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*Institute*

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# The Knowledge Edge





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The Australian Naval Institute was formed and incorporated in the ACT in 1975. The main objectives of the Institute are:

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

The Institute is self-supporting and non-profit-making. Views and opinions expressed in the Institute's publications are those of the authors and not necessarily those of the Institute or the Royal Australian Navy. The aim is to encourage discussion, dissemination of information, comment and opinion and the advancement of professional knowledge concerning naval and maritime matters.

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1. in electronic format (e-mail or disk); letters to the editor will be accepted in any format
2. in MS Word; and
3. either 250-400 words (letters and illumination rounds), 1500-2000 words (smaller articles) or 3000-5000 words (feature articles).

We can support black and white photography and diagrams but please supply originals or electronic copies. Colour plates are limited within the journal and will normally be reserved for feature articles.

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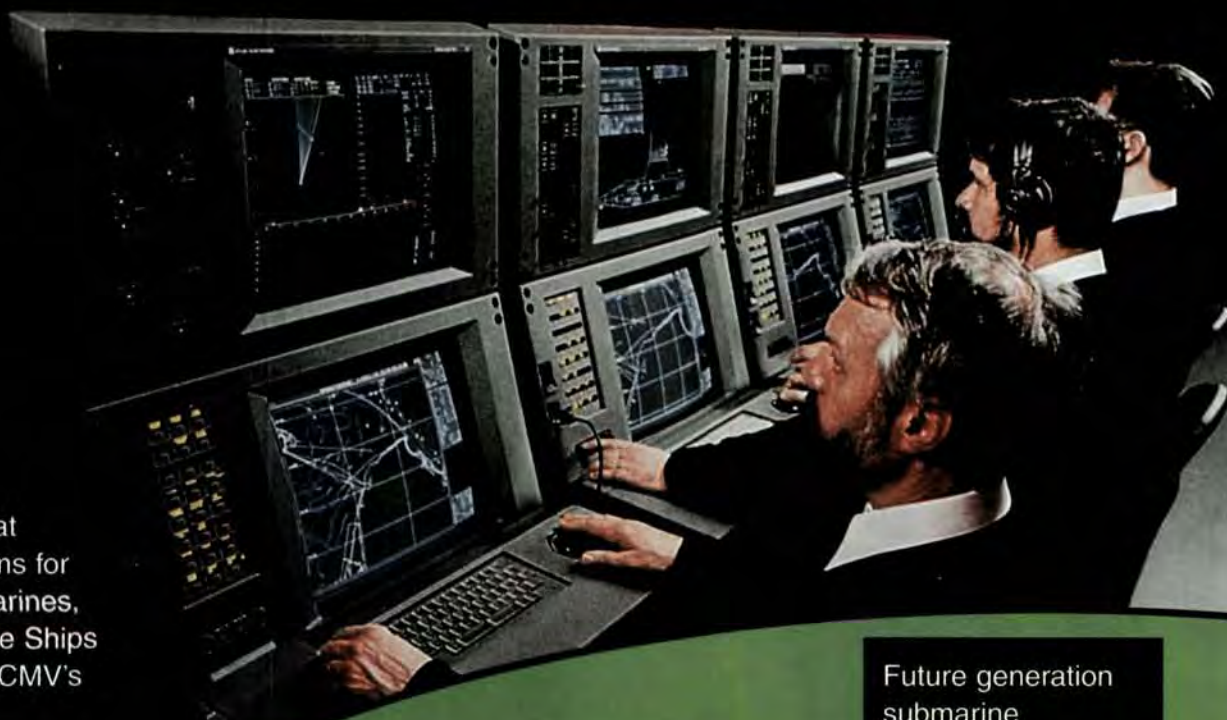
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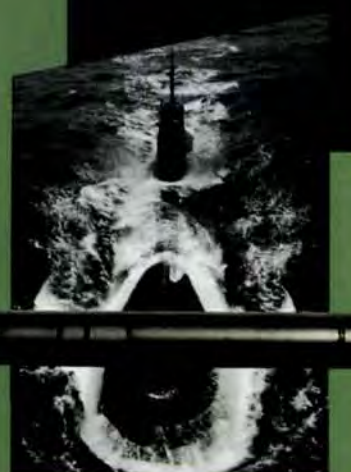
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## Editorial ...

### "WISE WARFARE"

*"We have called our highest capability priority the 'knowledge edge', that is, exploiting information technology so we can use our relatively small forces to maximum effect."*

...Ian McLachlan AO MP, 1998

The knowledge edge is the theme for this edition of the journal. It's time we in the institute came to terms with the need for the knowledge edge and how the Navy intends developing and maintaining its edge in the region. Chief of Navy is on record as wanting the most capable regional Navy south of China and east of India – knowledge has a crucial role in this vision. The future security environment in our region will shape the RAN's posture and development. An article by Peter Jennings provides a useful scene setter.

The Defence Science and Technology Organisation have put their views to members in an article by Dr Roger Creaser on the knowledge edge implications for the maritime battlespace. Is the knowledge edge focusing on the accumulation of information or the application of information? Is the focus to gather information better and faster, or, be able to take action on information better and faster? Dr Creaser points out in his article that the distinguishing feature between 'knowledge' and the 'knowledge edge' is "...how the information is presented and interpreted..."

But at the end of the day the winner is the commander who uses knowledge most effectively, and not necessarily with a high tech decision support system that many would see as the ultimate weapon of knowledge. Would it therefore not be easier to phrase the highest capability priority for Defence as "wisdom"? According to the Oxford dictionary, wisdom is "...experience and knowledge together with the power to apply them." Is that what Dr Creaser was saying, that the 'knowledge edge' is a combination of knowledge, experience and application?

Many successful commanders were wise in the ways of warfare and won their day despite having limited knowledge of their enemy – Spruance at Midway springs to mind. Will high tech decision support

systems help us fight and win at sea or develop in our commanders a dependence on technology – which could lead to decision avoidance?

How industry uses its knowledge to provide more effective capability to the Navy is outlined in a speech by Mr Ken Harris, Managing Director ADI on the occasion of the launch of the second Huon class minehunter in Newcastle. We hope to hear more in the future about how our industry partners intend to deal with the quest for the knowledge edge.

NZ's Defence plans are also important to the Institute and they are critically analysed in an article by Richard Jackson. New Zealand defence spending is at an all-time low, recently dropping to approximately 1% of GDP. The implications for the RNZN could be extremely unforgiving ... is a two frigate navy a viable force? Is New Zealand keeping up with the knowledge edge?

While the warfighting environment is a fundamental influence on Navy capability development, there are many other requirements of Navies, not all of which are seen as complementing the notion of a combat smart Navy. Ocean governance is one such area and LCDR Seth Appiah-Mensah, a student from the University of Wollongong, has provided a paper on ocean policy development in Australia.

Similarly, coastal surveillance is a sometime Navy role. Australian Customs has provided an article on Coastwatch, a close partner with Defence for the protection of our coastline. And as usual we have a history segment – hope you enjoy it.

Looking ahead, the next edition of *JANI* will deal with the fundamental component of capability, our people. Do we plan our workforce well enough, do we train well enough, and are we too demanding of our people? All the knowledge in the world is of little consequence if it is not applied to effect.

Andrew Bewick





## Letters to the Editor



Dear Sir,

Graham Wilson's article on the Naval General Service Medal 1793 – 1840 (*JANI* January – March 1998) sent me scrambling for a copy of the late Lew Lind's book *SEA JARGON*. A Loblolly Boy is described on page 95 as a 'young boy assigned to assist the Ships Surgeon or Steward. A 19th Century term'.

A Shifter is described on page 128 as 'an old name for a Cook's mate in the Navy. The name derives from his duties of shifting casks about when bringing up rations from the store.'

A Swabber is not described but may have been a man whose duties were to clean the decks – the 19th Century version of communal duties such as scrubbing out the ships company café. A Krooman (or Crewman), however, has me stumped. Maybe they just could not spell?

LCDR G. J. Swinden, RAN

Dear Sir,

Having finally got around to reading the January/March issue of the Journal, I was sufficiently annoyed by reference under the photograph on page 36 to 'all who will serve *on* her' (my italics) to write in an effort to reverse a sloppy habit which seems to be appearing in the modern navy. In my day, we served *in* ships and, judging from the relative lack of open upper deck space in some modern ships and the fighting of them almost exclusively from between decks or other enclosed spaces, it seems clear that "in" is even more relevant today.

I have heard several officers and sailors use "on" in recent months, including the captain of an FFG. I appeal to all in positions of influence and to you as Journal editor to be assiduous in referring to service *in* our ships.

Another (small) point – I trust someone has put Dr Earnshaw right that the name is *Queenborough*, not *Queensborough* (page 22 of the same issue).

Finally, am I already in my dotage or is it true that your address appears nowhere in the Journal? I can't find it anywhere! If it is on the address sheet, I've already thrown it out. Please put it inside or on the Journal itself.

Notwithstanding the above, I congratulate you on another interesting issue and wish the Institute well.

D. C. Rose  
Lieutenant Commander RAN R'td

Dear Sir,

Your January/March article *Illumination Rounds* addresses the topic of leadership, which is of course an essential element in the educational curriculum of all military officers. It is also a topic which appears in many civilian management-focused training courses.

My experiences within the RAN, and in the commercial or corporate world, have enabled me to undertake a comparative assessment of leadership qualities required for both environments, and to identify some common characteristics between them.

On every course which I have attended (and there have been many), which addressed the topic of leadership and how it should be defined, there was always a different conclusion reached. I recall that a common conceptual difficulty existed in differentiating between a good manager and a good leader.

Since entering the corporate world however, a definition which is common to both environments has crystallised in my mind as:

'Leadership is *the ability to inspire* performance in others which probably would not have occurred otherwise'.

The key action words of course are, 'to inspire' and the analysis of common leadership qualities and characteristics becomes complicated when one realises that one person's inspiration can be another person's boredom. Nevertheless any person who can inspire many people simultaneously to elevated performance levels, and towards the achievement of common goals, deserves to be labelled as a leader, and must necessarily in my view have at least the following common characteristics;

1. Knowledge – A superior grasp of all information relating to the operating environment of the group;
2. Vision – A vision for the group;
3. Communication Skills – A superior ability to communicate with the group.

For those still within the Armed Forces, who have performed admirably and have been assessed positively as having demonstrated superior leadership capabilities, there may be the anticipation that such assessments will automatically enable them to have a smooth transition to leadership positions within the civilian community when they eventually exit from their respective Armed Force. Examination of the

(Continued on page 11)



# Australia's Strategic Policy

A speech by The Honourable Ian McLachlan AO MP, Minister for Defence

**T**he main focus of my talk today will be the strategic review, *Australia's Strategic Policy*.

I also want to talk about the Asian economic crisis, and about our commitment to provide military forces for possible coalition operations against Iraq.

Obviously, these last two issues are the most important immediate challenges for Australian strategic policy.

Therefore it is important to understand how our broader strategic policy handles these issues.

In December last year I tabled in Parliament a review of our strategic outlook, titled *Australia's Strategic Policy*.

The review does three key things; It gives an up-to-date assessment of our strategic environment; it sets clear priorities for the Australian Defence Force (ADF) and it defines the shape of the force into the next century.

## Key Policy Areas

There are a number of important differences between *Australia's Strategic Policy* and preceding reviews.

First, the review describes a maritime strategy for defending Australia and our interests.

It moves beyond a planning emphasis on low-level contingencies, arguing that we need the capacity to defend Australia in a wider range of circumstances.

The review outlines a policy to build cooperation with our neighbours in the Asia-Pacific, showing the link between our territorial defence and wider regional security.

Perhaps the biggest change from previous reviews is that *Australia's Strategic Policy* also details rigorous priorities for force development and equipment acquisition.

## The challenge ahead

The Strategic Review was not an exercise in hunting for threats. It identifies no immediate threat to Australia.

But defence planning is about the long term. The review analyses the potential for developments to cause security problems in the future, unlike our largely benign environment today.

In the past Australia benefited from being the most developed economy in our region, holding the most advanced military equipment and weapons.

In some defence areas, that is no longer the case.

To stay confident of our ability to defend Australia, we must be more efficient and smarter in using resources.

## A Secure country in a secure region

While the focus of our policy is on defence of the homeland, it would be a serious mistake to think we could adopt a 'fortress Australia' strategy.

The 1994 Defence White Paper did not recognise how changing strategic circumstances were changing the levels of demand which could be put on our forces in such operations.

We can no longer assume that forces able to meet low-level contingencies in the defence of Australia will be sufficient to handle conflict beyond our territory.

We must make sure that the forces we develop do indeed give options for handling crises in which vital interests may be threatened.

Wherever they are called to operate, our forces must have the capacity to survive against – and defeat – modern weapons.

The Government, therefore, rejects the argument that we must choose between a defence force to defend Australia and one able – within realistic limitations – to operate overseas.

## Debate about 'forward defence'

I think our commitment to a broader defence approach has generally been well received, both in the Defence community and more widely.

There is wide agreement that Australian security cannot just focus on defence of the coastline and our immediate maritime surrounds.

The community understands the point that our security is tied to the wider security of our region.

Some commentators have said our policy marks a return to forward defence. It does not.

Forward defence was a policy in the 1960s. It was about Australia planning its defence *against* Asia.





We have moved on a generation since then. Now our approach is built around promoting our defence interests *with* Asia.

Our policy reflects a fundamental change in strategic thinking since that earlier era.

I have often said Australia cannot be secure if our region is insecure.

The Strategic Review recognises this, emphasising the ADF's role in working with our neighbours to promote regional stability.

