

# HOW NOT TO DEFEND THE INNER ARC

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# THE NAVY

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*Maritime Airpower  
for Australia,  
Part 2*

*Submarines  
in Britain's  
Defence*



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# THE NAVY

Volume 62 No. 3

## Contents

|  |         |
|--|---------|
| <b>HOW NOT TO DEFEND THE INNER ARC</b>         | Page 3  |
| By Dr John Reeve                               |         |
| <b>TBMD AND THE RAN</b>                        | Page 7  |
| By Mark Schweikert                             |         |
| <b>SUBMARINES IN BRITAIN'S DEFENCE MISSION</b> | Page 20 |
| By Dr Lee Willet                               |         |
| <b>MARITIME AIRPOWER FOR AUSTRALIA, PART 2</b> | Page 25 |
| <b>THE SMALL AIRCRAFT CARRIER MARKET</b>       |         |
| By George Kaplan                               |         |

## Regular Features

|                           |         |
|---------------------------|---------|
| From the Crow's Nest      | Page 2  |
| From Our readers          | Page 12 |
| Flash Traffic             | Page 19 |
| Observations              | Page 30 |
| Hatch, Match and Dispatch | Page 31 |
| Product Review            | Page 32 |
| League Policy Statement   |         |

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Front cover: (From right to left) HMAS ARUNTA leads HMNZS TE MANNA, HMAS HOBART, DARWIN and MANOORA from Sydney Harbour for exercises off Nowra during a recent work up period. (RAN, AB Damien Pawlenko)

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What the 'White' Paper will say about the RAN's plans to replace the DDGs is still somewhat up in the air. Here the recently decommissioned HMAS HOBART prepares for sea. (Brian Morrison, Warships and Marine Corps Museum Int)

## FROM THE CROW'S NEST

Many of the editorials and articles that I have written in the past have warned about the growing anti-surface ship community within Defence. This offensive has now taken on allies. A growing number of articles in the mainstream print media are supporting the anti-surface community by making sensational, unsubstantiated and subjective claims about surface ship vulnerability and cost whilst peddling the barrow of air power. The claims made by these articles, whilst being false and lacking insight, have unfortunately created their own inertia, or to put it another way, 'one dog barks at something, the rest bark at him'.

The only saving grace is that none of the writers, who side with air power at the expense of sea power, are recognised by defence media specialists or academics as having any military substance or relevance.

The problem though, is that many of our politicians tend to place an over reliance on Australia's media for defence information. An example of which was seen during a recent SLC (Senate Legislative Committee) hearing in May. The Chief of Navy (CN), Vice Admiral David Shackleton, was questioned about an article written by Mr Brian Toohey in the Sunday *Sun Herald* newspaper. The article made a number of unsupportable claims about surface ship vulnerability and proposed cancelling surface combatants in favour of fighter aircraft. CN's response to the committee's question left the members in no doubt about the article's factual basis. The committee accepted his response and the matter was given no more time.

Although this may seem trivial, many defence journalists, and academics see this as a new front of a wider battle. A battle that is becoming as important to the RAN's future as the aircraft carrier debate in the early 1980s. The implications of which should not go unnoticed.

The Navy League of Australia and THE NAVY do not wish to enter into a debate about sea power versus air power. We believe that Defence forces must be united in their force structures and free from inter-service rivalries. One of the early lessons of the recent Kosovo crisis

acknowledged by NATO command was that military power cannot be exercised in isolation from other services. The Serbs were quite willing and able to ride out the air campaign but were not so keen about the threat of NATO ground forces and the sea blockade being undertaken.

One of the reasons for the Serb's confidence was the way NATO air power was so easily fooled by Serb decoys and camouflage, simple to do when air power won't risk going below 15,000ft. It wasn't until the KLA (Kosovo Liberation Army), realising NATO was unable to target Serb ground forces, deliberately engaged the Serbs to draw them out for waiting A-10 tank buster aircraft.

'Operation Allied Force' was not the first war won by air power alone. No war can be won by the application of a single pressure point on a single front. Unfortunately, Australia's air power lobby cannot see our future security for the clouds and are in danger of giving themselves a pyrrhic victory.

The growing debate over air power versus sea power comes down to one of money and not military relevancy. The air power lobby (that's not to say the RAAF) sees the Navy's SEA 4000 DDG as a threat to funds for the AIR 6000 Hornet replacement programme. As the defence budget is further strangled, more bitterness and sniping can be expected from nearly all quarters as each fights for a bigger share of a dwindling pie. The Government will have to take responsibility for this state of affairs or increase spending to ward off capability cuts.

Another front facing the surface ship is the new 'White' paper. If the predictions about its preference for air power are true then Navy will suffer greatly. A nation girt by sea without a strong Navy cannot be considered a worthwhile ally to the region or a full partner in any US led coalition force. It would be a mistake and a grave threat to national security to reprioritise the surface ship capability out of the ADF based on inaccurate academic assumptions on surface ship viability legitimised by a lack of funding.

Mark Schweikert

## FROM OUR READERS

### SAN GIUSTO

Dear Mr Schweikert

I refer to the article on the international naval contribution to 'Operation Stabilise' in East Timor, which was published in the January-March 2000 issue of your magazine.

I found the article very interesting, properly detailed and extremely well timed. However, much to my surprise, I could not find any mention of the Italian LPD SAN GIUSTO and of the important role it played in this operation - except for a picture in the chapter dedicated to the US Navy contribution.

The naval vessel SAN GIUSTO was part of the INTERFET naval component in the framework of 'Operation Stabilise'.

She reached the theatre of operations on 23 October 1999, carrying personnel and vehicles for the Italian contingent assigned to INTERFET.

Relying on a 280 strong crew, SAN GIUSTO carried 4 helicopters (3 SH-3D and 1 AB-212) particularly suited to the transport of troops, equipment and supplies as well as for MEDEVACs. It had a large on-board hospital with a team of specialist doctors able to perform 1st and 2nd level emergency operations. It also carried a number of amphibious vehicles.

After disembarking the Italian ground troops in Dili, it continued to carry out missions in support of both Italian and international INTERFET contingents. The amphibious capabilities combined with some remarkable characteristics, such as its flexibility and capacity to reconfigure itself for specific missions, allowed it to undertake very important operations.

Yours Faithfully  
Giulio Timori  
Italian Embassy

## How Not to Defend the Inner Arc:

### The Lessons of Japanese Defeat

A Japanese commander signing a document of surrender in 1945. He must be asking himself how Japan could be so unstoppable at the beginning of the war yet end up in defeat? The answer to both is sea control.

By Dr John Reeve\*

With the 'White' Paper expected to continue an inner arc view of defence, Dr John Reeve examines the historical context of such a strategy with some rather sobering insights for Australia if this path is chosen.

Conventional wisdom today amongst Australian strategic planners is that defence of the archipelagic 'inner arc' to our north - as a zone of influence and a barrier against attack - is an essential concern. The arc is officially defined as the chain of islands from Indonesia in the west through Papua New Guinea to the Solomons and the Southwest Pacific.<sup>1</sup> It is that area from which land-based air attack can conceivably be launched against us. There is no doubt that the area of the arc is of critical strategic importance for Australia in virtually every sense. Certainly it must figure in the formulation of our defensive military strategy. Within the wider maritime environment of the Asia-Pacific in which the arc is situated, there is clearly a role for Australian joint force strategy and operations when and where required. As the recent deployment to Timor has indicated, this is probably the most likely area for future ADF operations. In this context the Navy, Army and Air Force have intimately related roles within a maritime concept of strategy.<sup>2</sup> 'Maritime' is an environmental, not a service-related definition and an operative word here.<sup>3</sup> This article does not argue a navalist position, implying that sea power alone will do the job. Nor is it directly concerned with procurement or budgetary issues. It does however, argue that the concept of defending the inner arc is (as it stands) strategically flawed, potentially dangerous, and in need of further development. It is flawed because it does not relate concepts such as manoeuvre in the littorals (coastal areas) to relevant principles of maritime strategy, especially sea control (the ability to use an area of the sea and deny it to others), which are based upon long historical experience and have been proven correct in every major conflict from the fall of Napoleon to the end of the Cold War, as well as in the Falklands in 1982 and the Gulf in

1990-91.<sup>4</sup> At the same time the concept of defending the arc is linked to an assumption of using sea denial ('guerilla war at sea') which can only operate as a function of sea control.<sup>5</sup> The aim in arguing this is not to score political points but to stimulate constructive debate on an issue of vital concern to this country.

History provides the only real evidence against which we can test strategic concepts. History has advantages in strategic discussion: it is real, it is unclassified, and we know who won. The concept of defending the inner arc can be tested against the Japanese war in the Pacific during the 1940s. Japan's war in Southeast Asia and the Southwest Pacific gives us an actual case study fought over the same area conceived of as the inner arc at the level of high intensity conventional warfare. It involved two phases: that of Japanese victory/Allied defeat (1941-42) and of Allied victory/Japanese defeat (from 1942 onwards). There are, as in all historical comparisons, variable factors for and against such a comparison between past and present. But the similarities in this case argue for its intellectual credibility and strategic utility.

Japan was ultimately overwhelmed by greater force, but it is the very effective way in which that force was applied, especially in turning the tide, and the strategic inadequacy of the Japanese response which are instructive. The Japanese concept of perimeter defence was produced by inadequate pre-war planning, inter-service rivalry, lack of strategic imagination, an attempt to translate assumptions of continental defence to the maritime sphere, and lack of understanding of the regional maritime environment. The Allied counter-offensive was built upon the establishment and mobile exploitation of sea control.



The Japanese cruiser MIKUMA heavily damaged during the Battle of Midway. The battle signified a shift in sea control to the allied forces. Japan never tried to regain sea control and adopted a perimeter defence mentality with devastating consequences.

This progressively left the Japanese floundering in a manner which has critical lessons for any Australian defensive concept based on comparable ideas. This is not to suggest that current Australian planning necessarily makes the mistakes made by the Japanese. It is, however, to suggest that a concept for defending the inner arc must pay attention to controlling the sea or risk failure. For Australia's recent mission within the arc in Timor, the deterrent effect of naval cover for the task force – based upon sea control – was a given, and Major-General Cosgrove has stated publicly how essential it was, calling this a "blindingly obvious lesson" in the value of sea power.<sup>10</sup> As the Japanese learnt to their cost, how much more relevant is this lesson to high intensity operations in which sea control may be contested, and in which our national interests may be threatened more seriously?

The Japanese Pacific offensive was a classic case of starting a war without knowing how to end it. Japanese strategy was short-term, and plagued by lack of inter-service co-operation and understanding. In 1941 the Japanese Army was preoccupied with the Asian mainland and its war in China, where forty-four of its fifty-five divisions were deployed. It saw Southeast Asia as a territorial resource basket to be seized and held. The Army assumed that the Navy would conduct a defensive war in the Pacific. Ultimately the Army saw itself as fighting the Soviet Union. There was thus a lack of forward planning for the Pacific, especially on the part of the Army who were politically dominant. There was a working assumption that Japan should reach a negotiated settlement with the Allies, who would respect the Pacific conquests. This fallacious assumption undermined efforts to analyse the problem of defence. The concept of an outer perimeter – which represented a failure to create a general maritime strategy – emerged during 1942, with the Army's dominance at Imperial General HQ, its winning of the political battle against the Navy's view of a wider Pacific war, the defeats at Coral Sea and Midway which led to loss of sea control, and that at Guadalcanal which led to progressive rolling back of the defensive perimeter. The death of Japan's naval commander Yamamoto in 1943 ended the likelihood of wider strategic use of the maritime environment by the Navy. The reactive concept of the defence of a territorial perimeter was thus established, creating the opportunity for Allied exploitation.

Without sea control such reactive defence meant lack of manoeuvre, vulnerability and lack of options, despite the possession of land-based air power. The perimeter was liable to penetration and outflanking like any defensive line. But situated in the maritime environment and without

use of sea control it was a particularly dangerous position. The withdrawal from Guadalcanal in 1943 thus precipitated the collapse of the outer perimeter. The Japanese strategic problem became not knowing when and where the Allies would use the sea to strike next. Seeing their defence in territorial as opposed to maritime terms meant in effect that the Japanese took their sea communications – and hence logistics and reinforcements – for granted. The Allied submarine campaign inside and beyond the defensive perimeter devastated Japan's sea transport in the most successful blockade in naval history. This blockade, like the amphibious power projection which defeated the perimeter, depended upon sea control and was a war-winning weapon. George Baer, one of the world's most distinguished naval-strategic writers, has observed:

*There was no systematic effort until too late to protect within these zones the sea lanes over which the vital cargo ships passed, to meet and match the American submarines, to mount a guerre de course, or, after Midway, to make another try for offensive sea control. Each of these omissions was an astonishing strategic lapse... Pinning all their hopes on the battles expected under their strategy of zone defence, Japan's leaders left exposed all other dimensions of the country's maritime position, failing in every other way to protect the empire's vital access to the sea... The offensive strategy of the United States exposed the weakness of Japan's perimeter defence. Static island fortresses, even with air bases, did not constitute an impenetrable palisade unless a Navy held local command of the sea. That command Japan never attained. Its Navy simply lacked the force and range. The United States, with its dual advance and very flexible Naval strategy, kept the initiative. It dispersed its fleet into task forces that kept the enemy off balance. The Americans could assault, or simply bypass and isolate, the Japanese barrier's strongpoints, attacking as they chose and wearing the empire down... The Americans used time and space as the Japanese could not.<sup>11</sup>*

Arrived at by default, the perimeter concept tended to compound defeat with defeat, as withdrawal was the only option in the face of penetration and out-manoeuvre. In war it is the winners who usually fail to learn the lessons and to think outside the established frame. We should listen to the losers in the last major war to be fought in the maritime environment of the Asia-Pacific. Tojo told MacArthur that the Allies defeated Japan by a combination



General Douglas MacArthur wades ashore in the Philippines. A surprisingly sea minded General he often complained about not having enough ships. The value of sea control was pivotal in his return.

of three factors: the leapfrogging strategy, the submarine war on shipping, and US carrier air power.<sup>12</sup> In maritime strategic terms, he was concluding that Japan lost its perimeter and the war because it lost control and use of the sea. Yamamoto knew that the sea must be utilised fully if Japan were to establish a credible defence or a negotiable position. He knew that the region is oceanic in scale and that the sea makes it indivisible; that within this environment maritime strategy is necessarily offensive (at least in the sense of achieving initiative, mobility, and reach), otherwise sea control will be lost; that the land-sea interface of Southeast Asia cannot be defended without that control; that Australia is a natural springboard into this interface (hence his desire to take Australia before MacArthur and the Australian command – similarly aware – seized the opportunity to go forward); and that Australia is dependent upon its sea communications (hence his desire to cut them off). Yamamoto's defeats and death left Japanese Pacific strategy to the continentally-minded Army, who saw the perimeter as a fortified extension of their war on the Asian mainland. This is a lesson against any tendency to superimpose ideas of continental defence upon the different circumstances of the maritime environment.

All military operations in the area of the inner arc must be conceived of within the context of true maritime strategy. There can be no battlespace dominance involving the arc without sea control. During the Pacific War the fighting around Guadalcanal, New Guinea, the Philippines, and the Central Pacific was inextricably linked to the issue of who controlled the local seas and used them. Defence of the inner arc against Japan did not succeed until the Coral Sea and Midway battles afforded the Allies sea control.<sup>13</sup> MacArthur and Nimitz could then take the offensive. Operations within the arc were very much influenced by its geography of isolated locations and rugged terrain. These created difficulties for land transport and air basing. Operational mobility and logistics were greatly facilitated by use of the sea in littoral areas (as recently in Timor). Having lost sea control the Japanese were vulnerable in this situation. Sea power was a requirement to drive an invader out of his lodgement in the inner arc, clearly evident at Guadalcanal in 1942-43. Air cover, both land and carrier-based, was utilised in successful operations within the arc and for power projection beyond it. (Darwin was bombed partly by aircraft based on Nagumo's four carriers. The Allied attack on Rabaul in 1943 involved the



Major General Peter Cosgrove returning from a visit to the FFG HMAS MELBOURNE during the Timor crisis. General Cosgrove later described the value of sea power as "blindingly obvious". Hopefully it will continue to be "blindingly obvious" to the authors of the new 'White Paper (RAN)



Yamamoto realised that sea control was the vital element of a war in the Pacific. This was demonstrated with a massive surprise attack on the US's ability to exercise sea control throughout the Asia-Pacific, its ships in Pearl Harbor.

carriers PRINCETON and SARATOGA.) Whether or not this is taken as an argument for Australian carrier procurement today, it is certainly part of a case for control of the maritime environment and for an air warfare capability within it.

It was sea control which allowed power projection in the inner arc in the Pacific War. This is demonstrated by the fact that MacArthur's reconquest of New Guinea was a strategic mirror image of the Japanese taking of Southeast Asia – employing amphibious landings supplied by merchant shipping while covered by naval and air forces. (MacArthur, a remarkably maritime-minded general, had as a major grievance the fact that he was short of shipping.) In this littoral warfare, sea control gave cover against enemy naval forces and gunfire support for landings. MacArthur's land-based air operations (like Nimitz's) relied on sea power for forward base acquisition and supply. Above all, sea control gave the initiative and the choice of when and where to strike. This distracted the enemy, enhanced the element of surprise, and allowed strongpoints to be bypassed and Allied lives to be saved. The initiative granted by sea control also gave options at the wider strategic level. The central Pacific advance covered the flank of the Allied front moving up through Southeast Asia. Later the U.S. command could consider taking either the Philippines or Formosa.

Sea communications, and the ability to interdict them by blockade, were and are critical in the area of the inner arc as in the entire Asia-Pacific region. Without sea control, which enables their protection or attack, operations to take or defend the arc are not strategically feasible. No army can reach the arc in force to occupy or defend it, or be sustained and reinforced, save by sea. This was as true during the Pacific War as it has been in the case of Timor. Japanese sea control in early 1942 meant that the southward advance could not be stopped. Once the Japanese were lodged in the arc, the Allies required a build-up and deployment of resources to take it, both of which occurred by sea. Above all, the future sea denial operation which could be required to defend Australia would only succeed as a dimension of sea control. This is one of the most salutary deductions from the Pacific War for Australian defence thinking. In a sense it was proven twice, by the Japanese in 1941-42 and by the Allies from 1942 onwards. Frank Uhlig, a leading U.S. naval commentator, writes of the Japanese conquest of Southeast Asia in terms which should sound alarm bells for Australian strategic policy:

*The defenses: American, British and Dutch, were... carried out by soldiers and shore-based aviation... and by submarines. Theirs was a dismal record of failure.<sup>14</sup>*



A Japanese destroyer is seen sinking from the perspective of the submarine that delivered the fatal blow. Without a concerted maritime strategy Japan was open to exploitation by submarines as part of the Allied strategy of sea control.

U.S. submarines failed dramatically to halt the Japanese advance. Twenty-nine submarines in Philippine waters made virtually no impression on Japanese amphibious assaults. The submarines retreated to Java, failed again, and retreated to Western Australia. We can compare the obstacle presented by the Royal Navy's surface warships to invasion in 1940 - the reason for the Luftwaffe's strategic mission to achieve command of the air.<sup>(1)</sup> During the Allied counter-offensive in the Pacific, the U.S. submarine campaign - aided by sea control and Japanese neglect of convoys and anti-submarine warfare - was a powerful factor in the erosion of Japanese defences and winning the war. This is not surprising. The classical maritime strategists Mahan and Corbett analysed centuries of naval history, concluding that commerce war is not viable strategically without control of the sea.

The arc concept risks becoming a victim of the fortress fallacy: the assumption that the strategic context can be safely surrendered by default because one guards against the one way the enemy will come. History is full of the victims of this approach, for it is a rare luxury to get (like Yamamoto) the war one expects. As well as the Japanese, one thinks (in maritime terms) of Singapore in 1942 and of the Soviet Union attempting to deal with the U.S. Maritime Strategy in the 1980s. There may also be a conceptual problem in planning to use manoeuvre in the littorals as a tool of barrier defence, however geographically deep one sees the inner arc as being. The essential strategic point about amphibious power projection is of course that it is offensive, combining the mobility of Navies with the striking power of armies. This has been true from the fall of Quebec in 1759 to the Falklands in 1982. In defence, amphibious operations usually follow defeat, as at Gallipoli, Dunkirk, Crete, and Guadalcanal. Manoeuvre is not seen today in terms of traditional amphibious warfare, but it has strong elements of amphibious operations after the coming of air power. In a maritime environment one must of course view power projection in highly flexible fashion, rather than run any risk of having a garrison outlook.

Defence of the inner arc, unless conceived of with sufficient flexibility, is potentially vulnerable to other distractions and commitments. A threat to the arc may be part of a regional (even global) emergency, in which the focus could not be confined to local defence. Simultaneous emergencies are frequently the work of an enemy strategy. Moreover, if Australia's local security is threatened it will be by a power possessing or contesting sea control as in 1941-42. The primary threat to Australia is not, therefore, to its landward (as opposed to its maritime) territoriality, but to its maritime communications. Yamamoto, who did

most to threaten this country after 1788, understood this well. The inner arc as a concept tends to neglect the Indian and Pacific Oceans and their intrinsic relevance to our national security. Thus any credible threat implies a wide strategic context.

Mahan did not live to see the Japanese defeat in the Pacific War. He did, however, write specifically of Australia's need to view its defence in wide and maritime terms: "by contemplating the whole, and recognising that local safety is not always best found in local precaution".<sup>(2)</sup> The current concept of defending the inner arc can be compared with the Japanese view of the same geography as a Pacific perimeter. That view was shown to be defective in terms of strategic viability and scope, and we should take care to absorb the lesson. Defensive strategy involving a form of the arc concept may well be viable, but it must be formulated within the context of a fully maritime strategy into which sea control principles are built. This article is written in a co-operative spirit, and with respect for the qualities and complementary expertise of the various elements of the Australian Defence Force. The fundamental point about the Japanese defeat in the Pacific (beyond the question of whether the war could ever have been considered feasible) is the fatal nature of lack of inter-service understanding.

Bad strategy kills, and bad strategy brings defeat. The islands and waters of our region are haunted by the ghosts of fallen empires and defeated forces - some of them our own, and all of them were initially (but not of course fully) defeated at sea. The conventional strategic wisdom which sees the inner arc as a defensive barrier should pay more attention to its maritime setting. Otherwise that conventional wisdom risks leaving a significant gap in Australia's defences and being a danger to national security. The Defence White Paper debate is an opportunity to ponder the expensive lessons of the past and their continuing relevance, for our geography has not changed.

<sup>(1)</sup> Australia's Strategic Policy (Canberra, 1997), p.10

<sup>(2)</sup> See for example M.Evans, *The Role of the Arms in a Maritime Concept of Strategy*, Land Warfare Studies Centre, Working Paper 101 (Canberra, 1998). I am indebted to Dr Evans' excellent work, especially his advocacy of joint and amphibious concepts of operations. It is important however, not to see sea control and power projection as distinct issues. Sea control is the pre-requisite for joint operations and power projection ashore in a maritime environment.

<sup>(3)</sup> The classic text is J.S.Corbett, *Some Principles of Maritime Strategy* (1911, repr. ed. E.Grove, London, 1988).

<sup>(4)</sup> An accessible study is C.S.Gray, *The Leverage of Sea Power: The Strategic Advantage of Navies in War* (New York, 1992).

<sup>(5)</sup> Such concepts will be dealt with in *Australian Maritime Doctrine (RAM Doctrine 1)*, soon to be published. Note that sea control includes the air space above and the water mass and seabed below the surface. The guerrilla analogy is Adm. Stansfield Turner's, quoted in G.Till, *Maritime Strategy and the Nuclear Age*, second edn (New York, 1984), p.191.

<sup>(6)</sup> In his Anzac Lecture at Georgetown University, 4 April, 2000.

<sup>(7)</sup> G.W.Baer, *One Hundred Years of Sea Power: The U.S. Navy, 1890-1990* (Annapolis, 1994), pp.231-2.

<sup>(8)</sup> S.E.Morison, 'Thoughts on Naval Strategy, World War II' (March 1968), repr. in *Naval War College Review*, Winter, 1998, p.63.

<sup>(9)</sup> D.Hornet, *High Command: Australia's Struggle for an Independent War Strategy, 1939-45*, second edn (St Leonards, 1992), pp.194-5.

<sup>(10)</sup> F.Uhlig, *How Navies Fight: The U.S. Navy and its Allies* (Annapolis, 1994), p.195.

<sup>(11)</sup> D.Ginnell-Milne, *The Silent Victory, September 1940* (London, 1958).

<sup>(12)</sup> Written in July, 1902, quoted in D.Stevens (ed.), *In Search of a Maritime Strategy: The Maritime Element in Australian Defence Planning Since 1901* (Canberra, 1997), p.155.

<sup>(13)</sup> Dr John Reeve is a Senior Lecturer and Osborn Fellow in Naval History at The Australian Defence Force Academy. His article is an abridgement of a Working Paper soon to be published by the RAN's Sea Power Centre.



A Chinese M-9 ballistic missile during a parade in Beijing. In 1998 four of these missiles were fired into the Taiwan Strait to intimidate the Taiwanese. The USN cruiser USS BUNKER HILL successfully detected and tracked each missile providing valuable intelligence for future TBMD systems.

By Mark Schweikert

As the 21st century dawns the world consists of a volatile mixture of alarming trends and growing challenges. Amongst these is a concern in the West of the increasing numbers and effectiveness of Theatre Ballistic Missiles (TBMs) and the associated worldwide proliferation of Weapons of Mass Destruction (WMD). As the RAN's proposed SEA 4000 destroyer will be Theatre Ballistic Missile Defence (TBMD) capable, and given TBM proliferation in our region, some information on what the RAN may be able to acquire is warranted particularly leading up to the 'White' Paper.

The need for a TBMD capability in Australia and the RAN is compelling. Many regional neighbours either have, make, sell or intend to acquire TBMs. TBMD is currently outside the capability of the ADF, thus TBMs cannot be countered. Although many resigned themselves to this fact during the Cold War when Soviet missiles threatened the West a counter now exists. This is timely given world-wide TBM proliferation with more than 30 nations possessing TBMs and more than 25 having or developing nuclear, chemical and biological weapons.

The fear of TBM proliferation became a reality in 1998. In April of that year, Pakistan tested a new ballistic missile, the Ghauri, with a range of 1,500 km. India already possessed ballistic missiles capable of hitting all of Pakistan. Both countries postured against each other by conducting unprecedented rounds of nuclear tests. In June, the press reported that the North Korean No Dong Missile was operational. In July, Iran launched the Shahab-3 with a range that has the capability to strike targets in Israel, Turkey, Saudi Arabia and other Middle Eastern countries. In August, North Korea launched the Taepo Dong 1 which over flew Japan. The latest edition of Jane's Strategic Weapon Systems reports that the Taepo Dong 1 has a range of approximately 2,000 kms, threatening all of Japan and US bases as far away as Okinawa. This test confirmed the ease with which an impoverished nation with massive economic problems, including famine, could develop and launch a long ranged TBM.

The rapid rate of TBM development and proliferation continued into 1999. In February, China deployed more than 100 TBMs along its coastline adjacent to Taiwan. In April, both India and Pakistan launched extended range, nuclear capable TBMs, Agni II and Ghauri-II respectively, with ranges in excess of 3,000 kms.

There is a determined and deliberate pattern to procure or develop longer range TBMs by countries whose political aims and activities are potentially hostile to those of the West including Australia. When North Korea finally test fires its Taepo Dong II TBM, half of the Australian land mass and most of Europe will be within range of North Korean WMD. It was recently revealed that North Korea has more than 500 Scuds and continues to produce medium range No-Dong TBMs. North Korea is also a major international supplier of TBMs. TBM technology and intellectual property. It is understood North Korea has over 5,000 tonnes of chemical agents including nerve, choking, blister and blood. Its biological capability includes anthrax, small pox, the plague and cholera. Many also believe North Korea is a nuclear power. Any of these WMD can be fitted to their TBMs.

To understand why TBMs are now the weapon of choice for many nations one has only to witness a Western military operation on TV. Whenever the West enter a conflict they immediately establish complete air superiority, usually via the USAF. Airpower is used to displace the enemy's offensive and defensive capabilities.



This not only denies the enemy the means to use its air force for defence but also for attack. Consequently, the only way to counter US/Western air superiority and attack the US and its allies is to go over their air superiority umbrella.

TBMs provide an attractive counter to Western air power as they are launched with no warning, have short flight times (which limits response times), are impossible to kill without specialised equipment and their payloads can vary from HE (High Explosive) to chemical, biological, nuclear or submunitions. A TBM's range means that they can strike targets deep inside USAF defended areas such as air bases where air superiority is vulnerable. Ballistic missiles are also very cheap, plentiful and becoming increasingly accurate. With the recent superficial victory of airpower during 'Operation Allied Force' over Serbia many Western nations are falling into the trap of no longer considering sole air campaigns an option but a necessity.

Part of the problem with the TBM not being seen as a serious threat is the misconception that it is a high priced complex weapon and thus not plentiful. However, Defence strategists should view the TBM as a simple round of ammunition. In WW II Hitler fired over 4300 V2 TBMs whilst undergoing Allied strategic bombing and massive resource deficiencies. TBMs are also considered inaccurate and thus militarily insignificant however, today, TBMs have GPS to aid in guidance and accuracy and are far less indiscriminate than their V2 ancestors. The Russian SS-21 battlefield ballistic missile, recently used in Chechnya, is a good example of the modern TBM. Small, accurate, cheap, easy to move around and with very different warhead types. Intelligence sources suggest that the SS-21 system and ammunition stocks were recently sold to North Korea via Syria. The North Koreans can be expected to reverse engineer the guidance system for use in its designs making them 75% more accurate.

Improvements in warhead payload have also given the modern TBM a new lease on life. The US RAND Corporation recently published a study on modern TBM effectiveness. It found that the use of submunitions in TBM warheads is a very effective way of neutralising airbases through attacks on parked aircraft, taxiways, runways, airbase infrastructure and the inevitable tent city of surged



The Indian Agni-II ballistic missile is believed to have a range of more than 3,000 kms and can be fitted with many warhead types the Indian's may wish to employ.

reinforcement personnel. The study concluded that airbase destruction could be achieved with as little as 30 TBMs, or for the price of four F/A-18s, and with land and air based TBMD systems still languishing in design and testing, the current level of naval TBMD provides the only real answer.

