While they have a shorter effective life span and require more maintenance, they can be built

more rapidly and have one unique characteristic: mobility. This important dimension can be overlooked as the need to establish dry docks in advanced operational areas does not normally arise in peacetime.

During the early days of the Pacific War, the only available facilities for the dry-docking of vessels beyond the established bases at Pearl Harbour and Sydney were the old graving dock at Kangaroo Point in the Brisbane River (built in 1881) and a 1,000 ton capacity floating dry dock in Darwin Harbour. For the most part, RAN ships working with the US Seventh Fleet could and did use the facilities of the USN for minor servicing, but for major work the ships returned to Brisbane or Sydney.

Australian ships attached to the RN Far East Fleet were able to make use of the RN docking facilities at Trincomalee. But for servicing the smaller ships of the RAN working along the North Australian coastline and in the Timor and Arafura Seas, the floating dry dock in Darwin was a godsend.

Darwin's Elusive Floating Dry Dock

The air raid on Darwin on the morning of 19 February 1942 has become one of the defining points in Australian history, as it was the first time that the mainland had been attacked by a foreign aggressor. The news of the raid and its devastating consequences was withheld from the Australian public initially on security grounds and, with the later occurrence of more dramatic events, it faded into the background. It is only in recent years that details of the raid and of subsequent raids (64 in all) have gradually emerged.

Contemporary photographs of Darwin Harbour show, amongst the burning and sinking ships, an apparently unscathed floating dry dock. In this dock was the corvette HMAS *Katoomba*, firing steadily at the attacking Japanese planes with her single four-inch gun and two 20mm Oerlikons, the incident being graphically portrayed in an impressionist painting by Keith Swain.

In all the accounts of the raid that give a list of the ships in the harbour, there are several references to *Katoomba* and her reaction to the raid, but there is no mention of the floating dry dock itself. It was as if she did not exist. In making enquiries about this dock one came up against a blank wall. Who owned the dock? Why was it there? Where did it come from? Where did it go after the war? These were questions no one could readily answer. Tracing its history has been a lengthy and, at times, frustrating task but eventually a fascinating tale emerged about a 'much-travelled' lady and her 'stay-at-home' sister and their important role in WWII.

The Raid on Darwin

In the early hours of the morning of 19 February 1942, *Katoomba* was involved in a collision with the US Tanker *Pecos*, just outside Darwin Harbour. Holed on the port side and making water, she was in danger of sinking. Secured alongside her sister-ship HMAS *Lithgow*, she was towed into Darwin and immediately taken into the floating dry dock. The docking procedures had just been completed when the Japanese struck.

The Japanese attack came in two waves. The first wave, comprising 152 bombers and 36 *Zero* fighters flying off four aircraft carriers about 200 miles NW of Darwin, arrived over the city at about 9.30 a.m. The second wave comprising 54 land-based bombers flying from Sulawesi arrived at about midday. There are believed to have been 45 ships in, approaching or leaving the harbour on the morning of the attack, including 15 RAN ships, two USN vessels and one hospital ship. The remainder were supply ships, freighters and other commercial vessels. Ten ships were sunk and 13 damaged.

The dock and *Katoomba* were sitting ducks and extremely vulnerable. Nearly all the ships anchored near the floating dry dock were either damaged or sunk but for some unknown reason, apart from a single strafing run begun by a low-flying *Zero* but quickly broken off, the dock was not attacked.

RAN Floating Dry Docks

During WWII, the RAN had two floating dry docks built to service its growing fleet. The first, AD1001, was built by Evans Deakin and Co in Brisbane in 1941; the second, AD1002, was built by Morts Dock and Engineering Co in Balmain, Sydney, in 1944. The first dock was apparently ordered when the threat from the north became apparent; the second was most probably built to join the Fleet Train being assembled for the British Pacific Fleet.