That is a different approach to what happened in the 1960s. One hopes that sections of the media will come to realise that point.

## East Asian financial crisis.

Notwithstanding the financial crisis in some regional countries, few people would question the Strategic Review's judgement that, in the medium to long-term, Asia will resume strong economic growth.

In the short term the financial crisis will make some countries slow their weapons buying programs.

Reacting to that, some commentators suggest that Australia's defence planning challenges have diminished – saying in effect that we don't need to modernise our own forces.

In the past, high levels of economic growth have been a foundation for strategic stability in the Asia-Pacific.

A pause in economic growth should not, of itself, be destabilising.

But the potential security impact of the crisis cannot be lightly dismissed.

One should not overlook the possibility that the financial crisis could have flow-on effects into political, economic and social stability.

Given a choice, I would prefer that Australia has to deal with the security challenges of a region enjoying stable growth, as opposed to a region where economic difficulties might threaten to undermine political stability.

But the essential point is that our defence force must be able to handle whatever security problems arise – be they the result of low economic growth or high growth.

So, in the longer term, the challenge for Australia – to remain a highly capable, high-technology, front rank, regional defence power – remains unchanged.

Even with the regional economic slow-down, Australia should not vary the pace or scale of the defence force modernisation program outlined in the Strategic Review.

That program is based on our enduring strategic realities – exploiting our geography and making the most of developments in technology.

Keeping up the pace of our force modernisation also reinforces Australia's position as an partner for military training and exercising.

The Southeast Asian countries realise this. It is not just a coincidence that many ASEAN countries have more substantial defence co-operation with Australia than they do with each other.

Australia has developed such close security relations with our neighbours precisely because our military is worth co-operating with.

The Strategic Review's key judgements about the need for the Defence Force to emphasise high-technology, a maritime defence approach and co-operation with friends and neighbours do not need to be changed.

## New Strategies

The review identifies from its assessment of the strategic environment, the following key strategic interests:

- avoiding destabilising strategic competition between the region's major powers;
- preventing the emergence of a region dominated by any power which might wish to damage Australia's interests;
- keeping Southeast Asia free from destabilising disputes;
- working with neighbours to strengthen their security; and
- preventing the proliferation of weapons of mass destruction.

The US alliance is our most important strategic relationship. America's continued defence presence in the Asia-Pacific is fundamental to regional stability.

Elsewhere in the region, our longstanding defence links with most of the countries in Southeast Asia and the Southwest Pacific lay the foundation for further strategic co-operation.

Our aim is to promote among the Southeast Asian countries a sense of shared strategic objectives with Australia.

We recognise, however, that the region's strategic centre lies in Northeast Asia. To that end, we are expanding links with Northeast Asia, particularly with Japan and China.





## Future Capabilities

Having set out an assessment of the strategic environment, and outlining Australia's key strategic interests, the review then identifies capability priorities for the ADF to 2020 and beyond.

To maintain our relative strategic position, our forces must measure up to two key benchmarks:

- First, we must maintain a very strong regional presence as a maritime power;
- Second, we must have the capability to deny our air and sea approaches to any credible force.

The review follows through the logic of this strategic analysis by setting four priorities for Defence capabilities.

### Priority One: The Knowledge edge.

We have called our highest capability priority the 'knowledge edge', that is, exploiting information technology so we can use our relatively small forces to maximum effect.

Increasingly, the knowledge edge can be the decisive factor in combat.

It is a big challenge to integrate intelligence, command systems and surveillance into a unified system giving commanders a complete picture of the battlefield, and enhancing their control of forces.

The acquisition of airborne early warning and control aircraft is one of the most important knowledge-edge projects currently under way.

### Priority Two: Maritime capabilities.

Our second priority is to develop military capabilities to defeat threats in our maritime approaches.

In this area, we are upgrading the weapons and sensor fits in our surface combatants and starting a project to assess submarine technology and design developments for a possible.

This project will give the government a basis for considering the option of a further Collins submarine purchase.

The government is also starting to look at fighter aircraft replacement options.

We are years away from having to make a decision – that will be some time in the first decade of the next century.

But when it comes, the acquisition of a fighter aircraft replacement will probably be the single most

expensive defence project ever undertaken by Australia.

A lot of elements will go into making sure we make the right decision – not least the extent of the upgrading necessary to sustain the F/A-18 until it needs replacing.

But I also want to make sure that Defence looks at all the options – including unmanned aerial vehicles and other technologies still in their developmental stages.

It is also vital that Governments take time to explain to the people the need for a fighter replacement acquisition.

### Priority Three: Strike Capability

Our third priority is strike capability.

The reality of our strategic geography dictates that we should plan on operations which concentrate on defeating attackers in our air and maritime approaches, before they reach our territory.

In defending Australia, we need to think about the way we would use our forces, broadly differentiating between reactive and pro-active operations.

Pro-active operations carry some risks. But they do offer the opportunity to seize the initiative, while imposing important constraints on an adversary's freedom of action.

Maintaining the F-111 in service to 2015 or 2020 is a key part of thinking in the strike area.

After the release of the Strategic Review, a number of commentators expressed concerns about the age of the airframe.

It certainly is a remarkable aircraft.

Defence people will know that what matters most is the avionics, weapons systems and sensors in the aircraft.

We have spent hundreds of millions updating these crucial parts in the F-111 – applying knowledge edge technology to give the aircraft capabilities not even thought of when it first came into service.

### Priority Four: Defeating threats on Australian territory.

Our fourth priority is land forces to defeat threats on our territory.

The priorities for land force development include building highly-mobile joint task forces, reinvigorating an amphibious capability, and providing extra air and land mobility for ground forces.





Together these initiatives will enhance the ADF's war fighting capabilities.

But upgrades and acquisitions do not come cheaply.

We need the Defence Reform Program, over the next few years, to realise one-off savings of \$500 million, and mature annual savings of \$900 and \$1000 million.

Nevertheless this will not be enough to implement all the priority developments outlined – particularly fighter aircraft replacements, surface combatants and (most probably) future submarine options after Collins.

## Flexibility an essential requirement

One of the essential requirements any Australian Government will have of the ADF is that it is as flexible as it can possibly be.

The focus on low-level contingencies which drove Defence planning for a decade in the 1980s and '90s had great value.

It forced Defence to work out what its priorities were. It made the Department take a serious and long-overdue look at what was needed for operations in northern Australia. It gave discipline to the equipment acquisition process.

All these were necessary steps. But one unintended consequence was that the focus on low-level contingencies was reducing the ADF's flexibility to undertake other operations.

Followed to its logical conclusions (although Defence did not get to this point) low level contingencies was turning the ADF into a one-scenario defence force.

A scenario, moreover, which most people thought was the one least likely to ever involve us in military operations.

The last twelve months of ADF activity underline the importance of having the maximum possible flexibility within Defence.

The ADF has been involved in:

- the Southern ocean rescue of two round the world sailors;
- airlift of Australian citizens and others out of Cambodia;
- operations against (alleged) illegal fishing in sub-Antarctic waters;
- drought relief in Papua New Guinea;
- substantial participation in the Bougainville Truce Monitoring Group;
- flood relief operations in the Northern Territory;

- and now, possibly, operations against Iraq's weapons of mass destruction.

It has been a busy and demanding period – one which shows the need for maintaining a capability to operate in a very wide range of possible contingencies.

## Crisis in Iraq

I want to turn to our agreement last week to participate in a military coalition against Iraq – should that become necessary.

The Strategic Review recognises the need for Australia to be prepared to contribute forces in support of global security interests.

Last week's decision, that we would support an international coalition against Iraq, is one such circumstance.

Australia's security interests go well beyond the physical protection of Australian territory. Global issues can have significant security implications for us too.

Prominent among the threats to global security is the proliferation of weapons of mass destruction.

Saddam Hussein has already shown he will use chemical and/or biological weapons against neighbours and even his own people.

Preventing the proliferation of these weapons is not just a concern for the United States, it is a global concern.

As the Prime Minister made clear, the Government sincerely hopes that military force will not be necessary, and that Iraq will meet its United Nations obligation.

However, if Iraq continues to flout its international obligations and fails to allow full inspections by UNSCOM, a grave risk is posed to regional and global security.

We have an interest in promoting stability in the Middle East.

We have an interest in stopping rogue states from threatening their neighbours and the regional peace.

We have an interest in ensuring that countries do what the United Nations asks them to do. The UN must not go the way of the League of Nations.

We have an interest in supporting the United States – helping America to remain a strong force for global stability.

Above all, we have an interest in stopping the proliferation of weapons of mass destruction.





## Conclusion

I would like to reiterate that Australia's Strategic Policy is more than just a frank and thorough analysis of the strategic environment we are facing.

The review details our national and strategic interests and set an appropriate strategic posture.

It sets the intellectual framework within which important decisions about military capabilities will be made by the Government.

The Strategic Review is not a static policy – waiting to become out-of-date. The Defence Department is constantly reviewing our strategic outlook to ensure that the document's judgements remain valid.

In taking the long view, it argues that the ADF must have the capabilities to be a highly flexible instrument of national policy.

And we make a commitment to ensuring the ADF can undertake and sustain military operations in support of strategic interests.



## Letters to the Editor



*(Continued from page 6)*

above three characteristics will quickly reveal why this generally cannot happen.

Of the three characteristics, Communication Skills can probably be regarded as portable between Service and civilian workplaces, however this is generally the only one.

The other two, that of vision and knowledge, will typically first require exposure and experience to be gained in the new environment of choice before leadership qualities will emerge.

History shows that high profile leaders both in and out the Armed Forces are often 'people of the moment'. In the military environment, superior leadership demonstrated in a particular combative situation is often anti-climaxed by inappropriate behaviour and inadequate performance in the subsequent State-of peace, where leadership qualities of a different type are required in order to, 'move forward'.

In the corporate world similar evidence exists. High profile CEOs, recruited to take companies to new plateaus of performance and profitability on the back of a particular vision, typically fade, or deliberately exit the role when the targets are achieved.

Professional leaders are transportable nonetheless between one working environment and another dissimilar one, provided that they spend time researching their intended new working environment and develop the levels of knowledge which will instil confidence in those around them, and which when combined with vision and superior communication skills, will facilitate their new leadership role.

These thoughts are submitted in the spirit of your column, 'From the President ...', where a more participative approach is requested from the ANI Membership.

Doug Stevens  
(Commander RANR)

International Business Development Manager  
Television New Zealand Satellite Services





# Knowledge Edge – Maritime Battlespace

*Roger P. Creaser*

Mariners have over the centuries won renown and recognition for their inventiveness in seeking to gain and maintain the knowledge edge in the maritime environment. Advances in navigation and charting have given navies significant tactical advantage in numerous engagements. In this century we have seen the introduction of sonar, radar and naval aviation to extend the tactical horizons of major combatants and thereby increase the knowledge available to commanders. More recently the proliferation of space based systems has added a new dimension to the kind and quality of knowledge that can be accessed.

We are, however, talking here about the knowledge edge and not just knowledge. This distinction needs to be made, particularly with the increased access worldwide to the technologies that can be used to gather and process information. The distinguishing feature is how this information is presented and interpreted, and we will find that this aspect will have an increasing impact on the way in which we design and operate maritime platforms.

## Data Integration

Much of the data that we gather either through on board or off board sensors is presented as track level data. One or more skilled system operators often do the integration of this data into the overall tactical picture. This is not only slow, but it can also mean that useful information is overlooked or lost.

The development of integrated combat systems as pioneered by the Collins class submarines represents a means of overcoming the problem in that any operator can, in principle, have access to the full sensor and weapon information. This is certainly a major improvement and one that is increasingly being used. Even here, however, trade-offs must be made due to the constraints of bandwidth limiting the extent that full sensor data can be accessed by high level information processing functions.

The synergism amongst the various sources of data can, however, be significantly improved by use of data integration or data fusion techniques. In this approach one source of data is related to another in a formal means that can yield a significant improvement in the overall effectiveness. In its simplest form, one sensor might cue another. For example a highly directional missile approach warning receiver might cue a fire control radar of the approaching direction of an anti ship missile and thereby increase the time available to

effect a countermeasure.

In more advanced forms of data integration mathematical relationships are derived that relate the type of data and the rate at which it is delivered. The result is that tracks are developed much more quickly and with reduced ambiguity. This can be of particular value where multipath conditions exist, which result in a target return arriving at the receiver by more than one path. Multipath can make it not only difficult to establish the track, but very difficult to determine target range. By integrating the data from different sources in a way that correlates such parameters as position and Doppler, accurate tracks can be established quickly with high confidence.

Data integration when combined with such advanced tracking techniques as Hidden Markov Modelling can result in a very high degree of automation in the detection and tracking of targets. Such advanced technology gives a distinct knowledge edge in those tactical situations where response times must be kept as short as possible. Advances in data integration are moving us rapidly towards the concept of the integrated battle space in the maritime environment.

## Cooperative Engagement Capability

A prime example of this is the USN developed cooperative engagement capability (CEC), which is a single distributed anti air warfare system that uses the sensors and weapons of different platforms and units. CEC describes the set of hardware and software that allows weapons and tactical systems, distributed over many platforms, to share unprocessed data in almost real time. The system creates an identical picture at each unit, and the quality of the picture is required to be at least as good as that produced from the most accurate sensor on any of the platforms. As well as sharing sensor data, decision and engagement data are also shared, and this is the driving factor in CEC and represents the knowledge edge available to individual units within a task force.