## Desert Storm

Desert Storm taught the West several important lessons about the need for TBMD after Iraq demonstrated the ease that a belligerent could use them. Scud attacks on cities, despite being tactically unsuccessful, affected coalition military strategy and constrained US options. However, at the Port of Jubayl a potential campaign 'show stopper' event occurred. An Iraqi Scud fired at the port fell in to the sea adjacent to the dock, but had it hit a major catastrophe would have occurred. Unloaded on the dock were thousands of tonnes of 155mm and 203mm HE artillery shells, aircraft fuel and military vehicles. Tied up alongside that dock was the LHA USS TAWARA, an army barge loaded with ammunition, one bulk fuel carrier and three container ships. Although no damage was inflicted the potential for devastation woke many to the threat posed by TBMs.

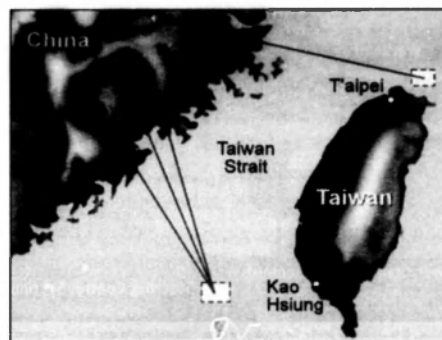
## Real World TBM Events

USN ships have often been in position to obtain real world TBM tracking data. During Desert Storm, AEGIS ships in the north of the Persian Gulf were the first to detect and track Iraqi Scud missiles.

In March 1996 USS BUNKER HILL (CG-52) detected and tracked four Chinese M-9 missiles fired into the waters near Taiwan. BUNKER HILL successfully detected and tracked the missiles with an older variant of the SPY-1A radar with no external cueing, no developmental radar improvements and a crew that was not specially trained for the mission. The crews existing air defence skills translated well to TBM tracking.

Tracking by AEGIS ships continued when USS MITSCHER (DDG-57) tracked Syrian TBM development test flights in the eastern Mediterranean with near 'fire-control quality'.

In August 1998, JDS MYOKO (DDG-175) tracked North Korea's first Taepo Dong I missile as it flew over Japan. This launch was unexpected and sudden yet the ship



The USN Aegis cruiser BUNKER HILL (CG-52) successfully tracked and plotted the trajectory of four M-9 ballistic missiles used by China in 1998. This map shows the impact points of the TBMs.

was still able to, without any TBMD thought going into its surveillance architecture, gain valuable intelligence on the North Korean missile's flight. These and other detection and tracking events have provided valuable intelligence data to system engineers and computer programmers, as well as tracking experience for shipboard crews for further TBMD development.

## The SM-2 Block IVA

Two naval TBMD weapon systems are currently under testing in the US. They are the Area Wide, using the SM-2 Bk IVA as a common AAW and TBMD missile, and Theatre Wide, using the newer SM-3 missile used exclusively for TBMD outside the earth's atmosphere.

For the purposes of this article and its relationship to the RAN and its AAW requirement we will concentrate on the Area Wide system. The Standard SM-2 Bk IVA missile is the newest of the AAW Standard missiles produced. It provides the capability for all round defence in a severe electronic environment against aircraft and ASMs (even with low radar cross-sections) from high altitudes down to sea-level and with a TBMD capability.

The Mark 125 warhead of earlier Standards is retained in the missile with a new fuzing system to meet a wider range of relative target speeds for precise burst-point selection. A Raytheon IR seeker, which is covered by an ejectable faring, is also fitted to aid in accuracy and provide a real time video data link to the launch ship for missile identification purposes, an indication that the TBM was destroyed and to replay on CNN as proof of destruction. The IR seeker positions the warhead to impact the target or pass close enough to enable the warhead fragments to be effective. The high closing velocities encountered in TBM engagements require precise fuze timing. To aid a Forward Looking Fuze (FLF) is fitted. The FLF uses angle and angle-rate information from the IR seeker and range and range-rate information from a high frequency short-range radar incorporated in the SM-2 missile. These two sensors provide data to the FLF to compute warhead detonation time and positioning to place the most fragments on the target. The new fuze will also direct the blast energy of the warhead towards the side of the SM-2 the TBM will pass as direct hits at these speeds will be rare.

In the first attempt to destroy a TBM target, a prototype SM-2 Block IVA missile performed as expected. The imaging IR seeker successfully performed target search, acquisition and missile hand-off, guiding the missile to a lethal intercept. Just before intercept, the IR seeker imagery was sent by real time telemetry to ground stations showing a well defined image of the TBM target. Several sensors fitted to the target to record warhead fragmentation reported lethal warhead impact with the TBM totally destroyed.

To demonstrate the lethality of the Standard SM-2 Bk IVA warhead design under simulated flight conditions, the USN conducted extensive warhead sled testing. In these tests, a sled propelled the Bk IVA warhead toward replicas of enemy TBM warheads and AAW targets. These tests were as close to actual flight dynamic conditions as possible. Target designs included simulated nuclear warheads, chemical, HE and submunitions. In the tests, the SM-2 warheads were detonated at a miss distance predicted at the outer boundary of 90% of all successful intercepts. These conservative values were used to measure the effectiveness of the warhead in 'worst case' and 'best case' scenarios.

During 1998 and 1999, six sled tests were conducted against nine TBM replica warheads and three AAW targets. In each test, the warhead performed exactly as designed. All tests achieved kills of the TBM and AAW targets. Chemical submunition casings were penetrated, rendering the chemicals ineffective.

## Naval TBMD

In the era of 'The UN Operation' international strategy has relied on force deployment from bases around the world. Airlift and sealift are the precursors to these operations, but the ports and airfields through which forces and reinforcements must arrive are known to the enemy and thus vulnerable to TBM attack. Currently, the only way to provide protection for these debarkation points is from ships at sea. If these ports and airbases are made unusable, bearing in mind that the enemy would want to restrict military operations against them at every stage, then the UN action cannot go ahead, giving the enemy victory.

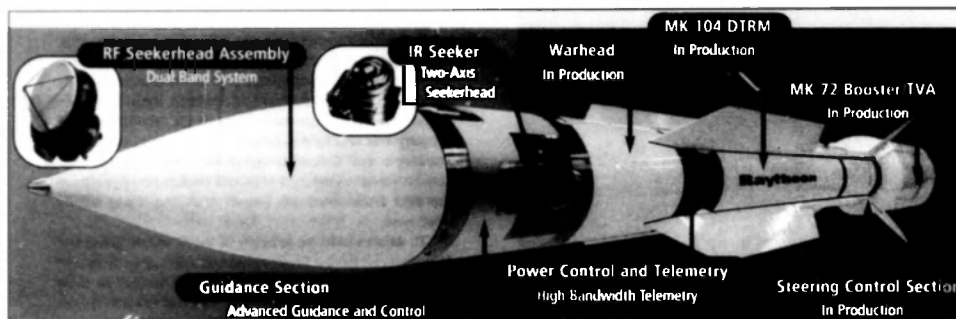
A credible deterrent and warfighting capability independent of foreign control and relatively free from reliance on overseas bases and support is only achievable



The highly effective Russian SS-21 'Scarb' battlefield missile is a good example of the modern ballistic missile. It is cheap, easy to move and very accurate. It can be fitted with various warhead types including an anti radar homing head. The SS-21 is believed to have made it to North Korea via Syrian



The effective ranges of North Korea's ballistic missiles.



The Standard SM-2Bik IVA is currently the only purpose built AAW/TBMD missile in production. It is currently ready for deployment and should equip any RAN destroyer purchased under SEA 4000.

by surface ships. As seen, naval AAW weapons and systems translate well into TBMD capabilities, and with little cost. Regionally, South Korea and Japan are investing large funds into TBMD technology for their ships. The RAN is also keen to explore the TBMD option for its new SEA 4000 destroyer.

Desert Shield provided a good example as to how land based TBMD/air defence units might arrive in theatre during a crisis. After the alert order for Gulf duty was issued, the first Patriot SAM (Surface to Air Missile) battalion completed airlift to Saudi Arabia in 34 days, while the second battalion was in place on day 82. The two Patriot Fire Units (less than a battalion) that rapidly deployed from Germany to Israel in 48 hours, due to Iraqi TBM strikes, required more than 50 C-5 Galaxy aircraft. This move diverted over 120 sorties each day from other high priority lift requirements.

Alternatively, a full load of TBMD missiles for a Ticonderoga class cruiser only takes four C-5 Galaxy. The ship could thus be used to defend the air base that the Patriot system needs in order to be deployed.

In 1994, following the Commander in Chief US Forces Korea's request to pre-deploy Patriots to Korea, the political clearance to do so took four months, followed by one and a half months of transit by rail, ship and road from Fort Bliss, Texas to assigned locations in the Republic of Korea. Nearly six months in total. A further restriction is that Patriot can only defend one small point and has to be deployed and set up at the intended target, assuming you know what that will be. Alternatively, naval TBMD can range out great distances and defend an area such as an entire city.

The deployment of TBMDs ashore was not a politically viable option during the 1996 crisis over Taiwan. The potential to aggravate China by placing US Patriots in Taiwan made that option far too provocative. The ever present uncertainty as to whether placing land based defences ashore would deter or incite potential enemy reaction demonstrates a continuing need for the flexibility inherent in using ships in international waters for TBMD.

The known deployment of land based TBMD units may also prompt an enemy to fire TBMs to probe the defences and test their effectiveness, providing an indication of how to counter them. He may also fire in the hope that the missile will be shot down, no damage would be inflicted but the political and military message would still be delivered. The latter course of action would also cause

panic in the community despite deployed TBMD units. The enemy may even alert the recipient of the impending attack in the hope of provoking a defensive reaction. Such a TBM scare campaign occurred in 1996 in the Taiwan strait when China fired four M-9 TBMs into the sea near Taiwan in the hope to intimidate and thus influence Taiwanese political opinion.

If not already on station, TBMD naval forces are far more capable of arriving in theatre in a few days than any land based counterpart. Sea based TBMD is also less visible and would deter the enemy from believing it could get away with probing attacks or 'message delivery' exercises for fear of starting a real war. In any event, the wreckage from the destroyed TBM would not appear on the six o'clock news that night as destruction would more than likely occur over the sea.

Despite the fact that coalition forces achieved total air superiority during Desert Storm, air power was unable to effectively locate and destroy Iraq's mobile missile launchers. In a future crisis, restrictive rules of engagement can be expected to prevent 'Scud hunting' prior to hostilities, which may well be initiated by TBM attacks. Even if TBM search and destroy operations are permitted over an antagonist's territory, it would place coalition attack aircraft at risk from enemy air defence systems until those systems were destroyed. An enemy faced with the prospect of 'use them or lose them', may well launch large numbers of TBMs immediately at the start of hostilities before coalition TBM hunting could occur or become effective. The inability to prevent enemy TBM attacks means that a strong defensive capability will always be required, especially as the use of WMD become increasingly likely. Future conflicts will necessitate the need to protect non-combatants as an enemy may attempt to wreck defensive coalitions through TBM attacks, as Iraq tried to with attacking Israel.

Actual footage from the IR sensor on a SM-2Bik IVA missile as it heads towards a Lance battlefield ballistic missile. In this test the Lance target was destroyed.



History has shown time and again that in the opening days of a crisis, forward deployed naval forces bring a wide range of capabilities, now including TBMD, into theatre in a few days. In the modern context that could also mean just when the heaviest TBM attacks would be likely. Naval forces with TBMD provide significant flexibility. From a few stations in the Sea of Japan, USN TBMD equipped surface ships can provide an effective TBMD force covering most of the Republic of Korea (ROK) and Japan. The beauty of ships is that they can be visible or unobtrusive, are self-sustaining and can carry out other traditional naval missions such as protection of air and sea lift, air intercept control, shore bombardment, ASW and maritime interdiction, while simultaneously providing TBMD.

## Conclusion

Repeated TBMD studies in the US have found that naval TBMD meets their objectives and provides the greatest capability and operational flexibility for the least dollars, and in the shortest time. The USN is making major commitments to TBMD and are keen to involve the RAN. This is one of the reasons for the strong US push for Australia to accept their Kidd class destroyers which can be made TBMD capable for a fraction of the cost of a new build ship.

Upon deploying naval TBMD, ships will be able to defend forward bases, ports and airfields and facilitate the arrival of follow-on land based air and ground forces while simultaneously providing the necessary command and control for joint and Allied forces. Without airfields and ports a modern military operation cannot go ahead. An example of this could have occurred in the opening stages of Operation Stabilise. It is not widely known that during the mid 80's Indonesia seriously contemplated the acquisition of TBMs. Had the West's actions towards Indonesia over East Timor been misinterpreted TBMs could have rained down on Dili, Darwin and Tindal and would have seriously damaged INTERFETs, and the ADF's, forces and restricted access to East Timor. Finding mobile TBM launchers in the

jungles and islands of Indonesia would be virtually impossible given the 'Desert Storm' experience.

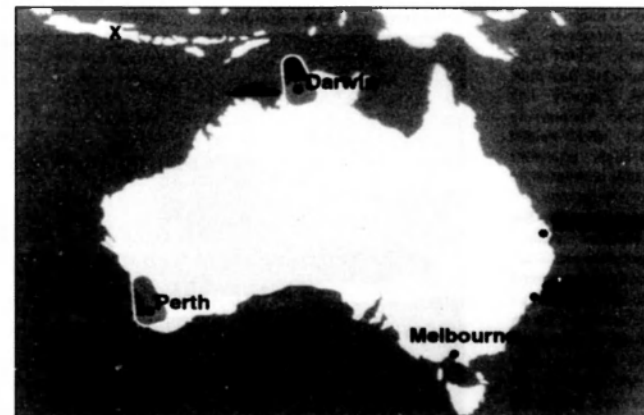
The RAN needs to develop a TBMD capability as TBMs become more attractive to the West's adversaries. North Korea, China, Iran and Syria are but a few countries of many who are capable of making and selling TBMs and tend not to be too selective who they sell to. With advances in Western AEW&C and stealth aircraft the TBM is the only counter that many nations can hope to employ, militarily and economically.

With the acquisition of an AAW destroyer the RAN can be expected to use of Standard SM-2Bik IVA. It makes sense to use the latest Standard available as this will be the only Standard missile in production. The USN will use this missile for some time thus ensuring a 30 year logistics and supply pool the RAN can draw upon. The RAN is already presented with the problem that the Standard SM-1MR used in the FFGs, ceased production in 1985, presenting supply limitations.

With acquisition of the SM-2Bik IVA the RAN would automatically become TBMD capable and would only require the necessary software for its radars. As mentioned the missile is also far more effective against aircraft, ASMs and cruise missiles than any before it. For example, the SM-2Bik IVA currently represents one of the only counters to the SS-N-22 'Sunburn', SS-N-26 and SS-N-27 ASMs used by Russia, China and India.

A TBMD capability should not offend anyone or start an arms race in the region as the system is purely defensive. With many regional neighbours unable to acquire a TBMD capability for economic and political reasons, RAN TBMD ships would be welcomed during a TBM threat situation, more likely now through world wide proliferation. The RAN would thus provide the regional umbrella to TBMs.

In the ADF context nearly all of our major RAAF airbases are close enough to the sea to be defended by RAN Area Wide TBMD capable platforms. The question is, will the new 'White' paper see the value in introducing and developing this capability which will not only defend but enhance our fighter and land force capabilities?

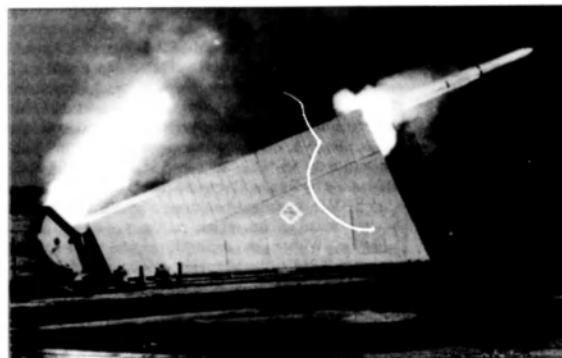


The effective footprint of the SM-2Bik IVA missile, launched from a ship stationed near Perth and Darwin, against TBMs fired from the 'X' position in Indonesia. However, if the Destroyer was within 50kms of the launch site it could defend the whole continent. This is not beyond reason given the island nature of the 'inner arc' (USN).

# Flash Traffic

## ESSM scores kill

The Evolved Sea Sparrow Missile (ESSM) has achieved a kill of a BQM-34S Firebee target drone during its first guided flight test at White Sands Missile Range, New Mexico. ESSM is under development by Raytheon Company's Missile Systems business unit for the U.S. Navy and the 13 member nations of the NATO Sea Sparrow Consortium, including Australia.



An ESSM leaving its test launch canister. The ESSM will arm the RAN's FFGs and Anzacs (Raytheon)

The missile, dubbed Control Test Vehicle-4A (CTV-4A), was launched from the Desert Ship launch complex at White Sands Missile Range. After a series of controlled manoeuvres, the missile transitioned to guided flight resulting in the tactical kill. Real time, visual, radar and telemetry data showed the missile maintaining proper controlled and guided flight with the flight trajectory comparing favourably with preflight predictions.

ESSM is the next-generation Sea Sparrow missile. Features include a larger diameter rocket motor, a tail control section, thrust vector control for vertical launch capability and an upgraded ordnance package. CTV-4A was the first of fifteen planned flight tests scheduled for this year. The NATO Sea Sparrow has been the primary surface-to-air ship self defence missile system for USN and member nations' ships for more than 30 years.

## Collins submarine upgrade on track

The upgrade of two Collins class submarines to increased operational capability was on track to meet its December 2000 target. Head of the Submarine Capability Team (SMCT), Rear Admiral Peter Briggs, said.

DECHAINEUX and SHEEAN are currently being upgraded to make them faster, quieter, more reliable and

HMAS WALLER and FARNCOMB, would be available for operations this year.

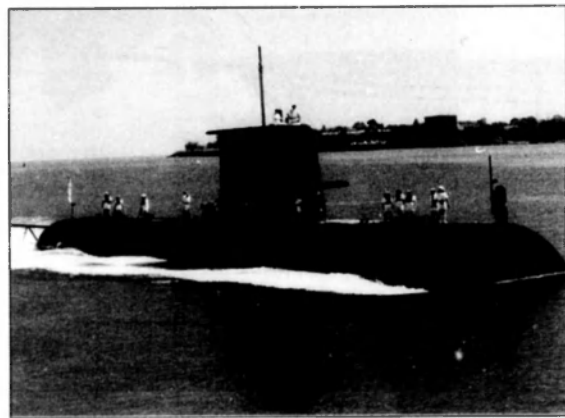
Later this year WALLER will take part in RIMPAC – an exercise with and against the US Navy near Hawaii. COLLINS will also travel to Hawaii then on to testing on a US Navy range off Alaska.

He said by the end of the year five submarines will have been delivered to Navy. The sixth, RANKIN, is expected to be launched in November 2000 and start sea trials in April 2001. All six submarines will be homeported at HMAS STIRLING.

Admiral Briggs said Navy was working to progressively overcome the Collins class submarine's operational deficiencies, improve their reliability and upgrade many of the electronic and platform systems onboard.

\$266 million was allocated from the Defence budget and approved by the Federal Government in December last year to achieve the upgrade of DECHAINEUX and SHEEAN to increased operational capability.

RADM Briggs said half of this funding was being used to incorporate new technology and to enhance the operational performance of the submarines. He said the balance of the funding would be used to rectify shortcomings, many of which were identified by the McIntosh/Prescott report.



HMAS WALLER on the surface in Darwin Harbour. The upgrade for all six submarines is on track.

Reporting on the progress of the upgrade project RADM Briggs said modification trials of engine mount stiffeners on one of DECHAINEUX's three engines were successful in reducing vibration.

They have now been fitted to COLLINS and will be finally fitted to the fast track submarines.

In 1999 COLLINS and DECHAINEUX trialed various measures in propeller and hull changes and engine fixes which had been successful in improving reliability and reducing the noise signature.

Modifications to the fin, casing and platform were now being fitted to DECHAINEUX and SHEEAN.

Currently a new Electronic Support Measure (ESM) system is being delivered for DECHAINEUX and SHEEAN. The system is a critical area of self defence enabling the submarine to detect radar transmissions. The submarines' communication and combat systems will also be augmented this year.

Admiral Briggs said the fast track program built on work approved by the Government in mid-1999 which had resulted in significant improvements to noise signature in COLLINS.

COLLINS has also had its combat system augmented and trials of this equipment, together with additional testing of platform improvements, will be carried out at sea in the coming month.

"We have also been encouraged by the response to a number of initiatives to retain existing submariners and attract new personnel," he said.

"In September last year we began to implement our plan to achieve an effective personnel capability. This included an increase in submarine service allowance, a financial bonus for two years' service, a three-watch system, stress management training and a dedicated trials crew to reduce family separation," he said.

"We have four submarines manned. We currently have 42 per cent of the final number of submariners required. We will need to build the numbers farther to ensure we have enough personnel to run the fleet and support infrastructure based on shore."

By Vic Jeffery, Navy Public Affairs WA

## Sea Eagle ASM withdrawn

The UK has announced the early withdrawal of its locally developed air launched ASM. The air launched Sea Eagle ASM served the RAF and RN for 15 years. The UK MoD believes that since the demise of the Cold War, for which the weapon was designed, strategic circumstances no longer require such a weapon.



An early model RN Sea Harrier launches a Sea Eagle anti-ship missile. Without Sea Eagle the RN Harriers are without an effective long range anti-ship missile.

The Sea Eagle entered service in 1985 as a long range fire and forget ASM. Production was completed in 1992. It was launched from RN Sea Harriers and RAF Tornado GR.1Bs which replaced the Buccaneer in this role. The decision also comes about from the recent UK Strategic Defence Review recommendation to withdraw the GR.1B from service as anti-shiping roles would now be in littoral waters as opposed to open ocean operations of the Cold War.

The availability and use of Harpoon in the RN surface fleet also brought about the decision to retire the missile early.

Sea Eagle uses inertial guidance for mid-course, followed by a J-band (10 to 20 GHz) active pulse radar terminal seeker with a range of 30km. On launch, the missile accelerates to its Mach .85 cruise speed, descends to sea-skimming height and then turns on to the target bearing. When the missile is approximately 18kms from its target, the radar seeker switches on and locks on to the enemy ship. On a long-range mission, the missile can, if required, climb when some 30kms from its target and use its seeker to

update its position relative to the target before dropping back to sea-skimming height. The missile's onboard flight-control computer allows it to vary the attack height, fly random manoeuvres during the final stages, fly over other targets or ships, ignore countermeasures or decoys and attack from any required bearing. A 500lb semi-armour-piercing warhead is used with a delayed action impact fuze. The propulsion unit is reported to have a low infra-red signature and is smoke free. The missile has a maximum range of 110 km.

The helicopter-launched version is in service with the Indian Navy for use on Sea King helicopters and Jaguar strike aircraft owned by the Indian Air Force. It is believed that Sea Eagle missiles were also exported to Chile and Saudi Arabia.

What the UK intends to do with its Sea Eagle stocks is presently unknown.

## IRAN tests new ASMs

Iran has announced that it has tested two new indigenous developed ASMs.

The first missile type is a reworked US RIM-66 Standard SM-1 naval anti-aircraft missile delivered to Iran in the 1970s. The missile's electronics have been digitised allowing the use of a frequency agile receiver for semi-active command guidance, providing greater resistance to jamming with solid rocket fuel, warhead and powerpacks now being made locally. Although not possessing the warhead effect of a Harpoon or Exocet the main advantages of this missile is its size and supersonic speed, thus making it difficult to counter.

The second missile is a locally modified Chinese C-802. The modification allows the missile to be air launched and gives it a more robust guidance system with, it is believed, a data link back to the launch aircraft.

The presence of both new types of ASMs will make naval operations in the Gulf and in particular the Straits of Hormuz that much more problematic.



## Two more Sovremennys for China

Russia is selling two of its existing Sovremenny class DDGs to China. This comes on the heels of the arrival



A Sovremenny class DDG. Two are to be taken out of Russian service, refitted and then sold to China.

of China's first Sovremenny (see *THE NAVY* Vol 62 No 2). The next is due in Chinese waters by the end of the year.

The two Russian Navy Sovremennys will be withdrawn from service and modified at the Severnaya Verf shipyard.

The modifications to be conducted are still unknown but it is thought that the work may be simple repair and a minor upgrade to bring them in line with China's brand new Sovremennys. However, China remains in negotiations with Russian officials on possible new weapons for these ships.

The cost to China of the two second hand ships will be significantly less than the first two brand new ships.

## KIEV destined for China

The Russian 'Kommersant' daily newspaper has reported that the 40,000 tonne aircraft carrier KIEV, mothballed by Russia over six years ago, has been sold to China.

The carrier originally accommodated 12 Forger VTOL fighters, 20 helicopters and had a

large complement of anti-ship missiles. She was launched in 1972 and withdrawn from service in 1994.

The Russian paper reported that a US-Chinese firm, Maritime Suppliers, is understood to have signed a sale agreement with the Russian Defence ministry.

What the Chinese paid for the carrier is not known but the MINSK and NOVOROSIYSK, same class, were sold to South Korea as scrap for \$US4.5m and \$US4.3m respectively.

According to Kommersant, the Russian Defence ministry has said that all military equipment had been stripped from KIEV.

China has been keen to acquire aircraft carriers for many years. Recent reports have stated that it will complete its first locally constructed carrier in 2005 with construction starting later this year.



The Russian carrier KIEV during the Cold War. What plans the PLA-N has for the carrier are unknown.

It is not known if KIEV will be used as an aircraft carrier or as an example to the Chinese for their carrier construction. However, the carrier is very similar to what India has recently chosen which is to be extensively modified to take the MiG-29K fighter. As the Chinese do not use the MiG they could opt for the SU-27K which is in Chinese airforce hands, which incidentally was thought to be for a carrier when initially purchased.

## Another FFG for Taiwan

The Taiwanese Government has decided to resurrect plans for an eighth Olivier Hazard Perry class FFG. The plan to build the eighth ship was shelved in 1997 due to budgetary constraints. The Taiwanese FFGs differ from those found in the RAN and USN in two main areas. They have two quad ASM missile launchers behind the bridge for eight indigenously produced Hsiung Feng II missiles and two 40mm Type 75 Bofors guns amid ships behind the ship's boats. All the ships in the class are named after Chinese generals and warriors. A Prairie Masker hull acoustic suppression system is fitted and a point defence missile system may be fitted in place of the 40 mm guns. Raytheon's RAM is a possibility (see *THE NAVY* Vol 62, No 2).

These seven FFGs, and the eighth when built, form the 124th Attack Squadron.

Why Taiwan would resurrect this class of ship is a mystery given that the design dates from the 1970's, is not stealthed like its new La Fayettees and stocks of the Standard SM-1 anti-aircraft missile are dwindling. It could not be considered a counter to China's new Sovremenny's as the SM-1 missile and Phalanx would provide little to no protection from the SS-N-22 'Sunburn' ASM now entering service with the PLA-N. It is also understood that China will be licensed to produce 'Sunburn' missiles giving it a superb ASM capability against all ships without Standard SM-2 or a sophisticated command, control and surveillance system.

## RSN commissions two LSTs and plans circumnavigation

The Republic of Singapore Navy (RSN) has commissioned two locally-built ENDURANCE class LST (Landing Ship Tank). The commissioning ceremony signified that the two LSTs, RSS ENDURANCE and RSS RESOLUTION, the first of a total of four, have attained operational status. Singapore's Deputy Prime Minister and Minister for Defence, Dr Tony Tan officiated at the commissioning ceremony at Tuas Naval Base.

The two LSTs are part of the RSN's new-generation LSTs that replace the five ageing ex-US County Class LSTs. They have greater lift capacity and longer range but operate with half the crew. With its enhanced logistics transportation capabilities, the LSTs have been designed to support Singapore's overseas training requirements, as well as peacekeeping and humanitarian missions. The new LSTs are equipped with the latest technology such as the Electronic Chart Display and Information Systems (ECDIS) for more accurate navigation at sea.

At the invitation of the USN, RSS ENDURANCE will take part in the International Naval Review (INR) from 3 to 7 July 2000 in New York City Harbour. This is a first for the RSN. While en-route to New York, RSS ENDURANCE will be sailing to ports in the United States and Mexico. On its way back to Singapore, it will call on ports in Canada, United Kingdom, France, Egypt and Saudi Arabia. This voyage by RSS ENDURANCE marks the first time that an RSN ship will circumnavigate the world.

## UK to build new landing ships

The UK Ministry of Defence has invited five UK shipbuilders to tender for the construction of two new large landing ships logistic for the Royal Fleet Auxiliary (RFA), with options for a further three ships of the class.

The two new vessels, with an approximate contract value of £130 million, will replace the two RFA

Landing Ships Logistic (LSL) SIR PERCIVAL and SIR GERAINT in 2003/2004.

The new ships, expected to be at least 10,000 tonnes each, will be much larger, more capable and flexible than existing RFA LSLs and will provide a major increase in the capability of the RFA to support amphibious operations and other military tasks such as peacekeeping duties and disaster relief around the world.

The UK Strategic Defence Review gave a clear commitment to improved specialist amphibious shipping for the Joint Rapid Reaction Forces, including the building of two new RFA landing ships. These vessels will enable the UK to maintain its leading position in amphibious capability within Europe and help Europe field a stronger and more coherent contribution to NATO.

The ships will offer flexibility for worldwide operations, and will be essential elements in future amphibious warfare operations. They will be the force multipliers for the UK's amphibious warfare fleet, moving the heavy vehicles, equipment, stores and troops that sustain a landing force anywhere in the world and disembark them in tactical formation directly into combat.

## USMC AAV water tested successfully

The USMC has completed the first high-speed water test of its new Advanced Amphibious Assault



The New USMC AAV. The vehicle would serve the Australian Army well from the LPAs KANIMBLA and MANDORA (USMC).

Vehicle (AAAV), designed and built by General Dynamics Land Systems. The test took place at the Patuxent River Naval Air Station in Maryland.