The docks were built to a British design and had a maximum lift of 1,000 tons on a draught of 7ft 4ins (2.23m) and the maximum depth of water above the keel blocks was 16ft (4.88m). A diesel-powered generator was installed in the

port wall of the dock and a two-ton SWL (Safe Working Load) travelling crane was mounted on the starboard wall, making the docks largely independent of shore-based services. The time required to lower the empty dock and to raise the dock with the maximum load of 1,000 tons was 90 minutes in both cases. The docks were capable of being towed to any area.[1]

Floating Dry Dock AD1001

The first dock (AD1001) was built on the old Moar's Slip adjacent to Evan Deakin's shipyard in Cairns Street, Kangaroo Point, Brisbane.[2] Under construction at the same time on the slipway were the corvettes *Townsville, Launceston* and *Ipswich.* The floating dock was the third vessel to be laid down at the new shipyard, on 4 November 1940. *Rockleu,* a 1,200 dwt oil fuel lighter was laid down on 27 July 1940 and the corvette *Townsville* on 4 November 1940. At the time there was no plate shop at Kangaroo Point and the steelwork for the lighter, the dock and the corvettes was fabricated at Evans Deakin's works at Rocklea and transported by road to the slipways

The dock was launched on 24 April 1941. Following an acceptance test on 3 September 1941 involving the trial docking of the auxiliary minesweeper HMAS *Tambar* (456 tons, a coastal steamer commissioned by the Navy in November 1939), the dock was handed over to the RAN on 3 October 1941.

The Dock in Darwin

Immediately after acceptance, the dock left Brisbane (6 October 1941) under tow from the tugs *Curlock* and *Beaver* for Darwin via Cairns and Thursday Island, a tow of about 2,000nm, arriving in Darwin on 2 November 1941. Two other ships, *Coongoola* and *Moruya,* remained in company for the duration of the voyage.

It appears that HMAS *Westralia* escorted the vessels to Cairns and again for the final leg from Thursday Island to Darwin. HMAS *Maryborough* acted as escort from Cairns to Thursday Island. On arrival in Darwin, the dock was moored in East Arm about 800m SSE from Jetty Light.[3]

At the end of hostilities, her services being no longer required in Darwin, AD1001 was towed back to Brisbane in December 1945. The important part played by this largely overlooked unit of the RAN in the defence of northern Australia is shown by the 251 dockings carried out during the period November 1941 to September 1945.[4]

Details of the return tow have not been found but on arrival AD1001 lay for a period alongside the fitting-out dock at Evans Deakin's shipyard where she was built. In February 1947 she was handed over to the Commonwealth Department of Works and Housing for care and maintenance. Over the next five and a half years she was not used and was moored in various locations on the Brisbane River.

Transfer to Port Phillip

In 1952 the dock was leased to the Melbourne Harbour Trust for the construction of the concrete caissons for the breakwater extension at the Breakwater Pier. On 3 December 1952, after some delay due to unsuitable weather off the coast, AD1001 left Brisbane under tow from the RAN seagoing tug HMAS *Reserve* escorted by the frigate HMAS *Macquarie,* bound for the HMA Dockyard at Williamstown, Victoria, a passage of 980nm.[5] It was an uneventful voyage until the tow entered Bass Strait, some 70 miles east of Wilsons Promontory, when heavy seas and high winds were encountered, forcing the ships to heave to.[6]

The dock arrived in Williamstown on 15 December 1952, two days later than scheduled,[7] and was berthed at the Gellibrand Pier where she lay until January 1958. On completion of the assignment for the breakwater extension, the Department of Supply, on behalf of the Navy, advertised the dock for lease or sale. No offers were received and in March 1958, the Melbourne Harbour Trust purchased the dock and negotiated a 30-year lease with the Hobsons Bay Dock and Engineering Co (HBE). Renamed *MHT Floating Dock No. 112,* it had to be dry-docked itself every three years under the terms of the lease. It replaced the existing 64-year-old floating dry dock, which had been converted

[1] HB Owen, Report of the Superintending Naval Architect, Garden Island, Naval Architect, Design. 9 March 1966. EDCO House Journal, Vol. XVII, Evans Deakin & Co., Brisbane, 1957.
[2] EDCO House Journal.
[3] I Affleck, Australian War Memorial, personal communication, 12 June 1996.
[4] *HMAS Melville War Diary (Extract)* Australian War Memorial Archives, Canberra, AWM 78.
[5] *Courier Mail,* Brisbane, 3 December 1952.
[6] *The Argus*, Melbourne, 12 December 1952.
[7] *The Herald*, Melbourne, 15 December 1952.

from the timber hull of the barque *Habitant* by HBE and later damaged by fire.