The anti air warfare environment can place very high demands upon surface combatants both in terms of self defence and the defence of the platforms under escort. High speed aircraft capable of launching long range sea skimming anti ship missiles can pose a very real threat and one that is difficult to counter unless adequate warning is provided. CEC offers the capability of significantly extending the information horizon of a surface combatant to the extent that the



missile launch platform is threatened. However, should a missile be launched the early warning provided should provide a very high probability of success in defeating the attack.

CEC is dependent upon a number of advances in technology, such as the introduction of phased array radar for air search combined with fire control. It is this technology that allows the near real time tracking and cooperative engagement to be achieved across the CEC net. Also of significance is the data link and picture compilation facility, being a technology leap from the combined tracking of tactical data links to true sensor data integration at the contact-to-contact level.

## Target Classification

So far we have concentrated on the gains that can be achieved by bringing a high degree of automation to the maritime battle space by using advanced mathematical and signal processing techniques. This is, however, only one part of the knowledge edge. The responsibility of command remains and the further we extend the information horizon, the more difficult it can be to classify the target as friend or foe.

Where the target operates a communications link or radar, it is possible to use electronic support measures to classify the target. Capturing a communications link or a radar pulse and carrying out in near real time the required processing is not a trivial exercise. The receivers have to cover a wide bandwidth, typically 0.5-18GHz where radar signals are concerned, and have the dynamic range and sensitivity required to intercept and process a single pulse.

To meet these demanding requirements DSTO has been developing multi-channel receivers that provide high sensitivity across a wide instantaneous bandwidth. The high sensitivity receiver uses an acousto-optic device, a Bragg cell, in which the angular deflection of a laser beam shone through the cell varies with the frequency of the radar signal coupled acoustically to the cell. A closely spaced set of photo-diodes detects the deflection of the laser beam and very accurately determines the frequency of the received radar signal. The output of each photo-diode is processed in parallel to form a multi-channel receiver.

Once the signal is captured, its characteristics can be determined, the source identified and in many circumstances the radar and the platform that carries this particular type of radar classified. Where radar is concerned, it is possible using modern high speed sampling devices to digitise and store the signal in digital radio frequency memories. Subsequent advanced signal processing enables the extraction and recognition of features that "finger print" individual radars, which allows specific or individual ships or

aircraft to be identified on the basis of their radar transmission.

Digital radio frequency memories can be used to manipulate and re-radiate the stored signal so confusing the radar. This is an example of where the knowledge edge has been used for knowledge warfare.

Similar techniques are used for the classification of aircraft, surface ships and submarines by capturing the sound or sonar signals emitted by these platforms. The RAN and RAAF are recognised for their expertise in classifying targets using passive sonar techniques, and this applies in particular to the submariners. DSTO has remained at the forefront of sonar classification technology and developed a number of techniques particularly suited to the RAN's operational environment. This applies in particular to narrowband signatures, but DSTO is also working to detect and classify automatically transient acoustic signals emitted, often inadvertently, by submarines. These signals can be processed to classify the emitter as a submarine as opposed to a surface ship, the class of submarine or ship can often be determined and its track and speed calculated. Multipath interference effects can be exploited to obtain the target's depth.

These and related classification techniques represent both leading edge technology and very advanced signal processing techniques. Such expertise is of paramount importance if tactical decisions are to be made with confidence.

## Closing the Loop

The knowledge edge as it exists today is very much dependent upon making best use of the sensors and sources of information available and using techniques and technology that allows effective data integration and interpretation. However, there is relatively little scope for the skilled operator to modify the process to meet specific requirements and achieve significant further improvements.

The next advance is likely to be the closing of this loop in that the sensors can be reconfigured dynamically to suit a particular tactical situation. For example, we might obtain higher quality information by only using part of the acoustic aperture of a sonar array, or we might choose only to process a certain number of sonobuoys in a field. In a phased array radar the pulse rate and the effective radiated power might be dynamically modified based upon the strength of the received signal.

To achieve this dynamic feedback between operator and the sensor and processing chain and thereby make the overall process more effective will require very careful sampling of the operating environment and the development of very advanced algorithms that control





the sequence of events that constitute the detection process. The result will be the development of operator aids, which allow the operator to control the overall process from target detection through to classification, localisation and the subsequent tactical decision in an optimum way. The complex control theory required for operator aids is beginning to be developed and its introduction into the processing chain for radars and sonars is likely to herald the next advance in the knowledge edge.

## Australia's Contribution

DSTO and industry, supported by the ADF, have maintained a continuing commitment to Australia keeping its knowledge edge in the maritime battlespace. The JORN over-the-horizon radar network is a prime example, providing large area near real time surveillance of the northern maritime approaches. The integration of JORN data with that obtained from microwave radars whether on ships, in an airborne early warning aircraft or on land will provide a very significant knowledge edge for the maritime battlespace across our north.

DSTO assisted by Navy and industry is about to trial seabed acoustic arrays that might be used either tactically or strategically. These large aperture sonar systems should provide long range acoustic surveillance of selected areas. The information obtained when integrated with data obtained from JORN will increase our ability to detect, classify and localise air and sea movements across the northern approaches.

In electronic warfare, DSTO has an active research program in the use of optical fibres and associated optical processing devices to store, carry and process radar signals. Optical fibre based equipment has considerable potential to both improve performance and lower cost, and make it much easier to install electronic warfare systems on ships and aircraft. A complementary program in gallium-arsenide technology enables microwave devices to be constructed on a single chip. The DSTO and CSIRO joint program in this technology will mean that monolithic microwave integrated circuits (MMIC) are designed and built in Australia. Optical fibre and MMIC technology is allowing Australia to implement advanced electronic warfare processing techniques that are the basis for the next generation of systems needed to maintain this aspect of the knowledge edge.

DSTO is also pursuing some quite radical technologies that promise to make quite remarkable contributions where sonar technology is concerned. One such example is "acoustic daylight" whereby the ambient sound energy in the sea is focused through an acoustic lens, in the same manner that a optical lens focuses ambient light. This allows images of objects

to be formed adding a new dimension to covert underwater surveillance.

Another technique that has significant potential promise is stochastic resonance. This technique injects noise into a sonar signal in such a way that it causes weak signals to resonate, the resultant increased response allows the signal to be detected against the background noise. Stochastic resonance could double the detection range of conventional passive sonar systems.

## Next Steps

In the future, it is likely to be increasingly difficult to maintain the knowledge edge due both to the proliferation of technology and because of increasing diversity of the types of threats that might need to be countered. It will, therefore, be increasingly important to develop very robust systems that are inherently structured to make the best use of technology and the various sources of information and intelligence.

The move to joint operations is an example of this trend and the RAN together with the ADF is placing increased emphasis on joint operations and highly integrated C3I systems. Such systems will become increasingly reliant on satellites to provide high bandwidth links that can transmit encrypted video providing the joint commander and the tactical commander very high levels of information. Satellites will also increasingly gather information that contribute directly to the knowledge edge. DSTO's Project Takari has is a long-term research program to address C3I requirements.

Satellite technology and its attendant systems carry with them a very large capital investment. One means of reducing this cost is to enter into joint programs with other major navies and share the cost and gain a high degree of leverage from the associated research programs. A further benefit of such an approach is that it facilitates interoperability, which in itself can provide a significant knowledge edge.

We must, however, always be mindful that it is our strategic and tactical commanders that are directly supported by the knowledge edge. As technology delivers more information, it must be interpreted and presented in ways that are explicit, unambiguous and meaningful. Human factors and human computer interface research are increasingly becoming an important aspect of the maritime battlespace. Three dimensional displays are beginning to appear and a greater degree of user interactivity is becoming embedded to allow the command team to use their combined skills and expertise to converge rapidly to the most appropriate representation of the tactical situation.





An example of an advanced concept of this approach is the command system being built by the US Defense Advanced Research Projects Agency (DARPA) which represents the command picture as holograms. Tiny cameras will interpret gestures as instructions and microphones convert speech into computer commands. A working system should be available in two years and a fully operational version by 2002.

The knowledge edge in the maritime battlespace represents the synergism between the continuing evolution of tactical doctrine and advances in science and technology. As a consequence it will continue to shape the form and structure of maritime forces, their contribution to joint operations and provide Australia with the strategic and tactical advantage needed to safeguard our security.

*Roger P. Creaser*

#### *The Author*

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# Coastwatch

*An article submitted by Coastwatch*

## The Role

Coastwatch, a branch of the Australian Customs Service (ACS), has as its role the provision of a surveillance and response service to detect potential or actual, unlawful activity in Australian coastal and offshore waters and the coordination of a response, as required, to such detections.

The ACS is tasked by the Australian government to provide a civil nati~ coastal and offshore surveillance and response service to a range of government agencies. This service is provided by Coastwatch.

## The Organisation

The area of operations confronting Coastwatch is vast. It covers 37 000 kilometres of coastline and an offshore maritime zone of nine million square kilometres.

To meet the this challenge, Coastwatch uses a fleet of fourteen specially equipped aircraft under contract. Augmenting these resources are the Fremantle Class Patrol Boats and P3 Orion aircraft of the Australian Defence Force (ADF), made available by Cabine to Coastwatch as part of the ADF's contribution. The surface assets are supported by vessels of the Customs marine fleet. Coastwatch is also able to charter other aircraft and vessels on an ad hoc basis should the need arise.

The civil surveillance and response program is managed by the National Manager, Coastwatch, who controls and coordinates the program through a structure comprising a central office located in Canberra and regional offices in Darwin, Broome, Cairns and Thursday Island.

The hub of this national organisation is the Canberra Operations Centre, which coordinates and manages all surveillance and response operations 24 hours a day. It also provides a 24-hour free phone point of contact for members of the public to provide information on any unusual or suspicious activities.

Also situated in Canberra are the Planning and Liaison and the Surveillance Resources groups. Planning and Liaison has responsibility for collating clients' surveillance needs and incorporating these into a forward flying and sailing programs. Surveillance Resources handles all matters relating to contract management and monitoring, including training for contract aircrew and Coastwatch staff.

The ACS National Marine Unit, also headquartered in

the Coastwatch branch in Canberra, is responsible to the National Manager Coastwatch for all aspects of the day-to-day operation of the ACS fleet of ocean-going vessels. These vessels provide

ACS and other government agencies with strategic maritime patrol services as well as tactical operational support.

## How Coastwatch Works

Coastwatch activities are determined by the surveillance needs of client agencies, which include, but are not limited to:

- Customs
- Australian Fisheries Management Authority
- Australian Quarantine and Inspection Service
- Department of Immigration and Multicultural Affairs
- Great Barrier Reef Marine Park Authority
- Environment Australia
- Australian Federal Police

Every flight and marine patrol is multi-tasked to meet the needs of client agencies.

Strategic surveillance forms the majority of the flying program. It involves the translation of planned, risk-assessed "askings submitted by client agencies into ongoing flying programs. The flying programs are developed in Canberra two to three months in advance as "broad picture plans", to allow Coastwatch regional of fices and the contractor to determine the general resource requirement. The program is sufficiently flexible that it can be varied to suit changing circumstances at any time.

Strategic surveillance "askings are submitted by the client agencies through a formal committee system – the Operations and Program Advisory Committee (OPAC). This group, which comprises all Coastwatch clients, meets in Canberra each month and overviews the outcome of the surveillance program and the development and planning of the future program. A network of regional sub-committees provide regional feedback for consideration by OPAC and the central office.

Tactical surveillance flying is the result of sightings from the strategic program or from specific operational intelligence, usually received without warning and which present a more demanding





scenario than routine, strategic surveillance. The success of the tactical operations is paramount and they are given absolute priority.

When a Coastwatch aircraft detects an incident which the crew considers to be a potential or actual breach of Australia's laws it reports direct to Coastwatch's Operations Centre which immediately consults the appropriate clients as to their requirements. If a surface interception is considered necessary then Coastwatch arranges for the most appropriate vessel, most often a Naval Patrol Boat or a ACS vessel, to provide the response. Often Coastwatch aircraft continue to provide air support to the response vessel until the interception has been achieved. Coastwatch maintains a role until the situation is placed under the control of the appropriate agency.

Coastwatch, like any other operator of aircraft in Australia, also provides operational support to the search and rescue authorities.

## Resources

The principal components of Australia's current civil surveillance effort are:

- in excess of 14500 hours of visual and electronic aerial surveillance provided by civilian contract fixed-wing aircraft;
- 1000 hours of civilian contract helicopter surveillance in the Torres Strait;
- 250 hours per year of dedicated RAAF P3C Orion offshore patrol of the Australian Fishing Zone;
- 1800 patrol boat days per year provided by RAN patrol boats primarily for civil response purposes;
- complementary effort by Customs ocean-going vessels, particularly to provide an operational response capacity for any inshore sightings or incursions detected by Coastwatch assets; and
- capacity to charter or hire additional air or surface resources, if required.

Following a steady increase in demand for Coastwatch services, a new contract commenced in 1995 that, with a 30 per cent budget increase compared with the previous arrangement, which provided a 190 per cent increase in surveillance capacity – to in excess of 80 million square nautical miles per year. This involved the introduction of new aircraft with greater ranges and improved performances, fitted with state of the art equipment including digital surface surveillance radar, high definition television and video recording, infra-red cameras and night search capabilities.

The result is a mix of visual and electronic operations providing a surveillance matrix which increases the probability of detection as vessels approach the coastline. As well, different types of aircraft move

from one location to another to ensure maximum productivity for each type and its optimum contribution to overall surveillance.

## The Aircraft

Coastwatch uses the following aircraft:

### *Pilatus Britten-Norman Islander PBN2B*

Six aircraft – deployed at Broome (one), Darwin (one), Cairns (two), and Horn Island in the Torres Strait (two).

Search capacity: visual – 650 nautical miles track

Operating heights: 100 to 5000 feet. Surveillance air speed: 110 to 120 knots.