The AAAV is a new amphibious APC for the USMC. It can self-deploy across water and land with 17 fully equipped Marines. It is armed with a 40mm gun and can travel on the water at more than 30kts in Sea-State 3. On land it has a maximum speed of 75kph+. Its armour provides protection from Armour-Piercing 14.5mm rounds and the vehicle has an automatic fire extinguisher system.

During the test the AAAV prototype reached speeds in excess of 20kts over a one-mile distance. This test also marked the first attempt to power the AAAV at the full-up plane position it uses to ride on the water.

"Taking a vehicle that can perform like an M-1 tank on land and turning it into a speedboat on the water is quite an engineering feat" said Colonel Blake Robertson, USMC AAAV programme manager.



The USMC's new armoured amphibious assault vehicle during water trials. (USMC)

During 1999, the AAV prototype successfully completed safety checks, crew familiarisation, thruster and water mobility testing, and land-speed performance requirements at Quantico in Virginia.

"A prototype engine is 75% through its 1,000-hour engine durability testing and another has started the 400-hour standard NATO testing," said John Wosina, Land Systems Vice President of Amphibious Operations. "The prototype vehicle is scheduled to continue water testing through this summer in preparation for Early Operational Assessment testing later this year."

## USN SSNs may get new life

Citing costs and the need for more submarines, the USN is likely to earmark more than \$US1 billion to extend the life of its SSNs rather than convert four Ohio class SSBNs to carry cruise missiles.

The USN placed \$US1.1 billion in its 2001 budget request that would be used either to refuel four SSN-688

Los Angeles-class attack submarines or to serve as a down payment on converting several Ohio-class strategic ballistic missile submarines to carry cruise missiles.

This issue is being debated within the USN who must decide on where to allocate the money. However, because of arms control treaty uncertainty, it seems more likely the USN will take the Los Angeles-class option. The USN have four SSN-688 that will have to be decommissioned in 2002 if they don't refuel them.

The Ohio-class conversion at present is considered risky. If changes to the existing Strategic Arms Limitations Treaty II cannot be negotiated to allow strategic missile submarines to be converted to carry cruise missiles, then the USN will be forced to completely remove the missile compartment from each sub and replace it with a different type. This approach is viewed as very costly. It is estimated that this special missile compartment conversion would cost an extra \$US500 million per sub, taking the four-ship conversion costs to about \$US 4.5 billion.

Under the terms of the 1993 treaty, ballistic missile submarines cannot be used for other missions unless the missile tubes are significantly different from what is already fitted. Otherwise, the modified submarine would still count as part of the warhead totals under the treaty's provisions, even if there are no ballistic missiles on that submarine.

If the USN decides to go with the SSBN conversion option now it could be forced to pay a huge cost increase if arms control implications are not addressed before work starts. Rather than lose the opportunity to increase the SSN force structure, it is believed the USN is more likely to choose refuelling. Nuclear refuelling of the Los Angeles-class subs costs about \$US200 to \$US250 million per boat.

If the decision is made to forgo ballistic submarine conversion at this time, the issue is not dead. Navy officials said, adding that converting the four strategic submarines could still be carried out to boost the total number of attack submarines to 62. The USN believes that this is still not enough to handle all the missions the sub force faces today.



The USN SSN USS KEY WEST. Refuelling four SSNs will help the USN meet its submarine patrol responsibilities. (USN)

## HMNZS WELLINGTON Decommissions

HMNZS WELLINGTON, well known to many in the RAN, has been decommissioned after 18 years and 352,000 nautical miles in RNZN service.



HMNZS WELLINGTON during happier times. (John Mortimer)

WELLINGTON was acquired from the Royal Navy in 1981 having already served for 12 years as HMS BACCHANTE in RN Service. As a gun-armed Leander she was fully compatible with existing RNZN frigates. She sailed for New Zealand in 1982 and went straight into a lengthy refit. Changes were made to bring her into line with RNZN standards - such as the ASW mortar which was removed and replaced with two triple ASW torpedo tubes. Most significantly though was her fuel capacity being doubled, setting her apart from her contemporaries. Other changes were made including an RCA digital fire control system and gunnery radar, anti-missile chaff launchers, new ESM and an updated surface search radar.

In 1991 the ship again entered major refit with the installation of the NAUTIS F action information system, and the new LW-08 long range air warning radar. Such equipment served her well for one of her most extensive deployments when in 1996, WELLINGTON was sent to the North Arabian Gulf, as New Zealand's first contribution to the UN-mandated sanctions against Iraq,

Following her Gulf deployment in 1996, WELLINGTON was further altered by replacing the old Seacat missile system with the Phalanx CIWS and enlarging the hangar in anticipation of the replacement naval helicopter.

However, personnel training demands were beginning to dominate the Navy's day to day management.

and in late 1997 the ship was designated the Navy's training frigate.

During 1998, incidentally, WELLINGTON conducted the last operational flight of a Wasp helicopter.

Last year a decision was made to place her alongside at extended notice following the announcements of a three frigate policy for the RNZN. None the less, the ship made one last passage to the city of Wellington where her charter of the freedom of the city was returned. Since then WELLINGTON has served alongside in a training role and support role for the fleet.

In his closing remarks at the decommissioning ceremony on 5 May, the RNZN Chief of Navy said "Farewell WELLINGTON and thank you - for the happiness we have shared; for the friendships made and the frustration's endured; for the memories, and the sea-stories they generate; and for bringing us safely home. May I wish all that have served in her every success and remember, whilst her people will soon leave the ship, the ship will never leave her people."

## India to receive more Bear

The Indian Navy has announced it has selected the Russian Tupolov Tu-142 'Bear' for Maritime Patrol duties. The Tupolov beat the French Atlantique which happens to be used by India's neighbour and part time enemy Pakistan.

The Indian Navy will purchase six Tu-142 aircraft which will be equipped with the British made Sea Eagle ASM (Anti-Ship Missile, see earlier news item) and cost approximately \$US200 million.

The Indian Navy already operate eight Tu-142 'Bear' for maritime patrol. This was considered a major factor in favour of the decision to purchase the Russian aircraft which have the ability to operate off the Western Australia coastline.

The Indians also have plans to equip the new aircraft with the much feared SS-N-27 ASM.

## Navy League award for HMAS ADELAIDE

The Navy League Community Service Award Shield for 1999 has been won by HMAS ADELAIDE. Commodore M.J. Youl AM RAN(Retd), representing the Federal President of the Navy League of Australia, presented the award to the Ship's Commanding Officer, Captain W.M. Gately AM RAN, on the flight-deck of HMAS ADELAIDE berthed at Fleet Base East.

The Navy League of Australia Community Service Award is presented annually to the HMA ship or establishment that has made the most significant contribution to the civilian community during the calendar year. The contribution need not be made in Australia. It can be made anywhere in the world and can range from a rescue at sea, fighting bushfires or raising funds for charity.

The Federal Council of the Navy League selects the winner of the award from nominations forwarded to it by the various RAN commands.

The League's executive admit that it is not an easy decision to make as ships and establishments vary greatly in size. Obviously establishments

such as HMAS CERBERUS, with a ships company of several thousand, has more opportunities to qualify for the award than a patrol boat with a crew of 20 or so.

The award was first presented in 1981 to HMAS PENGUIN and since then it has traversed the length and breadth of the country a number of times. The list of winners includes HMAS CONNAWARRA, Naval Communications Station HAROLD E HOLT, HMAS STIRLING, FIMA Cairns, HMAS CERBERUS, HMAS ALBATROSS and HMAS HARMAN.

Until this year it had been presented to a ship on only 4 occasions – HMAS CESSNOCK (twice), HMAS BRISBANE and HMAS ANZAC three years ago.

HMAS ADELAIDE was a very worthy winner for 1999 given the excellent work which the Ship's Company had done in supporting the Colton ward at the Adelaide Women's and Children's Hospital, St Ann's Special School, and their support for the Naval Reserve Cadets of TS ADELAIDE. The Ship's Company had raised a considerable amount of funds for the hospital and the school. Members of the Ship's Company had visited the hospital and the school and spent time with the children. Children from the school were also given an exclusive tour of the guided missile frigate.

Commodore Youl congratulated the Ship's Company for their efforts

and particularly the fact that, although they all had busy jobs on board, they were prepared to spend their spare time raising funds and helping these organisations when they could. The Ship's Company also kept close ties with the organisations by sending regular newsletters and updates. Commodore Youl said that "their efforts were a credit to the Ship's Company".

"The thousands of kilometres that the shield had travelled since it was first awarded demonstrates that Australian sailors, wherever they might happen to be, contribute much to the community which in turn reflects well on the communities perception of the RAN" he added.

## Kidds rejected, Again

The Minister for Defence, John Moore, has announced that the Defence Capability Committee (DCC) has formally decided that the US Navy Kidd Class destroyers will not be acquired by the ADF.

The DCC reached its decision on the basis that, in the present environment, they do not provide longer term value for money.

"The Kidds were only one option for Navy's long term Anti-Air Warfare capability and they were closely examined," Mr Moore said.

"Although they will not be acquired, the examination of the Kidd option proved a useful exercise in

exploring issues relevant to the acquisition of an effective Air Warfare capability for the ADF's surface fleet."

Mr Moore said that a decision on a naval Air Warfare capability would be made following the Defence 'White' Paper, due for release later this year.

A joint Defence and industry team has been established to determine the most effective way to acquire the capability for the ADF.

"The Government recognises that an Anti-Air Warfare capability in the surface fleet is an important consideration. It also is an expensive one," Mr Moore said.

"The Federal Government and the Defence Department will continue to work with industry to investigate the question of the future of Australia's surface fleet, including Air Warfare capable ships.

"This will include consideration of industry's future ability to support the ADF in the provision of its maritime capabilities," Mr Moore said.

Industry is already gearing up to meet the capability requirement of the RAN with many major shipbuilders from around the world expressing interest. Whether any new ship on offer will be as capable, survivable and powerful as the Kidds is open to debate. How many will be acquired is also unknown but if the decision is to be based on the 'White' Paper's recommendations that number could be quite low.

# Observations

## DEFENCE GOVERNMENT WILL HAVE TO CHOOSE

By Geoffrey Evans

Looking at the defence scene in early May 2000 it appears to the writer that the present government will have to face up to some troublesome defence issues in the very near future.

All the indications point to a defence force expected to perform too many tasks with inadequate resources. Both financial and human. The tasks range from peacemaking and peacekeeping missions in foreign lands to a defence force expected to have the ability to deter anyone contemplating a challenge to Australia's national sovereignty.

The Defence Department's decreasing proportion of the national financial cake is almost, if not quite, as well known as widely reported cost overruns in some acquisition programmes; the additional costs involved in rectifying these deficiencies are however small compared with the certain cost of replacing major items of naval, air force and army equipment many of which will become obsolescent at about the same time – 'block obsolescence' as it is known in defence circles. Ships and aircraft do not come cheaply.

Efforts to avoid block obsolescence have been made by defence planners for many years but governments tend to procrastinate when faced with significant equipment expenditure. Governments failing to act in a timely way can however, claim with some justification that the community has other priorities in the relatively peaceful climate in which most Australians have lived, virtually since the Second World War.

Human resources: Not surprisingly, personnel costs have for long formed the largest item of expenditure in defence budgets – only rarely falling below 50%. In recent years particularly these costs have escalated and will continue to do so as pay scales based on rank are increasingly discarded in favour of pay, for specific skills (not so long ago only medical and dental officers received salaries more closely aligned to their civilian colleagues). A fall in uniformed and civilian members has not been matched by a corresponding fall in personnel expenditure – in fact costs will almost certainly increase as the Services strive to match wages and conditions prevailing in civil employment in order to not only attract recruits but to retain serving members.

In addition to the need to meet increased equipment and personnel costs, operational expenses have also grown especially since the East Timor venture: while some peacemaking/keeping expenditure may be reimbursed by the United Nations overall operational costs are unlikely to decrease in the foreseeable future and are more likely to rise as tensions in our region show signs of easing.

The Howard Government appears to recognise the approaching problems and one might assume it awaits with some trepidation the Defence White Paper it commissioned in 1999, which among other things will provide the current strategic outlook. One does not have to be a foreign affairs or defence expert to realise that we do not yet live in a world in which nations have decided to dismantle their armed forces, discard their armaments and henceforth live happily alongside one another: indeed, one might reach a quite different conclusion.

Given convergence of the factors outlined above – with defence debts exceeding income – it seems something will have to give: A reduced defence capability or more funds to meet the nation's security insurance policy? Not an easy decision for any Australian government.

## Sea/Shore Postings

The April issue of the Defence Personnel Executive's publication THE KEY contains interesting information on the problems of achieving a reasonable balance between sea and shore time in the RAN at the present time.

The aim of the sea to shore ratio is to provide 10 years service at sea in a 20-year career: Ideally the sea/shore ratio would be:

|                       |     |
|-----------------------|-----|
| • Warrant officer     | 1:2 |
| • Chief Petty officer | 2:3 |
| • Petty officer       | 1:1 |
| • Leading Seaman      | 3:2 |
| • Able Seaman         | 2:1 |

The ideal is rarely achieved for many reasons including:

- operational requirements,
- career progression (promotion and training requirements),
- known discharges,
- billet requirements,
- personal posting preferences.

If possible, six to eight months notice of postings is given to members but this can be affected by factors such as:

- changes to a sailor's medical category or to personal or family circumstances,
- unexpected discharges,
- personnel shortages etc.

At the present time an overall shortage of personnel in the RAN, intensified in certain categories, has meant more time at sea for some people; however, the need to have ships manned and operationally fit to go to sea makes this inevitable.

(In the writer's experience sailors were not particularly adverse to seetime, in fact it was sometimes a relief to see Sydney Heads or some port with all its entanglements disappear over the horizon)

## Coastwatch

Coincidentally a decision to hold yet another inquiry into coastal surveillance arrangements was announced at the same time the April-June edition of THE NAVY in which this column pleaded for no more inquiries, was published.

The latest inquiry – there have been at least ten since 1971, the latest in 1999, an average of one every three years or less – is to be conducted by the Joint Committee of Public Accounts and Audit.

Members of the public were invited to express their views on the performance of Coastwatch, submissions to be made by 2 June 2000.



The Kidd class DDG USS CHANDLER enters Sydney Harbour for the last time. The Kidds were at one stage the most powerful destroyers in the world (Brian Morrison, Warships and Marine Corps Museum Inc)

# Submarines in Britain's Defence



The RN SSBN HMS VICTORIOUS makes an unprecedented port visit to the French Port of Brest. The roles of RN SSBNs are expanding and becoming more flexible. (RN)

Dr Lee Willet\*

With the UK expanding its submarine capabilities, Dr Lee Willet examines the utility of this capability enhancement and its implications to UK military strategy. The importance of nuclear power to the RN's submarine force, and future strategic direction, is considered vital in this expanding role for Britain's submarines.

Initially, submarines were regarded as 'a weapon of the weak'. With nuclear propulsion, submarines emerged as the ultimate weapon of the strongest powers in the nuclear age. Bringing scope for speed and for deep-dived, sustained reach, nuclear power turned submersible torpedo-boats into submarines. Although the only difference between a nuclear-powered and a conventional submarine is the power plant (sensor and weapons technologies will be equivalent in capability), a nuclear power plant brings operational capabilities of a different order of magnitude because of the speed and endurance it brings as core assets to the submarine.

Modern warfighting technology highlights the role of stealth. The most effective way to make a sea-based platform stealthy is to hide it beneath the surface. Nuclear submarines provide – in one multi-dimensional, modular unit – a balanced strategic, operational and tactical force package presenting discretionary political and military choices across the spectrum of sometimes blurred and non-permissive strategic challenges. Their unique agility derives largely through two key strengths: stealth and flexibility. Stealth lends the ability to employ surprise, a key principle of war and a fundamental asset of the submarine.

In the post-cold war world the British nuclear submarine fleet has been forced to undergo a basic re-evaluation of its contribution to Britain's defence mission. However, the Royal Navy (RN) Submarine Service has undergone a period of strategic reassessment perhaps unrivalled in Britain's armed services. A principal aim of

British defence policy is the maintenance of an independent national nuclear deterrent complemented by conventional forces capable of operating operations across the range of modern military operations. Across this spectrum – from having sole responsibility for Britain's nuclear deterrent, from a new source of land attack from the sea in its newly-deployed Tomahawk Land Attack Missile (TLAM) capability to the ability to operate across the spectrum of operations from high intensity conflict (such as special forces insertion) to operations other than war (such as providing intelligence in counter-drug operations) – submarines bring unrivalled flexibility to influence events above, on and below the surface of the sea. For this reason, submarines remain indispensable to British policy and to military taskings.

Britain's 1998 Strategic Defence Review underscored as key aspects of British policy the kinds of roles for which nuclear submarines provide a unique contribution – power projection in distant, expeditionary operations. Under SDR, Britain will have a force of 14 submarines: four Vanguard-class Trident SSBNs; and 10 Trafalgar- and Astute-class SSNs.

## SSBNs

The role of Britain's military is to deter aggression and support Government policy. A principal aim here is to maintain an independent national nuclear deterrent complemented by flexible and multi-dimensional



The Trafalgar class SSN HMS TRECHANT was painted with a special blue paint in selected areas over the hull to examine their visual stealth effects in shallow water. Success would mean more shallow water/littoral operations for RN SSNs. (RN)

conventional forces. Nuclear weapons are the ultimate guarantor of national security. They also provide unprecedented military and political standing. By combining stealth and survivability with the lethality of nuclear weapons, submarines are the most independent, covert and survivable deterrent asset. Former British Defence Secretary George Robertson noted recently that "a submarine on continuous patrol, because it is invisible and undetectable, is the most secure, and therefore crucially the most stable, means of maintaining nuclear deterrence".

SDR mandated that Britain will retain continuous at-sea deterrent patrols, a role that has been perhaps the RN's most significant post-war achievement. In an unprecedented open discussion of British nuclear strategy, SDR mandated that Britain's SSBN force levels would carry reduced warhead loads while operating at reduced readiness levels. However, reflecting emerging thinking in the RN and elsewhere, perhaps the most significant development was that Britain's Trident force would carry Britain's sub-strategic deterrent capability.

This new role developed from Britain's reassessment of the causes of conflicts which might provoke the use of nuclear weapons. Britain drew several conclusions from this re-assessment. First, deterrence is no longer wholly dependent on linkage to nuclear weapons. Second, the increasing number of rogue states in possession of or in pursuit of a WMD (Weapons of Mass Destruction) capability do not share Western understandings of deterrence. Third, in recent months – despite the decision to ratify the START II nuclear arms control treaty – Russia has reviewed its own strategic posture and has announced that it will consider first use of nuclear weapons, at both strategic and tactical levels, if necessary.

The decision to adapt Britain's Trident programme to a greater variety of roles highlights how the flexibility of the Trident D-5 missile has proved wholly appropriate to British purposes, linking conventional and strategic nuclear deterrence by providing deterrence at levels below grand strategic. All four British SSBNs are designated as sub-strategic platforms, providing strategic and sub-strategic deterrence for the UK and for NATO. A sub-strategic policy might see Britain use the threat of a sub-strategic, preventive strike to deter the use of WMD by a rogue state. Constituting only an adaptation of Trident's existing capabilities, sub-strategic is not so much a military capability as a cost-effective means of extending and tailoring strategic responses in proportion to perceived national interest.

As Britain broadens the roles of its SSBN force, so the proportionate contribution of this force to NATO's strategic deterrent continues to grow. Rear Admiral R. P. Stevens, Britain's Flag Officer Submarines (FOSM), noted that Britain's SSBN force contributes 20 per cent of NATO's maritime nuclear forces, a hefty contribution in comparison with [Britain's] relevant size. This proportion will continue to grow if START II is implemented to bring U.S. Navy SSBN levels down to 14. On top of this, given that the U.S. Navy may have to re-port some of its Atlantic Fleet SSBNs to the Pacific following the prospective conversion of four Pacific Fleet SSBNs (the first four of the Ohio-class) into special forces and land attack platforms, the relative proportion of British SSBNs in the Atlantic – and committed to NATO – will increase further.

Today, an SSBN's land attack influence has moved beyond strategic nuclear targeting. The U.S. Navy is continuing design work for converting its first four Ohio-class SSBNs into dedicated special operations and land attack platforms. The significance of this emerging programme is in the land attack role. As Rear Admiral Malcolm Fages (U.S. Navy Director of Submarine Warfare) noted, the land attack role 'barely existed as a submarine capability just ten years ago'. The converted Ohio SSBNs will be able to fire 154 TLAMs in six minutes – bringing strategic and tactical surprise from a stealthy, forward-deployed unit. The RN is monitoring these developments closely. The RN has only four SSBNs, all of which are required in the deployment cycle to maintain one SSBN on station as a continuous at-sea deterrent. Yet an operational challenge here would be to dual-role the SSBN on station to maximise its operational capacity without impinging on the survivability of the strategic deterrent.

Since SDR, there has been a greater stated emphasis on the secondary roles for SSBNs. Such operations include hydrographic surveillance, training operations and port visits. The much-publicised visits by HMS VANGUARD to Gibraltar and HMS VICTORIOUS to Brest in France highlight the potential relevance of submarines to Defence Diplomacy, a central component of Britain's defence mission in the wake of SDR. U.S. SSBNs have begun to participate in wider fleet exercises. A further challenge – in maximising the operational output of an SSBN – would be to deploy an SSBN with a maritime task group for a mission in conjunction with – or other than – its deterrent role.

## SSNs

In providing presence, sea control/denial, anti-submarine/surface warfare, indicators and warnings (INW), special forces operations, the protection of the strategic deterrent and coercion or strike operations with the Tomahawk Land Attack Missile (TLAM), SSNs can operate across the spectrum of military taskings. Here, SSNs can be 'covert when required, overt if desired'. SSNs can undertake these operations either autonomously or in support of a joint task group.

Britain's SSN fleet continues to undertake core tasks wholly similar to those conducted in the Cold War. Since the advent of nuclear power, British SSNs have conducted sustained operations as primary forward-deployed assets at perhaps the highest levels of force readiness. Two new developments are the introduction of land attack cruise missiles and increasing requirements for SSNs to act as forward-deployed intelligence assets.



The RN's acquisition of TLAM (Tomahawk Land Attack Missile) gives their SSN fleet greater scope to contribute to maritime operations. (RN)

Britain procured 65 TLAMs, for deployment across its SSN fleet, as weapons for strategic coercion. Procured from the U.S. in 1998, Britain fired its first TLAMs in combat in 'Operation Allied Force' in Kosovo during March 1999. When deployed on SSNs, TLAM enhances significantly British capabilities and transforms the nature of Britain's conduct of warfare from the sea. The sea is no longer a self-contained battlespace, but a medium on which and from which warfare is conducted. TLAM-capable SSNs bring a decisive and unprecedented maritime contribution to joint and combined operations ashore, adding to a Task Group a stealthy reach, power projection and surprise, often in non-permissive environments. With only limited rounds available, from the British perspective SSNs are 'self-evidently the ideal delivery platform [for TLAM], operating at low levels of self-risk and unsupported for extended periods'. With the combined reach of a precise, 1,000-mile range missile and a covert, sustainable and forward-deployed sovereign platform, this force package brings the ability to: to instil uncertainty in the mind of a prospective aggressor; to exert strategic surprise; to reach in-land at distance, into and beyond the littoral, with considerable, precise deep-strike point target force across all levels of warfare from deterrence (through coercion) to the shaping of the strategic and operational battlespaces. As well as reducing risks to friendly forces and non-combatants, TLAM has developed into a 'weapon of choice' in a category of 'preferred weapons'. TLAM is a weapon of choice for both political leaders and force commanders.

Britain's First Sea Lord Admiral Sir Michael Boyce noted that TLAM provides Britain with political options and force capabilities consistent with SDR's requirements for more flexible and rapidly-deployable forces able to respond to the challenges of a complex modern world. Sea-based land attack cruise missiles may prove to be of greater significance for the Royal Navy in the future. In an era of casualty intolerance, as Australia's Deputy Secretary for Strategy Hugh White noted at the RAN's 'Maritime War 21' conference in Sydney in February 2000, the future for manned aircraft remains uncertain at the very least. Thus, TLAM and its equivalent or successor cruise missiles look likely to remain a central factor in the equation for any future offensive air system. Moreover, the case for cruise missiles may be pushed harder still by developments in ballistic missile defence technologies. Britain has a seat at the cruise missile table, through TLAM. However, the RN Submarine Service will need to re-assess its rationale for deployment of TLAM if it is to remain in the conventional land attack game now that the U.S. has moved to the

Tactical Tomahawk (TacTom) and beyond (with the Advanced Tomahawk Land Attack Missile, or ALAM).

However, Britain's SSNs need to show that they provide more capability than land-attack. 65 TLAMs is not a cost-effective load-out for a handful of billion-pound platforms. SSNs are very much part of the fleet. When deployed with TLAM, SSNs provide an invaluable contribution to Task Group operations with their inherent reach, stealth, mobility and flexibility. British SSNs are integrated more closely with Task Groups and their units, while retaining broader presence, flexibility and autonomy in many diverse warfare roles. As military forces seek knowledge dominance in the modern battlespace, SSNs have an increasing role. SSNs provide sustained, forward-based INW. Through maximising their ability to disseminate this information, SSNs can contribute directly to the real-time recognised maritime picture.

## Submarine Operations in Kosovo

SSNs made several critical contributions in 'Allied Force'. In an operation which challenged much of the logic of contemporary Western strategic thought, the nuclear submarines of the American and British Navies showed the ability to exert a range of unique, flexible options across the spectrum of combat. When military capabilities are viewed as a whole, from sea control to stealthy TLAM strike, the ability of an SSN to bring a range of battle-ready capabilities to the combat theatre in a single unit is evident.

From the U.S. Navy's perspective, USS MIAMI (SSN-755) became the first SSN to contribute to the land attack strikes in two theatres in the same deployment, having taken part in Operation 'Desert Fox' in December 1998 before deploying to the Adriatic for 'Allied Force'. USS NORFOLK (SSN-714) switched between INW and TLAM operations, while USS ALBUQUERQUE (SSN-706) contributed to the TLAM strikes while fitted and deployed as a special operations platform. Other U.S. submarines, USS BOISE (SSN-764) and USS NARWHAL (SSN-671), also contributed to the operation.

From the British perspective, HMS SPLENDID diverted from passage to the Persian Gulf with the HMS INVINCIBLE Task Group to be the first Allied unit into action on the first night of 'Allied Force'. HMS TURBULENT was also deployed, as an ASW asset to counter the prospective threat from Serbia's sole conventional submarine. In undertaking the full range of autonomous, joint and combined operations, HMS SPLENDID and TURBULENT showed how RN SSNs are



Many felt that with the end of the cold war the sun would set on the need for SSNs. However, the need has only grown with the modern SSN capable of conducting numerous military operations. (RN)

a cornerstone of the maritime contribution to joint and combined expeditionary operations. A measure of how far the RN Submarine Service has come is found in 'Allied Force': British and American SSNs fired 25% of the TLAMs employed, in Operation 'Desert Storm' in 1991 and Operation 'Desert Fox' in 1998. U.S. SSNs alone provided only 4% of the TLAMs fired.

## Challenges for Britain's Submarine Force

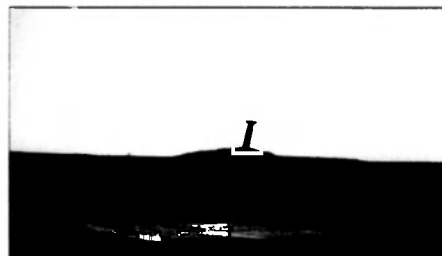
The RN Submarine Service clearly is making strides towards meeting the strategic challenges of the modern world and towards maximising its contribution to British defence policy. However, there remain some significant obstacles to further evolution. These are: connectivity, force size and the costs of nuclear ownership.

### Nuclear Ownership

Nuclear submarines often are viewed as expensive Cold War relics making only a limited contribution to military operations. Now that the submarine services of Britain and the U.S. have gone some way towards realigning and re-communicating the enduring multi-functional contribution of nuclear submarines to such operations, a significant challenge which remains is the issue of the cost of nuclear power. What is often overlooked, however, is the cost-effective capability that is procured with a multi-dimensional and flexible platform whose life expectancy can surpass 30 years. Simply, nuclear submarines provide more bang for the buck. This argues against the logic of force level cuts in SSNs.

### Force levels

Under SDR, Britain's SSN force was cut from 12 to 10 hulls. As SDR sought to reduce Britain's defence expenditure, two SSNs arguably were sacrificed to fund two new aircraft carriers. This decision was aided by the costs of nuclear ownership and, more specifically, by the prospective savings to be made from cancelling some submarine re-fits. Yet SDR's decision to trim SSN force levels from 12 to 10 hulls is set against a backdrop of increasing requirements for submarine missions and the fact that the background research for SDR showed that more than 14 SSNs were needed to meet national tasks. This calculation centred on the need to have five SSNs on station – one each to tackle the tasks of INW, Special Forces insertion, ASW, ASuW and land attack. Moreover,



For many years the submarine lost the capability to apply firepower to shore targets with the deletion of the deck-mounted gun. TLAM returns this capability to the RN but with far greater accuracy and effectiveness. (RN)

in these calculations the requirements for TLAM land attack were not vectored in as force drivers. When procuring TLAM, the RN calculated that three SSNs were required for TLAM missions alone to guarantee achieving the desired coercive effect. Thus, these analyses suggest a requirement for as many as seven SSNs on station in any given operation. A force level of 14 boats produces an operational cycle of five boats on station, a force level of ten produces just three. Moreover, the lack of available hulls will limit the ability of SSNs to carry out strike mission requirements without impinging on other operations, or vice-versa. Thus there is an argument that Britain should have been looking to increase, not decrease, its SSN force levels. A recent study by the U.S. Joint Chiefs of Staff has concluded that U.S. SSN levels should rise from the current level of 56 hulls to perhaps as many as 76 boats. This requirement is diametrically opposed to the conclusion of the 1997 Quadrennial Defence Review, which had stipulated a force level of no more than 50 hulls.