However, by 1976 the cost of each dry-docking had risen substantially and with the decreasing revenue following the arrival in the port of the modern floating dry dock *A.J. Wagglen*, the cost of maintaining the dock was seriously affecting HBE's overall trading result. In June 1977, HBE bought the dock so that they could dispose of it and relieve themselves of the financial burden.

In August 1978, the dock was sold to Seico Shipyard of Singapore. On 28 March 1979, the dock left Williamstown under tow from the tug *Ginyo Muru*, bound for Kuala Belait in Brunei, and was last seen disappearing out through The Rip at the entrance to Port Phillip. No response has been received from enquiries to the port authorities in Singapore and in Brunei regarding the fate or present whereabouts of the dock, although there is an unconfirmed report that in 1996 the dock was owned by the Kuala & Belait Shipyard in Brunei.[8]

Her sister dock (AD1002) has been more fortunate and remains in Australian hands. She was built by Morts Dock and Engineering Co in Balmain, Sydney, in 1944 and on completion was handed over to the RAN. The war having ended before she could be assigned to a role with the British Pacific Fleet Train, she was moored at Garden Island. Here she still remains in service, now managed by Australian Defence Industries on behalf of the federal government. In 1993 she had a major refit and was considered suitable for service for some years to come. The fact that AD1002, is still in service at Garden Island, Sydney, suggests that AD1001 may also still be in commission. A photograph of the dock alongside Garden Island in September 2001, indicates that there is still life in the old dock yet.

Conclusion

AD1001 earned a place as an essential element in maintaining the RAN in northern waters during WWII, but she has received little acknowledgment. This is not surprising. Until quite recently, *Janes Fighting Ships* did not list naval floating dry docks, not even as fleet auxiliaries.

It is to our discredit that AD1001 may be still afloat, unrecognised and in foreign hands, only a few hundred miles from where she served with such distinction in the defence of Australia. She is probably one of the last, if not the last, remaining RAN unit that saw active combat service in WWII.

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About the Author

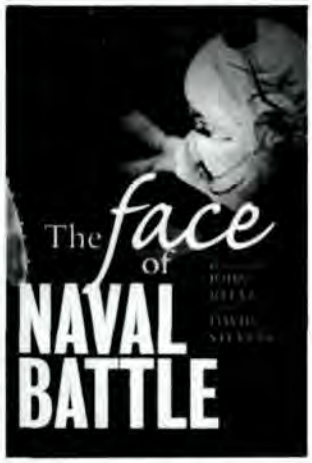
This essay won the Second Prize in the Naval Officers Club Literary Prize Competition, 2002. Unfortunately, John Betty died before the winners were announced.

AD1002 at Garden Island, 2001

[8] RC Leek, personal communication, 4 August 1996.

BOOK REVIEWS

The Face of Naval Battle: the Human Experience of Modern War at Sea



edited by John Reeve and David Stevens
Allen and Unwin, Sydney, 2003
xx, 363 pp., illustrations, index,
RRP: $39.95 softcover

This book is a series of essays based mostly on the papers presented at the second King-Hall Naval History Conference, which was held in Canberra in July 2001. The book's sub-title is *The human experience of modern war at sea*. My first reaction to receiving the review copy was 'at last!'

The introductory chapter by John Reeve increased my anticipation. I once worked for an Army officer who had been given the unenviable task of unifying three single Service organisations, while making significant savings. He recognised that the real challenge was to develop a unifying culture and we spent a considerable amount of time working on this. He understood that he had to learn about both the Navy's and Air Force's culture and why they had become what they had. He used to bemoan that while he had little trouble in developing a working appreciation of Air Force's, Navy's was initially a total mystery to him. The culture was so unlike any other culture he had come across and so unfathomable that he was having great difficulty in understanding what made Navy people tick. I wish I had had this book's introduction to give him to read. It's the best elucidation of Navy's culture and why it is the way it is that I have ever encountered.