Crew: 1 pilot, 2 observers.

Equipped with: cameras, gyro-stabilised binoculars, and a comprehensive communications suite.

### *Aero Commander AC500 Shrike*

One aircraft – deployed at Broome.

Search capacity: visual – 750 nautical miles track.

Operating heights: 100 to 5000 feet. Surveillance air speed: 130 to 150 knots.

Crew: 1 pilot, 2 observers.

Equipped with: cameras, gyro-stabilised binoculars, and a comprehensive communications suite.

### *Bombardier (De Havilland) Dash 8 Series 2*

Three aircraft are deployed – one each at Broome, Darwin and Cairns. Search capacity: electronic – 80 000 square nautical miles at 300 nautical mile radius. Operating heights: 200 to 25 000 feet. Electronic surveillance speed: 185 knots. Crew: 2 pilots, 2 observers. Equipped with: cameras, gyro-stabilised binoculars, digital surface surveillance radar, infra-red camera and high definition television camera mounted in a stabilised turret.

### *Reims F406*

Three aircraft are deployed – one each at Broome, Darwin and Cairns.

Search capacity: electronic – about 60 000 square nautical miles at a 150 nautical mile radius; visual – 650 nautical mile range. Operating heights: 100 to 10 000 feet.

Operating speeds: electronic surveillance- 170 knots, visual surveillance- 145 knots.

Crew: 1 pilot, 2 observers.

Equipped with: cameras, gyro-stabilised binoculars, digital surface surveillance radar and night vision equipment.





### *Bell Longranger IV*

One aircraft deployed at Thursday Island in the Torres Strait. Used for visual search day and night plus transport of people and equipment in the Torres Strait and Cape York Peninsula areas.

Search capacity: visual – 250 nautical miles track.  
Operating heights: 100 to 10 000

feet. Operating speed: surveillance at 110 knots.

Crew: 1 pilot, 1 observer.

Equipped with: cameras, gyro-stabilised binoculars, night vision equipment (observers only).

## The Customs Marine Fleet

The Customs marine fleet provides an effective national civil surface response capability. The fleet operates around the entire Australian coastline and out to the limits of the EEZ.

Since the mid 1970s, the ACS has operated a fleet of ocean-going vessels of various types and sizes. They provide the ability to respond to actual or suspected breaches of Commonwealth laws relating to the management of the Australian coastline and offshore areas. These vessels in the current fleet range in length from 20 to 25 metres.

Responsibility for the planning, tasking and deployment of the vessels rests with a central management group, the National Marine Unit (NMU), a part of the Coastwatch branch in Canberra. Tasks are allocated to individual vessels by the

NMU based on bids submitted from all states and territories. All bids for the strategic use of the vessels are approved through the Coastwatch planning process.

In response to the increasing demand for operations beyond the 12 nautical mile Customs jurisdiction, the current fleet will be replaced by a fleet of eight 35 metre vessels – coming into service progressively over the period 1999 to 2001.

The new vessels, to be called “Bay Class” vessels, will enhance Coastwatch’s surveillance and response capabilities, enabling the current tasking levels from client agencies to be met more effectively and efficiently. The increase in the number of vessels from six to eight will increase the fleet’s potential sea-going days to around 1200 per year and improve operational coverage and response times.

Technical details on the new Bay Class vessels include:

Length:	35 m
Beam:	7.2m
Draft:	2.5m
Displacement:	112t
Speed:	20 knots
Range:	1000nm at 20 knots
Crew numbers:	Up to 9
Accommodation:	6 x 2 berth cabins 4 temporary berths 12 passengers on aft deck
Tenders:	2 x 6m Al rigid hull, segmented non-inflatable collars Each with 2 x 90 HP Honda outboard motors 150 nm range at 25 knots





# New Zealand's Defence – in Good Shape?

*In November last year, just two weeks before Australia's Strategic Policy 1997 was presented to Parliament, New Zealand released its latest Defence White Paper. Richard Jackson reports on the Kiwi White Paper, reactions to it and the implications for the RNZN.*

The 1997 Defence White Paper, titled 'The Shape of New Zealand's Defence', is a shocker. Not a shocker of a document, it is a well-written exposition of New Zealand's future force structure. Rather the shock lies in the detail – revelations of how hollow the NZDF had become, of how old our equipment is and of how shallow the purse is for buying future equipment. And the biggest shock – the decision to reduce the RNZN's combat force by 25%.

## Defence Policy Turmoil

New Zealand defence policy has been in turmoil since 1984, when the then newly elected government caused the ANZUS rift, arbitrarily scrapped the RNZN's force structure plans and proclaimed New Zealand's reliance on UN operations both as the purpose of our armed forces, and as the foundation of our defence. The first post-ANZUS White Paper was published in 1987 (ironically claiming continued adherence to the ANZUS alliance) and it focused the armed forces explicitly on the South Pacific. Implicitly, then, our armed forces could be low-tech and scaled down, since they were to be confined to an area of no military threat and low level constabulary tasks.

This focus back fired somewhat, on those wanting to neutralise (or neuter) New Zealand's armed forces – a strict South Pacific theatre of operations actually reinforced the need for self reliance, and for long range ships and aircraft and for wide area surveillance systems. Given the unchanging geography of the region, and New Zealand's specific constitutional responsibilities to the Cook Islands, Niue and Tokelau, the 1987 White Paper had to recognise the need for modern surface combatants. As a result, the RNZN gained approval to join in the ANZAC frigate project and also built and commissioned HMNZS ENDEAVOUR (our fleet tanker) acquired HMNZS MANAWANUI (our diving support ship) and began studying the options for a military sea lift ship.

But an exclusive South Pacific focus neither reflected New Zealand's real foreign policy interests, nor provided the armed forces with the right training environment, if they were to retain any combat credibility. We still had an obligation to Singapore and Malaysia through FPDA, while our commitment to the defence of Australia (a psychological commitment

among the people as much as stated policy) implied that our forces must be able to integrate with the ADF.

If there was any doubt about the potential demands on New Zealand's armed forces, the end of the Cold War, the start of large scale UN peacekeeping operations and the Gulf War all sent clear messages. New Zealand could not confine itself to the South Pacific; at least not if it wanted its foreign policy to match its trade policy, its cultural links, its humanitarian concerns and its export drive.

## The '91 Defence Policy

So the 1991 the new, conservative, government that had been elected in late 1990 commissioned Defence White Paper. That policy emphasised our commitment to the wider region, but it also set in a train a series of force structure reviews, designed to question the key capabilities of the Army, Navy and Air Force. Much of that 1991 White Paper remains relevant, indeed the new White Paper specifically states that the 1991 policy framework 'continues to be the most appropriate policy framework to guide our defence effort'.

But the force structure reviews led to a long period of indecision about our increasingly elderly equipment; they also sowed the seeds of renewed interservice rivalry for scarce capital funds. In 1994 a Defence Assessment was written (but not publicly released), which prioritised the capabilities of the NZDF, and thus led to five major equipment decisions. These were the go ahead for a replacement naval helicopter, defensive equipment for the C-130s, rewinging the P-3 Orion fleet to extend the airframe lives, purchase of a merchant RoRo ship as a military sea lift ship and, a low level air defence missile for the Army.

Each of these projects is underway: the first of the replacement naval helicopters has arrived, hawker pacific of Australia are refurbishing our P-3 Orions, the C-130s are currently being fitted with chaff and radar warning systems, while the French Mistral SAM has been delivered to the NZ Army.

But in 1996 we had our first election under the new MMP electoral system. MMP was supposed to restore some of the checks and balances to Parliament after years of 'dictatorial' power by the Executive (ie Cabinet). The new Parliament had more parties than the previous one, and so a coalition government had to



be formed – the expected outcome, but unexpectedly a coalition of the centre right, the National Party and the (new) New Zealand First Party. Most pundits had forecast a coalition of the left, led by the Labour Party. For Defence, the new government meant a new defence review, and it is this process that has led to the 1997 White Paper.

## The New White Paper

As I noted earlier, the new White Paper establishes continuity with the previous one, and so there are no radical insights into the region or the strategic setting. The good news of the 1997 White Paper is that New Zealand's defence spending will rise, to cover new capital equipment, an increased operating tempo and improved pay. Its main focus is the future force structure of the NZDF, and here the Paper contains a long-term projection of future capital equipment purchases.

The main features are:

- a. a three-frigate combat force for the Navy, and a commitment to the other naval capabilities of MCM, NCS, sealift, RAS, hydrography and oceanography.
- b. maintenance of an air combat capability, with the prospect of replacing the Skyhawks in the period 2007/2010. As well the capabilities of maritime air patrol, air transport and tactical vertical lift are to be maintained by electronic upgrades for the Orions, a commitment to C-130Js and extending the air frame life of the Iroquios helicopter fleet.

- c. Reviving the Army's general land combat capability by enlarging the infantry battalions to four-company units (rather than the present three) and replacing the old M113 armoured personnel carriers, new reconnaissance vehicles, tactical communications and infantry weapons.

These decisions are justified in the White Paper by its discussion of the international setting and the impact on New Zealand's three security aims of:

- \* defence of the nation,
- \* contributing to regional security and
- \* playing a part in collective global collective security efforts.

These national security requirements lead on to a discussion of the military considerations that will affect the size and shape of our armed forces. The White Paper points out that the nature of peacekeeping is changing: from truce monitors (such as UNTSO) to peace facilitators (as in Bougainville) and peace enforcers (as in Bosnia). The technological trends of the RMA are changing the capability of armed forces both in targeting, weapons effect and command and control. Armed forces of small nations must be able to contribute to the battle field picture, while also being able to exploit the information available from others.

And the size of the NZDF is further shaped by the demands of readiness, interoperability and critical mass. These issues were also explored in the 1991 White Paper, but in the 1997 version, critical mass is described as being a squadron of 18 aircraft for the air







combat force, two regular battalions and a brigade structure for the Army and three surface combatants for the Navy (allowing one to be continually deployed).

## The Air Force

The RNZAF had of course a huge bow wave of capital equipment needs – all its current front line aircraft date from the late sixties/early seventies. So now, 30 years on the need to replace Hercules, Orions, Skyhawks and Hueys virtually all at once, was unavoidable. So the annex outlining future capital projects is heavily weighted to the modernisation of the RNZAF: air weapons and laser designators for the A-4s; the Orion upgrade; the helicopter life extension and self-protection systems and then the A-4 replacement. This is good news for the RNZAF, and it has value for the maritime scene since the Kiwi Skyhawks and Orions are maritime aircraft. But the undercurrent of interservice rivalry – that it was a case of either the frigates or Skyhawk replacements – is not welcome, and it may take some time for tensions to ease within Defence HQ.

## The Army

There seems no doubt that the Army emphasised its peacekeeping role in staking its claim to more capital funds. Certainly the Army's shopping list shows they were successful; early projects to go ahead are: direct fire support weapons, anti-armour weapons, armoured vehicles (the M113 replacement) tactical communications and a Landrover replacement. Again, these are not unreasonable projects, and in view of the restructuring of the Australian Army, a re-equipped NZ Army will be a welcome partner.

But Army has sought to position itself as the 'owner' of peacekeeping operations, to the extent that I have heard officers' claim that only the Army is doing a 'real' job. Yet peacekeeping is more complex and far more joint service than it was eight years ago. The UN is far more pragmatic (and reluctant) about initiating peace operations, peace enforcement – rather than peacekeeping – is now a consistent theme, while the involvement of navies – as seen in Somalia, or in support of UNPROFOR and also in Cambodia – has been consistently overlooked in Wellington.

Army's campaign was well supported by public statements from various retired officers. One, Grant Crowley, made public his vision of the NZDF as a larger Army supported by an air transport force and some auxiliary ships. He has since become one of the bigger critics of the new White Paper. And this constant public posturing on behalf of the Army has an impact on the RNZN; even when it does undertake direct UN operations with the MIF in the Gulf, these

become assessed in the public mind as somehow not as important as the single company of troops amid the (former) 40,000 strong UN force in Bosnia (for example). The recent role of CANTERBURY at Bougainville – a clear deterrent backing up the unarmed land forces – was quickly forgotten amid the images of soldiers playing in paddling pools with local children.

That of course leads to other issues of public information and building new perceptions in the public mind.

## The CHARLES UPHAM

The other shock for the Navy is the delay to the conversion of the *CHARLES UPHAM*, the military sea lift ship. The *UPHAM* was bought in late 1994, a Mercandian-class North Sea Ro-Ro trader. On arrival in New Zealand she was painted grey, given some additional communications equipment and commissioned in October 1995. Then she was deployed for various trials and Army exercises. On returning from a South Pacific deployment, with virtually no cargo, she was caught in a storm and found to roll sharply, too quickly for personnel safety, while her high sides caught the wind and made her nearly unmanageable. Navy knew that to function properly as a military sea lift ship *UPHAM* would need extensive conversion – more water tight compartments for damaged stability (which would also provide accommodation for troops) a water ballast system and a flight deck (which like the *RFA ARGUS* would be built over a concrete slab thus reducing the metacentric height and hence the rate of roll). It is not that the *UPHAM* is unsuitable as a vehicle transport (after all a sister ship does the Wellington-Lyttelton run every week of the year) but in the long distances of the South Pacific she cannot reasonably undertake passages in the empty condition. Coincident with this experience, the RNZN was at its nadir for marine engineers, so it was convenient to lay the ship up pending conversion. Yet, although the design studies had been undertaken, *UPHAM'S* conversion has been delayed to 2001/02; in the interim she has decommissioned and will be chartered out commercially. Presumably issues of capital funding flows, as well as RNZN personnel shortages, lead to that decision.