What may be of interest to the RN are U.S. submarine developments beyond its new Virginia-class SSN. U.S. submarine designers are looking at modular designs for future submarine classes, with submarine hulls having the capacity to be fitted for a variety of roles – from conventional submarine operations, to special forces options to conventional and nuclear land attack capabilities – as operational requirements dictate. This modularity would obviate the need for two different types of submarine. The RN is in the process of making a decision to extend the life of its Trident SSBN hulls to 36 years, the first step in a process which will bring Britain's programme more closely into line with its U.S. counterpart. It should be noted here that designers of Britain's Future Attack Submarine (FASM) are keeping their options open for installing a nuclear strike capability. Once Trident reaches its life expectancy, the option of deploying nuclear cruise missiles as the strategic and sub-strategic deterrent will return to the fore – as it has on the occasion of each British debate on the strategic deterrent issue. A submarine force capable of providing both strategic deterrence and traditional SSN roles would help the RN's cause in budget debates.

Moreover, as the requirements for stealth increase, so will the demands for multi-purpose, covert platforms such as nuclear submarines. Here, the *modus operandi* for a submarine on strategic deterrent patrol is not so different from that of a boat on TLAM strike. The key factors here are the differences in range between the two missiles and the resultant fact that a TLAM shooter deploys further up-threat. However, prospective improvements to TLAM speed and range in the ALAM concept suggest that there is some potential for operational congruence leading to a multi-purpose submarine carrying both strategic deterrent and conventional land attack weapons. Such a platform would bring greater payload to bear from under the sea. Improved payload, along with connectivity, will be crucial to the ability of the submarine to continue to influence events ashore.

### Connectivity

Today, there is a greater emphasis in the UK on SSNs providing forward-based intelligence. SSNs must be able to interact more closely in joint and combined operations to make a direct contribution to the real-time intelligence so crucial for shaping the modern battlespace.



If it is to be accepted that network-centred operations will provide the framework for implementing military force, the RN Submarine Service understands that communications remain its Achilles heel. In the words of U.S. Secretary of the Navy Richard Danzig, the challenge for submarine services is developing the:

*ability to integrate the submarine force with the rest of the Navy and the whole suite of national security activities. It is [the] ability to work with the battle group. It is [the] ability to come in close to the littoral. It is an ability to define submerging not as a lonesome venture but as a venture that connects with others... We need to overcome the notion that "run silent" is the necessary imperative of the submarine force in all circumstances.*

Yet an SSN must be able to provide ISW while exploiting its traditional, unique virtues of autonomous, sustained stealth. SSNs must generate functional interoperability with other units. In recent operations, British SSNs have experienced difficulties in communicating with other forces. However, as was discovered in Kosovo, the TLAM communications infrastructure may provide a larger framework for communication with other assets.

From the RN's perspective, there is a growing argument for upgrading SSN communications to tackle and exploit the challenges of knowledge dominance in modern warfare. Here, the U.S. Navy already has fitted 50% of its SSNs with EHF (Extremely High Frequency) communications capabilities, including switching its TLAM communications infrastructure to EHF. Without EHF, the lack of sufficient bandwidth is a central source of the communications problems facing SSNs. Moreover, limited communications capabilities will restrict Britain's ability to exchange TLAM targeting data and broader Battle Plans with the U.S. It is understood that U.S. EHF technologies for these purposes is subject to Foreign Military Sales legislation. Rear Admiral Stephens is actively pushing the case for the RN to switch to EHF.

## Conclusions

The changing role of the submarine has been the key issue for the RN Submarine Service since the end of the cold war. The primary challenge has been to justify retaining a force seen as expensive and outdated. Despite the strategic challenges of the modern world and a general misunderstanding of the vital, unique contribution of submarines to the national security of a maritime power, the British and American submarine communities actively are seizing the opportunity to assert the primacy of nuclear-powered submarines at the leading edge of contemporary military operations. New strategies and new technologies are enhancing this utility further.

First, national taskings for British and American submarines are increasing despite declining force levels. Second, a growing number of nations are pursuing submarine and nuclear capabilities. This underscores the enduring need to maintain traditional ASW skills. Third, nuclear-powered submarines provide the covert, sustainable, forward-deployed capability crucial to requirements in contemporary military operations for strategic surprise and active shaping of the battlespace. Fourth, developments in sensor technologies may serve to make surface warships increasingly vulnerable. Little progress has been made in improving the transparency of the oceans. Even here, however, the RN has moved to



The SSBN HMS VIGILANT on the surface. The main and only role of the SSBN during the cold war was strategic nuclear strike. Today, the RN is expanding the SSBN's role and its contributions to maritime security and military operations (RN)

combat potential threats by camouflaging the hulls of some of its submarines. British nuclear submarines provide more capabilities than the maintenance of the strategic deterrence and land attack capabilities.

Alongside Britain's aircraft carrier and amphibious forces, the RN's Submarine Service presents a formidable strategic triad of core capabilities for projecting ashore select political influence and raw combat power and for supporting national interests. Britain's submarine community, however, continues to make rapid and robust progress in meeting the continuing changes of the new world order. In meeting the core mission requirements of the SDR, a current operational snapshot might see British submarines deployed with combined task forces in the Persian Gulf, deployed in support of British peace enforcement operations in Sierra Leone, conducting training exercises in the Mediterranean, protecting sovereign territory in the South Atlantic and maintaining Britain's strategic deterrent in the North Atlantic. Rear Admiral Stevens has scripted a vision in which the RN Submarine Service will continue to develop a force capable of dominating any maritime environment, complementary with other assets and fully integrated into the framework for the RN's contribution to the national defence mission. To the RN Submarine Service, SDR only built on a 'process of change already underway in the nature of the Flotilla's mission.' Recent British Ministry of Defence analysis of future force requirements in the 2015 period and beyond have concluded that submarine roles will not change too much up to that time-frame. This suggests that current submarine roles are significant and enduring. On this basis, there is no doubting that nuclear submarines will make an enduring contribution to military operations in the new millennium.

(1) Some US SSBNs already have been fitted with special operations capabilities. In the 1990s, the Benjamin Franklin-class SSBNs U.S. Kamehameha (SSBN-642) and USS Polk (SSBN-645) were re-fitted for special forces operations. Several SSNs also have been fitted similarly. (2) For example, in 1999 USS Alabama (SSBN-731) joined the USS Carl Vinson Carrier Battle Group (CVBG) for the first-ever participation by a Pacific Fleet SSBN in an ASW Exercise.

(\*) Dr Lee Willett was Leverhulme Research Fellow at the Centre for Security Studies, University of Hull, UK when this piece was written. He is now conference coordinator for the Military Science Programme at the Royal United Services Institute for Defence Studies.

# Maritime Airpower for Australia Part 2



## The Re-emergence of the Light Fleet Carrier

The Spanish carrier PRINCE DE ASTURIAS is an ideal example of the modern Light Fleet Carrier.

By George Kaplan

In part two of our series on Maritime Air for Australia, George Kaplan examines the re-emergence of the Light Fleet Carrier in many Navies around the world. The examples in the article provide an interesting insight into what Australia could afford.

For many years it appeared that the operation of organic fixed wing air support at sea was a pastime affordable only by the richest of nations. Many of the countries who had embraced naval aviation in the relatively peaceful years following the end of the Second World War had given the game away when the cost of replacing the ubiquitous ex-Royal Navy Majestic class light aircraft carriers became apparent.

While several of these navies had investigated the operation of the Harrier STOVL (short take off/vertical landing) aircraft, there had always been a question mark surrounding the aircraft's performance in comparison to more conventional aircraft.

These doubts were conclusively put to rest following the Harrier's magnificent performance in the 1982 Falklands Conflict in the South Atlantic.

In the years following the Falklands campaign several navies laid down ships specifically designed to operate VSTOL aircraft, providing organic air cover when and where required. Italy, India, Spain and Thailand now operate such carriers, with several others considering acquiring similar capabilities.

Today the cost of introducing organic fixed wing aviation support to smaller Navies has never been more affordable. A number of shipbuilders have designs on offer which provide a level of capability once thought well beyond the means of smaller nations.

Given the continuing high level of conflict which seems to have enveloped the globe in the last 15 years, and the growth in peace keeping operations in more distant parts of the world, the trend towards more, rather than less carriers seems set to continue.

Operations in Somalia, the Gulf, evacuations from strife torn African countries and closer to home, East Timor, have brought home the essential value of mobile air power, operating whenever and wherever required, independent of basing rights in other countries, and responsive to national imperatives, rather than the shackles of collective operations.

The RAN once operated a Majestic class light carrier. The increasing costs of operating conventional carrier aircraft and the cost of a replacement for HMAS MELBOURNE proved too much for the government of the day. Perhaps the time may be right to cast an eye over what can be achieved at a quite reasonable cost.

For the purpose of this article an arbitrary limit of 25,000 tonnes has been set as the demarcation point.

## The United Kingdom

The RN has considerable experience in operating VSTOL aircraft at sea, dating back to the late 1970s. The Sea Harrier has operated from the decks of the three Invincible class CVLs, INVINCIBLE, ILLUSTRIOUS and ARK ROYAL, in numerous wars and UN sanctioned operations. So effective is the capability offered by these three ships that they are undergoing modifications to allow them to operate additional aircraft. This will see them losing the Sea Dart surface to air missile system to make room for additional deck parking space for embarked RAF GR-7 Harriers and their armament.

Controversial when first proposed, the Invincible class were first designated 'through deck cruisers' to escape the ire of opponents of the Navy's plans to acquire air capable



The RN Invincible class carrier HMS ILLUSTRIOUS after her conversion to remove the Sea Dart missile launcher and plate over the bow. This conversion allows additional deck parking for aircraft while the Sea Dart magazine now provides more stores space for embarked RAF GR-7 Harriers (RN).

ships. Comedians of the time described them as "see-through carriers". A Defence Review of the early 1980s almost saw INVINCIBLE sold to the RAN, however the Falklands Conflict put paid to any thought of selling any of the class. Since then all three have been busy in trouble spots throughout the world, most recently in operations over Kosovo.

Commissioned in 1980-85, the Invincible class displace 20,600 tonnes and, following their most recent refit, can operate a peacetime mix of up to 15 FA2 Sea Harrier and GR-7 Harrier aircraft, in addition to nine Sea King or Merlin helicopters. Several of the Airborne Early Warning variants of the Sea King are also embarked, deemed essential after the RN's experiences in the Falklands.

Powered by four Rolls Royce Olympus gas turbines, the Invincible class have a maximum speed of 28 knots, and a range of 7,000 nautical miles at an economical speed of 19 knots. For last ditch defence against anti-ship missiles the ships are armed with three Goalkeeper close in weapons systems, in addition to the usual chaff and electronic warfare capability.

Complement of the ship is 685, with an air group of 366 RN and RAF personnel embarked.

In addition to operations as an aircraft carrier, the class can carry a Royal Marine Commando Battalion of up to 600 (light) troops over short distances, and their command, control and

communications facilities are unrivalled in the RN, allowing them to command full task forces of warships and amphibious groups.

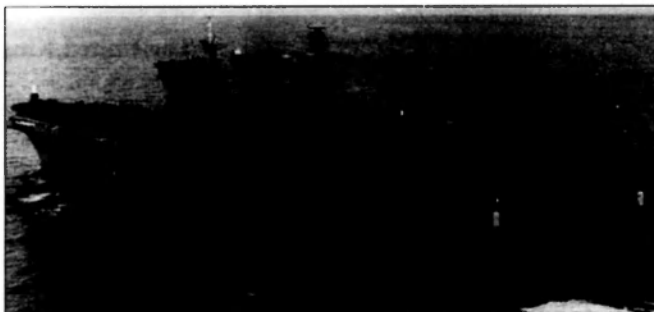
So successful have the class been that the RN has confirmed that they will be replacing the three ships of the class with two much larger ships, on the order of 40,000 tonnes or more, operating up to 50 aircraft each. Estimated in service date is around 2020.

In addition to the three Invincible class, the RN also operates the 21,758 tonne helicopter carrier HMS OCEAN. Commissioned in 1998, OCEAN is designed to provide a helicopter lift and assault capability for the embarked 850 troops of a Royal Marine Commando Battalion. To provide the troop lift OCEAN embarks 12 Sea King transport helicopters and will embark six AH-64D Apache attack helicopters to provide hard-hitting fire support to the embarked Battalion.

OCEAN is interesting in that she represents a major departure in build philosophy for the RN. The first major RN warship largely designed and built to mercantile standards, OCEAN was completed at a cost of approximately £200 million pounds, equivalent to the cost of a single Duke class frigate. Built by Vickers Shipbuilding and Engineering, who subcontracted the actual construction and basic fitting out work to Kvaerner Govan, a mercantile yard, OCEAN completed basic sea trials before military equipment was fitted by Vickers. Based on successful trials, OCEAN has undertaken deployments as far afield as the Caribbean, where hot weather trials were interrupted by relief missions to countries in the region devastated by a severe hurricane.

OCEAN uses a hull form based on that of the Invincible class, with a modified superstructure providing more useable flight deck area. While a ski jump is not fitted, the installation of one would be a comparatively minor modification. As currently fitted out, OCEAN can carry and operate Harriers and Sea Harriers however, maintenance facilities are not available.

Diesel engines were specified for good range and minimal impact on the ships internal layout, providing a maximum speed of 19 knots and a maximum range of 8,000 nautical miles. For self-defence OCEAN carries three Phalanx close in weapons systems in addition to eight 20mm cannon, as well as the usual suite of chaff launchers. Complement is 268 plus 180 aircrew and helicopter



One of the most interesting designs of late is the RN carrier HMS OCEAN. This ship was built using a mix of commercial and military standards in the design to significantly reduce cost yet not at the expense of capability. (RN)

maintenance personnel. To deliver her troops four Landing Craft Vehicle/Personnel are carried on davits, together with two small Griffin hovercraft.

OCEAN carries many lessons for other Navies looking to return to the aviation fold. Her mix of military and civil systems have produced a capable force projection asset at a discounted price by comparison with a new build vessel constructed to military standards only.

Whilst OCEAN herself is not designed to provide permanent basing for Harrier aircraft, this was a decision made to optimise her for the amphibious support role. A sister ship designed for carrier operations could operate a much larger air group than the Invincible class, based on the larger hangar space available. Incorporating the benefits of almost 20 years of RN VSTOL operations, a modified OCEAN would be attractive to many Navies worldwide.

## Spain

Spain bucked the trend of small Navies' post-World War II, and approached the US, rather than the UK, for a small aircraft carrier. Spain acquired the Independence class light carrier CABOT in 1967, a veteran of the Pacific War, under the name of DEDALO. Faced with the requirement to replace the increasingly difficult to maintain DEDALO in the late 1970s, Spain chose to build a new carrier, based on a USN design.

This design was the Sea Control Ship (SCS) concept, championed by Admiral Elmo Zumwalt, USN Chief of Naval Operations during the late 1970s. Admiral Zumwalt proposed the development of smaller helicopter and VSTOL capable vessels as the low end of a high/low mix of naval aviation. The SCS would be built to provide organic aviation support to convoys and amphibious groups, freeing up the vastly more capable (and expensive) super carriers for offensive strikes. The plan fell afoul of the naval aviation community in the USN who saw it as a threat to the continued funding of the large Nimitz class aircraft carriers.

Whilst deemed 'unsuitable' for the USN, the concept met most of the requirements of the Spanish Navy, and the design was acquired for construction by Bazan in Spain. Numerous minor modifications were made however, the ship remains true to the SCS concept, providing a way to get a useful number of aircraft to sea at a reasonable cost.

Displacing 17,188 tonnes, PRINCIPE DE ASTURIAS has a normal air group of eight EAV-8B Harrier II Plus, together with ten Seahawk, AB-212 ASW and Sea King helicopters. Two of the latter are the Airborne Early Warning variant, Spain having taken heed of the RN's hard lessons of 1982. In an emergency a maximum of 37 aircraft could be operated, however this number would involve some overcrowding.

Two of the ubiquitous General Electric LM-2500 gas turbines propel PRINCIPE DE ASTURIAS to a maximum speed of 26 knots, with a maximum range of 6,500 nautical miles at 20 knots. Self defence is provided by four of the indigenously developed Meroka 12 barrelled 20 mm close in weapon systems, plus a comprehensive electronic warfare suite. To allow the ship to carry out her role as flagship of the Spanish 'Battlegroup Alfa' task force, she is fitted with a comprehensive command and control system.

Ships complement is 555, with an embarked air group of 201 plus a small embarked flag staff.

Built to a price, the Spanish Navy has obtained a surprisingly effective unit that provides capability far beyond its initial cost. So successful has PRINCIPE DE ASTURIAS been that the Spanish Navy intends to acquire a second, improved version when funding allows.

## Italy

The Italian Navy has long recognised the benefits accruing to organic fixed wing aviation, having begun construction of a carrier late in the Second World War. This ship, AQUILA, was never completed, however, a series of innovative helicopter capable cruisers have seen service in the years since World War II. A decision was taken in the late 1970s to construct a through deck carrier design, initially to operate helicopters but incorporating a 6.5 degree 'ski jump' for VSTOL aircraft.

However, a problem arose over a 1923 law that laid down the provision of fixed wing support to Navy was an Air Force responsibility. The Italian Air Force however, refused to acquire VSTOL aircraft to operate at sea so an amendment was pushed through the Italian Parliament in 1989 to allow the Navy to acquire a fixed wing arm, allowing the purchase of AV-8B Harrier II aircraft.

Despite these dramas the GIUSEPPE GARIBALDI has proven to be a capable platform, incorporating a useful anti-ship armament as well as a powerful aircraft complement on 13,850 tonnes displacement.

Commissioned in August 1987, GIUSEPPE GARIBALDI normally operates an air group of up to 18 aircraft, made up of a mix of AV-8B Harrier II's, Sea Kings and AB-212 ASW helicopters. In an emergency additional aircraft could be operated for short periods.

For specialist tasks such as vertical troop assault, an air group of seven Sea Kings and four AB-212's operated by the Navy were joined by six AB-205, two CH-47 Chinook troop carrying helicopters and three A-129 Mangusta attack helicopters of the Italian Army.

Four Fiat/General Electric LM-2500 gas turbines propel GIUSEPPE GARIBALDI at 30 knots, with a maximum range of 7000 nautical miles at 20 knots. Self defence is provided by two eight cell missile launchers firing the Alenia Aspide anti-aircraft missile, while close in defence is provided by three twin Otobreda Compact 40 mm mounts.

A number of unusual weapon systems have been fitted to GIUSEPPE GARIBALDI, including two triple ASW torpedo tubes mounted port and starboard, and eight Tesco anti-ship missiles. Taken together GIUSEPPE GARIBALDI possesses a versatile mix of offensive and defensive armament, whilst still operating a useful air group, however, the question must be asked as to whether too much has been attempted on too small a displacement? On a displacement of less than 14,000 tonnes the ship must be cramped, and have limited growth potential for new systems.

Perhaps aware of these limitations, the Italian Navy is looking to a much larger vessel as a supplement to GIUSEPPE GARIBALDI. Plans for this ship, combining the features of both aircraft carrier and amphibious assault ship, are currently being finalised however, some details are available.



The Italian carrier GIUSEPPE GARIBOLDI is a good example of a multi-capable carrier. It has its own anti-aircraft missiles, ASW torpedoes and anti-ship missiles as well as its air complement of Harriers and Sea Kings.

The new ship, tentatively named LUIGI EINAUDI, is designated as an LHA (General Purpose Amphibious Assault Ship) and will displace some 22,500 tonnes. Propelled by a combination of gas turbines and diesels, the new ship will be capable of up to 28 knots. The air group will normally comprise eight AV-8B Harrier II plus aircraft and 12 EH-101 Merlin helicopters, with multiple helicopter operating spots as well as a ski jump at the bow.

To better transport and deliver bulky cargo such as tanks and artillery a large well deck will be fitted at the stern to accommodate up to four Landing Craft Mechanical (or a single Landing Craft Air Cushion) while four Landing Craft Personnel will hang from davits. The ship is not intended to transport troops, instead providing heavy equipment lift in support of the Italian Navy's three San Giorgio class LPDs.

The LHA will have a substantial self defence capability, including missiles and guns and will be fitted to provide a command capability for an amphibious commander and his staff. Commissioning date is tentatively set for 2007 and details will undoubtedly change before then.

## Thailand

The Royal Thai Navy (RTN) had initially signed a contract with Bremer Vulcan in Germany in early 1991, for a small aircraft carrier, the countries first. This contract was cancelled mid year and a new contract was let with Bazan in Spain, builders of the PRINCIPE DE ASTURIAS, for a smaller version of that ship.

The Thai requirement was for a ship capable of operating aircraft for a range of tasks, primarily Exclusive Economic Zone surveillance, disaster relief, search and rescue and law enforcement at sea. Secondary tasks are air support for maritime operations and command and control of naval forces.

Commissioned in March 1997, CHAKRI NARUEBET was completed for a reported \$US303 million, although much equipment remains to be fitted. It is believed that the final equipment fit will include a Mk-41 eight cell vertical launch system for the VL Sea Sparrow anti-aircraft missile,

four Phalanx close in weapons systems and a suitable electronic warfare system.

Displacing 11,485 tonnes, CHAKRI NARUEBET is powered by two General Electric LM-2500 gas turbines in conjunction with two MTU diesels, providing a maximum speed of 26 knots and a range of 10,000 nautical miles at 12 knots.

CHAKRI NARUEBET can operate an air group of up to 12 aircraft, although more could be embarked in an emergency. The air group is made up of a mix of ex-Spanish Navy AV-8S Matador (Harrier) and S-70B-7 Seahawks, although other Navy and Army helicopters can be embarked as required.

Complement is 455 with an additional 146 personnel embarked with the air group. Facilities are also included for members of the Thai Royal family.

On a limited displacement and budget, the RTN has managed to acquire the basics of a maritime capability as yet unmatched by any South East Asian Navy. Whilst the development of organic aviation expertise has been temporarily curtailed by the economic recession which swept the region in 1999, the capability remains to be exploited once the economy improves. Once the full range of armament and electronics has been fitted the RTN will possess a formidable regional asset to support whatever regional strategy it may choose to pursue.

## The Future

Navies around the world have not lost sight of the benefits that these versatile platforms provide however, the costs involved have for many years seemed to place their capabilities out of reach of all but the largest and wealthiest nations.

The advent of the new breed of smaller aircraft carrier, as epitomised by the vessels described in this article, have once again opened the way for mid-sized Navies to contemplate the acquisition of organic air support to maritime and amphibious operations.

For relatively modest cost Navies can acquire one of the most versatile maritime platforms available, equally at home in search and rescue and disaster relief roles as amphibious and maritime operations.

Several regional Navies are in the market for carriers, either to replace existing but aging vessels (India) or to provide new power projection capabilities (China). Whilst Thailand is the first in the South East Asian region to operate these economical and versatile vessels, they will surely not be the last.

The RAN has been without organic fixed wing air support since the demise of MELBOURNE in the 1980's. The costs of acquiring and operating the next generation of conventional carrier aircraft such as the F-4 Phantom was simply beyond the resources of the Defence budget, as was the cost of acquiring a carrier large enough to operate them.

The advent of the Harrier appeared to give the RAN a way out of the ever-increasing size and cost spiral of conventional carrier operations. The offer by the RN to sell INVINCIBLE to the RAN seemed an opportunity too good to be true, unfortunately the Falklands War put paid to that offer. Since then the RAN has seemingly resigned itself to being without the substantial benefits that accrue to a Navy possessing these versatile assets.

However, the increasing range of designs available, utilising a mix of civil and military construction techniques, together with innovative manning concepts, have reduced the cost of entering the carrier game to a level not seen since the end of the Second World War.

Today the choice of vessel available is truly wide ranging. Scratch any serious builder of warships and you will find a carrier design available, in a range of sizes to match any budget.

Bazan in Spain, Fincantieri in Italy, Bremer Vulcan and Blom and Voss in Germany and DCN in France are amongst the yards that have designs on offer, ranging from small vessels of some 6-8,000 tonnes up to 20,000 or more tonnes.

Most offer a dual capability in both the aviation and amphibious support roles, operating a mix of helicopters and VSTOL aircraft, often with a complement of landing craft.

The simplicity of VSTOL carriers, compared with the complexities of conventional carriers (steam-powered catapults, mirrored landing aids and arrestor gear) has reduced the cost of construction dramatically. The example of CHAKRI NARUEBET is illuminating. The RTN acquired her for some \$US303 million, about the cost of a single Anzac class frigate.

At that price the RAN would be able to acquire several suitable vessels, capable of operating as both a carrier and amphibious asset. Such platforms would allow the RAN to provide a greatly increased level of helicopter support to the Army in the case of further operations such as those undertaken in East Timor.

In addition, the carriers would provide the centrepiece of RAN task forces deployed in Australia's area of responsibility. The enhanced maintenance capability of a carrier would provide additional support for the embarked Seahawks, Sea Kings and Super Sea Sprites of the task force.

Equipped with all three helicopter types, a helicopter carrier would provide a powerful centrepiece in anti-surface, anti-submarine and amphibious warfare.

The vexatious question of which aircraft type to operate from the carrier and by whom could also be solved through some judicious forethought. The Harrier, in its various incarnations, is nearing the end of its development life however, a replacement aircraft is under development.

The Joint Strike Fighter (JSF) is a multinational project involving the US and a number of partner nations, with the aim of bringing into service an aircraft to replace a wide range of aging aircraft types.

The JSF will be built in three types, a conventional take off and landing version for the US Air Force, a carrier compatible version for the US Navy, and a vertical take off and landing version for the US Marines, Royal Air Force and Royal Navy.

The RAAF's F/A-18 Hornet fleet is due to be replaced in the 2010-2012 timeframe with the same aircraft in all likelihood replacing the F-111 in 2020. Obviously the most likely contender to replace the Hornet is the JSF.

The aim of the JSF is to achieve maximum possible commonality across all three variants, and it would not be too difficult to envision the RAAF acquiring a mix of conventional and VSTOL variants of the JSF. This would avoid the problems of operating two widely dissimilar



The Thai CHAKRI NARUEBET is a scaled down version of the Spanish PRINCIPE DE ASTURIAS. It is optimised for disaster relief having large accommodation facilities and kitchens. Her inclusion in the INTERFET support fleet would have been very welcomed. She also embarks Harriers and ASW helicopters.

aircraft types, with their attendant separate maintenance, spares and training costs.

With the eventual retirement of the F-111, and the conversion of the two F-111 squadrons to the JSF joining the current Hornet squadrons, Australia would have five front line JSF squadrons. One of these squadrons could be equipped with the VSTOL variant of the JSF for operations from a Navy carrier.

Thus Navy would provide the platform and rotary wing element whilst the RAAF could provide the fixed wing component. This would answer Navy's needs for air cover during operations distant from Australia, whilst centralising the maintenance and logistics of the squadron under the logical command of the RAAF.

The possibility exists for the Navy to regain this capability with the support of both Army and Air Force for the acquisition of a carrier.

A suitable vessel, capable of providing support to amphibious operations, and embarking an air group of Navy helicopters and Air Force JSF variants, would provide Australia with a force projection asset vital to the nation. Particularly important if Australia is to be seen as a robust defence partner throughout the South East Asian area.

Recent statements from the government and from within the ADF have spoken of the need for the ADF to be able to operate throughout Australia's area of national interest. The capability to deploy troops, equipment and airlift wherever required is a fundamental capability currently lacking in the ADF.

The acquisition of a basic aircraft carrier/amphibious support ship would provide this capability and together with an embarked complement of fixed wing aircraft, would provide Australia with an invaluable capability for safeguarding Australia's interests throughout the region.

*In Part three of our series we examine an innovative, indigenous design for a multi-purpose air capable platform designed by and for the RAN. The Littoral Support Ship.*

# Hatch, Match & Dispatch

## MATCH

### LEEWIN & MELVILLE Commission

For the first time in the history of the RAN two sister ships have been commissioned together.

The historic commissioning ceremony occurred at Trinity Wharf in Cairns and marked the commencement of official Navy service for Australia's new hydrographic ships.

The two ships, HMAS MELVILLE and LEEUWIN, replace the existing hydrographic ships, HMAS MORESBY and FLINDERS.

HMAS MELVILLE and LEEUWIN will provide the RAN with one of the most advanced hydrographic capabilities in the world. Fitted with state-of-the-art technologies, the sister ships are each crewed by 48 personnel.

In another first for the RAN, personnel have been formed into three crews, who will rotate between the two ships. This new manning system will maximise the ships' operational time, with each ship expected to spend 300 days at sea each year.



HMAS LEEUWIN during sea trials

## DISPATCH

### HOBART Decommissions

The Commanding Officer, HMAS HOBART, Commander Peter Murray RAN, sent the following message just after his ship conducted her last speed trial off the NSW coast.

SUBJ: HMAS HOBART FINAL ENTRY TO SYDNEY HARBOUR

1. WITH FOUR BURNING AND TWO TURNING HOBART CONDUCTED HER LAST FULL POWER TRIAL AND ENTRY INTO SYDNEY HARBOUR. SPEED BY FIX WAS 36 KNOTS. SPEED BY GPS 35.8 KNOTS

2. AGE DID NOT WEARY HER. BUT THE YEARS CONDEMNED. WE WILL REMEMBER HER.

The Royal Australian Navy's oldest warship, the guided missile destroyer HOBART decommissioned at Fleet Base East in Woolloomooloo on Friday, 12 May.



The White Ensign is lowered for the last time on the decommissioning DDG HMAS HOBART. (Brian Morrison, Warships and Marine Corps Museum Ltd)

In a traditional naval ceremony, the Australian White Ensign was hauled down for the last time before HOBART's crew marched off the ship. The Commanding Officer then presented the ensign to the Maritime Commander, Rear Admiral John Lord, signifying the end of HOBART's 35 years' service in the RAN.

After commissioning in 1965, HOBART conducted numerous tours of duty in the South East Asian and Pacific regions. These included three six-month deployments to Vietnam for operations with the US Seventh Fleet during 1967, 1968 and 1969. HOBART was also one of the first ships to provide relief to the citizens of Darwin after the devastation caused by Cyclone Tracy in 1975.

HOBART is the only serving RAN warship to have suffered a missile hit during a conflict. She also holds the record for winning the Gloucester Cup eight times, for having the best overall efficiency. HOBART is the last RAN major surface warship to operate with an all-male ship's company.