I've been told this General's difficulty in comprehending, let alone empathising with, Navy's culture is common to many who are in a position to affect Navy's interests. A better understanding by the general community can only be a good thing. Navy people therefore would do well to think more deeply about their culture, why it is the way it is and how they can best portray it. This introduction will help in that exercise.

As can be expected in a book based on conference papers, the quality of the contributions varies considerably and it doesn't quite live up to the promise of the introduction. For me, the book's biggest shortcoming is that some of the chapters hardly even pay lip service to the broad theme of the human experience of modern war at sea - something I was anticipating. In addition, too many of those that do look at the human dimension are little more than descriptive in nature. While there is nothing wrong with the occasional descriptive piece, and I did enjoy reading some of these chapters, particularly Peter Stanley's account of J.E. Macdonnell, there are too many of those types of chapter for my liking. They provide virtually no insights into how or why people thought and behaved the way they did. Nor is there much critical analysis, and the conclusions too often seem somewhat contrived and included for the sake of inclusion, rather than to add anything to the essay. For me they didn't pass the 'so what?' test. Those are the disappointing aspects of the book.

There are some excellent chapters, however. The pick for me is the one by Michael Whitby on Commander A.F.C. Layard, DSO, DSC, RN. I became engrossed by Whitby's account of the challenges Layard faced commanding escorts and escort groups during the Battle of the Atlantic, not least of which was his doubts about his own ability. Added to that he was a Royal Navy officer commanding Canadians, and this proved quite a culture shock but, like the General I mentioned above, he recognised that he had to work with the culture, rather than against it. This chapter should be compulsory reading for anyone who aspires to sea command, indeed to any position of command or senior management.

I found the chapters by Peter Overlack on Graf Spee, Lee Cordner on his command experience, and David Stevens on perceptions of the enemy at sea the best of the rest. Others will probably have their

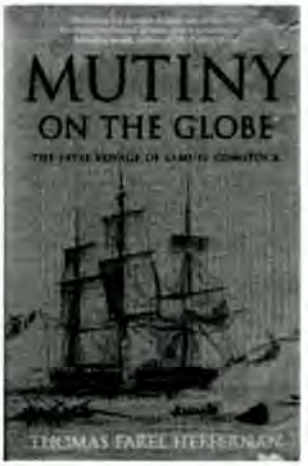
own favourites.

There is probably something for everyone in the various contributions. It would be a very useful book to give someone who is considering joining the Navy, or who has recently joined and wants to get some feel for what is in store. But we are still to see a first class book on the human experience of modern war at sea. This is not an easy task, and this book isn't a bad start. But there remains a big gap in the literature on the human dimension of naval battle.

Reviewed by Rear Admiral Simon Harrington AM, RAN (Ret'd)

Mutiny on the Globe: *the Fatal Voyage of Samuel Comstock*

by Thomas Farel Heffernan
Bloomsbury, London, 2003
320 pp., paperback
RRP: $22.95



This is the story of an horrific event which occurred in the American whaling ship *Globe* in 1824. Bizarre and extraordinary in every way, the savage mutiny and the events which followed make this story stand out in many ways.

During this period the American whaling industry reached its zenith, with ships operating out of Nantucket on voyages of up to three years which took them to the far reaches of the Atlantic and the Pacific. This was a demanding and dangerous profession, but the rewards usually made it worthwhile. Surprisingly, the book does not explain the basic tenets of the whaling industry particularly well, especially in matters of leadership and discipline. Rather it focuses more on the personalities involved. In particular the central figure, the 21-year-old Samuel Comstock, is particularly well drawn and it is his headstrong, unbalanced and dynamic personality, which gave rise to this extraordinary story that took place far from home - off the Gilbert Islands. (Interestingly for Australian readers, we find that the Marshall and Gilbert Islands were first discovered by Europeans in 1788 by the *Scarborough* and the *Charlotte*, both ships of Captain Phillips' First Fleet, and were named after the captains of those two ships - Marshall and Gilbert respectively.)

Seizing the moment when the ship was off the Gilbert Islands, Comstock murdered his captain and the ships' officers with the intention of setting up an island paradise. But - not to give the story away - paradise did not eventuate as the tale became ever more gruesome.