However, critics (like Crowley) take it as proof of 'manifestly inadequate advice' from the Navy, thus usefully giving them ammunition to undermine the RNZN's credibility. Yet the ship was a high priority for the Army back in 1994, it could be valuable to the ADF (in view of the LPA project and the ADF's new emphasis in amphibious capabilities) while it would also be a major deep draft command opportunity within the RNZN.





## The Navy

But the White Paper does concede that money has to be spent on the Navy. The White paper lists the following naval capital projects:

- \* Kauri Point ammunition storage upgrade
- \* bridge training simulator
- \* evolved Seasparrow, towed array sonar and torpedo modifications (ie a semi-WIP for our Anzac frigates)
- \* a fifth maritime helicopter in 2003
- \* a remote minehunting system
- \* provision for the Anzacs' midlife upgrade, and
- \* a third surface combatant by 2006

On the face of it, this may seem a good list. In fact it is just sufficient to keep the Navy ticking over by upgrading the Anzac's weapons, ensuring there is attrition aircraft available to the helicopter force, continuing the development of our MCM capability and providing for two key pieces of infrastructure. Yet the inclusion of funds for a third frigate has already attracted adverse political comment.

Australia was disappointed in the NZ Defence White Paper, and Canberra has said so, both in the text of Australia's own Strategic Review (released two weeks after the NZ White Paper) and in discussions during the annual defence talks in early 1998. In particular the down sizing of the RNZN and the lack of commitment to another modern frigate has drawn particular pressure from Australian officials. Yet, due to New Zealanders' weak public opinion towards defence, NZ politicians will not be motivated to do much more, despite the Australian reaction.

## The way ahead

So what is the way ahead for the RNZN, after the 1997 White Paper? The Chief of Naval Staff has made it clear in one of his 'WADS' (With All Dispatch; a new widely distributed rapidly disseminated personal memo format from CNS to the fleet as a whole) that the RNZN's priority now has to be training. *HMNZS WELLINGTON* has been dedicated to the sea training role even though she is fresh out of refit and re-equipped with Phalanx CIWS and other new equipment. But the fleet has to reduce to meet the government's new policy of a three frigate force: *WAIKATO* is to pay off in July 98; *WELLINGTON* will pay off as *TE MANA* is delivered, but *CANTERBURY* will steam on until a

third modern frigate can be delivered. In the meantime, *MONOWAI* paid off in April and *TUI* has already gone out of service; both are being replaced by *RESOLUTION* (the newly acquired ex-American T-AGOS), with a consequential valuable saving in complements.

The Navy's training staff at *HMNZS TAMAKI* are seeking innovative ways to increase shore training effectiveness and the NZDF's personnel policy people are under pressure to improve naval conditions of service, while a pay rise is promised for July 98. All these initiatives are intended to improve our retention and rebuild the core of trained sailors and officers we so desperately need.

And the Sea Sprite program is on track, the first SH-2F is now flying and the Wasps have been retired (after 32 years' service!). The SH-2Fs are our interim helicopter, pending the delivery of G-model Seasprites in 2000, in conjunction with the RAN project.

So it is not all gloomy for the RNZN. The service is determined that its individual ships will be credible, both in terms of weapons and sensors, and in terms of well trained ships' companies. I am confident that after the shock of the 1997 White Paper we can resume our place among the navies of the region. Back in Wellington Naval Staff will have some tough battles to fight to get a third Anzac frigate ordered (some forecast that the third frigate should be ordered later this year). But I hope the Staff doesn't lose sight of making the case for a four-frigate fleet. Yet in the meantime the RNZN will have to look inwards, concentrating on training and on its people – they remain the greatest single factor.







# East Asia 2020: Visions of a Partnership

By Peter Jennings

Peter Jennings is Senior Adviser to the Minister for Defence, the Hon Ian McLachlan, AO. Before joining Mr McLachlan's office in March 1996, Mr Jennings was Director of Strategic Policy in the International Policy Division, Department of Defence. Mr Jennings has held academic positions with the Australian Defence Force Academy and the Australian National University.

*This is an article tabled at the Gwingana Forum in November 1997, prior to the Asian Economic Crisis. It deals with the way countries outside Asia will interact with the Asian Community over the next twenty years. It is interesting to note that although vast (unforeseen) changes have occurred in the region since this article was written, the basic concepts of the article remain extant.*

## East Asian Prospects for 2020

The quarter century to 2020 will expose East Asia to the competing influences of globalisation and regionalism. To the extent these forces represent real policy differences, the key to East Asian stability is for the region to embrace policies encouraging the closest interaction with extra-regional powers.

It is only by exposing their countries to the global economy that East Asia will enjoy the political stability needed to encourage the growth of a sense of East Asian identity.

Economic growth underpins regional stability in East Asia. For the region to remain peaceful and promote a sense of cohesion as a community, governments need to encourage high growth. The paradox is that growth-friendly policies will push East Asia more fully into a globalised economic system.

## Continued high growth

Despite recent financial and share-market uncertainties in East Asia, the dominant view in Australia and elsewhere is that Asian growth rates will continue to be high. The World Bank estimates that, over the next decade, East Asian growth – excluding Japan – will average 6.8 per cent compared with 2.4 per cent for Western Europe and Japan. Growth figures will reduce as countries increase their level of development. However, a continuation of growth rates similar to those the region has enjoyed in the last decade will consolidate East Asia's position as a pre-eminent centre for world growth.

Increasingly, growth is linked to trade. Indeed global trade and investment have grown much faster than gross domestic product over the last decade – a trend likely to continue. And by far the fastest growing trade sector has been trade in services rather than goods. Although trade between East Asian countries is high and continues to increase, future East Asian prosperity will be more than ever linked to its trade with the rest

of the world.

That shows that national policies geared to promoting open markets and supporting the free flow of goods and services are necessary to sustain high growth. Such policies will help to further integrate East Asia into a globally focused – rather than a regionally focused economy.

The dramatic increase in trade in services – it is estimated to be 27 per cent of world trade in 2010, compared to 21 percent now – shows the rapidly changing structure of the world economy. As economies in East Asia develop, they will need to move more into the services sector. Underpinning this trend has been the rapid advances in communications technology.\*

## Impact of the communications revolution

The spread of, and increased access to, communications and computer technology will have dramatic effects on the countries of East Asia. Linked to financial markets, for example, the communications revolution means that it is almost impossible for national governments to control the price of local currencies.

It becomes equally hard for governments anywhere to control public access to information.

The information revolution presents some dilemmas for East Asian governments. How is it possible, for example, to foster a cohesive sense of national or regional identity in the face of many competing international cultural forces?

In looking at North Korea now, we are watching the terminal stages of the last country in East Asia that sought to completely control its peoples access to information.

The information revolution is so widespread in its impact that it will become impossible for governments to regulate its popular impact.





If that judgment is correct it will have a profound impact on the development of regional cohesion. Rather than the development of a distinct East Asian regional identity there will be a marked blending of cultural and social norms.

There will be distinct national traits but the influence of North American culture and social values will, I think, have a greater impact on people than any tendency to identify as East Asian.

That statement is already true of young people in East Asia today – and they are the people who will lead the region in 2020.

I have argued that to promote economic growth East Asia must maintain close ties with extra-regional countries, and that the impact of communications technology pushes more in the direction of a Trans-Pacific community than a distinct East Asian identity.

Both these developments would be put at risk if East Asia failed to manage its military and strategic affairs in such a way as to keep the region peaceful.

## Role of the US in regional security

Many countries in the region agree that the key factor in maintaining stability is a strong United States forward military presence, backed by a healthy bilateral alliance structure.

The size and shape of that presence may alter over time in response to developments such as the likely unification of Korea and to changes in military technology.

The US military presence acts to dampen strategic competition between the region's major powers – a role that, if anything will become more important after Korean unification.

Nor can this be confined to just North Asia. South-East Asian countries are increasingly interested in the potential impact on their security of North Asian developments.

Sub-regional boundaries are becoming far less effective as 'insulators' against the potential impact of security developments in other areas.

So, US strategic engagement is a necessary background to shaping a broader regional security framework, where countries do not believe that their fundamental security interests are at risk and where tensions can be contained.

## Mahbubani's regional consensus

Writing in the September-October 1997 issue of *Foreign Affairs*, Kishore Mahbubani – the Permanent Head of Singapore's Foreign Ministry – argued that

there was a strong wish in the region for the "current geopolitical order to be frozen in place." The security status quo was what was needed to enable an Asia-Pacific consensus to develop. \*

I agree with Mahbubani's overall view about the role of the United States, but not with the proposition that these security mechanisms can be frozen.

Changing power relativities between states in East Asia – and between the region and extra-regional powers – mean that bilateral and multilateral security structures will need to be extraordinarily flexible to adapt and manage this situation.

## Sino-US relations

No-where is this more obvious than in the need for the United States and China to develop a working relationship which acknowledges each other's vital interests.

The good management of Sino-US relations is the key to future regional stability.

The United States will also have to work harder to develop stronger, more nuanced relationships with countries like Indonesia and Vietnam.

US security leadership may still be essential, but a major difference between the Cold War era and the present is that America needs to work harder at promoting consensus among states – it cannot expect to lead without consultation.

A final point about regional security is that no-one should underestimate the costs of failing to keep the region peaceful.

Regional military expenditure continues to grow. Between 1985 and 1995 regional defence spending increased by 34.7 per cent from US\$115.8 billion to US\$155.9 billion.

That spending is bringing increasingly capable weapons systems into the region – mostly from Europe, Russia and the United States. \*

There is a lag between the region's acquisition of weapons systems and platforms compared with the development of formal and informal security mechanisms to manage tensions.

## Russia, India, European Union

I have concentrated on the United States because of its pre-eminent position as an extra-regional power. However it may be useful to mention some other players.

By 2020 it is likely that Russia may have emerged from a period of self-absorption to become a more active participant in East Asian affairs.





The shape of Russian relations with Japan and China will have a major impact on security.

A failure to manage either of these sets of bilateral relations would be a major complicating factor in regional security.

At present India's security pre-occupations remain firmly focused on its own sub-region. It is difficult to see that changing in the near future. However like Sino-Russian relations, Sino-Indian security must concern itself with a long land-border and a history of geographical disputes.

India's domestic economic, development and political problems are enormous. If it is able to manage these successfully it is likely to become a major economic force in the wider East Asian region as well as a competitor for investment and markets.

Finally, Europe is eager to remain a key trading partner and provider of investment, training, weapons and infrastructure.

It is likely that some in East Asia may look to Europe as providing a model for a greater level of political and economic integration.

Over the coming twenty-five years, Asia will certainly develop much more of the mechanical elements of integration – treaties and agreements to facilitate commerce, trade, aviation and communication, easier movements of people and so on.

It will be much harder, however, for East Asia to take the next step to a closer level of political integration in the way the Europeans have.







# 'Popular consciousness' of maritime Australia: some implications for a national oceans policy development

By LCDR Seth Appiah-Mensah, Ghana Navy Centre for Maritime Policy, University of Wollongong

## Abstract

*Australia, the island continent to the southeast of Asia and some 20 000 km away from Britain, was totally dependent on the sea for its communications with the outside world. Even major inroads into overseas trade by air freight has not changed the pattern much. Sea-dependence has therefore dictated its defence, trade and exploitation of maritime resources strategies over the years. Much of its maritime culture was shaped by the geography, isolation and distance from Britain and within the island itself; albeit not correspondingly as high as its sea-dependence. The development of Australia's Oceans Policy somehow gives the nation an opportunity to bring the influence of its maritime culture to bear on an important national policy with international implications. This paper provides an analysis of the impact of maritime Australia upon the development of an integrated national oceans policy.*

## Introduction

An Australian historian has noted that 'all major themes of Australian history can be refracted through the prism of its maritime experience;' and ever since Geoffrey Blainey published the *Tyranny of Distance*, it has been an axiom of Australian history that the nation was principally moulded by the great distances between itself and the outside world on one hand, and within the island nation on the other. Indeed Australians have lived with the sea from the earliest days of Aboriginal habitation and have had their society, both indigenous and immigrant, shaped by maritime experiences and connections of all kinds. Since the first fleet most Australians have undertaken at least one long voyage at sea, either as migrants, tourists or soldiers to their battlefields overseas. Australians also engaged in fishing or sailing, either for profit or leisure. For reasons of wealth, power, sport or sheer enjoyment many Australians familiarised themselves with the coastline in various forms of natural and artificial environments. The influence of the sea reached far and deep into the continent as both production and

consumption were (and still are) profoundly related to, and often dependent on, the seaborne flow of exports and imports (Broeze 1998).

Even Admiral Hill's modern qualitative and quantitative analysis confirm that Australia is consistently a sea-dependent nation, after Japan, the United Kingdom and the Scandinavian countries.<sup>2</sup> What is not known is whether the same rating could be given to its 'popular consciousness' of maritime affairs (hereafter referred to as maritime culture) were it to be subjected to similar analysis. The relevance of this culture could not have been more apparent than at a time when Environment Australia is awaiting public comments on *Australia's Oceans Policy – An Issues Paper*, released by the Commonwealth Government Minister for Environment, Senator Robert Hill, on the 19th May 1998. Clearly, this provides a test case for Australia to bring its maritime culture to bear on this new policy.