The 4720 tonne warship was the second of three Perth class guided missile destroyers built for the RAN in Michigan, USA. Together with her sister ships BRISBANE and the recently decommissioned PERTH, HOBART has generally been regarded as one of the RAN's best balanced and most capable warships.

Truly an impressive ship that will be sorely missed.

# PRODUCT REVIEW

## Battle of the Java Sea

Odessa Documentaries, 1995

Director: Nick Hoppen

Length: 185 mins

Review copy supplied by: Crusader Trading, shop 7 Cosmopolitan Court, 60-64 Wollongong St, Fyshwick ACT 2609

Ph (02) 6239 2332, www.crusaderhooks.com.au

Price: \$45

Video reviewed by: Mark Schweikert

After only two ships were left, PERTH and HOUSTON, of a force of 14 that had engaged a very large Japanese task group, the Australian Captain Hee Waller, being senior to the American skipper, signalled the heavy cruiser HOUSTON: 'Suggest we make for Batavia 20kts'. To which HOUSTON's captain replied 'Suggest 30kts'.

The video documentary 'Battle of the Java Sea' contains many accounts such as this that have not made it into the history books. The documentary is a vast collection of personal first hand accounts and anecdotes of the battle. The footage used to illustrate the documentary is also very interesting and complements the stories of those interviewed.

Former crew members of the 14 ships from The Netherlands (including native Indonesians), Australia, the US and UK give their own accounts of each stage of the battle that claimed over 2000 lives. Even Japanese crew members who took part in the battle are interviewed.

In one account given by a Dutch Seaman, he remembers one of the crew who, during the heat of battle, had had enough of the fighting and walked off the ship into the sea never to be seen again. Another account concerns a US submarine surfacing amongst Dutch survivors in the water after their ship had been sunk. The US submarine skipper collected two Americans, posted as signalmen to the Dutch before their ship sank, pointed the Dutch survivors the way to Surabaya and submerged beneath them.

One crew member from HOUSTON tells of how he watched the Dutch ship KORTENAER deliberately put herself in between HOUSTON and a Japanese torpedo. KORTENAER had to go around the US cruiser and then crash stop to make sure the torpedo hit. As a result the Dutch ship sank. Even before the battle HOUSTON had been given the nickname 'The Galloping Ghost of the Java Coast' as she had survived so many Japanese attempts to sink her.

The personal accounts in the documentary are placed together in such a way as to tell the story with little to no narration.

The footage used in places of the ships before the battle is remarkable. It includes early pre-war colour footage of Dutch naval manoeuvres in the Java Sea. Others include the arrival of HMS PRINCE OF WALES in Singapore. The smoke that a USN 1918 four Stack destroyer can make has to be seen to be believed and cannot be fully appreciated in a photograph.

The documentary also examines the reasons for the battle. How many senior officers wanted the force withdrawn to Australia, whilst some government officials wanted the force to stay and show the local colonised native Indonesians that the Dutch were not just there to exploit

them. This non-military stance won over and cost more than 2000 servicemen their lives and the loss of many ships.

The Australia cruiser PERTH features in the documentary with personal accounts of the battle provided by the former crew members, Arthur Bancroft, Bill Bee, James Brown, Max Jagger, Jim Millerick and Norman White.

The battle only delayed the Japanese invasion of the Dutch East Indies by a day and was strategically insignificant to the outcome of the war. The battle has also received little Australian public recognition when compared to Coral Sea or Midway. However, the large Dutch involvement and the losses that they took mean it has great significance to them, hence it being a Dutch documentary.

The battle and its geographic location is significant today as it is believed the new Australian 'White' paper will focus on this part of the world and use the battle as an example of where our defence interests lie.

'The Battle of the Java Sea' is a very well researched and informative documentary. The only drawback to the movie is that most of it is subtitled in English, being a Dutch film. However, the interviews with crew members from the UK cruiser EXETER, the US cruiser HOUSTON and PERTH are in English, with no subtitles, and adds to the perception that each ship's crew had a different perspective of the battle. Most of the English speaking crews are interviewed towards the end of the documentary which provides relief from the subtitles as the documentary is quite long.

The film won the 'Best Documentary' award at the 1996 Dutch Film Festival and if one is not too put off by reading subtitles then 'The Battle of the Java Sea' is well recommended.



# STATEMENT of POLICY

Navy League of Australia

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

The Navy League:

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

- Advocates the development of a defence industry supported by strong research and design organisations capable of constructing all needed types of warships and support vessels and of providing systems and sensor integration with through-life support.

As to the RAN, the League:

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

The League:

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

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



Voyager

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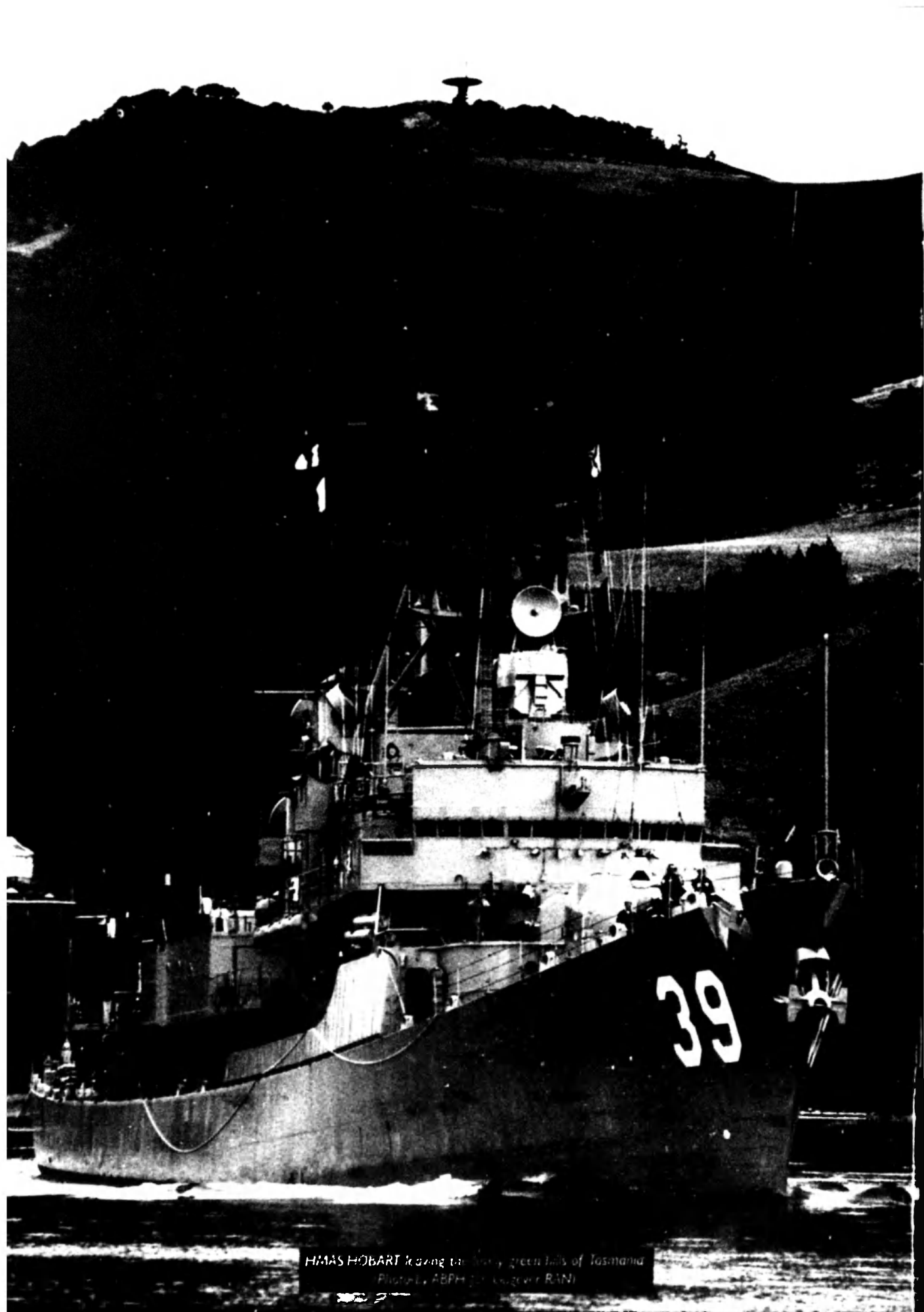
**“THIS SPOT  
COULD BE  
YOURS”**

*Contact*

**Peter Jordan  
(03) 9645 0411**



The Kidd class DDG USS SCOTT leaving Sydney Harbour for the last time (see Flash Traffic section). The improvements the RAN were planning to make to the Kidds, if purchased, would have made them the most powerful and versatile surface combatants in the Southern Hemisphere. (Brian Morrison, Warships and Marine Corps Museum Int)



HMAS HOBART leaving the dark green hills of Tasmania  
Platoon ABPH for Kagera R.N.I.

# THE NAVY

**The Magazine of the Navy League of Australia**

*Exploding the Myth of Surface Ship Vulnerability*     *Maritime Airpower for Australia, Part 3*



*Australia's Leading Naval Magazine Since 1938*

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# THE NAVY

Volume 62 No. 4

## Contents

### THE NAVY LEAGUE CELEBRATES 100th ANNIVERSARY

By Geoff Evans, Graham Harris, Sir William Deane,  
Vice Admiral David Shackleton Page 4

### EXPLODING THE MYTH OF SURFACE SHIP VULNERABILITY

By Mark Schweikert Page 10

### MARITIME AIRPOWER FOR AUSTRALIA, PART 3 THE LITTORAL SUPPORT SHIP

By Dr Norman Friedman Page 27

### CATCH F-22

By CMDR Jeff Hubber, USN Page 31

## Regular Features

From the Crow's Nest Page 2  
From Our Readers Page 2  
Hatch, Match and Dispatch Page 16  
Flash Traffic Page 21  
League Policy Statement Page 36

The opinions or assertions expressed in *THE NAVY* are those of the authors and not necessarily those of the Federal Council of the Navy League of Australia, the Editor of *THE NAVY*, the RAN or the Department of Defence. The Editor welcomes correspondence, photographs and contributions and will assume that by making submissions, contributors agree that all material may be used free of charge, edited and amended at the Editor's discretion. No part of this publication may be reproduced without the permission of the Editor.

Front cover: The Navy League of Australia's crest with the motto 'Keep Watch', reminding its members and friends to guard against apathy towards maritime defence. (John Wilkins, NLA)

## The Navy

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## FROM THE CROW'S NEST

This edition of *THE NAVY* celebrates the Navy League of Australia's 100th anniversary. To mark the event, former Federal President, and regular contributor, Geoff Evans, details some of the history of the Navy League. Unfortunately, not many records exist of the Navy League's history other than that carried in the memories of its members. However, what we do know for sure is that the League has continually reminded Australians that we, as our national anthem boasts, are "girt by sea" and must consider and treasure it as part of our future from trade and defence perspectives.

Today, the League has a number of legacies that its forefathers would be most proud of. The rise of the Sea Cadets, now Naval Cadets, its large and geographically dispersed membership, the creation of a video documentary series designed especially for schools to educate the young people of Australia about our maritime heritage and last but not least, *THE NAVY* magazine.

The work of the League sometimes goes unheralded. The contributions made by its members even more so. Some of which can only be described as extraordinary and deserving of our country's highest accolades and honours.

Membership to the League is open to anyone. The League does not discriminate. Although membership, like every other voluntary organization these days, is declining.

One of the ways the League puts the maritime nature of our island before the Australian public is through *THE NAVY* magazine. The league has been quite vocal in its support of the RAN throughout its life utilising the magazine and its appearances before parliamentary committees. Our most recent endeavours cover the topics of the carrier replacement in the early eighties, the case for nuclear powered submarines, and most recently the need for an air-warfare destroyer capability.

In this edition the League's objectives are certainly met. We detail the case against surface ships and ask is

vulnerability an intrinsic quality of the modern surface combatant?

Dr Norman Friedman, of the US Naval Institute and accomplished author, reports on the RAN concept of the Littoral Support Ship (LSS). The LSS is designed to fill three roles: support ship, army transport and air power projection. A ship like this would have been extremely valuable during our recent Timor operation and negated our reliance on similar US platforms such as the USS BELLEAU WOOD, PELELIU and to a lesser extent, USS MOBILE BAY.

The LSS concept (remembering it is only concept, no funds have been allocated to it or plans drawn up for its construction) attracted some negative reporting from the general media some months ago with the headlines 'Four \$4 billion Aircraft Carriers for Navy'. One should realise that a) it is the RAN's duty to examine and devise concepts such as the LSS to try and improve its capability; and, b) the Australian public expects its military to examine all means to save money without compromising capability.

Finally, we take a look at some of the claims about the 21st century's version of the Spitfire, the F-22 raptor. Many expect RAAF acquisition of Raptor will displace the ADF's plans for a balanced force as each could cost as much as an Anzac frigate with none of the money going to Australia. All this, in an environment of unnecessary fiscal restraint on the other two services.

The Green Paper has been getting plenty of press of late. The Navy League made submissions to the community consultation process but what will come of these and how they will effect the White Paper remains to be seen. However, a bleak picture is expected for Navy. Its capability has seriously been eroded since 1982 and there appears to be no stop to this trend for the nation "girt by sea".

Mark Schweikert

## FROM OUR READERS

Dear Sir

I have recently been passed a copy of the briefing for the Commemoration of the "Battle for Australia" which is said to honour the courage, sacrifice and service of Australians who repulsed the Japanese attack on Australia in 1942. My attention was drawn to the lack of any mention of the operations which lead to the capture of Guadalcanal. Clearly the author did not regard those operations as being part of the "Battle for Australia". He repeated the myth that the Australians at Milne Bay had inflicted the first significant defeat on the Japanese.

As the author of "*The Shame of Savo*" (Allen and Unwin Sydney 1994) I can claim to have some knowledge of the launching of the Japanese attack into the South West Pacific. That attack had begun with Pearl Harbor and proceeded without check until Coral Sea when the Japanese were forced to abandon an assault by sea on Port Moresby and proceeded to attack over the Owen Stanleys. Coral Sea was however, regarded by the Japanese as only a temporary check and planning continued to expand their

perimeter by capturing Fiji, Samoa and New Caledonia in July. They already held the Solomons which they planned to use as a springboard for these operations.

Important though the results of Coral Sea were for the maintenance of transpacific communications they were as nothing in comparison to those of Midway which forced the Japanese to recognise that America held the initiative and that it was essential that they establish a defence perimeter through the Central Pacific to the south west. Within a week of Midway they had cancelled their plans for further expansion and had begun consolidating their position in the Solomons whilst continuing operations in Papua New Guinea, apparently, with the limited aim of capturing Port Moresby. There could have been no thought of providing the carrier support essential for operations further afield such as an invasion of Australia. The Americans' reaction to their success at Midway was a little slower but just as dramatic for on June 24th Washington ordered an assault on Guadalcanal to start on August 1st. This date was a bit optimistic so that it was not until August

8th, that the US Marines landed, virtually unopposed, on Guadalcanal but they had to fight for a secondary objective, Tulagi Island.

The Japanese quickly mustered a force of some 900 men on Truk and transported them in six destroyers to a point 12 miles to the east of the marines where they landed on August 18th. Their objective was Henderson Airfield. They had hoped to surprise the marines but were discovered before they could get into position and when they finally attacked at the mouth of the Tenaru River on August 21st they were virtually wiped out losing over 800 men to the Marines' 43. This American victory preceded that of the Australians at Milne Bay by five or six days.

I would therefore like to take issue with two points arising from the briefing. The first is the statement that the first significant defeat of the Japanese took place at Milne Bay. This is clearly not so unless one wishes to argue that the Battle of Tenaru and the securing of Henderson Airfield were not significant. The second point is the lack of any discussion on the significance of the assault on Guadalcanal and its place in the Battle for Australia. (It will be remembered that we contributed three cruisers, a squadron of Hudson aircraft and the Coastwatchers to that operation losing CANBERRA and more than 80 men)

In my opinion the capture of Guadalcanal should be considered as part of the "Battle for Australia" because our success there effectively established a major Allied

presence on the flank of any Japanese thrust towards Eastern Australia which of course could only have been accomplished by sea. To paraphrase Nelson - I do not say that the Japanese could not have invaded Australia but I do say that because we held Guadalcanal they could not have come by sea.

Yours sincerely

CDRE Bruce Loxton, RAN (Rtd)

Dear Editor

It is with a great deal of pleasure that we extend our best wishes to the Navy League of Australia on the occasion of its centennial celebration. The efforts of the Navy League of Australia on behalf of the Royal Australian Navy have made important contributions to the Navy's role in the defence of your nation and preservation of the freedoms enjoyed by your citizens.

Please accept our heartfelt congratulations for the attainment of this important milestone in the life of the Navy League of Australia. We rejoice with you that your nation and Navy have reaped the benefits of 100 years of outstanding service by your organisation.

Sincerely,

John R. Fish

Rear Admiral, U.S. Navy (Ret.)

National President

Navy League of the United States

Notice is hereby given that the

## ANNUAL GENERAL MEETING

of

THE NAVY LEAGUE OF AUSTRALIA

will be held at the Great Northern Hotel, Earl Street, Launceston, Tasmania

On Friday, 24 November 2000 at 8.00 pm

### BUSINESS

- To confirm the Minutes of the Annual General Meeting held in Canberra on Friday, 12 November, 1999
- To receive the report of the Federal Council, and to consider matters raised therefrom
- To receive the financial statements for the year ended 30 June 2000
- To elect Office Bearers for the 2000-2001 year as follows:
  - Federal President
  - Federal Vice-President
  - Additional Vice-Presidents (3)
 Nominations for these positions are to be lodged with the Acting Honorary Secretary prior to the commencement of the meeting.
- General Business:
  - To deal with any matter notified in writing to the Acting Honorary Secretary by 14 November, 2000
  - To approve the continuation in office of those members of the Federal Council who have attained 72 years of age, namely John Bird (Vic), Joan Cooper (Tas), Arthur Hewitt (WA), Gwen Hewitt (WA), John Jeppesen (NSW), Tom Kilburn (Vic) and Andrew Robertson (NSW).

### ALL MEMBERS ARE WELCOME TO ATTEND

By order of the Federal Council

Ray Corboy, Acting Honorary Federal Secretary, PO Box 309, Mt Waverley VIC 3149

Telephone (03) 9888 1977 Fax (03) 9888 1083



# The Navy League in Australia – 100 Years On

By Geoffrey Evans

It is a matter for regret that the early history of the Navy League in Australia is lost in the mists of time but it is known beyond doubt that a branch of Britain's Navy League was formed in Launceston in the year 1900 – on 26th November of that year to be precise – and called the North Tasmanian Branch.

The parent Navy League was formed in Britain in 1894 with the commendable object of "urging upon the Government and the Electorate the paramount importance of an adequate Navy as the best guarantee of Peace." Of concern at the time was the high proportion of foreigners in British Merchant ships, the crews of which were largely interchangeable with those manning Royal Navy ships and formed the Navy's Reserve. It was believed the foreign element weakened the Royal Navy.

At the turn of the century the Royal Navy was still as vital to the wellbeing of the Dominions and Colonies as it was to Britain and Navy League Branches were soon established throughout the Empire. Northern Tasmania was No. 53 while in our region Auckland was No. 12 (formed in 1896) and Wellington No. 80 (formed 1904). Branches were also formed in Sydney and Melbourne but the writer has no knowledge of the dates.

Following the example of the present Navy League, the overseas Branches established organisations designed to encourage young men – teenagers – to take an interest in the sea and nautical affairs. Over the years these organisations carried a variety of names including the early 'Navy League Boys Naval Brigade', 'NL Sea Cadets' and (in Australia) 'Australian Sea Cadet Corps' and since 1973 the government sponsored "Naval Reserve Cadets" – the

latter a misnomer as the cadets are not members of the Defence Force. A Navy League was also established in the United States at the turn of the century, but more about this later.

From their inception until World War II the Australian branches of the Navy League took a sporadic interest in naval defence, members spending most of their time and money on sea cadet training units that had been formed in Northern Tasmania, Sydney and Melbourne. This situation continued until after the war.

In 1947 the Branches formed a loose coalition and sought naval assistance for the NL Cadets. The Naval Board not surprisingly declined to negotiate with a London based organisation and it was not until 1950 that the Navy League of Australia came into being as an autonomous body, governed by a Federal Council that included representatives from each State and Territory of the Commonwealth.

The first Federal Council headed by Commander (S) John Bates RANR (later knighted) consisted of retired RAN and wartime Reserve Officers whose first task was to gain recognition and practical assistance from Navy for the cadets. An Australian Sea Cadet Corps (ASCC) was formed with Divisions corresponding to the States and Territories, a partnership arranged with the Navy and a Sea Cadet Council consisting of naval and Navy League representatives formed to oversee the activities of the Corps.

The Naval Defence Act (this was in the days when the Navy, Army and Air Force were separate Departments of State and had their own rules and regulations) limited the



The Queen inspects members of the Australian Sea Cadet contingent at Buckingham Palace in June 1952. The Cadets were attending the 2nd Empire Sea Cadet Training Course. LEUT Geoff Evans accompanies the Queen with Admiral Sir Louis Hamilton in the background.

## JOIN THE AUSTRALIAN SEA CADET CORPS



**T.S. BARWON**  
SPECIAL TRAINING



**SYLLABUS OF TRAINING**  
The cadets of training learn, with special regard to:  
Sailing – Flag, Light and Signal, Sea, Weather – Knots, Tides and Weather, Boat Work at Sea, Boat Work under Sail and Oar, Compass, Land and Line, Signalling of Wire and Rope, Power Boat Management, Physical Training, Boat, and many other subjects.



Age Range 14-18 years  
Navy, Army, Navy, Army  
Training Ship: BARWON, Western Head  
Serves the Navy 19 30 21 30  
Sailing on water 1 year, 10, 15, 20, 25, 30  
Mentor, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

A Navy League advertisement for Sea Cadet recruitment from the early 1950s.

assistance Navy could provide but it was invaluable nevertheless. It included the provision of uniforms, responsibility for training and the supply of some training equipment: the Navy League was responsible for everything else including accommodation (drill halls) and administration.

In the event the ASCC prospered and expanded from less than 500 cadets in three states in 1948/49 to 1700 in 1958 and 2500 in 1963. As growth continued unabated, Navy no doubt prompted by the treasury became concerned about the escalating cost, while Navy League had major problems in funding the buildings required for new Units. Moreover the size of Australia and vast distances caused administrative problems. In practice each Division of the Sea Cadet Corps virtually ran itself.

In 1966 a small sub-committee of the Sea Cadets Council was formed to advise on the future of the ASCC. There were only 3 members – the Director of Naval reserves who was chairman of the Council, the Federal President of the League (CMDR. John Howse) and the writer as Vice-President.

Given the legal limits placed on naval assistance to what was regarded as a private organisation, as well as the financial strain on the Navy League, the sub-committee recommended that the Sea Cadet Corps be made the responsibility of the Navy and brought into line with the Army's school cadets and the Air Training Corps. The recommendation was accepted by the Naval Board and the Federal Council of the Navy League and the League lost its cadet organisation on 1st January 1973.

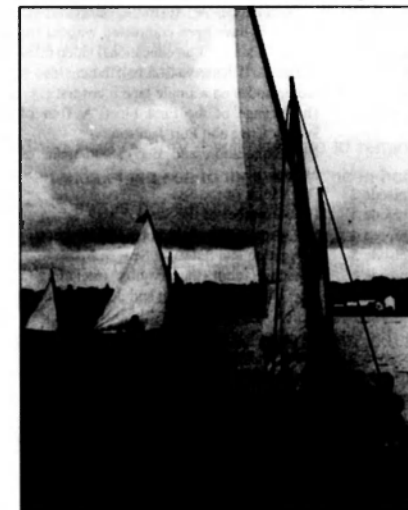
Although giving priority to its Cadet training activities the Federal Council did not neglect the naval scene and supported the RAN's efforts to establish a carrier based fleet air arm. However, while the future of the ASCC was being discussed other more worrying events were taking place.

The nineteen-sixties were unhappy years for the RAN – it had been a period of accidents including the MELBOURNE/VOYAGER collision and the drowning of a number of midshipmen from the carrier SYDNEY. Many in the Navy League felt more interest should be taken in the naval situation while the Chief of Naval Staff, Sir Victor Smith, obviously thinking along the same lines, sought the support of the wider naval community, in particular the Navy League and the Naval Association.

So far as the league was concerned one of the difficulties was lack of knowledge of the RAN's problems, of information that was essential if the League was to be of any real assistance to the Navy. In the event an understanding was reached between the principals involved and the League has been consistently well-briefed by Navy for more than 25 years.

The Navy League also found that the more deeply it became involved in naval affairs and with the integration of the three Service Departments into a single Department of Defence, a need to think more broadly and to embrace not only the role of the Army and Air Force but foreign affairs, defence policies and not least, the commercial shipping industry. The seventies and eighties were a stimulating period for the Federal Council.

The wider interests had an effect on the composition of the League's membership – people interested in youth training are not necessarily interested in national security issues and vice-versa, although it is of course an advantage when they do coincide. After the 1973 'take over' of the ASCC, while the League continued to support the NRC – indeed, when the Government decided in 1975 to abolish the three Service-sponsored cadet organisations the intercession of the Navy League kept the NRC intact until a new government re-introduced cadet training – the



Part of the training given to the Sea Cadets, and to today's Naval Cadets, is Sail Training. Here, Cadets from TS VOYAGER learn to sail on Hobsons Bay in Victoria during the 1950s.



The newest Naval Cadet unit in Australia, TS KYBRA from Western Australia, exercising their 'Freedom of Entry' to Esperance

League was able to give more attention to maritime affairs in general and to diversify its membership by including representatives of most parts of the maritime community.

A more representative membership enabled the League to participate actively in many issues involving the country's maritime wellbeing, from the hotly debated aircraft carrier debate that continued through the 'seventies' until 1984, the decline in Australian flagged merchant shipping, the place of Reserves in increasingly sophisticated navies, regional relationships and other issues vital to Australia's future.

In many respects the Navy League of Australia became less like its British Commonwealth counterparts and more akin to the influential Navy League of the United States (NLUS) which, while supporting a sea cadet organisation, focused its attention on America's naval and maritime needs.

The largest and certainly the most expensive project undertaken by the League in Australia (it cost over \$200,000 and could not have been completed without the aid of a generous benefactor) was an educational video titled *'The Sea and Australia'*. A two-and-a-half hour video – six self-contained episodes on a single tape it covers:

- Episode 1 The Voyage of the First Fleet, A Tour of Sydney Cove and Port Jackson
- The Exploration and Early Settlement of Australia
- Episode 2 The Nature of the Sea
- Episode 3 The Resources of the Sea
- Episode 4 Commercial Shipping, Ports and Harbours,
- Episode 5 Navigation and Safety at Sea
- Episode 6 Protection and Conservation (including a short history of the birth and development of the RAN)

The video was distributed free of charge to over 2,500 secondary schools in Australia, happily with the co-operation of six separate State educational authorities and continues to be sought by groups involved with the sea.

The most lasting of the Navy League's contributions has been *THE NAVY*, a magazine produced since 1938 and currently a quarterly distributed throughout Australia. For a substantial part of this period *THE NAVY* provided the RAN with a 'voice' not otherwise available to the 'Silent Service'. While the Navy League can still express naval problems (with or without the Navy's prior knowledge) through *THE NAVY*, changes in the defence organisation



In November 1981 the first Navy League of Australia community award was won by HMAS PENGUIN. Captain John De Costa accepts the award from Federal President Geoff Evans (left). Also in the background is Rear Admiral Andrew Robertson now a Federal Vice President of the Navy League.

including the establishment of sophisticated PR facilities within the Department of Defence and a plethora of defence orientated publications, have helped to create problems for high quality magazines such as *THE NAVY* which are increasingly costly to produce and distribute.

As the Navy League in Australia enters its 100th year and the 21st century dawns, the question needs to be asked – will there be a place for a Navy League in a world that has changed in so many ways in the 20th century? Or for that matter, other maritime-conscious organisations?

The writer believes the answer is probably 'yes'. One thing has not changed – the sea and its continuing influence on the affairs of nations and communities worldwide. An organisation dedicated to reminding generations of Australians of the vital importance of the sea to their wellbeing in both peacetime and war will almost certainly need to keep on reminding future generations that the sea is not simply a place for leisure.

In terms of security, recent events close to Australia have no doubt jolted many Australians who have grown complacent about their country's future and suddenly compelled to realize how close they are to their neighbours and how different the conditions under which those neighbours live – and die. Memories however, tend to be short and again, the Australian Navy League's task as an educational body would seem endless. It is however, for the present generation of young Australians to produce leaders to willingly accept the responsibilities involved.



The most recent recipient of the Navy League of Australia Community Award is the FFG HMAS ADELAIDE. Here, CDRE Merv Youl AM, RAN (Rtd) presents the award to the ship's crew on behalf of the Federal President of the League.

## A Message of Congratulations from the National Patron of the Navy League of Australia His Excellency, the Governor-General, Sir William Deane



The National Patron of the Navy League of Australia, His Excellency the Governor-General, Sir William Deane.



Government House  
Canberra ACT 2600

As Patron-in-Chief of the Navy League of Australia I am delighted to send this message of congratulations to the League and all its members and supporters as the League enters its 100th year of service in Australia.

This is a time when many changes are taking place, not only in our own (Australian) society but in communities worldwide. We need to be reminded on occasion that important things and traditions endure.

The Navy League came into existence in Britain in 1884. Its first Australian Branch was founded in Tasmania on 26 November 1900, when a relatively small group of people, realising the importance of the sea, the way it was used and its ultimate influence on the well-being and security of their fellow citizens, formed the League to remind their fellows of that importance and influence.

As the Navy League enters its 100th year and the 21st century it will continue to remind future generations of Australians of the immense importance of the sea to their wellbeing in both peacetime and war and the need to remember that the sea is not simply a place for enjoying one's leisure time. This message is conveyed by supporting youth training organisations such as the Sea Cadet Corps and the Naval Reserve Cadets, by promoting public discussion, and through publications such as *The Navy*.