On balance this is a well-researched and lively book which sits well within the lexicon of whaling stories such as that written about the *Essex*. Some 'unseaworthy' terms occur from time to time such as reference to ships 'travelling'; and sentences such as 'with Comstockian grotesquerie Samuel ordered a memorial service' are more than creative!

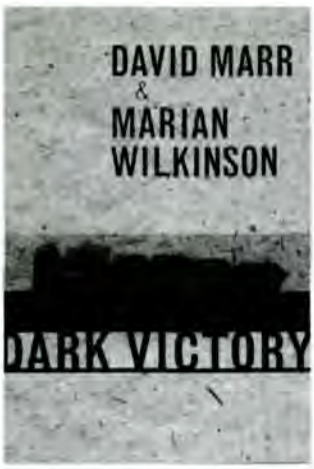
As Australia and like-minded countries promote initiatives in international forums to create ocean sanctuaries for the greatest of creatures, books like *Mutiny on the Globe* are relevant to our historically informed understanding of whaling and provide a valuable insight into the days when the whaleman was king.

Recommended.

Reviewed by Commodore Harold Adams AM, RAN (Ret'd)

Dark Victory

by David Marr & Marian Wilkinson
Allen & Unwin
viii, 350 pages, notes, glossary, index
RRP$29.95



Dark Victory records and examines the events surrounding the large influx of what were termed illegal immigrants to Australia in late 2001, the Howard Government's policy approach to the problem and the subsequent impact on the conduct of the federal election later that year. Given the Government's apparent desire to remain opaque on the events covered in the book (as evidenced by their attitude to the Senate Inquiry into these events), the authors have done quite well in trying to piece together what happened. The book is based on limited interviews with some of the senior players in the drama (but not the naval officers directly involved), the vast amount of information generated by the Senate Inquiry into a Certain Maritime Incident, and information on the public record.

The authors' obvious dislike of the Howard Government and their disgust at the Government's treatment of the illegal immigrants wears a bit thin during the course of the book. However, once you overcome the continual damming with faint praise of the some of the participants: the 'whey-faced' Philip Ruddock, the 'portly' Max Moore-Wilton, the 'bland' John Howard and the 'workaholic' Jane Halton, you can concentrate on a well-written story.

The events should be well known to readers, with the MV *Tampa* rescuing a sinking boatload of illegal immigrants on their way to Australia. Under pressure from those rescued, *Tampa's* Captain attempted to land his new passengers at Christmas Island, in spite of an Australian Government direction to stay outside Australian territorial waters. The Australian Defence Force were sent in to take over the *Tampa* to ensure they did not reach Australian territory (the migration zone) and thus gain access to Australia's legal processes for asylum determination. The Royal Australian Navy was required to transport them to Nauru as part of the Pacific Solution (whereby all illegal immigrants would have their claims for asylum processed by the UNHCR offshore). The Government then began Operation *Relex*, which was a massive border protection operation to intercept and divert all attempts at seaborne illegal immigration to Australia. In the course of this operation, and during the 2001 federal election campaign, the Government alleged there had been a case of illegal immigrants throwing their children into the sea. This event was a significant factor during the election campaign and was subject to a Senate inquiry after the election to determine its veracity (or lack thereof).

These events bring into stark relief the issues of civil-military relations in Australia, the power and accountability (or lack of it) of Ministerial staff, and the perception that the Government rode roughshod over the Commonwealth bureaucracy and was not interested in professional military advice. (Readers of *Dark Victory* should also read Patrick Weller *Don't Tell the Prime Minister* (reviewed by Dr Sam Bateman in the Summer 2003 edition) to gain a complementary perspective into what happened.) Of greater concern were two related issues concerning control of and interference in operations. Firstly there was the situation of higher operational command demanding information from the Commanding Officer of HMAS *Adelaide* during an actual boarding and rescue, as the then Minister for Defence was about to be interviewed by the media. Secondly there was the Government interference in operations to the extent of deciding when and where the Navy could rescue and hold illegal immigrants. While the Government is rightly responsible for setting national policy, the Australian military tradition is for comprehensive rules of engagement that enable those on the spot to make quick decisions within those policy parameters. As Defence slowly introduces the operational enabler of Network-Centric Warfare with increased real-time communications and battlespace awareness, in all likelihood future operations will see increased micro-management by higher operational commands or even Ministers.