It is the contention of this paper that though sea dependence has been and still is crucial to Australia's survival only few Australians fathom the depth of their country's interaction with the sea. The paper, first of all, discusses the sea dependence of the island nation from the time of its settlement by the indigenous Aborigines to the present. It acknowledges the modest achievements of recent strategies to improve the maritime awareness of Australians. While attempting to assess the impact of the maritime culture of Australia upon the national oceans policy it is not the intention of this paper to discuss the policy itself. As maritime Australia encompasses all aspects of human life, this paper adopts a three-core point approach to discuss Australian maritime culture: controlling of sea space, taming of distance and living with the sea (as the world's second element after the land). This leads on to an assessment of the maritime culture in contemporary times and how it is impacting upon the development of Australia's oceans policy.

## Controlling the sea space

Australia's relations with and dependence on the sea pre-dates the arrival of the first fleet from Britain in 1787. Many Aborigines used rafts or small boats for fishing and transport before the arrival of the white Australian. Geoffrey Blainey's well illustrated book,





*The Tyranny of Distance*, also gives a vivid account of the European sailings to Australia pre-dating Captain Cook, from the first fleet to the subsequent migrant ships. The island continent which was some 20 000 km from England was totally dependent on the sea for its communications with the outside world. Historians do not seem to agree on the reasons for which Britain selected Australia for its convicts. While some argue that Britain primarily considered Australia as a gaol for the convicts,<sup>3</sup> others submit that commercial strategic purposes weighed heavily in making the choice. While there is still no consensus in sight, this paper identifies the entire Australian project in terms of pure British imperial policy. The new colony of Australia can be said to have commenced on the ambition of British imperialism to keep French and Spanish rivals from its commercial and strategic interests in the region; and that the availability of Norfolk Island's pines and flax for mast and sails was an icing on the strategic cake. For white Australia, controlling the sea space for the exercise of naval power was paramount for use of Australian waters. The unique location of Botany Bay, also, made it a port of call on the longest intercontinental routes, particularly from Britain to China.

The significance of the Royal Navy to British imperialism cannot be overemphasised. In those days it was not uncommon in Britain to hear the paeon 'it is on the Navy that the nation depends' or words to that effect. Castex (1994 reprint:390) notes that for an island nation like Britain (and Australia for the purpose of this paper) naval superiority was a matter of life and death, representing both a necessary and sufficient condition for survival. Australia's total dependence on the sea as a means of communication, trade and sustenance was no longer questionable and therefore had to address the resulting maritime security concerns. The Royal Navy was the ultimate guarantor of the antipodes-Australia and New Zealand and established an Australian station, based in Sydney in 1859. This was largely seen by many as a token gesture towards regional pre-occupations about defence and security issues in the Pacific. And as McLean<sup>4</sup> notes New Zealand was not greatly reassured by this arrangement because it would take too long for British ships to steam to its rescue 1200 miles across the stormy Tasman sea. For the same reason the Australian colonies were anxious about the inadequacy of the force for their own defence.

In 1900, the formation of the Commonwealth in Australia gave it a national ambition to rid itself of imperial defence ties which culminated in the agitation for the formation of the Royal Australian Navy in 1908. A number of Russian scares during the second half of the century and Germany's naval challenge to Britain facilitated the founding of the Royal Australian Navy (RAN) in 1911. The RAN began with a battle-cruiser HMAS *Australia* and four

cruisers. During the outbreak of war in 1914 the newly formed Australian fleet was to play a key strategic role in the Pacific region. HMAS *Australia* served as an escort to the convoy despatched to seize German Samoa and for the first deployments of Australian and New Zealand forces to the Middle East. McLean<sup>5</sup> observes that HMAS *Sydney* demonstrated the value of a regional navy by intercepting and destroying the German cruiser *Emden* not far from the first convoy route. World War I also demonstrated how dependent Australia was on merchant shipping. It is recorded that all Australian campaigns were fought at sea and merchant transport being one of Captain Roskill's (War at Sea Vol 2) three elements<sup>6</sup> of sea power became the critical means of carrying the Anzacs to Egypt, Gallipoli and France. In many of the wars and conflicts of the 20th century the RAN was active in theatres far from its shores and therefore out of the public eye. The location of these wars often tended to alienate the Australian people from the realism of their contribution; and yet the sailors, often regarded as the patriots of the country's developmental efforts.

The shifting balances in geopolitics and strategic calculations led to Australia's 'Monroe's Doctrine', which bequeathed to the nation a leading role in southwest Pacific and the conquest of a modest Pacific empire. In recent times, there has been significant changes in Australia's international position which have enabled it to shift from Britain's traditional European rivals to its regional powers; from Japan to China, Indonesia and India. New patterns of trade, shipping, ports and population have led to the concept of the 'Two Ocean Navy' with increasing homeporting at HMAS *Stirling* near Fremantle. The defence white paper *Defending Australia 1994* clearly indicates the predominance of Canberra's diplomacy of Regional Engagement toward Southeast Asia.<sup>7</sup>

The increasing dependence of Australia on offshore resources has given the RAN the task of controlling the nation's waters as a basic exercise of national sovereignty in support of other civil agencies. The tasks include the protection of its coastline, shipping and resources such as fisheries or offshore oil and gas platforms. The adoption of UNCLOS in November 1994, leading to the declaration of a 200-mile EEZ has also increased the enforcement responsibility of the nation in the ocean space. Though a number of boats have recently been apprehended close to the coast, a few were detected only after they had entered Darwin harbour-suggesting that the Australian coast is porous. This observation will give currency to the debate of the need for an independent coastguard in Australia.<sup>8</sup>

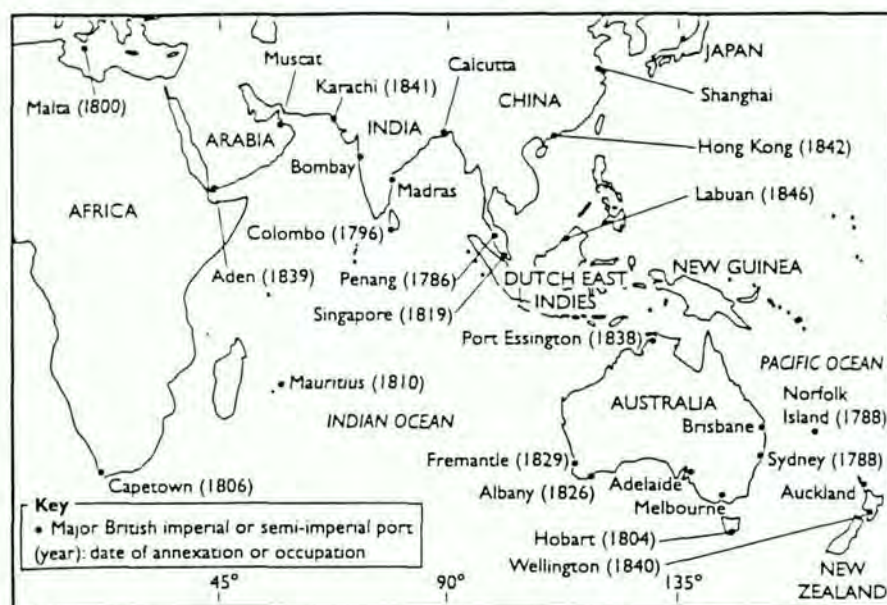


## Conquest of the sea's vast expanses (taming the distance)

Australia's conquest of the sea's vast expanses and how it is the highway to subdue what Blainey would call 'the tyranny of distance' is relevant to its maritime-ness. From the beginning white Australia was conceived as an integral part of Britain's imperial economy. All Australian immigrants, imports and exports for a long time remained solely sea-dependent. Thus the vehicle for 'taming the distance' was shipping with all its indispensables, physical and human elements: ports, jetties, lighthouses, shipyards, seafarers, waterside workers, pilots and custom officials. Historians believe that isolation by distance was one of the moulds that shaped Australia's history. Australia was so far from England that Sydney gradually drifted into Asia's net of commerce, especially the practice of convict ships sailing back to England through Asia opened regular SLOCs between Sydney and Asian ports. The rise of and the importance of whaling, wool, gold and dynamic export industries of the 19th Century gave an unprecedented momentum to the Australian trade (see figure 1). By the 1830s the ports of Sydney and Hobart had a high population of American, French and English whalers who regularly called for repairs and provisions. Shipbuilding therefore emerged as the largest and most dynamic colonial industry in the first half of the 19th Century, and Tasmania alone is reported to have built over 400 vessels ranging from small cutters to ships of 500 tons. Colonial shipping was the live-wire of the early fishing industry, particularly sealing and whaling. Whaling became the mainstay of the shipbuilding industry.<sup>9</sup> For once the

long distance from the old world had profited Australia. The clear advantage Australian whaling and sealing ships had over foreign competitors was closeness to the fishing grounds. That proximity was, for more than half a century, one of the nation's few assets.

The most dramatic revolution in Australian shipping was the introduction of steamship. This enabled faster journeys to be undertaken while maintaining steady pace independent of the weather and wind. The total tonnage of overseas arrivals and departures in all Australian colonies rose from over 1 million tons in 1850 to 23.6 million in 1900; and with about 50% increase from 1909 – 1913, just before the Great War. The British dominated the shipping business from the beginning in spite of Australia's efforts to establish itself, first with the Commonwealth Line and then the Australian National Line. Foreign elements continued to be pre-dominant, particularly P&O. This foreign dominance has helped to make maritime Australia less appreciated by its citizens. To some extent it has kept some Australians ignorant and sea-blinded. The other cause of the apparent ignorance in maritime affairs is traced to the repression of maritime facilities and workers in Australia's historiography, probably because of the militancy of the wharfies and seamen who helped in taming the distance. Broeze observes that '...the wharfies and seamen were a living proof that Australia was not a country of conflict-free consensus that conservative orthodoxy preached for so long'. Even to date, Sam Bateman<sup>10</sup> argues that irrespective of the major inroads made into overseas trade by air freight in recent decades, Australia still depends heavily upon seaborne trade (See Table 1).



*Australia and the port system of the British Empire in the Indian and Pacific Oceans c.1850.*

**Figure 1** (Source: Frank Broeze's *Island Nation*).



Another way of taming the distance is the settlement pattern of Australia. Eight of every ten Australian lives in what Blainey calls 'The Boomerang Coast,'<sup>11</sup> which is less than one-tenth of the country's area. The density of the population in the Boomerang Coast is realistic, economically and socially. The concentration of the population and economic activities in one compact area means relatively cheaper cost of transportation of raw materials,

foodstuffs, manufactured goods, and power. By concentrating the population in the Boomerang Coast, Australia spends less in carrying goods and services over vast distances. This provided the simplest solution to the problems of distance on land. However, this high population density in the Boomerang Coast has now become a serious social and environmental issue.

**TABLE 1**  
Australia's overseas trade—mode of transport, 1990-1991

<i>Weight</i>				
	<i>Inwards</i>		<i>Outwards</i>	
	'000 tonnes	%	'000 tonnes	%
Sea	32 202	99.5	304 439	99.95
Air	163	0.5	176	0.05
Total	32 365	100.0	304 615	100.0
<i>Value</i>				
	<i>Inwards</i>		<i>Outwards</i>	
	\$mill	%	\$mill	%
Sea	35 116	73.6	42995	81.7
Air	12 616	26.4	9621	18.3
Total	47 732	100.0	52 616	100.0

Source: *Yearbook Australia* 1994, Table 23.30, p. 656; Table 23.31, p. 657; Table 23.32, pp. 657-659; Table 23.36, p. 662.

## The use and enjoyment of sea resources

The sea is a resource harvested through fishing, whaling, pearling and other such activities. The spread of Aboriginal settlement on the continent is believed to have been influenced by fishing. However, fishing did not become an important industry in Australia until the arrival of southern European migrants mostly Italians, Greeks, Portuguese and Dalmatians. The beginning was very modest in the 1860s but grew and had co-operative fish markets in Melbourne (1865), Sydney (1872) and Fremantle (1891). The major problem identified with this industry then was storage. The Commonwealth Government intervened as early as 1908 to establish a fisheries research program. By 1914 the most important fish products were pearlshell and pearls. Traditional fishing received a boost when the NSW government commenced the operation of its own trawlers in 1915 and eight years later 17 trawlers landed over 600 tons of fish, mostly shark. In contemporary times the marine industries have diversified in type and value as shown in figure 4. It is estimated that marine industries contribute a total of \$30 billion to the Australian economy annually.

Another aspect of living with the sea is through the conquest of the wave and the wind by yachting, surfing or swimming. Since the 1820s regattas, which included sailing-boat and whaling boat races had been organised in Sydney and Hobart. Australia has the second-highest number of sailing-boats in the world after Norway, and yacht clubs can be found around the whole littoral. The diversity of sailing clubs once sharply reflected the divisions in Australia society, but with traditional elites gradually fading Boat building away most of the previously exclusive clubs have become more egalitarian. Despite their increasing international competition and commercialisation, swimming, surfing and fishing have drawn Australians and foreigners to the sand and surf of the country's beaches. Shark attacks and accidents like the drowning of Prime Minister Harold Holt in 1967 did not even dent their enthusiasm. The shockwaves generated at the advent of the bikini did not 'spoil' the Australian society, although nude bathing raised the 'temperature' of many. By the second half of the century the capital cities of Australia had begun to expand seawards with the foundations of suburbs like Bondi, Manly, Coogee, St Kilda, Brighton, Mentone, Glenelg and Cottesloe. They were mainly residential but at the weekends and during summer their beaches were crowded.