It gives me great pleasure to commend the activities of the Navy League of Australia and to congratulate it on its achievements over 100 years.

Sir William Deane

Governor-General of the Commonwealth of Australia

## Message from the Federal President of the Navy League of Australia, Mr Graham Harris

The year 2000 sees a number of notable centenaries. Among them is that of the Navy League of Australia.

On the 25th November 1900, the first Australian branch of the Navy League was founded in Launceston, Tasmania. This year we are to hold our centenary celebrations in that city.

The creation of the first Australian branch of the League followed shortly after the formation of the Navy League in Great Britain at the end of the 19th century. Its objective was said to be the arousing of interest in the British Navy. No doubt in 1900 that was a view shared in Australia. We of course also had our various colonial naval forces and with Federation in 1901 the need for a Royal Australian Navy was to be considered. Indeed defence was one of the important factors in Federation. 1900 was a timely birth date of the League.

Following the example of the League in Great Britain, cadet units were established in Australia. This was seen to be an effective way of interesting young people in the Navy.

As branches of the League were established so too were units of the Sea Cadet Corp. Indeed, for the first three quarters of the League's first century the Cadets were the principal preoccupation.

The branches of the League had been originally set up as branches of the UK Navy League and this situation remained until after World War II. You can imagine the organisational and financial effort required by these various, in those days separate, branches to run their Cadet units.

After the Second World War the branches formed a loose coalition and sought the assistance of Navy. To facilitate dealings with Navy the various branches in 1950 formed the Navy League of Australia.

The year 2000 is therefore not just the hundredth anniversary of our beginnings in Australia. It is also the 50th anniversary of our federation and existence as an independent entity.

The Navy was, by statute, limited in the support it could provide. It provided uniforms, responsibility for training and some training equipment. The Navy League was responsible for everything else. This included accommodation (drill halls) and administration.

The Australian Sea Cadet Corp, as it was called, prospered. From some 500 just after the war it grew to 2500 by 1965. As growth continued unabated Navy became concerned about escalating costs. At the same time the League had major problems funding the buildings required for new units. The League was also encountering administrative difficulties running a growing organisation by now spread throughout Australia. By about 1970 it was seen to be inevitable that the League and the Cadet Corp would have to separate. On the 1st January, 1973 the Navy assumed responsibility for the Sea Cadet Corp.

Although the League no longer has responsibility for the Navy Reserve Cadets as they are now called, it still retains an active interest in their welfare. Each year the best Cadet Unit in Australia receives the Navy League Efficiency Award. In each State there is a similar award for each State. Cadet units are also helped financially.

There are nowadays over 3000 cadets in 75 community based and 8 school units. These days there are girls as well



The Federal President of the Navy League of Australia, Mr Graham Harris

as boys. It is a very worthwhile Navy run, but community based organisation. I believe the Navy League is entitled to be proud of what it first started 100 years ago.

While the support, maintenance and administration of the Cadets may have been the dominant activity of the League until the 1970s promoting the wider maritime interest was not neglected. There have been publications of various sorts since the 1920s. *The Navy Magazine* has been produced since 1938.

In 1970 the League created the Navy League of Australia Perpetual Award-Community Award. It is presented each year to the ship or establishment which makes the greatest contribution to its local or adopted community. By this award we wish to recognise and encourage Navy working with the community, for it is one of the best ways of reminding people that they do have a Navy and that this wide brown land is in fact just a great big island.

Freed of the responsibility for the Cadets the League, over the last three decades, had had more resources for what is now undoubtedly the number one objective; to promote maritime interest and in particular maritime defence.

Over this period we have issued press releases, made submissions to Parliamentary committees and when requested appeared before them. We have held meetings and seminars in various forms. Numerous letters have been written seeking to promote or argue issues of concern to the League. A cross-section of the issues the League has interested itself in over just the last three or four years includes: arguing for the use of wave piercing catamarans/more money for Defence; the composition of the Ocean Policy committee; the recognition of particular ships crews in Vietnam; the support for Naval Museums and historic buildings; the question of a Coastguard; and, the ability of the ADF including Navy, to provide adequate air defence for deployed ADF units.

In a sense the last thirty years have been a period of transition. We have moved from being an organisation primarily concerned with running a community based youth organisation, the Sea Cadets, to one which has as its number one objective that of keeping before the Australian people that we are a maritime nation and require a strong Navy.

It is a quite different task to that which we had in earlier decades. The League must seek to target opinion formers and decision makers. We must be prepared to adapt to achieve our aim. Inevitably we will have to give more attention to media relations, to government and to the parliamentary process. This is some challenge as we will be playing on a crowded stage with many very professional well-funded organisations seeking their share of attention. Many of these organisations will want money spent on their concerns not on the League's.

I am confident that the League will be able to meet the challenge. Past performance can be a useful guide to future outcomes. When looking at what the League has achieved over its first 100 years I am sure that my successor in 100 years will also have a good tale to tell.

## Congratulations to the Navy League of Australia – By Vice Admiral David Shackleton AO, RAN

The Royal Australian Navy is an organisation that relies heavily on the support of past serving members and all sectors of the community. The formation of the Navy League in Australia in 1900, several years prior to the induction of the Royal Australian Navy, resulted in an immediate support base from which the Navy cleverly employed during its early years. The selfless support from the Navy League resulted in the utilisation of the requisite knowledge and experience required to build the edifice upon which the role and traditions of the Australian Navy were formed. Indeed were it not for the newly formed Navy League in Australia, the genesis of both the Permanent and Reserve Naval Forces in Australia would have been adversely delayed.

The Navy of today owes much to the highly experienced and influential members of the Navy League earlier last century. However, it was not until the nineteen-sixties that the then Chief of Naval Staff, Sir Victor Smith, actively sought and embraced the full support of the Navy League during a time of mixed success. This necessary partnership has continued through to the present day where the close and mutually beneficial alliance has ensured that the Australian Navy is adequately represented across the broader community.

The Australian Navy has a long and proud history, attributable to the courageous men and women who have elicited a broad spectrum of both peacetime and wartime successes. Many personnel who have contributed to our past are now members of today's Navy League. The Navy League of Australia, therefore, has the unrivalled distinction of being in the best position to represent our interests. We are now entering a new era, both as a Navy and as a Nation, where dynamic and multifarious forces will incessantly impact upon our future successes. In order to combat this change, the Australian Navy will increasingly rely on the support of the Australian



The Chief of Navy, Vice Admiral David Shackleton AO, RAN

community, of which the Navy League is one of its most important advocates. In this regard, the leadership, dedication and experiential knowledge of the Australian Navy League will continue to be heavily drawn upon to support the activities of Australia's Navy.

The League's function of acting as one of the primary educational bodies concerning naval and sea power matters is becoming progressively more important. The promotion of Navy's image by the Navy League in this respect is also vital to the sustained retention of our personnel.

On behalf of the Royal Australian Navy, I offer my warmest congratulations to the Navy League on its 100th anniversary. The past hundred years has offered numerous accomplishments to our nation, many of which have been derived from the sacrifices made by the distinguished members of our Navy League. The current serving members of both the Permanent and Reserve Forces of the Australian Navy

have not forgotten the dedicated contribution of the Navy League's former and present members.

The Royal Australian Navy will continue to look towards the wisdom that is embodied by the Navy League of Australia. Your services to the Australian Navy and indeed Australia as a nation will always be highly valued, and will be in great demand as uncertainty and insecurity dominate our national landscape in the years to come.

D. J. SHACKLETON, AO  
Vice Admiral, RAN  
Chief of Navy

# Exploding the Myth of Surface Ship Vulnerability



HMAS NEWCASTLE at Sydney Heads. Once the FFG upgrade has installed the new ASMD package, Australia's FFGs will be amongst the world's most defended ships. (Brian Morrison, Warships & Marine Corps Museum Int)

By Mark Schweikert

Is the modern surface combatant all that vulnerable or are the claims based on misinformation and a failure to understand our maritime environment? Mark Schweikert examines the basis of misguided vulnerability claims and details some of the advances in ship self defence and the limitations of Anti-Ship Cruise Missiles (ASCMs).

The two most quoted examples of the threat posed by ASCMs (Anti-Ship Cruise Missiles) to surface combatants remain the Exocet attacks on the UK destroyer SHEFFIELD (1982) and the US frigate STARK (1987). But are these 1980s examples against 1970s era warships justified in demonstrating what some perpetuate to be the intrinsic vulnerability of the modern surface combatant? I would say not, as both these ships were prevented from defending themselves and essentially prevented co-operative targets for what could be more accurately described as live fire training exercises. Hardly a scientific test for those serious about examining military capability or history.

SHEFFIELD and STARK could certainly have defended themselves and were equipped with the necessary weapons and systems to do so. Although this may seem simplistic, evidence of other warships having successfully defended themselves from the same type of threat, and in some cases a far greater threat, tend to support such a hypothesis. Why SHEFFIELD and STARK were prevented from defending themselves shall be explained later.

The current Australian Defence Green Paper (at the time of writing the Paper had not matured to a 'White' Paper) makes the claim that surface ships are becoming too vulnerable yet fails to support these claims with any evidence. The foundations of these claims may stem from media reporting of the SHEFFIELD and STARK incidents. The ubiquitous seven-second grab of the professional

journalist, who is not a military expert, does not allow time for proper scientific or academic examination. Media reports are designed to simplify the issue for lay audiences and generally lack accuracy (the recent KURSK incident is a good example with many journalists reporting conflicting stories and facts). Journalists record incidents combined with sensationalism, not reasons. In this environment normal susceptibility is portrayed as high vulnerability which is further characterised as defencelessness. Other issues like survivability, resistance to attack and targeting are conveniently ignored.

What is also constantly overlooked is the fact that ASCMs are not impervious to jamming, confusion, malfunction, weather, operator error or destruction. Given the very technical nature of ASCMs many journalists avoid reporting these issues leading many to believe in the 'silver bullet' theory (one target, one bomb). The fact is it is easier than many believe to defeat the modern ASCM. Further, the damage caused by ASCMs is very localised ie. only affects one point, not the whole ship.

At one stage or another the tank was too vulnerable, as was the fighter, the strike aircraft, the submarine, the list goes on. In Australia, at present, the greatest threat to our surface combatant force isn't the proliferation of the newest Russian ASCM, as claimed in the Green Paper and a local Aerospace magazine, but the stroke of an ill-informed pen in the upcoming White Paper.

## "HANDBRAKE"

The first, and much quoted, example of surface ship vulnerability concerns the 1982 Argentine Exocet attack on the RN Type 42 destroyer HMS SHEFFIELD. SHEFFIELD was acting as part of a three-ship radar picket South of Port Stanley when at approximately 15:50hrs on 4 May 1982 the code word 'HANDBRAKE' flashed across the fleet. This code word denoted the detection of a Super Etendard's attack radar by one of the ships in the task group from which it could be reasonably assumed that an Exocet attack would follow.

The two Argentine Super Etendards were each carrying an AM-39 Exocet ASCM and approached the group from below the picket's radar horizon. The Argentine's made no effort to locate the carriers and fired both missiles at the first target that was detected, SHEFFIELD, for fear of being shot down.

As luck would have it, at the time of the attack SHEFFIELD was communicating by satellite with Fleet HQ in the UK. Although it was known that this mode of communication conflicted with electronic warfare systems used to defend against Exocet type threats, the requirement of higher command for information tends to take precedence. As was expected, this created a condition that rendered the ship deaf and blind. Had SHEFFIELD seen the attack, or heard the warning, appropriate action would have taken place, which in all likelihood would have prevented the ship from being hit by one of the two ASCMs (before deploying to the South Atlantic the Task Force conducted a series of 'live fire' work up exercises off Gibraltar. SHEFFIELD proved to be the most proficient ship in the Task Force).

The Exocet that hit SHEFFIELD failed to explode. However, the resulting fire, fed by ruptured fuel lines and unspent solid rocket fuel, eventually forced the abandonment of the ship due to intense smoke. Part of the reason for the premature abandonment was the shortage of reliable water pumps and basic fire fighting equipment owing to funding cuts imposed before the war by the then British Government. However, despite being hit by an Exocet and abandoned to the fire SHEFFIELD did not sink.

Five days after the attack the ship was towed to South Georgia for salvaging. Given the absence of crew, power, pumps, the large amount of fire fighting water already present in the ship and the hole in its side, water seeped in during a fierce South Atlantic storm causing the ship to slowly fill with water, capsize and sink.

So should this count as one of the quintessential examples of intrinsic surface ship vulnerability? A ship that was prevented from defending itself yet could, was ill-equipped to handle the fire due to measures beyond her control and yet did not sink and was sea worthy enough to be salvaged. One would think not.

## Operation Corporate/Rosario

The ever-shifting counter-argument used by some to re-invigorate the 'intrinsic vulnerability' claim is the sinking of four ships (ARDENT, ANTELOPE, COVENTRY and SIR GALAHAD) by conventional bombing. However, the 18 ships damaged by the same means that did not sink tend to disprove this counter-argument.

The reason for the high number of failed bombing attacks came from the presence of the ship based anti-aircraft missile Sea Dart. Knowing Sea Dart's inability to engage low flying targets, the Argentineans were forced to fly at very low level when near the islands and when attacking ships to avoid being shot down in Sea Dart's higher-level engagement zone. This flight profile resulted in higher fuel consumption, thus less time over the target, and an atypical weapon employment resulting in failures (bombs were dropped from such low level that they didn't have time to arm).

Thus, the presence of an air warfare destroyer with an area air defence weapon, despite its limitations, was crucial to the conflict. It should be noted that ships shot down more aircraft than Harriers alone with most of the Harrier kills the result of vectoring provided by the ships.

The other point to consider was the use of Exocet. Seven Exocet were fired during the conflict. Four hit their targets, SHEFFIELD, ATLANTIC CONVEYOR (2) and GLAMORGAN (it is also understood that all failed to detonate). SHEFFIELD and ATLANTIC CONVEYOR were abandoned due to uncontrollable fire and smoke. GLAMORGAN successfully fought the fire in her helicopter hanger and later rejoined the battle. Three Exocets were successfully decoyed/missed, one flew over the target's flight deck.

The Exocet's success rate in the South Atlantic was less than expected despite being used against a ship that was prevented from defending itself. SHEFFIELD: a merchant ship that couldn't defend itself, ATLANTIC CONVEYOR: a ship that was too close to the launcher to react in time, GLAMORGAN (the ship was conducting shore bombardment duties off Port Stanley when hit by the land based Exocet).

These examples of failed bombing and ASCM attacks bear testimony against those who see the Falklands as the turning point for surface combatants. Some argue had the war continued that the RN Task Force would have eventually been sunk. However, the truth is, Argentine aircraft attrition rates were disproportionately higher than those of the RN's ships. This is best illustrated by the San Carlos amphibious landings where the RN lost two light frigates, ARDENT (the victim of 17 air attacks) and ANTELOPE, while the Argentine's lost approximately 40 aircraft. A rather unsustainable effort for the Argentineans



It is not widely known that an Exocet did not sink SHEFFIELD. Five days after being hit SHEFFIELD was towed by HMS YARMOUTH to South Georgia for salvaging. On route, the ships encountered a large storm. SHEFFIELD slowly filled with water and capsized.



Despite Sea Dart's inability to engage low flying targets its presence was absolutely vital to the outcome of the Falklands conflict. Here a modified Type 42 air warfare destroyer fires a Sea Dart to port.

as evidenced by the very few air attacks after the San Carlos battle.

The real lesson of the Falklands was the fundamental advantage of sea control, which has never lost. The Argentine plan for Falkland/Malvinas security was a strategy of denial through the employment of air power and land forces around an island chain (as proposed in the current Green Paper). Even though the Argentine's had air superiority it was the British that won the conflict despite being 8,000 miles from home, fighting for more than three-months, in a conflict they had not prepared for, in an area never envisaged, and against a worthy non-Warsaw Pact opponent. The value of sea control, which can only be achieved with surface combatants, is something our defence planners pay little attention too, as with the case for the RAN air warfare destroyer.

## TN-2202

One of the more perplexing ASCM attack examples centres on the 1987 Iraqi Exocet attack on the US frigate STARK. As with SHEFFIELD, STARK did nothing to defend herself due to measures beyond her control.

Two Exocet missiles hit STARK on 17 May 1987 in the Persian Gulf. One of the missiles failed to detonate but ironically caused the most damage due to the fires it started fed by large amounts of unspent rocket fuel. Despite being hit by two Exocets, losing 37 crew as well as the ship's most experienced damage control officer, she did not sink nor was abandoned. Although representative of the survivability of warships and the localised nature of ASCM warhead effects does it provide a useful example of surface ship vulnerability? The point should also be made that the STARK incident proved that survivability and vulnerability are mutually exclusive terms, a hit does not mean a kill.

At the time of the STARK incident the US was engaged in 'Operation Ernest Will', more colloquially known as the 'Tanker Wars'. 'Ernest Will' was a result of the Iran-Iraq war taking on a maritime dimension due to the stalemate in the land battle. Merchant ships were being attacked to affect the other sides oil exports and thus income which was being used to finance the war. With the world's oil supply at risk the US and UK began escorting and protecting tankers through the trouble zone.

Immediately the US painted the Iranians as the 'bad-guys'. The US attitude was a result of the Iranian storming of the US Embassy in Tehran and the subsequent hostage drama still present in the memories of the Reagan

administration and US military. To the crew of STARK, the Iraqi's were the 'good-guys' and not to be feared (the enemy of my enemy is my friend).

On the night of the attack a patrolling USAF E-3 AEW&Cs (Airborne Early Warning & Control) aircraft detected and tracked an Iraqi F-1 Mirage fighter flying a familiar pattern observed on many occasions for attacking merchant ships in the lower half of the Persian Gulf. The AEW&C designated the F-1 'friendly' and gave it the designation TN-2202. This information and radar picture was data linked to STARK who accepted it as posing no danger given its 'friendly' classification.

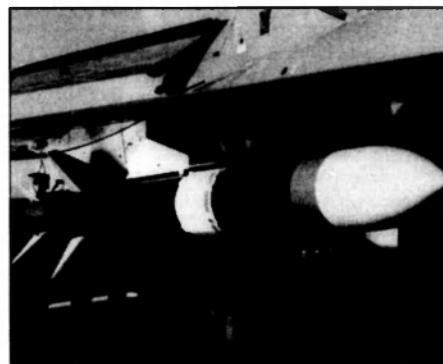
The Iraqi F-1 was on an anti-shipping mission and carried two Exocet missiles. When the Iraqi pilot found STARK on his radar he fired, without identifying it. Obviously, if he had then he would have ignored STARK and left the area to attack merchant ships, vital to Iran's war effort, as was his mission.

When the CIC crew on STARK realised what was happening it was too late as TN-2202 had already closed to such a short range and fired her missiles that any defensive action would have been useless. Of course, had the ROE been written to favour STARK and count the Iraqi's as hostile the F-1 would not have gotten so close. STARK would have either identified herself to the Iraqi long before he could fire or shot him down. To prove the former scenario, a few days before another US warship, being far more cautious than STARK, warned off an Iraqi Exocet carrying F-1 by using one of its fire control radars to 'illuminate' the aircraft thus identifying its warship status and the fact that it was ready to shoot. The Iraqi aircraft left the US warship and attacked a merchant ship elsewhere. The STARK incident was more a case of fratricide than the victim of enemy action due to intrinsic surface ship vulnerability. One can reasonably expect allies not to deliberately try and kill you. The Iraqi's themselves were quite shocked and embarrassed at what occurred. So much so that when a US delegation visited Iraq to find out what happened the F-1 pilot was 'missing' and had not been seen since he climbed out of his cockpit the night of the attack.

The point should be made that STARK was not only capable of shooting down the missiles but also the aircraft itself before it fired its Exocet's (had the ROE been rewritten to accommodate such action) - STARK, like SHEFFIELD, had also reached or exceeded the combat performance standards for operational deployment to a war zone and was fully versed in defending against threats such as Exocet.



The most puzzling ASCM attack was that on the USS STARK in the Persian Gulf during 1987. Two Exocets hit STARK. One of the warheads exploded, the other started a massive fire. Despite the hits, STARK did not sink.



An AM-39 Exocet fitted to a Super Entendant. Seven Exocets were fired during the Falklands conflict. Only four scored hits with all but one failing to explode.

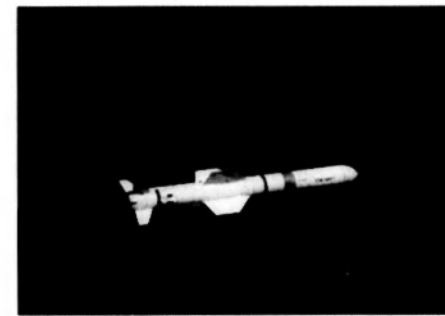
So does the STARK incident constitute as another 'classic example' of surface ship vulnerability? A ship that was prevented from defending itself due to the ROE, the perception that the Iraqi's were the 'good-guys', as so designated from the USAF AEW&C aircraft, and in an area flushed with ASCMs. I would think not, as again, STARK was essentially a cooperative target.

## Generic limitations of ASCMs

The most important requirement for the use of ASCMs is the necessity for locating, identifying and targeting. Many fail to address this point and see the ASCM's 'fire and forget' status as a 'fait accompli' for the surface ship based on the land experience where the target is usually static. Dr Eric Grove of the University of Hull's Strategic Studies Centre recently said "the vastness of the sea can occasion a group of RN ships was detected on radar and reported as trawlers and a container ship an aircraft carrier. The consequences of getting it wrong in a shooting war are obvious, not only for ammunition holdings.

A fortunate example of failed targeting occurred during the Gulf War. HMAS SYDNEY was on Combat SAR (Search And Rescue) duties when fired on by an Iraqi 'Silkworm' ASCM. However, due to poor targeting (a common trait it would seem for the Iraqis) the missile hit an oilrig instead.

The targeting and identification problem also gets far more difficult as the range of the engagement increases. The greater the range the lower probability of a hit due to the constant moving status of the surface ship, unlike the fixed land target, and navigational errors brought about by weather and sea state (not to mention operator error). The increase in range means that surveillance assets will have to close to identify the ship and remain in contact for follow up attack platforms. If closing on an air warfare destroyer for identification purposes an airborne surveillance asset will more than likely have to close to within the destroyer's SAM envelope, with inevitable results for the aircraft (proven time and again in naval exercises such as RIMPAC). Aircraft will also have to close the range if radar jamming or non-combatants are present in the vicinity of the target in order to fix their position.



A Harpoon missile in its cruise phase. Despite having a range of nearly 120kms, use of the weapon at this range reduces the probability of hit due to wind, minor navigational errors and the distance the ship travels during the missile's flight. Effective ASCM use requires excellent surveillance, locating, identification and targeting information to be successful.

JOHN HANCOCK was the mistaken target of an Iraqi Exocet attack. Details are scarce but the missile did not hit the destroyer due to a tugboat which crossed the path of the incoming missile which was hit instead. Effective targeting may have avoided the tugboat - assuming the destroyer was the target. The point should also be made that law of the sea conventions and UN resolutions will deny the use of 'maritime free fire zones' due to civilian maritime traffic congestion.

During the Tanker War the Iranians set up floating decoys and radar reflective barges to fool Iraqi Exocet armed aircraft. Many of the decoys were fired on more than 20 times as the Iraqi's continually neglected to identify their targets.

During the Falklands conflict Admiral Woodward sent a rather terse message to RAF Command as their Nimrod patrols were not identifying radar contacts. On one occasion a group of RN ships was detected on radar and reported as trawlers and a container ship an aircraft carrier. The consequences of getting it wrong in a shooting war are obvious, not only for ammunition holdings.

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HMAS SYDNEY in the Persian Gulf during the Gulf War. Any future conflicts that the RAN is engaged in will probably see the return of the DSTO's RAM panels. The reduced RCS of SYDNEY with RAM was described as 'significant'. This measure enhances countermeasure effectiveness and makes the ship harder to detect, locate, identify and target. (USN)

ASCMs also have other limitations which do not receive much attention. Sea state affects the height at which the sea-skimming ASCM can fly and thus its detectability. Sea state can also prevent ASCMs from being fired, usually sea state 5-6 for most missiles, as mountainous seas can hide a ship.

Weather can play a part, strong crosswinds can prevent launch and blow the missile off target. Rain can also degrade the seeker heads ability to search for a target.

One of the big problems with ASCM use, particularly in poorer countries, is operator proficiency. The old computer adage of 'garbage in, garbage out' is particularly appropriate for ASCM use. Operator error can be reasonably blamed for a land-based Exocet passing over the flight deck of the RN Type 21 frigate HMS AVENGER during the Falklands conflict without hitting or detonating its proximity fuse. During the Tanker war of 1988 an Iranian Harpoon missile fired at the cruiser USS WAINWRIGHT was fired with the wrong data which negated the missile finding the ship despite passing harmlessly by her port side. 'Smart Weapons' cannot overcome the burden of 'dumb Operators'.

As seen money needs to be spent not only on war stocks of ASCMs but more importantly on training stocks. Not many countries in our region can afford the vast stocks of ASCMs needed to 'swamp' the defences of our ships in Cold War Soviet style raids. At best, ASCM use will closely follow the Argentine example of occasional hit and run perimeter sniping due to their multi-million dollar price tag. Militaries around the world are being squeezed for money and have many competing and more important acquisition programs to fund than stockpiling ASCMs.

## ASMD Hard and Soft Kill

Not much attention is given to the symbiotic relationship between hard and soft kill defensive systems on warships. The term hard kill relates to the actual destruction of the ASCM while soft kill aims to prevent it from achieving its makers' intent through manipulation of the missile's seeker. When used in isolation, as was the case in the early days, each measure produced mixed results and ultimately had limitations. However today, hard and soft kill ASMD measures are coordinated to mutually enhance each other thus providing greater effectiveness

and a layered defence against ASCMs. For example, soft kill can be used to lure, through chaff or Nulka, an ASCM to a particular sector where a hard kill measure has greater effectiveness. Hard kill can aid soft kill as near misses with proximity rounds or missiles can damage the ASCM's seeker thus enabling soft kill measures to be more effective. Soft kill effectiveness also saves the ship hard kill ammunition.

New command and decision support computer aids for ship's defence also take into account wind, ship speed and direction and provide advice on the best course and speed with the best ASMD measure to protect the ship relative to the ASCM. Systems such as this rank the relative effectiveness of each ASMD measure and advise what, when and where to use the measure, either sequentially or concurrently. They also provide advice to avoid conflict between systems such as the example of SHEFFIELD using her satellite communications equipment. A chaff cloud fired from a ship inadvertently coming in between an ASCM and the ship's fire control radar could be disastrous as the chaff cloud would mask the target.

Some of the soft kill measures that are employed today include systems that confuse, jam and seduce the seeker of the ASCM through the use of chaff, IR flares, onboard electronic jammers, off board systems such as the Australian hovering rocket Nulka or inflatable radar reflective decoys. Raytheon is in the process of designing a Phalanx armed with a low energy laser to confuse, blind and or destroy passive IR seeker heads in some ASCMs such as Penguin.

Some of the more common hard kill weapons include the 20mm Phalanx gun CIWS (Close In Weapon System), the 30mm Goalkeeper, RAM (Rolling Airframe Missile), Sea Sparrow, Sea Wolf and some Standard SM-2 variants. The new Raytheon ESSM (Evolved Sea Sparrow Missile), to be first fitted into an Australian warship, will be the world's leading hard kill ASMD weapon. Four missiles fit into one VLS (Vertical Launch System) cell giving the FFGs and Anzacs 32 ready to use missiles. The ESSM is designed to allow one fire control radar to control three ESSMs in flight simultaneously. The missile has a greater range than its predecessor, the Sea Sparrow currently in use on the Anzacs, as well as being quicker to react, faster, more accurate and more manoeuvrable. Each ESSM can be expected to have a Probability of Kill (Pk) in the order of .80 against a supersonic ASCM. With three being able to be controlled simultaneously from each fire control radar, a ship with two such radars can be expected to engage at least four supersonic ASCMs simultaneously in the hard kill mode alone. When coupled with soft kill the figure would be much higher.

## RAN ASMD Upgrades

The RAN is adopting a number of ASMD upgrade measures on its FFGs and Anzacs which will make them amongst the world's most defended ships.

Briefly, the package for the FFGs includes: ESSM, Nulka and long range chaff launchers for confusion and seduction chaff and IR decoys. The ships new Phalanx Block 1A has greater range, ammunition capacity and accuracy compared to earlier Phalanx models. The Block 1A is incorporated into the ship's electronic architecture to



Despite being hit by three Hellfire missiles, three Harpoons and a 2400lb LGB the RIMPAC target ship, the former DDG USS BUCANNON, remained afloat. Special scuttling charges had to be placed by hand to eventually sink her. Anti-ship proponents call these attacks on the target hull as 'classic text book stuff'. What they fail to realise is that the ship was in a known position, didn't defend itself, wasn't moving and had no damage control crew. (USN)

enable the operations room to pre-designate ASCM targets via radar and electro-optical sensors thus reducing the Phalanx's automatic reaction time of three seconds, vital against a supersonic ASCM which only gives you 30 seconds to react.

The ESSM will be more than a match for all ASCMs on the market today, including the Russian sea-skimming SS-N-22 and 27 variants as used by China and India respectively.

The Anzac package has yet to be decided but what has already been approved is ESSM, Nulka and a second fire control channel. Other improvements currently on the drawing board include a second type of ASMD missile, long-range chaff launchers and more VLS cells to accommodate more ESSM.

## Conclusion

Of course nothing is invulnerable, nothing. The claims and hype created by uninformed commentators present a disproportionate argument with real dangers - particularly if the public and strategists are swayed by them, as seems to be the case in Australia. Ship vulnerability claims also attack the very foundation of Australia's security, sea control.

The makers of the Harpoon ASCM claim the missile to have a success rate of 93%. What they don't reveal is that the figure is derived from target practice shots against unarmed, un-manned, stationary, known hulks. Historically, ASCM success rates are significantly lower than manufacturers claims. Of all the examples mentioned in this article the ASCM has only been approximately 37% accurate (actually hitting its target) and approximately 18% effective (contributing to a chain of events that led to loss). Of the 135 merchant ships hit by Exocet during the Tanker War only 14 sunk.