Defence's senior leadership does not come out well in the account of the children overboard affair. Notwithstanding the substantial planning and management pressures on the former Chief of the Defence Force during a prolonged period of high operational tempo, it was not until far too late that he

looked into the issue before having to reverse his position and admit there was no documentary evidence for the children overboard claim. Who can forget the television footage of him fleeing his press conference with Laurie Oakes' words 'do you feel like a dill?' ringing in his ears. The former Secretary of Defence also does not fare well, relying on the hoary diarchy argument that it was up to CDF to correct errors of fact concerning military operations. Of interest was his announcement at the Senate Inquiry that he had offered his resignation to the new Minister for Defence. It is understood that the Department was awash with rumours at the time that the offer of resignation was related to Defence's continued poor financial management, and perhaps the Government's decision not to extend his employment contract is related to this.

The events portrayed in the book demonstrate serious concerns with the concept of accountability in the public service. The Interdepartmental Committee run out of the Department of Prime Minister and Cabinet appeared to keep poor records of its deliberations, while the Defence representatives on the IDC were clearly politically outplayed by other Departmental representatives. Linking accountability to leadership issues was the evidence that advice was provided up the line to the CDF and Secretary that the photographs meant to portray children thrown overboard were in fact taken the next day when the boat sank. But this was apparently not passed to the Minister in a timely manner. Similarly, the Head of (Defence) Public Affairs and Corporate Communication was directed by the Secretary to advise the Minister in writing that the photos were incorrect, but on Ministerial staff advice she was advised not to, and did not advise the Secretary of this.

What is disappointing in the reporting of this whole affair is the lack of media savvy about defence issues. When the then Chief of Navy initially stated just before polling day that the Navy did not say that children had been thrown overboard, his forced retraction noted that Defence had passed on this information. As anyone in the bureaucracy knows, there is a major difference between 'Navy' and 'Defence', but the media did not understand this very clear, but subtle distinction. The book goes into considerable detail of the victim's suffering from alleged electric baton shocks delivered by the ADF, with a one sentence rebuttal from the acting CDF, Air Marshal Angus Houston, that the ADF did not use electric prods. The back cover of the book states that both authors are experienced investigative journalists, one would have thought it would be relatively simple to ascertain whether or not the ADF actually has electric batons.

Importantly, did the policies portrayed in the book stop attempted seaborne illegal immigration? While the authors of the book might not like the answer, the Government's policies were effective, and when combined with regional diplomatic efforts, federal police activities offshore and the cyclone season, the flow of illegal immigrants did stop. Of course, the recent incursion of illegal immigrants from Vietnam who were intercepted off Port Headland recently demonstrate the impossibility of creating a permanent maritime barrier.

What has been the impact on the RAN of these sorry events? Operational *Relex* saw the commitment of a considerable proportion of the fleet to the border protection role. Such activities fit within maritime doctrine as constabulary operations and are an enduring role for navies. In addition to the patrol boats which largely undertake constabulary operations, surface combatants, amphibious and afloat support ships, as well as the *Leeuwin* class hydrographic ships were also committed to Operation *Relex*. However over the past four years, the Navy has been in a period of high operational tempo (East Timor, Bougainville, the War on Terror and operations in Iraq), with a small fleet that was in the process of being re-equipped (new *Anzac* ships being delivered and the FFGs about to undergo an upgrade). Such pressures must have had an impact on warfighting training, hydrographic survey, logistic usage and operating costs, as well as personnel retention.

Who comes out well in this story? The Captain of the *Tampa* is correctly portrayed as having done the right thing, although some may quibble that he steamed to Christmas Island rather than back to Indonesian waters. The professionalism of the Navy as an instrument of Government was again demonstrated in firstly undertaking the difficult border protection role and more importantly, rescuing and caring for the illegal immigrants as their vessels become increasingly unseaworthy.

This is a must read book, but naval readers might find it frustrating, given the tone, bias and lack of understanding of military issues.

Reviewed by Sutekh

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