A passive aspect of living with the sea may be considered. It involves enjoying the seashore with its open spaces and varying moods, watching surfers, boats and gulls while walking on the beach or driving past. Offshore islands, lighthouses and ocean-going ships also offer their own unique pleasures. Currently living and retiring to the seaside is one of the major dynamics of Australia demography, as the developments of marina resorts and coastal centres like the Gold Coast demonstrate. Living and working on the coast obviously also has its disadvantages. Improper disposal of waste and pollution along the coast have become major issues of environmental concern. Environmentalism and conservationism became significantly prominent when Australians turned their focus and affection to the fauna of the sea, in particular its coral reefs, seals, dolphins and whales. Ironically, the whales that were hunted in the 19th century have become symbols of conservationism in the 20th century. The campaign for clean seas also raised awareness on the effects of 'ships of shame', bulk carriers and tankers registered in countries which do not enforce highest standards of safety and pollution control. The myriad of activities and interests in the oceans have prompted international and national efforts to properly manage, conserve, exploit and protect the marine environment through integration of some sort. This is what

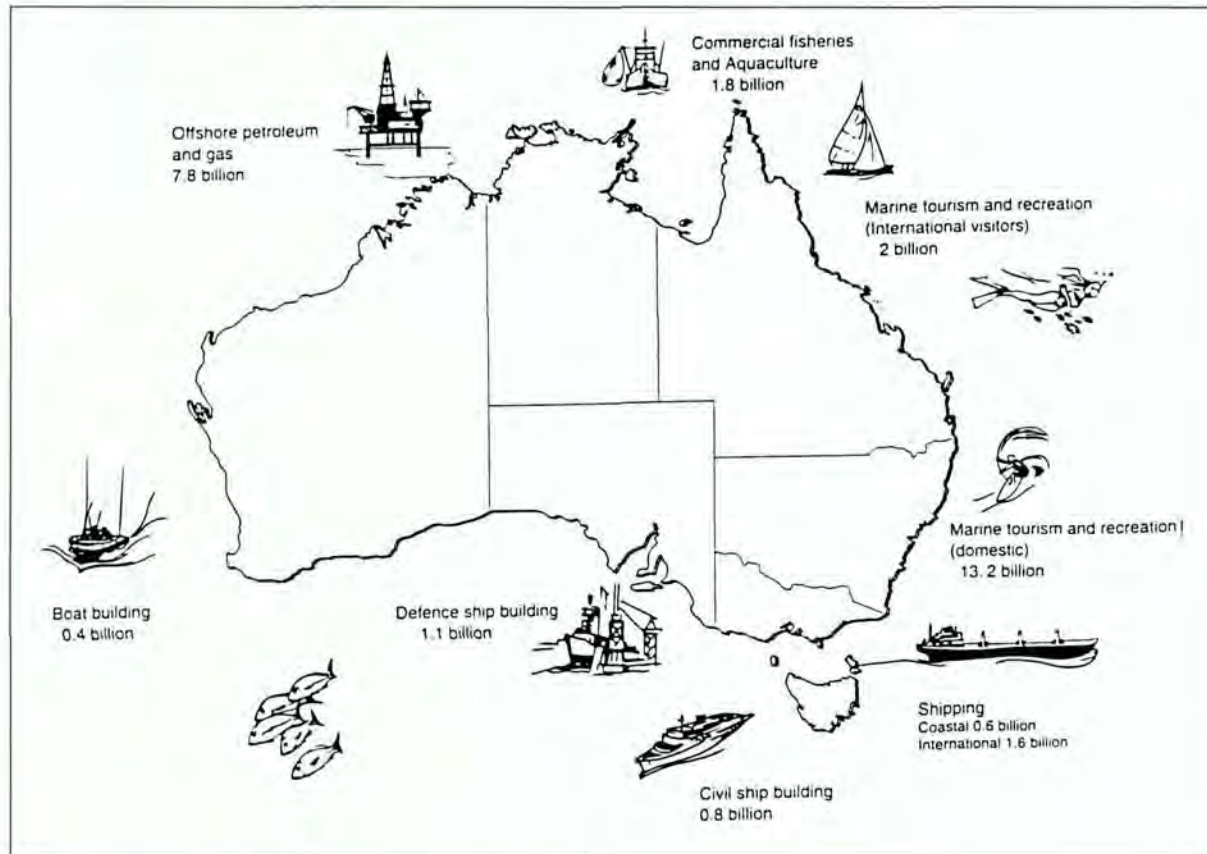
Australia's Oceans Policy seeks to achieve by asking for public comment (maritime) on the officials' draft, the result of which largely depends on public awareness of the issues involved.

## Some Issues of Maritime Awareness in Australia

From the discussion above it is observed that Australia had everything maritime about it. Even, colonial newspapers were replete with maritime news on voyages, whaling, shipwrecks, sometimes sour accusations to impolite captains, commendations for successful captains and foreign goods. This extensive maritime information 'kept the sea central to the colonists' consciousness' and according to Broeze (1998):

*Over the next 150 years overseas and coastal shipping, ports and port cities, large harbours and modest outports, lighthouses and breakwaters, whalers and pearlers, ocean space and naval force, the beach and the lifesaving patrol, swimming and yachting continued to forge the maritime elements in Australia's identity.*

The importance of the sea and its associated themes are however conspicuously absent in the artistic



Source: Marine Industry Development Strategy AMISC 1997

**Figure 2.** Estimated Value of Australia Marine Industries





record of the nation's history in visual arts and literature. Most colonial art works emphasised the significance of the perception of landscape (as opposed to seascape) as an indispensable part of the self-image of Australians. This may be due to the reasons noted already such as the militancy of the wharfies and the dominance of shipping by foreigners.

Since World War II the perception of maritime themes as integral to Australian life in the visual arts has been matched by progress in literature. This includes a wide range of national issues like shipping and overseas trade, ports and fisheries, beach life, maritime sports and Australia's gradually rediscovered location and role in the Asia-Pacific region. Hill observes that a nation's self-perception of its maritime-ness is very important and can prevent it from '... treating the sea with sometimes malign neglect that can most kindly be characterised as sea-blindness'.<sup>12</sup> Some important maritime novels published in Australia since World War II are Robert Close's *Love Me, Sailor* (1945), Geoffrey Blainey's *The Tyranny of Distance* (1966) and Frank Broeze's *Island Nation: A History of Australians and the Sea* (1998).

In recent decades there appears to be more awareness of the significance of the sea through artistic avenues. The establishment of the Australian Association for Maritime History and the appointment of a director of Naval Historical Studies in the RAN's Maritime Studies Program and the development of maritime museums in all states and the territories have given what Hill calls 'a [modest] nautical slant' to Australia. This culminated in the opening of the Australian National Maritime Museum at Darling Harbour, Sydney in 1991. Indeed, maritime archaeology brought the sea into the national headlines and Australia's Historic Shipwreck Act of 1976 also set a benchmark to the world.

To the maritime observer, these modest achievements in the maritime awareness of the ordinary Australian are just 'a drop in the ocean'. It can be argued that the post-1945 effort to raise the maritime culture has probably only succeeded in emancipating the ordinary Australian from his landscape ideology to the coast – the beach. Undoubtedly, every Australian, from the young to the old, is conversant with the beach and its activities but many only see it as the water's edge where they can retire for pleasure.

To most Australians the beach has become the neo-colonial fence beyond which nothing or very little is known. The new Australian maritime jurisdiction covers an area in excess of 15 million square kilometres (one-eighth of the earth's surface if international objectives are included) with a coastline just in excess of 37 000 km. These figures in a way demonstrate the alarming ignorance of the Australian about the new maritime regime. Andrew Forbes<sup>13</sup>

notes '...the need to progress beyond our rudimentary knowledge of the role that the oceans play in our existence' because his friend Walter Munk (cited in Forbes: 1998) confirms '... the oceans ... are ... a reservoir of ignorance'. Another disturbing feature of Australia's maritime ignorance is the virtual complete silence of the media on the oceans policy (often regarded as the mouthpiece of the public). After the release of the officials' draft of the policy the media has turned a blind eye on its progress even as the deadline approaches.

Effective management of the oceans will depend on Australians knowing about the marine environment and its importance, recognising the threats to it, wanting to care for it, and learning the skills to look after it. Many factors may influence people's values (family, friends, media and personal experience) but it is education at schools, colleges and universities that gives people most of the formal knowledge and skills to make informed decisions, and the ability to act on them. Australia has around three million students, 10 000 schools and 200 000 full-time school teachers. During their formal education, every Australian student learns something about the sea in a variety of subjects, from art to biology. But as the SOMER report indicates 'Most Australians leave school with little more than basic understanding of the sea, and the important issues affecting the marine environment' (1995:34). Even at the universities, marine studies generally have a greater emphasis on basic science than applied science and management of the oceans. Professor Gerard Sutton, Vice Chancellor of the University of Wollongong, in an opening address at a recent international conference on "Ocean Governance and Maritime Strategy" in Canberra made similar observation:

*Hopefully Australia's Ocean Policy will say something about the development of the skills for oceans governance and the role of the university sector. This role is not just in marine science...but in other relevant disciplines as well.*<sup>14</sup>

To him, the establishment of the Centre for Maritime Policy at the University of Wollongong in 1994 presented a more sanguine opportunity and dared to suggest that the four words in the title of the conference 'oceans governance' and 'maritime strategy' encapsulates the work of the Centre.

Indeed, all is not gloomy for Australia's maritime culture. Credit must go to marine scientists<sup>15</sup>, marine industries, RAN and politicians for sustaining and projecting the maritime culture in their various spheres of professions, locally and abroad. In fact, through their activities and contributions to international maritime issues, Australia's maritime values are highly revered.<sup>16</sup> This group of experts have actively contributed to the evolution and development of Australia's Ocean Policy and are likely to provide





the 'bulk' of public comment on the officials' draft, given the inaction of the media and the ignorance of the general public.

## Some Implications for Oceans Policy Development

The success of Australia's *Oceans Policy – An Issues Paper for public comment* will largely depend on the nature of the public interests and response it generates. The Federal Minister for Environment, Senator Robert Hill, notes in the foreword that '... the document has been accepted as providing a sound basis for public consultation and is being released for public comment as an officials' draft' and gave the deadline as 15 July 1998. With barely one month to the deadline it appears very little or nothing is going on with respect to public involvement. Even the government agencies have gone dumb on it and the media does not appear to be bothered at all. In rebuking the hypocrisy of the Pharisees of his day Jesus said '...by their fruits (works) you shall know them'. Though not trying to sound judgmental the development of the oceans policy has offered an opportunity for Australia to assess its 'popular consciousness' in maritime affairs. The degree of integration and consequently of the rationality and efficiency will be directly related to the 'fruits' of the public and of course the Commonwealth government. It may be argued that public awareness programmes initiated for the past few decades have prepared the Australian public for such a moment. This author contends that the modest achievements of the awareness strategies are woefully inadequate for the comprehension of the development of a national oceans policy. Perhaps there is a need for a 'nautical slant' to the national life. Hill observes that in Brazil school teachers are mandated to inculcate a regard of the sea in their pupils.

Traditionally, in Australia, a fragmented and sectoral approach to ocean management exists. With the multiplication of various responsibilities corresponding to the increase in the multiple-use of the oceans, it is nowadays common to find some 10 to 15 different ministries having ocean-related responsibilities. This creates functional and institutional problems. In addition, each state has established various degrees of decentralisation and has a multiplicity of public and semi-public or private actors having specific interests to advance or defend. What is more, maritime issues and the concept of national oceans policy are not understood by the public and as discussed above does not command priority in the public view.

Australia is a member of the international community and is therefore subject to international law through international, regional or bilateral treaties to other

nations. Thus the international law of the sea will limit arbitrary decision-making in a number of areas including the delimitation of ocean space under its jurisdiction and its various marine activities such as fisheries, marine scientific research, navigation and mineral resources exploitation of the seabed. Here again, very often the public has difficulties in understanding the extent to which international rules and norms applied to ocean affairs impose limits on unilateral government action. For example Anthony Bergin<sup>17</sup> notes that Australia has concluded maritime delimitation with four of its maritime neighbours and this author wonders how many people are aware of this important development in maritime Australia.

The international role of Australia in ocean affairs includes economic and strategic aspects. The aspects related to its naval power and defence objectives are very important in the formulation and conduct of its national oceans policy, especially the current emphasis on regional co-operation. The supremacy attached to this objective may defy any rational cost-benefit analysis and therefore may attract public criticism. There could be several instances where the objectives related to naval power or maintenance of links of communications appear in conflict with certain other objectives, but are still pursued in view of their relationship to the sovereign attributes and role of the nation. RAN's role in protecting the new maritime zones in addition to its traditional tasks requires additional resources as noted in the draft oceans policy. An ill-informed or ignorant public may be infuriated by the extra budgetary requirements.

The socio-economic imperatives are crucial to the formulation and implementation of the national oceans policy. As mentioned earlier, the Australian maritime industries contribute approximately \$30 billion annually to the GDP, which may be a public 'secret'. This will remain largely unknown to the general public, except those working in the maritime sectors and agencies, until a deliberate effort is made to disseminate the information by way of public education.

Clearly, the official's draft of Australia's Oceans Policy indicates the nation's reliance on 'ocean managers' for effective implementation of the policy. As observed above, it is not only marine scientists that are going to manage the oceans, but rather includes other disciplines where personnel may not be readily available or are not being trained in the appropriate tertiary institutions. A nautical slant is therefore required at the universities to produce experts in ocean management or governance.

## Conclusion

Australia has been sea-dependent from the time of its Aboriginal habitation through colonisation to the



present time. Its distance from England helped a great deal to shape its history and its international policies. Historically, colonial Australia was founded and sustained by controlling the sea space, taming the vast distances through shipping and exploiting the resources of the sea for domestic and commercial purposes. This was made possible through the influence of the rich imperial maritime culture. Independent and modern Australia continues to survive on the same colonial maritime principles, albeit highly diversified and intensified. But in spite of the intensity and diversity in maritime activities in Australia, there appears to be a marked decline in the maritime culture of the public.