An example of the naivety of the anti-ship lobby concerns their reaction to the recent live fire exercise conducted during RIMPAC 2000. An old Charles F. Adams class DDG was put out on the sea range and used for target practice. This was a target with no crew, no Captain, no weapons, no power, by itself and in a known stationary position without any civilian or friendly units in the vicinity. And yet, despite being one of the easiest targets to sink and absorbing three Hellfire and three Harpoon

missiles and a 2400lb laser guided bomb the ship did not sink. This didn't stop the anti-ship lobby from claiming the exercise to be "classic text book stuff". For Australia's maritime security sake I hope they're not serious, let alone listened to as sinking enemy warships may be necessary for our future security. Believing it is easy will produce force structure weaknesses.

No western warship has been hit by an ASCM since 1987, over a decade ago, despite at least four other known attempts. No Western warship can be said to have sunk as a direct result of an ASCM hit alone, even the target hulks. Australia's warships will be, shortly, the most defended ships in the world against ASCM so why do we need to defend the reputation of the surface ship and reiterate the value of sea control to an island nation's strategic thinkers? Perhaps they should think a little harder.

Whilst this article is long it has only touched on some of the many issues relating to ASCM use and ASMD. Issues such as survivability, ship strategic and tactical manoeuvre and ASMD tactics against specific threats are too long and detailed to go into in one article. But perhaps the last word should go to the RN Type 42 air warfare destroyer HMS GLOUCESTER. During the 1990-91 Gulf War she was acting as goalkeeper to the US battleship MOUSSOURI whilst it pounded Iraqi positions in Kuwait. A Silksworm ASCM was fired at the battleship but was shot down, very calmly, by the RN destroyer. Perhaps this is the real turning point.



An ESSM being fired. The ESSM represents the best hard-kill measure against the new, and proliferating, Russian ASCMs. The missile is being installed on the FFGs and Anzacs. (Raytheon)

# Hatch, Match & Dispatch

## HATCH

### PARRAMATTA launched

The seventh ANZAC class ship built by Tenix Defence Systems has been launched at Williamstown, Victoria.

The ship, PARRAMATTA, was launched by Mrs Jill Green. The name honours the three previous PARRAMATTAs that have served with distinction in the RAN.

Mrs Green is the daughter of LEUT George Langford, RAN (Mention In Despatches, deceased). LEUT Langford was one of the officers killed while serving in PARRAMATTA II when she was torpedoed and sank in 1941. He had never seen his daughter



The recently launched PARRAMATTA with the Melbourne skyline in the distance (Tenix)

Tenix Managing Director, Mr Paul Salteri, said "The ANZAC Ship Project has had a deep-seated impact on Australian industry. Through participation in the project Australian companies have become more innovative; improved business practices; increased export opportunities; and acquired new defence capabilities.

"One in five Australian businesses involved in the ANZAC Ship Project has obtained new technology as a result and ANZAC Ship Project companies are two to three times more likely than others to implement best-practice business and management techniques," Mr Salteri said.

More than 1,300 Australian and New Zealand companies are supplying products and services to the \$AUS6 billion project.

A study commissioned by the Australian Industry Group found that by constructing the ANZAC frigates in Australia, instead of purchasing overseas, Australia is generating:

- \$200m-\$500m in additional annual GDP (growing GDP by at least \$3b over the 15-year construction phase).
- \$147m-\$300m in additional annual consumption (growing consumption by at least \$2.2b over the same period).
- Around 7,850 fulltime equivalent jobs.
- Savings of about \$520m in through life support.

The growth in Australia's GDP resulting from the project is already sufficient to cover the cost of constructing the Darwin-Alice Springs rail link.

Tenix Defence Systems is building 10 ANZAC class ships eight for Australia and two for New Zealand.

## MATCH

### WEEWAK Returns

The LCH WEEWAK has returned to the fleet after a period of 15 years in reserve. Her return to service comes as a result of the Timor and Bougainville operations placing a strain on the availability of other ships of the class.

WEEWAK started life in the RAN in 1972 and was laid up in reserve in 1985 as an economy measure.

The Australian built LCHs can carry a varied load; either three Leopard tanks; 23 quarter tonne trucks; four LARC Vs or 13 M-113 APCs. Armament consists of two .50 cal machine guns.

WEEWAK's return to service gives the RAN six functioning and operating LCHs.

### NORMAN Commissions

The Huon class Mine Hunter, NORMAN, has commissioned into the RAN. HMAS NORMAN joins her sister ships HUON and HAWKESBURY with the final three ships, GASCOYNE, DIAMANTINA and YARRA yet to join the fleet.



NORMAN was delivered on time and on budget by ADI from its Newcastle facility. NORMAN is seen here during her commissioning ceremony at HMAS WATERHEN in Sydney. (Brian Morrison, Warships and Marine Corps Museum Int)



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# RIMPAC 2000

# IN IMAGES



The ship of RIMPAC 2000 during a group formation photo.

(ABPH Damian Pawlenko)



The very capable South Korean destroyer, EULJIMUNDOK entering Pearl Harbor (Brian Morrison, warships and Marine Corps Museum Int)



The Japanese heli-carrier KURAMA at the entrance to Pearl Harbor (Brian Morrison, warships and Marine Corps Museum Int)



HMAS ADELAIDE's Seahawk performing winching exercises on the FX.  
(ABPH Damian Pawlenko)



An SM-1MR Missile firing off HMAS ADELAIDE during RIMPAC 2000.  
(ABPH Damian Pawlenko)



HMA Ships ADELAIDE (left), SUCCESS (middle), NEWCASTLE (right),  
DUBBO (back left), ARUNTA (back middle) and GLADSTONE (back right) in  
formation on the way to RIMPAC (ABPH Damian Pawlenko)



HMAS ARUNTA with USS ABRAHAM LINCOLN in the background  
(ABPH Damian Pawlenko)



The Seaking from HMAS SUCCESS flying over HMAS NEWCASTLE.  
(ABPH Damian Pawlenko)



HMAS WALLER entering Pearl Harbor for the first time  
(ABPH Damian Pawlenko)

## RAN Fixed Wing era comes to an end

The last two RAN fixed-wing aircraft, a pair of HS 748s, have been withdrawn from service. The planes had been on the job for 27 years.

Attached to 723 Squadron, the aircraft were built in the UK and accepted into the RAN in 1973. They were bought to replace the venerable Dakota.

The planes were initially used for navigation training and transport duties. In 1980/81 they were modified to provide electronic warfare (EW) training for the Australian fleet.

As the only EW platform of its type in the south east Asia region the HS 748s took part in most fleet work-ups and in domestic and international exercises.

They also provided logistic support to ADF personnel and were awarded the Navy League of Australia Plaque for aid to the civilian community following Cyclone Tracy.

Two years ago one of the aircraft shuttled between Nowra and Merimbula supplying helicopters involved in the Sydney to Hobart yacht rescues with spares, stores and maintainers.

Their departure closed the final chapter of fixed wing operations in the RAN.

Navy is negotiating with Raytheon Systems Company Australia for the provision of Electronic Warfare (EW) Training Services to enhance the operational effectiveness of Navy fleet units.

Five commercial offers were evaluated for the \$60m contract which will extend over 10 years. The decision, under the Defence Commercial Support program, is expected to provide an updated EW training capability appropriate to contemporary EW technology on a cost-effective basis.

Ratheon will be required to provide, on a privately financed basis, the platform, equipment and all resources needed to deliver the full training services around Australia and, if required, to units deployed in the South East Asia region

Subject to successful negotiations, Raytheon will commence a phase-in of operations in early 2001, with full service delivery by mid-2001.

*From Navy News*

## Historic submarine HUNLEY raised

H.L. HUNLEY, a submersible known as the 'South's secret weapon', had just turned for shore after sinking the Union blockader USS HOUSATONIC one chilly February night in 1864, when it vanished in Charleston Harbor, South Carolina, with all hands.



HUNLEY suspended in a hoisting frame after being raised from the bottom of Charleston Harbor

The fate of the first submarine to sink an enemy vessel in combat and her nine young volunteer crewmen remained a mystery for nearly 135 years, until a team led by the Naval Historical Center (NHC) in Washington, D.C., provided some answers. Doctor Robert Neyland, NHC's chief underwater archaeologist and HUNLEY project director, called the revolutionary vessel "a national treasure" comparable to the Wright brothers' aircraft. "It is the very first successful military submarine", he said. "Not until World War I would another submarine sink an enemy ship". Novelist and adventurer Clive Cussler and divers from his non-profit National Underwater and Marine Agency found HUNLEY in 1995. A team led by the National Park Service Submerged Cultural Resources Unit surveyed the wreck in 1996 to determine if the submarine could be recovered.

With the exception of a hole in the forward hatch, the HUNLEY was found intact. It is believed the submarine was quickly covered and filled with sediment. "In many ways this is like recovering a bottle - everything is contained inside the submarine", Neyland said. In mid-May, a team of experts working in zero visibility began work to raise HUNLEY from the sea bottom, where it laid completely buried under three-to-four feet of sand and shells.

When the recovery, excavation, and conservation of HUNLEY are complete, HUNLEY will be on display at South Carolina's Charleston Museum in a new wing built especially for the vessel and its associated artefacts.

## Admiral Zumwalt class DD-21

The President of the United States has announced that the Navy will honour Admiral Elmo R. 'Bud' Zumwalt Jr., by naming its 21st century Land Attack Destroyer (DD 21) after him. Zumwalt, who became the youngest man ever to serve as chief of Naval Operations (CNO) in 1970, passed away in Durham, North Carolina on Jan. 2, 2000. Appropriately, this class of 32 future warships will embody Zumwalt's visionary leadership and well-known reputation as a Navy reformer. Entering the fleet at the end of this decade, USS ZUMWALT will usher in the Navy's newest class of destroyers. These revolutionary



A computer generated image of the new DD-21 Zumwalt class destroyer



HOBART, shackled to a tug, begins the long journey to South Australia. (Brian Morrison, warships and Marine Corps Museum Int)



The RN Type 23 'Duke' class frigate HMS SUTHERLAND passing the Opera House on her recent visit to Sydney (Brian Morrison Warships and Marine Corps Museum Int)

warships are being designed to meet post-cold war requirements using 21st century naval warfare concepts. The Zumwalt class will incorporate several advanced technologies and introduce a number of design features to improve the DD 21 sailor's quality of life. Armed with an array of land attack weapons, USS ZUMWALT will be capable of delivering an unprecedented level of offensive firepower from the sea. It will also be the first U.S. Navy ship to be powered and propelled by a fully integrated power system, including modern electric drive. The cruiser-sized Zumwalt will be manned by a crew approaching one hundred and will feature new habitability standards and shipboard amenities, including staterooms for the entire ship's company.

## SLAM-ER reports for duty

The USN recently announced that the Stand off Land Attack Missile - Expanded Response (SLAM-ER) has entered into full production and has 'reported for duty' in the fleet. Rear Adm. John B. Nathman, director of Air Warfare, spoke at a joint Navy/Industry event at the Pentagon to mark the occasion. "Precision engagement is much more than going some where and blowing things up. Accuracy and the ability to plan and determine where and how to control the effects of that engagement is key. SLAM-ER is a true stand out of an area defence weapon. Combined with Super Hornet, the potential is tremendous", said Nathman. SLAM-ER provides a surgical strike



A test shot SLAM-ER in flight. (Boeing)

capability against high value, fixed land targets, ships at sea or in port, and at standoff ranges greater than 150 nautical miles. High survivability and lethality are assured by SLAM-ER's adaptive terrain following, passive seeker, precise aimpoint control, and improved penetrating warhead.

## HOBART Gifted to South Australia

The Minister for Defence, John Moore, has announced that the guided missile destroyer HOBART, has been



With most of her equipment removed, HOBART leaves Sydney for the last time to be turned into a dive wreck. (Brian Morrison, Warships & Marine Corps Museum Int)

gifted to the South Australian Government for use as a recreational diving attraction.

"This is the first time the Federal Government has made a gift of this type to South Australia. There has been great interest in obtaining HOBART and this decision has the potential to provide a real boost to the local tourism industry", Mr Moore said.

"The hulk of former destroyer-escort SWAN, which was given to the Western Australian Government in 1997, has been dived on by an estimated 14,000 Australian and overseas divers, and I am advised that this has contributed an additional \$5.2 million in earnings to Western Australia".

HOBART saw 35 years' service in the RAN, having been commissioned on the 18th December 1965. She completed three tours of duty with US forces during the Vietnam War, coming under fire while serving as a unit of the US Navy's Seventh Fleet.

"HOBART was the second of three guided missile destroyers acquired for the Navy and has served Australia with pride and distinction", said Mr Moore.

The ship has been towed from Sydney to South Australia and will be scuttled off the Fleurieu Peninsula, south-east of Adelaide to form the nucleus of an artificial reef.

Currently, weapons and fittings are being removed for use on other Navy ships with HOBART also undergoing an extensive clean-up operation to remove oil and other pollutants.

## RNZN Seasprite first flight

The first of the RNZN's new SH-2G Super Seasprite naval helicopters successfully underwent its first flight during the afternoon of 2 August. The aircraft, NZ 3601, will undertake a complex flight test program which will culminate in weapons proving trials in Arizona later this year. It will be joined in the program by the next three aircraft in the initial New Zealand production contract.

A fifth Seasprite is also to be built, but its delivery is not due until 2002.

## Return of the Daring class, the Type 45 DDG

The UK Government is proceeding with the construction of the Type 45 destroyer. The Type 45 will replace the now ageing 11 Type 42

DDGs. The first three will be built by BAE SYSTEMS and Vosper Thornycroft.

Twelve Type 45 DDGs are planned with the first ship entering service around 2007 and the last in 2014. Total cost of the project including weapons systems is estimated to be £6 billion. The MoD will negotiate a £1 billion order for the construction of the first three ships of the class with prime contractor BAE SYSTEMS later



BAE systems concept for the Type 45 'Daring' class destroyer.

this year. The programme is expected to provide up to 5,500 jobs in BAE SYSTEMS Marine and Vosper Thornycroft shipyards and in other defence industries around the UK.

The delay in replacing the Type 42s is a direct result of the efforts to design a 'joint' anti-air destroyer with France and Italy - Known as Project Horizon - which was cancelled last year. However, the main combat system of the Horizon project, the Principal Anti Air Missile System (PAAMS) is still being developed internationally and will be used on the Type 45s.

The Type 45 will be known as the 'D' Class and the first two ships of the class are to bear the names HMS DARING and DAUNTLESS. The third ship in this batch will be named later.

An order for the construction of the second batch of ships is expected to be placed with the prime contractor around 2004.

The build strategy being adopted is based on the latest developments in advanced outfitting and modular construction techniques. This will mean that, while the ships themselves will be assembled in the prime defence shipyards, some of the major

components and blocks can be competed for by companies throughout the UK with the appropriate experience and facilities. BAE SYSTEMS says this strategy will also mean that the ships should be substantially more cost effective than previous classes.

The Type 45 destroyer will introduce Integrated Electric Propulsion into the RN for the first time. Benefits include a reduction in costs through-life because of lower

maintenance and fuel consumption costs. The propulsion system gives greater flexibility to ship's electrical distribution systems allowing for considerable growth in demand through life.

## USN places Super Hornet Order

Confident in the performance of the new Super Hornet the USN has placed an order for 222 F/A-18E/F Super Hornets valued at \$US9 Billion. The first squadron will deploy aboard the US carrier ABRAHAM LINCOLN in June 2002.

The Super Hornet is claimed to provide twice the number of sorties



The Super Hornet will become the USN's main strike fighter until the arrival of the JSF. (Boeing)

and has 40% greater range than the current Hornet. It also has two extra weapons pylons and stealthing.

The Super Hornet has some big shoes to fill as it is replacing the Tomcat, F/A-18C/D and the A-6 to a lesser extent.

All of this comes amid the announcement that the price for the F-22 Raptor (see article in this edition) has risen yet again. The US DoD believe that 339 F-22s will cost the US Taxpayer \$US48.6 billion. Many in the US believe that if the expensive project goes ahead that only 100 to 200 aircraft will be purchased.

## AIEWS passes US Navy CDR

The AN/SLY-2(V) Advanced Integrated Electronic Warfare System (AIEWS) has passed its US Navy Critical Design Review (CDR).

The successful CDR was the final design review on the technical progress of the shipboard electronic warfare system that will be widely deployed on all Navy ships for at least the next 20 years.

The first low-rate initial production ship for installation on the Arleigh Burke class DDG-91 will occur in 2003.

"Because the Navy's battlespace is increasingly expected to be a littoral, or coastal, environment instead of deep water, it needs a system capable of dealing with the dense electromagnetic environment typical of the littorals", said Dr. Peter Costello, director, ship electronic warfare systems". AN/SLY-2 is an EW system that provides situational awareness, counter targeting and anti-ship missile defence. It has, for example, radar-quality angular resolution markedly better than what the Navy has ever had available before".

Lockheed Martin Naval Electronics & Surveillance Systems (NE&SS) in Syracuse is responsible for leading the AN/SLY-2 team which includes Litton Advanced Systems and Sensytech. The team is developing the AN/SLY-2 engineering development model (EDM) high-resolution antenna arrays, receivers, pulse-sorting hardware and complex processing



software. In a parallel contract, DSR is developing control and processing software as well as the displays as an associate contractor to the Navy, with Lockheed Martin having overall system integration responsibility.

The first antenna array prototype has already started testing at Chesapeake Beach as part of the AIEWS' programme's risk management. It is expected that the prototype soon will be used in at-sea tests to validate the performance of the AN/SLY-2 system.

## Production of SAN ANTONIO LPD 17 to begin

Litton Avondale Industries has received approval by the USN to begin production of the lead ship in the USN's new SAN ANTONIO (LPD-17) Class of amphibious assault ships.

The LPD-17 Amphibious Transport Dock Ships will replace the LPD-4, LSD-36, LKA-113, and LST-1179 classes of Amphibious ships. The LPD-17 ship's mission is to embark, transport, and land a landing force in an assault by helicopters, landing craft, and amphibious vehicles. It will be capable of embarking the LCAC hovercraft and the MV-22 Osprey Tilt-rotor aircraft.

Start of production of the LPD-17 lead ship follows a 36-month period of design, material procurement and engineering. In addition to design work begun for the new class in 1997, Litton Avondale has already constructed a series of pilot ship sections to demonstrate the maturity of the design and efficient production processes.

To date, four ships have been awarded in the 12-ship program, with eight additional ships planned in the next four to five years. The first ship will be delivered in late 2003. Value of the four ships awarded to date is in excess of \$US2 billion.

Eight of the ships will be built at Litton Avondale in New Orleans, while four are currently planned for production at Bath Iron Works in Maine.

## Coastwatch get new surveillance aircraft

Bombardier Aerospace has delivered two Q200 Series turboprop to Surveillance Australia, who will operate the aircraft on the COASTWATCH programme on behalf of the Australian Customs Service.

The two Q200s were ordered in September 1999 by Surveillance Australia of Adelaide, a wholly owned division of National Jet Systems Pty. Ltd.

The aircraft has had long-range inner wing fuel tanks installed on the production line. Other specialised equipment includes large observation window inserts in each of the mid-fuselage emergency exits, a Raytheon SV-1022 search radar in a belly radome, a Wescam 16DS turret containing Forward Looking Infra Red (FLIR) and a daytime television camera. The sensors are controlled from one cabin console, and are integrated with the aircraft's navigation system to provide time and position data, while imagery is recorded for later use. The other console controls a comprehensive electronics suite that will allow communications with ships at sea and Defence and Customs resources.

The two new aircraft will join three Dash 8 Series 200 aircraft that have been operating successfully with Surveillance Australia since 1996 from bases at Broome, Darwin and Cairns. The COASTWATCH mission is to patrol the Australian Exclusive Economic Zone (EEZ), searching for illegal fishing, immigrants, narcotics smugglers, marine pollution, quarantine threats, etc. Missions can last up to 9 hours.

In its COASTWATCH configuration, the Q200 can transit 300 nm (555 km) at its max cruise speed, fly a low-level search track of about 1,000 nm (1 851 km), resulting in 90,000 nm<sup>2</sup> (260,000 km<sup>2</sup>) of coverage per mission, including a number of target identifications, before returning to base with adequate fuel reserves.

## Singapore commissions submarine

The Singaporean Deputy Prime Minister and Minister for Defence, Dr Tony Tan, has officiated at the commissioning ceremony of the Republic of Singapore Navy's (RSN) submarine, RSS CONQUEROR, at Tuas Naval Base.

RSS CONQUEROR will enhance the RSN's capability to safeguard Singapore's maritime interests and approaches.

The submarine was launched in May 99 at the Kockums shipyard in Karlskrona, Sweden. She is the first of the four RSN submarines to arrive in Singapore. Prior to her return in May this year, RSS CONQUEROR went through a refurbishment programme in Sweden. In Singapore, she has gone through a series of stringent sea trials to verify the performance of the submarine systems in local conditions.

The submarines were put through a tropicalisation programme to adapt it to operations in tropical waters. Warm tropical waters are more conducive for active marine growth on the submarine surface. The high salinity of tropical waters also makes the pipes and valves of the submarine susceptible to corrosion. Battery cooling is also a concern and can affect discharge and recharge rates.

The tropicalisation programme addresses these problems and also increased crew comfort. It entails:

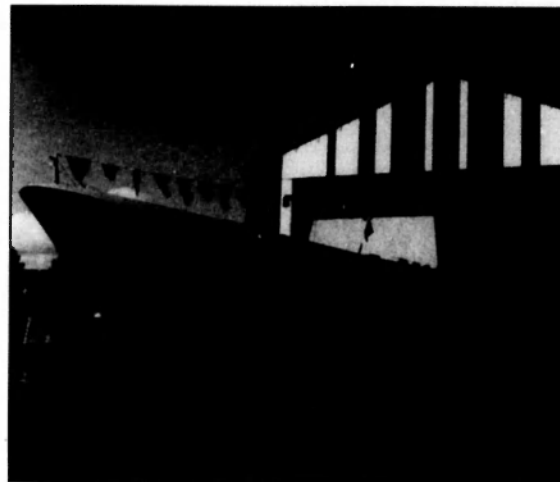
- Changing the steel pipes and valves that come into contact with seawater to copper nickel iron ones in order to reduce corrosion.
- Installing a marine growth protection system to minimise the growth of marine barnacles on the submarine surface.
- Installing a freon compressor to enhance the cooling efficiency within the submarine.



One of Singapore's new submarines on the surface. (RSN)

## Sawari II frigate launched

The first of the SAWARI II frigates ordered by Saudi Arabia, the AL RYADH has been launched from the DCN-Lorient shipyard.



The Royal Saudi Navy's new Sawari II frigate is launched from France's DCN. (DCN)

The Sawari II contract, signed by France and Saudi Arabia in 1994, added three more ships to the original Sawari I contract for four ASW frigates. The three Sawari II multipurpose stealth frigates, designed and built by DCN, the French naval shipbuilder, are derivatives of the La Fayette class frigate used by France and soon to be used by Singapore. They are 135 metres long, with a 17-metre beam and displace over 4,500 tons.

Thomson-CSF is prime contractor for Sawari II. Its main industrial partners on the contract are DCN/DCN International for the platform and propulsion system; SFCS (a joint venture of DCN International and Thomson-CSF) for the combat system; NAVFCO for crew training; SODETEG and SOFINFRA for design and construction of shore infrastructure in Jeddah (school and facilities); and Aerospatiale-Matra-Missiles for missiles.

The frigates' automated information processing system,

developed jointly by Thomson-CSF and DCN, is based on the French Navy's La Fayette class system. The frigates will also be equipped with the Aster air defence system currently used on the French aircraft carrier CHARLES DE GAULLE.

## Fourth Triomphant class SSBN to be built

France is to build a 4th SSBN (nuclear powered ballistic missile submarine).



LE TERREMAIRE on the surface. The French Navy intends to build a fourth SSBN. (Marine Nationale/French Navy)

The submarine, LE TERRIBLE, is expected to enter service in 2008. France already has LE TRIOMPHANT and LE TEMERAIRE in service with VIGILANT expected to be ready by 2004.

The Triomphant class is replacing the L'Inflexible M4 class SSBNs and are built at DCN's Cherbourg shipyard. The first submarine, LE TRIOMPHANT, entered service in 1997. The second, LE TEMERAIRE, entered service in 1999 with the third, VIGILANT, still under construction.

Each submarine carries 16 vertically launched M45 SLBM (Submarine Launched Ballistic Missiles), supplied by Aerospatiale. Each missile carries six Multiple Re-entry Vehicles (MRVs), each of 150 kT. The range is estimated to be approximately 6,000 km. The new enhanced M51 missile, due to enter service in 2008, will carry a warhead with 12 MRVs, and an increased range to approximately 8,000 km.

The submarine's sub-surface to surface missile is the Exocet SM-39 supplied by Aerospatiale. It has four 533 mm torpedo tubes and has the capacity to carry a mixed load of 18 ECAN L5 Mod 3 torpedoes and Exocet missiles.

The DR 3000U electronic support system supplied by Thomson-CSF is a radar warning receiver operating in D to K bands. The system uses a masthead antenna array with omnidirectional and monopulse directional antennas and a separate periscope warning antenna.

The submarine is fitted with the Thomson Sintra DMUX 80 bow and flank array sonar suite. The DMUX 80 provides passive target ranging and interception capability. The submarine's very low frequency towed array sonar provides very long range capability.

Triumph class submarines have a submerged speed in excess of 25 knots and a surface speed of 20 knots.

## Stonefish Mines for ADF

BAE Systems has been selected to provide the ADF with the Stonefish Mk III Maritime Mining System, a family of multi-influence ground sea mines.

The mines can be deployed from surface ships, submarines and aircraft such as the F-111, F/A-18 and AP-3C Orion.

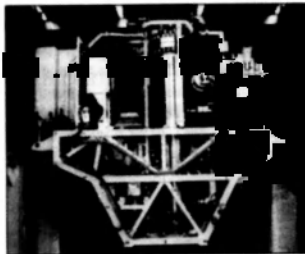
The system uses the one mine type or 'combat mine' but with different deployment and influence modes. This is achieved through off the shelf software and special purpose kits that configure the mine to the desired mode. A full training package is also included in the deal.

The Stonefish was chosen under Phase 1A of Project 2045. Further phases are expected to acquire a standoff sea mining capability for the Collins class submarines enabling them to launch mines into harbours or patrolled shipping lanes from distance.

## Pakistani Agosta 90B gets AIP

The French naval shipbuilder DCN has taken delivery of the first AIP (Air Independent Propulsion) system to be installed onto an Agosta 90B submarine on order for Pakistan.

The LOX (Liquid OXygen) tank was installed into a hull subsection



The MESMA steam plant before being installed into the AIP module for testing. AIP will give the Pakistan Navy a near nuclear powered submerged capability. (DCN)

during April. The steam generator module will be attached to the LOX hull subsection early next year and thoroughly tested on shore before the AIP 'plug' is attached to the submarine.

AIP will give Pakistan's submarines increased underwater range and decreased indiscretion rates as they won't be required to surface or snorkel as much.

## Israelis test sub-launched Cruise

Speculation is mounting that an Israeli Dolphin class submarine (see THE NAVY Vol 61 no.4) fired a cruise missile to a range of 930miles off Sri Lanka in the Indian Ocean.

The first indication of the test launch came from a British press report published in mid-June quoting and unnamed Israeli source.

It is widely known that Israel and Sri Lanka share close military relations. Whether the test was conducted by a submarine or a submerged test rig is yet to be confirmed.

The Arab press has long claimed that the new Israeli subs were intended to carry cruise missiles to use against them.

What type of cruise missile was used is open to conjecture as there has never been an indication that the Israelis have purchased the US Tomahawk missile. It has been widely speculated for some time that Israeli engineers have re-worked sub-Harpoon missiles to the land attack role but this would only provide a 500lb HE warhead to a range in the vicinity of 120kms.

## France sells FOCH to Brazil

France has sold the 37 year-old aircraft carrier FOCH to Brazil for \$US42million. The 40,000 tonne carrier will be delivered to the Brazilian Navy in mid-November.

FOCH will be renamed SAO PAULO and replace Brazil's existing carrier MINAS GERAIS (ex HMAS VENGEANCE) which will be offered for sale.

Work will be done in France at the DCN facility to dis-arm the carrier and re-equip it for Brazilian use which includes the removal of asbestos. The carrier should set sail for Brazil some time in April 2001.

Brazil is expected to operate around 23 ex-Kuwaiti A-JMB Skyhawks from the new carrier.



The French carrier FOCH has been sold to Brazil and will arrive in April next year. (Marine Nationale/French Navy)

# Maritime Airpower for Australia Part 3

## Australian Strategy and The Littoral Support Ship

The LSS concept ship with another concept vessel, an Australian designed air warfare destroyer

By Dr Norman Friedman

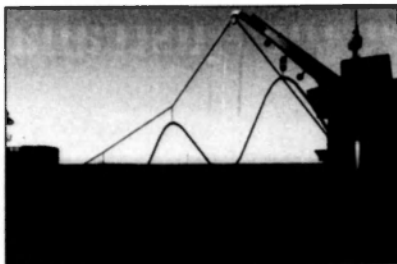
In part three of our series on maritime airpower for Australia, world renowned naval expert and accomplished author, Dr Norman Friedman, examines the need for Australia to seriously consider its maritime nature and the value of the capability provided by the Littoral Support Ship (LSS) concept. It should be noted that the LSS is a concept and not a plan or acquisition 'wish'. The concept was borne out of a capability requirement of the ADF that has emerged in the past decade and currently filled by a number of platforms at a far more exorbitant price than what the LSS could be acquired and operated for, and with greater capability.

The East Timor operation recently re-focused Australians on their regional responsibilities, and thus, indirectly, on their need to be able to project military power. The great question is whether the current capability matches current and future needs. It seems a particularly apt question as a new White Paper is being prepared. Hopefully comments by an outsider will seem relevant to this process.

Clearly the single greatest fact of Australian geography is that the country is an island, the other great fact is that the interior is largely empty, and that the country's population (and wealth) is largely confined to points widely scattered along a long coastline. The island aspect makes invasion difficult, but the scattered character of the population centres makes defence difficult. Modern forces are very expensive, and it is impossible to multiply them sufficiently to cover the whole country against a determined attack. For over a decade the solution has been to build and maintain a string of air bases to which the limited force of modern F/A-18 fighters can deploy in an emergency. At all other times the bases, which are in largely deserted areas, are unmanned – and unguarded. The basis of the concept was the expectation that the Australian government would enjoy adequate warning of any assault, hence would be able to deploy in good time. Of course, the concept has its problems. A lawyer would call an unmanned base an "attractive nuisance," because seizing it would offer enormous advantages. A historian might observe that warning has not always been available as needed – Pearl Harbor is hardly the latest, or the only, case

in point. Should this seem the nattering of a hyper-critical American, the reader may recall that during the Cold War the U.S. Air Force built a bomber base at Shemya, in the Aleutians, then realised it was unneeded – and abandoned it (the runways could not be destroyed or blocked). From then on, Soviet seizure of Shemya was high on the list of potential World War III nightmares. Australia has no one, but numerous, Shemyas.

It would probably be impossible to keep an invader from gaining a foothold in some relatively deserted part of the country. Successful defence of Australia would probably entail a seaborne attack on this position, which would of course be defended. Thus the current defence policy would seem to require an Australian ability to mount an opposed landing at a considerable distance from a base, supported by Australian aircraft. Without such an ability, the system of unmanned air bases around the coast is an open invitation to any potential attacker. Air support, of course, would be necessary because anyone seizing one of the deserted air bases would use it for just that purpose. The distance factor is due to the sheer length of the Australian coastline. Although Australian aircraft would enjoy the advantages of interior lines of communication (they can, of course, cross the middle of the country at will), the distances are great. Tactical aircraft can be tanked, but the longer their flights the better the chance that relatively minor damage will prove fatal. As a case in point, the US Air Force lost an F-111 in the long-range attack on Libya in 1986, whereas naval aircraft flying over



The LSS is a multi-rolled ship being able to provide full replenishment services to escorts and other ships.

much shorter ranges were unscathed. Not only does it seem likely that the damage which proved fatal to the F-111 would not have been deadly at shorter ranges, but pilot fatigue was surely a factor. In addition, the F-111 portion of the raid was considerably reduced because so many aircraft had to drop out due to minor defects, which would not have mattered at shorter ranges. These considerations would be important even if the aircraft simply attacked pre-selected targets. However, support of a landing would require that aircraft engage enemy aircraft and also that they hit pop-up targets; in either case, they would have to spend considerable time in the combat area after long tanked flights across Australia. It would seem to follow that some kind of deployable platform for aircraft is a prerequisite for the defence of Australia, given the "attractive nuisance" airfields which would so greatly simplify an attacker's task.

East Timor exemplifies another consideration in Australian defence. Australia is inescapably a regional power, gaining enormously from her connections with nearby countries, particularly in the island barrier to the north. An outsider would observe that such engagement requires that Australian friendship offer some special advantage; otherwise it may well be more attractive for neighbours to seek control over Australian wealth and resources. Australia is more technologically advanced than her neighbours, so from a military point of view the advantage should, in theory, be some form of leverage based on technologically advanced forces. At present, for example, Australia is the only regional power with long-range bombers (the F-111s). The Royal Australian Navy can escort ships in the teeth of air attack, and it can convey Australian troops, albeit in limited numbers. However, the troops will find it difficult to deal with serious opposition, since the fleet has only limited firepower. Air strikes mounted from Australia may be able to deal with targets identified in advance, but aircraft cannot be maintained "on call" to support troops. That is, it has long been known that aircraft waiting on an airfield generally cannot answer urgent calls for assistance hundreds of miles away. Quite aside from the time lag involved, conditions at an airfield may well preclude immediate take-offs. That reality has been blurred in recent operations (such as Kosovo) by the use of aircraft exclusively to attack pre-selected targets. Australian troops lacking air support would presumably feel that such attacks were beside the point. Much the same may be said of urgent requests for air support against attacking aircraft.

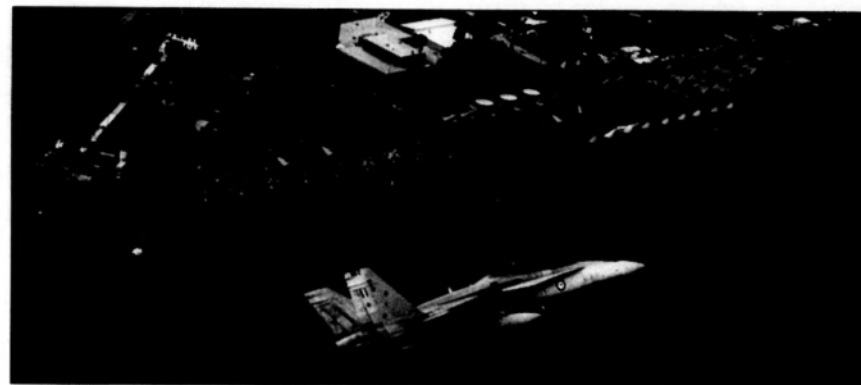
In the past, Australia pursued a national strategy of forward presence, in which Australian troops and aircraft were stationed in places such as Malaysia to demonstrate support. This policy was exemplified by the Confrontation and by Australian participation in Vietnam. It was rejected because the presence of troops on the ground tends to demand involvement; the Australian government would prefer to decide when and where it becomes militarily involved. Moreover, experience shows that it is often difficult to gain agreement to insert troops or ground-based aircraft, and that their withdrawal can carry terrible penalties for national prestige – and can send very misleading messages, with severe consequences. Under the current policy of forward engagement, Australia extends friendship and offers support – using forces which generally do not require permanent basing abroad. That means both the offer of long-range air support (mainly using F-111s) and the offer of naval support. Of the two, naval support has enormous advantages. It is continuous, and it can be highly visible on a sustained basis. Yet it does not require any surrender of sovereignty by the supported country, and there is no basing with consequent possible friction. In the important case of supporting a friend against another country, warships can appear without the unfriendly country's consent, yet without actually attacking it (aircraft based on a distant continent do not offer this sort of opportunity). To be meaningful, presence must carry a military capability. For navies that means either the ability to land and support troops, or the ability to do significant damage to assets ashore. Without heavy guns or organic attack aircraft, the Royal Australian Navy cannot do much direct damage – but it can land Australian troops.

However, the capacity to transport the troops' supporting vehicles is inherently limited. The more serious the opposition the Army faces, the more it needs a combination of armour and anti-tank helicopters. The Army has a limited capability of this kind right now in the two ex-US LSTs.

The ability to operate at a distance also depends on the fleet's ability to replenish its ships, which currently depends on a pair of tankers substantially slower than fleet speed. In a contested operation, the tankers themselves would need separate escorts, thus reducing whatever firepower the fleet could bring to bear at a landing site.



The LSS can, if wanted, also act as an airpower projection platform with the ability to embark the RAAF's F/A-18 for fighter cover, and/or strike mission. To facilitate this, the LSS uses arrestor wire gear and either a catapult or ski jump.



The only thing stopping this RAAF Hornet from landing on the USS INDEPENDENCE below is the parked aircraft on the deck. The RAAF's Hornets require little modification to bring them back to the USN carrier-borne aircraft standard (RAAF).

From a strategic point of view, then, it can be argued that what Australia brings to the regional table is the ability to project military power in support of regional allies – that is a major reason they are regional allies. For this capability to be worthwhile, it ought to be effective in the face of opposition. Specialist ships are required, not least in order to maintain multi-service capability in power projection. Anyone aware of Second World War history will know just how difficult it was for the Allies to build up and maintain their amphibious capability, which proved so important – and in which Australia participated very heavily, for example in the Solomons and New Guinea. Without specialist ships, training is difficult at best, and problems which crop up in reality are often missed. That was certainly the case in US pre-1941 amphibious training, conducted with neither specialised ships nor specialised landing craft.

So what is needed? Troops need fast transports, which carry them, their supplies, and, as importantly, their heavy vehicles. For modern assaults, moreover, the ships ought to carry helicopters, both troop carrying and fire support. The larger the number of helicopters (operable more or less simultaneously), the faster the assault and the fewer the casualties. Big transports are likely to have the range needed, but their escorts probably will not, so power projection requires underway replenishment ships. Preferably both transports and replenishment ships are fast, since speed is a valuable form of protection against submarine attack. The larger the ships, the easier to maintain high speed, particularly in rough weather. What is less widely known is that larger is by no means necessarily more expensive: ship steel is quite cheap. Incidentally, larger ships are generally far less vulnerable to attack because weapons, hitting either above or below the waterline, generally destroy structure over a limited length. The less the proportion of the overall length of the ship, the less damaging is each hit. On the other hand, a larger ship does not have so much larger a signature that she is much more likely to be found or hit.

Standardisation is another consideration. The more distinct classes of ships a Navy operates, the more expensive is that operation. Ideally the RAN ought to

operate standard classes of surface escorts and auxiliaries, both sharing the same type of engine. It is not clear to what extent that is practicable. However, it is clear that auxiliaries can be standardised, with considerable savings. It turns out that a single type of ship can accommodate both fuel (for replenishment) and troops and vehicles, the former in her hull and the latter on her decks. The RAN has already operated a ship of this type, the ex-carrier HMAS SYDNEY, which transported troops and their vehicles on her hangar and flight decks. She could fuel ships alongside from her capacious tanks.

## The LSS

Last year three members of the RAN's Directorate of Naval Materiel, John Truelove, Stephen Kretschmer, and Peter Clark, examined the concept of a multi-role ship as a



The idea of using a flat decked ship for troop transport isn't new. In fact the 'carrier' platform is the most versatile weapon in history. Here the aircraft carrier HMAS SYDNEY is used to transport troops and heavy equipment to Vietnam.



Another of the LSS' roles is that of troop and heavy lift transport. The ship can also act as a command and control centre plus support troops ashore with 'Hotel services', as provided by USN Helicopter assault carriers during the recent Timor operation.

training exercise. They soon found that the long flat decks required for the troop vehicle role made it possible for the ship to operate the aircraft the troops might need to support them in combat. The natural size of the ship, about 30,000 tons, turned out to be well adapted to the F/A-18 currently operated by the RAAF. Moreover, built to civilian standards, it would be less expensive than the new air defence escorts the Navy currently plans to buy. The five current Australian fleet auxiliaries (two underway replenishment, three troop carriers) could be replaced by four of these fast support ships.

The study called the proposed ship a Littoral Support Ship (LSS), because it was key to supporting Australian intervention in regional littoral areas – in the areas of greatest interest to Australia, and in which she can make the greatest contribution to regional alliances. The ships' open hangar spaces could easily be fitted out as troop accommodations. Vehicles or aircraft could be carried on deck. The key to the design is the realisation that open space makes a ship adaptable to a very wide variety of roles. As it happens, one of them is aircraft support (in one version of the LSS, a steam catapult is installed), but in fact the other roles, which a variety of ships already fill,



During the Hornet's initial flight testing it was subjected to 'ski jump' take-off trials with great success. The results indicate that an LSS fitted with a ski jump can launch Hornets with no loss of aircraft performance or load.

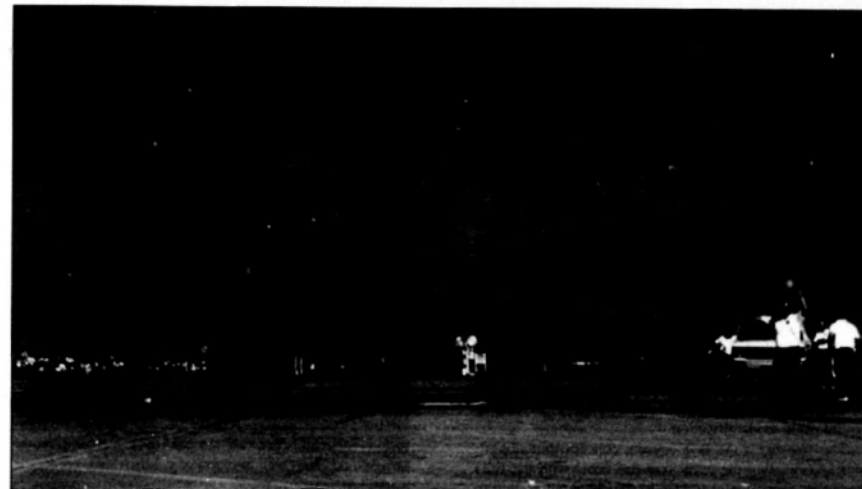
determine the overall size and volume of the ship. The proposed design is 247.0 m overall x 28.0 m (45.0 m at the upper/flight deck) x 7.8 m, with a CODOG (COmbined Diesel Or Gas turbine) powerplant.

Overall, the LSS is a very innovative solution to a difficult problem: Australia badly needs the ability to project military power, but she cannot keep buying a very varied fleet, which is inherently difficult to maintain. The solution, both in Australia and in other navies, has generally been to blend several ship functions together in order to limit either overall numbers or, at the least, the number of separate types. The LSS is certainly a step in this direction. That it looks like an aircraft carrier is not the point: the design was determined by the needs of troops and of underway replenishment. Carrier capability is a bonus, not a drawback. Moreover, without some kind of mobile base, it is difficult to see how the expensive (hence not numerous) F/A-18s or any successors can have much relevance to two of the most important Australian defence problems, the defence of the country itself and power projection in support of regional friends or allies.

*\* The views expressed in this article are the author's own, and should not be attributed to any organisation, including the U.S. Navy, for which he has worked or is currently working.*



The LSS as it would look from the air. It should be remembered that the LSS is a concept and not a planned acquisition nor an aircraft carrier in the traditional meaning of the word.



The Lockheed Martin F-22 Raptor. The aircraft is most vulnerable on the ground, and in government finance committees with the unit price rising every year (USAF)

*Commander Jeff Huber, USN\**

With many expecting the new Australian Defence White Paper to be a 'Battle of Britain' strategy written for the 21st century version of the Spitfire, the F-22, some balance on the claims about its performance are warranted. If the F-22 is eventually chosen to replace the RAAF's F/A-18 and F-111s each one could cost as much as an Anzac frigate and yet use exactly the same weapons as the aircraft it replaces. The following was first published during 1997 in the United States Naval Institute's magazine 'Proceedings' and is reprinted with the Editor's permission.

The first F-22 airframe – Raptor 01 – 'The Spirit of America' – rolled out of a Lockheed hangar on 9 April 1997 amid a firestorm of budgetary controversy. The stealth fighter, currently estimated at more than SAUS 200 million per copy, is catching flak from countless sources, most notably the US Congress.

In an attempt to polish the project for the legislative eye, the USAF (United States Air Force) has expanded the jet's role from an air superiority only fighter to a multi-mission platform. The January 1997 issue of *Aviation Week & Space Technology* featured a series of articles on the state of the stealth fighter program that aptly summarises the body of F-22 advocacy. At first glance, these arguments seem compelling. A peek beneath their surface, however, reveals the house-of-cards nature of the USAF's 'expanding role' F-22 strategy.

## Air Superiority

The three components of air superiority are defensive counter air (DCA), offensive counter air (OCA), and suppression of enemy air defences (SEAD). In DCA, good-guy fighters shoot down bad-guy strikers before they can drop bombs on good-guy ground and surface forces. In OCA, good-guy fighters clear the sky of bad-guy fighters so that good-guy strikers can bomb bad guys. SEAD, OCA's partner in protecting strikers, neutralises bad-guy surface-to-air missiles.

The F-22's sales pitch frames it as the undisputed master of each air superiority task. I'm sceptical.

## Defensive Counter Air.

Being stealthy for the purpose of shooting down strikers isn't a persuasive F-22 selling point. DCA fighters operate over friendly territory and don't have to worry about bad-guy surface-to-air missiles. For the sake of role expansion, however, proponents attribute to the aircraft a 'unique' DCA ability to shoot down stealthy cruise missiles: The F-22 also will carry the next-generation AIM-9X and improved versions of the AIM-120 AMRAAM designed to destroy low-observable cruise missiles expected to be on the market early in the next century.

Land-attack cruise missiles avoid radar detection by flying low against the terrain, putting the earth between themselves and enemy radars. Spending extra money to make them stealthy is a curious notion. Even if the arms industry can create a viable market for low-observable cruise missiles, there's genuine doubt as to whether advanced air-to-air missiles will be able to shoot them down.

Regardless, whether whiz-bang air-to-air missiles will be able to shoot down whiz-bang cruise missiles has nothing to do with the F-22's stealthy airframe. The air-to-air missiles and their companion avionics will work equally well on any fighter airframe in the current inventory. More important, fighters are almost certainly the least cost-effective or tactically effective means of defending against cruise missiles. Cheaper, better countermeasures can be found.

## Offensive Counter Air

For the OCA role, stealth fighter advocates describe divisions of F-22s circling over enemy territory in 'free-fire zones', within which they could attack any 'positively identified target'. In fact, 'free-fire zones' and 'positive identification' are mutually exclusive terms in the air-to-air world. Free-fire zones are so named because they don't require positive identification of a target to engage it.

The free-fire concept declares that because projected F-22 tactics 'ensure' that no stealth fighter will accidentally shoot down his wingman (a leap of faith worthy of Martin Luther), anything within an F-22's detection and weapons envelope is a hostile aircraft and may be engaged. Unfortunately, any innocent aircraft happening into the zone gets whacked along with the bad guys. Worse yet, any good-guy strikers (who are the reason for having the free-fire zone in the first place) flying into the zone get whacked as well. That's why beyond-visual-range engagements require positive identification.

The free-fire zone is a groovy concept, but doesn't work. Associating the term 'free-fire zone' with the F-22 implies that the stealth fighter is somehow better able to kill more bad guys more quickly than any other fighter with similar weapons, sensors, and command-and-control connectivity. Not.

"Wait" cry F-22 pundits, "we're not talking about strike support; we're talking about the pure air superiority sweep mission!"

In this OCA tactic, the fighter cavalry 'sweeps' into Indian country alone and unafraid, unencumbered by any requirement to defend strike aircraft or any danger of accidentally shooting them, and takes on latter-day Red Barons in a duel for control of the sky.

The fighter sweep is a relic of the two world wars and Korea. The primary objective was attrition. Good-guy fighters flew near bad-guy airfields, drew their fighters into

the sky and knocked them back down until they were all gone or they just gave up and ran off. The tactic's attrition efficacy was particularly notable in the MiG Alley brawls of the Korean War, though its overall operational and strategic worth was questionable. In subsequent conflicts, the sweep has made negligible dents in enemy fighter inventories.

More recently, the sweep has been modified to include a loose connection with the strike mission. Fighters ingress some set amount of time before the strikers enter the area. This, theoretically, allows for a freewheeling air to air fight that clears bad-guy fighters from the sky for at least as long as it takes the strikers to hit the target and skedaddle back to the fort.

What really happens is that in the process of raging around the sky over the bad lands, the sweepers manage to make absolutely certain that every element of the enemy's integrated air defence system is wide awake and ready to rumble. The sweepers run out of gas before they kill anybody and go home before the strikers show up. Bad-guy strip alert fighters get airborne just in time to jump on the strikers like sharks on a school of goldfish.

A last word about the sweep: there's an odd irony in using F-22s as sweepers. You can only sucker bad guy fighters into coming up to fight if they know you're there. If you're stealthy, how do they know you're there?

But forget the cruise missile and sweep things. We've got the no-fooling F-22 air-superiority tactic - raid disruption. This is where we sneak up on enemy airfields while bad-guy strike groups are forming up and blow them away before they even finish their rendezvous. This sounds great if you're going up against one of General Savage's 'Twelve O'clock High' thousand-plane B-17 raids. Problem is, modern tactical air strikes aren't anything like that. They can consist of as few as four, two, or even one aircraft. It takes very little time for small strike packages to join up and press on to the target.



USAF and Lockheed Martin officials have made numerous and grandiose claims about the F-22's performance. Some of which are very contradictory. The fact remains that the F-22 is the last ultra expensive hangover from the Cold War. (USAF)

And if bad guy really wants to launch massive strikes, he can counter raid disruption with raid dispersion. Dozens, scores, or hundreds of strike aircraft can be launched in small packages from multiple fields spread over a broad geographic area. Raid disruption F-22s would be unable to engage enough of these strike packages to keep the rest from saturating and overwhelming our air defences.

Or, if bad guy doesn't have enough airfields for dispersion, he can just attack during the day. Stealth aircraft may have radar and infrared detection avoidance characteristics, but they can't evade the human eye in broad daylight any better than any other aircraft. Raid disruption, like stealth, is pretty much a nighttime thing.

Day attack also offers bad guy a bonus convenience - his pilots don't know how to fly at night anyway.

## Suppression of Enemy Air Defences

HARM (High-speed Anti-Radiation Missile) allows tactical aircraft to destroy or shut down an enemy surface-to-air missile while flying outside that missile system's range. The launching aircraft can have one or both of two objectives for employing HARM: (1) to attack the missile from a safe distance, allowing other aircraft to fly through its envelope, or (2) to protect itself from the enemy missile.

An aircraft protecting other aircraft from a safe distance doesn't need to be stealthy, and a stealthy aircraft doesn't need to protect itself from a surface-to-air missile. However, *Aviation Week & Space Technology* explains, "Air Force officials favour over flying the target with a stealth aircraft and dropping much more powerful weapons to destroy a radar site".

If they favour over flying the target so much, why did they spend the money to redesign the HARM so it would fit into the internal weapons bay of the F-22?

## On Time, On Target, On Per Diem

Expanding into the role of a true strike fighter, the F-22 is being readied to carry and deliver state-of-the-art precision-attack munitions: improved joint direct-attack munition (JDAM), JAST-1000, miniaturised munitions technology, wind-corrected munitions dispenser (WCMD), low-cost autonomous attack system (LOCAAS), and GBU-22 Paveway. It's great that they'll spend tons of money to modify these weapons so a SAUS200 million + jet can carry them in its weapons bay. It's not so great that existing SAUS40-60 million dollar jets (Super Hornet, JSF, Rafale, Eurofighter) can or could carry the same weapons without having to spend money to modify them.

## Hyper-cruise

"You have the stealth of an F-117 but you add supercruise. Therefore, anybody's reaction time in dealing with F-22 is reduced considerably."

- A senior USAF official.

Speed is life. It's the key to mission accomplishment and survival. By the time they see me coming, I'm already gone. Wait a minute...If I'm stealthy, how did they see me coming?

## Now You See 'em, Now You Don't

"Because the F-22's [detectability] has been so dramatically reduced, the single pilot's defensive duties - a time-consuming task in conventional aircraft - have been taken out of the new stealth fighter."

- A Lockheed Martin official.

The real bottom line of F-22 advocacy is that while it won't do much that existing tactical aircraft couldn't do, it's stealthy! Well, sorta.

Besides HARM, the F-22 and its stealthy cousins (the F-117 and B-2) are being designed, refitted, or projected to carry all sorts of advanced standoff weapons. Why would stealth aircraft need to shoot standoff weapons?

*Aviation Week & Space Technology*, says USAF planners concede that to preserve maximum stealth, F-22s will have to be flown in specific attitudes relative to enemy radars. What if they have to change their attitudes to shoot somebody down? Or drop a bomb? Or launch a HARM? That could get 'time consuming'!

Yet another unidentified senior USAF official concedes that the United States "must guard against the fact that someday, given enough [data] netting and sensors, the value of stealth could be reduced". This Air Force official, apparently, didn't predict anything about stealth's cost adjusting over time in proportion to its value.

Stealth technology is not a panacea. It does not make aircraft invisible to all radars and passive sensors; it just makes them less visible. The 'stealth gap' conundrum is that even before newer, better, and more expensive stealth aircraft come on-line, newer, better, and cheaper counter stealth detection and targeting are out there waiting.

Stealthiness is not a bad thing, even if it is not perfect. The point is to shrink enemy weapon systems' envelopes as much as reasonably possible. Some stealth is better than none. More stealth is better than some. If we can reduce a threat envelope by 25% or even just 10% at an equitable cost, that's a significant and affordable tactical advantage.



An F-22 Raptor during one of its many flight trials. By the time it becomes available to the RAAF each one could cost as much as an Anzac frigate with that money going overseas. (USAF)





The most recent test of the F-22 Raptor was the firing of a Sidewinder missile. The ironic point about the F-22 is that it uses the same weapons as most other aircraft. The point proponents make is that 'it's stealthy'. What they fail to mention is that its stealth is only effective at certain ranges, heights, flight profiles and against particular types of radar and detection equipment. (USAF)

But with the prices we're looking at for aircraft such as the B-2 and the F-22, the stuff ought to work like a Romulan cloaking device.

## The F-22 Catch

The Joint Strike Fighter, conceived from the ground up as a multirole stealth jet, is just down the road. Most estimates peg it at a third or less per-copy than the F-22. My Vote is to skip the expensive one and buy the less costly one—but I'm not voting. The guys in the US who are have constituent local economies at stake. They're under pressure to balance the budget, salvage what key social programs they can, and ensure that a fair share of the government dollar gets to their home states and districts. In addition, they must judge the F-22's worth in terms of capability, which must be a nightmare. For every uniformed knucklehead like me who says the platform can't walk its talk, there's another who says it can.

Early air power theory centred on the notion that the bomber will always get through. When fighters and air defence artillery proved that maxim wrong, air power force planners adopted a strategy of designing and buying more theoretically defensible and costlier manned bombers. When that didn't work, they sank money into escort fighters to protect the bombers.

The B-2 and F-22 are direct conceptual descendants of the Flying Fortress and its P-51 Mustang escorts. The world has changed; the thinking hasn't. It is imperative that today's planners apply a transformational philosophy to designing our future air power force structure. If we keep asking for money we don't really need, we might find ourselves cut off completely.

(Supplementary, Oct 2000)

Three years after 'Proceedings' originally published 'Catch F-22', controversy still plagues the stealth fighter project in the US. A few months ago, CNN ran a story on the issues surrounding its future. A retired USAF Colonel, Col Everest Riccioni, convincingly stated that aerospace engineering analysis shows the F-22's radar cross section and performance characteristics are only marginally better than those of the USAF's present air superiority fighter, the F-15C Eagle. "The F-22 is really not a spectacular increase in capability over current aircraft...It was maldesigned to an extent, coceived for a mission that no longer exists, and is totally irrelevant to modern warfare" he said.

The counterpoint snippet was a quote from U.S. Congressman Randy 'Duke' Cunningham, the Vietnam era air ace. He said something that sounded to me like, "Shoot, that guy ain't got no combat experience. What the hel's he know? His figures is just plain wrong!"

The USAF's current pro-F-22 propaganda campaign boils down to, "Do you want your sons and daughters flying into combat with anything less than the very best America has to offer?"

Lamentably, in the American political process, good-ole'-boy anecdotal testimony and shameless manipulation of public sentiment outweigh scientific fact. Here's hoping our Australian friends can find a more elevated framework of debate.

(\*)Commander Huber originally published "Catch F-22" in the September 1997 edition of 'Proceedings'. At the time he was CO of the VAW-124 'Bear Aces', an E-2C Hawkeye Sqn on board the carrier USS JOHN F. KENNEDY (CV-67). He is presently Operations Officer on the aircraft carrier USS THEODORE ROOSEVELT (CVN-71).

# PRODUCT REVIEW

## THE FIFTY-YEAR WAR, CONFLICT AND STRATEGY IN THE COLD WAR

by Norman Friedman

Reviewed by Keith Jacobs

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THE FIFTY-YEAR WAR, CONFLICT AND STRATEGY IN THE COLD WAR is a history of the Cold War from the latter days of Stalin to the collapse of the former-USSR, with a strong emphasis on the changing strategies and weapons procurements of the major powers. The author asks some salient questions with the most important of those being:

1) Did the West defeat the Soviets, or did the Soviet systems carry with it such damning flaws that the outcome was inevitable, and,

2) Was the Cold War...about Communism versus capitalism? Or was it about old-fashioned Russian imperialism, cloaked in a largely irrelevant ideology?

The author places some emphasis on "relationships" throughout the work, including that of the Soviet Communists with the Western left movements, the Soviet leaders and their military; the Soviet perceptions in the Middle East and the U.S. in Vietnam; and, that of Khrushchev, Brezhnev and other Soviet leaders with the West.

Particularly interesting is coverage of the Tibetan insurgency, in which the author suggests the CIA may have made contact with as early as 1951 – well before the shooting end of the Chinese Civil War. "The sustained armed rising was a major opportunity, particularly since the Tibetans soon showed that they were very willing to fight. Effective cooperation apparently began in 1956, with equipment and men dropped in. The CIA trained Tibetan recruits, initially in Taiwan, eventually in Colorado. By 1956, the resistance army was tying down 14 PLA divisions. Maintaining them in Tibet must have been extremely costly, perhaps limiting Chinese freedom of action anywhere else. The Chinese were also uncomfortably aware that other border regions were probably restive". (p. 210) The support provided was mostly by C-130 airdrops but after the Gary Power's U-2 shoot down over Russia, President Eisenhower banned flights over Communist territory thus ending the Hercules supply line.

The overland route using Nepal was maintained but effectiveness could not be maintained as with the airdrops. The Tibetan's never had a "rear area" with which to retreat, rest and train in – as did the Afghan Mujahadeen. Nepal eventually closed its borders. Only after the Sino-Indian border war in 1962 did the Indians become friendly to the cause. "In 1958-59, the Tibetans were doing better against the Chinese than the Afghans would do against the Soviets, and they were far more united".

The six parts of the book offer thirty-eight short chapters. Source material is extensive and original, much of the Soviet military changes being based on declassified National Intelligence Estimate (NIE) documents. In the last Part, the author offers a perspective on the collapse of the USSR rarely offered, the influence of the computer and the spread of information in the former-USSR under Gorbachev. The volume is certainly timely, as the Russian bureaucracy and military find them responding to the loss of the "KURSK" nuclear submarine (SSGN) in much the same manner as they did during the Cold War, yet Russian public indignation has risen measurably over this incident. THE FIFTY-YEAR WAR, CONFLICT AND STRATEGY IN THE COLD WAR is highly recommended.

Norman Friedman

## STATEMENT of POLICY

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

The Navy League:

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

- Advocates the development of a defence industry supported by strong research and design organisations capable of constructing all needed types of warships and support vessels and of providing systems and sensor integration with through-life support.

As to the RAN, the League:

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

The League:

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

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

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