Maritime Australia has been greatly influenced by the culture of arts, literature, media and Australian historiography. Since 1945, a number of strategies have been adopted to increase the maritime awareness of Australians through arts, education in school and other artistic avenues. There is some modest achievement in the development of literature and arts in maritime affairs. However, the demands of Australia's Ocean Policy development will overstretch the modest 'beach' knowledge of maritime Australia. Clearly, this is a clarion call on Australia to bring its maritime human resource to bear on a policy that will encompass about one-eighth of the earth's surface. The type of public response will reflect in how integrated and feasible Australia's Oceans Policy would be apropos of sectoral, socio-economic, political, cultural and international imperatives. Human resource development in ocean management through formal education will require some attention to sustain the policy. Meanwhile, there are strong indications that Australia's Oceans Policy will not atrophy through benign neglect, inaction and ignorance of the public (including the media) because the experts who lobbied for its introduction and have sustained its development till date, are still holding onto the 'lifeline'.

#### NOTES

- 1 See Frank Broeze, 1998, *Island Nation: A History of Australians and the Sea*, Allen & Unwin, Sydney, p. 257. Such major themes of 'mainstream' Australian history include distance, political economy, industrial relations, gender relations, the management of time and the quest for Aboriginal rights, justice and reconciliation.
- 2 See Hill, J.R., 1986, *Maritime Strategy for Medium Powers*, Naval Institute Press, Annapolis, pp. 40-44.
- 3 See Blainey, G., 1966, *The Tyranny of Distance*, Sun Books, Melbourne, p.37. Blainey argues that Australia was first settled with the twin hopes of giving England the naval supplies it needed and ridding England of the people it did not need. He notes that official letters disclosing the decision to send a fleet to Australia back his argument.
- 4 See Mclean, D., 1990, Australia's Maritime Interests: The New Zealand Dimension, in Bateman and Ward (eds.), *Australia's Maritime Interests-Views from Overseas*, Canberra, p. 74.
- 5 *Ibid* p.77.
- 6 Roskill argues that maritime power rests on three essential elements, namely strength, security and transport. Importantly, the transport element must be supported by adequate shipbuilding and ship repair industry.
- 7 See Young, TD, 30 January 1995, *The 1994 Australian Defence*

*White Paper: An American View*, paper at the conference on "1994 Defence White Paper Conference", Canberra.

- 8 See O'Connor, M., 1997, A coastguard for Australia?, in MacKinnon and Sherwood (eds.) *Policing Australia's Offshore Zones: Problems and Prospects*, Wollongong Papers on Maritime Policy No. 9, p 268. O'Connor has been arguing for a coastguard since the late 1960s and still thinks an independent coastguard is ideal for Australia. Incidentally, the *Australia's Oceans Policy - An Issues Paper for Public Comment*, p.85, envisages the acquisition of 8 Customs ocean-going vessels to carry out surveillance tasks similar to those performed by the RAN's Patrol Boat Force. Perhaps the formation of a coastguard is in the offing.
- 9 Blainey, *op.cit.*, p.149. The convict system hastened the rise of a dynamic export economy, producing goods for an expanding world market. If Australia had not been a gaol, a strong Australian-owned whaling fleet might not have arisen before 1850. Convicts cheaply built the whaling ships and emancipated convicts and their free-born sons manned them.
- 10 See Bateman, S., 1997, Environmental issues with Australian ports, in *Ocean & Coastal Management*, Elsevier Science Ltd, Vol. 33, Nos 1-3, pp. 229-247. Note that air freight is mainly in high value cargo.
- 11 Blainey, *op.cit.*, p.146. If the south eastern rim of the continent is defined as the coast stretching from Port Perie to Adelaide to Melbourne to Sydney and Brisbane and all the interior within 200 miles of that coast, then the result is a coastal tract shaped like a boomerang. Today, apart from Canberra and western Sydney, Australia's major growth centres are all on the coast.
- 12 Hill, *op.cit.*, p.47.
- 13 See Forbes, A., 1998, *Oceanography's Contribution to Oceans Management*, paper on 'Ocean Governance and Maritime Strategy' conference in Canberra, p. 1.
- 14 See Sutton, G., 18 May 1998, *Oceans Governance and Maritime Strategy: Opening Address*, to the Conference on 'Oceans Governance and Maritime Strategy' in Canberra, p.3.
- 15 An Ocean Outlook Congress was held by leading marine scientists to mark Australia's adoption of the 1982 UNCLOS on 16 November 1994 and issued a report that 'of the many challenges and opportunities facing Australia none match the potential rewards offered by sustainable development of Australia's newly-declared EEZ and associated marine territory.' The intense lobbying from the marine scientist can be credited with the political response from the Commonwealth Government on Australia's Ocean Policy. For further information see Bateman, S., 1997, *Marine Industry Development and Oceans Policy in Australia*, paper for COSU Conference, Singapore, 12-14 May 1997 and *Ocean Outlook: A Blueprint for the Oceans*, a report from the Congress 16-17 November 1994 and a Scientific Program Proposed by the Steering Committee.
- 16 For instance, Professor Edward Miles called on Australia (and Canada) to play the role of political entrepreneur(s) in what he called 'a proactive strategy' in convening periodic conferences on state practice and the extent to which any deviations are injurious to the central compromises of UN Convention at a recent international conference in Canberra. See Miles, E.L., 1998, *New Ocean Regime: Facilitating Implementation, Compliance and Evolution*, paper on 'Oceans Governance and Maritime Strategy' Conference in Canberra, 18-19 May 1998.
- 17 For details on maritime delimitation w--th Indonesia, PNG, Solomon Island and France see Bergin, A., 1998, Australia: National Arrangement for Maritime Management, pp. 5-6, in Bateman and Bates (eds.), *Regional Maritime Management & Security*, Canberra Papers on Strategy and Defence No. 124.

#### REFERENCES

- Bateman, S., 1997, *Marine Industry Development and Oceans Policy in Australia*, paper for COSU Conference, Singapore, 12-14 May 1997.
- Bateman, S., 1997, Environmental issues with Australian ports, in *Ocean & Coastal Management*, Elsevier Science Ltd, Vol. 33, Nos 1-3, pp. 229-247.
- Bergin, A., 1998, Australia: National Arrangement for Maritime Management, pp. 5-6, in Bateman and Bates (eds.), *Regional Maritime Management & Security*, Canberra Papers on Strategy and Defence No. 124.
- Blainey, G., 1966, *The Tyranny of Distance*, Sun Books, Melbourne.





- Broeze, F. 1998, *Island Nation: A History of Australians and the Sea*, Allen & Unwin, Sydney.
- Castex, R. 1994 (reprint), *Strategic Theories*, Naval Institute Press, Annapolis, part V, The Sea versus the Land, p. 390.
- Forbes, A. 1998, *Oceanography's Contribution to Oceans Management*, paper on 'Ocean Governance and Maritime Strategy' conference in Canberra, p.1.
- Hill, J.R., 1986, *Maritime Strategy for Medium Powers*, Naval Institute Press, Annapolis.
- McLean, D. 1990, Australia's Maritime Interests: The New Zealand Dimension, in Bateman and Ward (eds.), *Australia's Maritime Interests-Views from Overseas*, Canberra.
- Miles, E.L., 1998, *New Ocean Regime: Facilitating Implementation, Compliance and Evolution*, paper on 'Oceans Governance and Maritime Strategy' Conference in Canberra, 18-19 May 1998.
- O'Connor, M. 1997, A coastguard for Australia?, in MacKinnon and Sherwood (eds.) *Policing Australia's Offshore Zones: Problems and Prospects*, Wollongong Papers on Maritime Policy No. 9, p 268.
- Ocean Outlook: A Blueprint for the Oceans*, A Report from the Congress 16-17 November 1994 and a Scientific Program Proposed by the Steering Committee.
- Our Sea, Our Future*, 1995, Major findings of the State of the Marine Environment Report for Australia, Department of Environment, Canberra.
- Sutton, G. 18 May 1998, *Oceans Governance and Maritime Strategy: Opening Address*, to the Conference on 'Oceans Governance and Maritime Strategy' in Canberra, p.3.
- Young, T.D., 30 January 1995, *The 1994 Australian Defense White Paper: An American View*, paper at the conference on "1994 Defence White Paper Conference", Canberra.



## JOURNAL OF THE AUSTRALIAN NAVAL INSTITUTE

### October – December Edition

- The next edition is due out mid-November
- Articles are being sought on a number of relevant maritime issues
- The focus of the Journal will be on personnel
  - Articles due to Editor by 31 October '98

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You may have noticed some differences in this edition of the Journal. We are under-going some significant changes over the next few editions. If you have any suggestions or comments on the direction of the Journal please forward them to the Editor.

Requirements for submissions are available on  
pages two and three.



## Fresh Water Flat Tops US Ships *Sable* and *Wolverine*

*Carrier Flight Training on the Great Lakes in World War Two by Graham Wilson*

As the sun rose in the east, the sound of approaching aircraft was detected. In preparation for the approaching aircraft, the carrier turned into the wind. Black coal smoke belched from the stack as the engines increased power to drive the paddle wheels at the ship's sides. As the flight deck crews rushed to take up their positions, a fine spray of fresh water whipped across the wooden deck.

Coal smoke? Paddle wheels? Fresh water? At first sight, none of this makes much sense. Yet, in World War Two, the United States Navy actually operated two coal fired, paddle wheel driven aircraft carriers whose keels never touched the salt of the open sea. This article relates the story of two of the most fascinating but obscure warships to serve in the war.

During the Second World War, the United States Navy, from a very faltering start, rose to pre-eminence in the field of aircraft carrier operations. At the time of America's entry into the war, the USN operated a total of seven aircraft carriers – six fleet carriers (CV) and one light fleet carrier (CVL). By the war's end, this figure had grown to almost 100, including 20 fleet carriers, eight light fleet carriers, and a staggering 70 escort carriers (CVE), for a total of 98 flat tops.

But this was not the complete inventory. The US Navy's pennant lists for the years 1942-45 include two intriguing ships classified as "IX" and listed as training carriers. These two vessels, USS *Wolverine* (IX-64) and USS *Sable* (IX-81), were unique among US aircraft carriers for a number of reasons. Firstly, they carried no embarked aircraft, all aircraft operating onto and off the ships being shore based. Secondly, they were coal fired – a rarity enough among all surface combatants of the day but unheard of in aircraft carriers. Thirdly, they operated not on the wide waters of the Atlantic or Pacific Ocean, but on the enclosed, relatively sheltered and relatively benign waters of the Great Lakes. Finally, both carriers were driven through the waters of the lakes not by propellers but by paddle wheels!

The saga of *Wolverine* and *Sable* had its genesis with the Japanese attack on Pearl Harbor on 7 December 1941. While an American naval expansion had been put in train some time before Pearl Harbor, the Japanese attack and America's subsequent precipitous entry into the war added an urgent impetus to the expansion programme. In particular, the US Navy desperately needed to expand its carrier fleet. This

expansion encompassed not only ships but also men. And the officers and sailors recruited to crew the CVs, CVLs and CVEs coming off the ways of America's shipyards of course needed to be trained; not only the aircrews but also the flight deck crews.

The training requirement offered the US Navy an at first sight insurmountable problem. In its first year at war, the US Navy was barely holding its own in the Pacific and could ill afford to spare one of its precious carriers to be used for training purposes. Even had a carrier been available for training purposes, the navy was not prepared to risk having one of its precious flat tops operating close to the coast where predictable and easily monitored sailing patterns would make training carriers prime and relatively easy targets for prowling Axis submarines. This was especially true of the east coast as this was still the U-Boat's "happy time" when German submarines roamed the length of America's eastern seaboard almost at will, unhampered by an inexperienced US Navy which had yet to acquire the skills of anti-submarine warfare so painfully learned by the Royal and Royal Canadian Navies over the preceding two years. To commit an aircraft carrier to a necessarily predictable pattern of operations in submarine waters would have amounted to almost criminal lunacy.

The US Navy, however, was not to be denied, for it needed those training carriers. While a great deal of flight training for carrier crews could be conducted at land based facilities, the vital skills of landing and taking off from a moving flight deck could only be practised on just that, a moving flight deck. Similarly, while flight deck crews could practice their vital support skills at land based facilities, there was nothing like the experience to be gained by actually carrying out their tasks on a real flight deck on an actual ship afloat. Before the war, these skills had been practised and honed aboard one of the navy's operational carriers deployed on a training cruise and, in the smaller pre-war navy, this had worked well. For the reasons listed above, such an expedient was not available and something else would have to be thought of. It should be noted that the other major carrier based navy of the day, the Imperial Japanese Navy, faced the same problem and had solved it by relegating the old (1925), small carrier *Hosho* to training duties in the sheltered Inland Sea for the duration of the war. She was, in fact, one of the few Japanese carriers to survive the war.





But the hard pressed US Navy could not afford to allot even one of its older carriers to the training role. These carriers were themselves desperately needed for operations in the Pacific, holding the line as it were while newer ships could be built and commissioned. It is possible that the very first US flat top, USS *Langley* (CV-1), might have been used but she had been converted to a sea plane carrier and aircraft transport in 1937 and anyway was sunk in the Battle of the Java Sea in February, 1942, America's first carrier becoming in effect her first carrier loss of the war.

Yankee ingenuity, however, will not be denied. While a stop gap measure of sorts was extemporised using escort carriers hurriedly converted from merchant hulls and operating in the fairly easily defended waters of Chesapeake Bay and the less easily defended waters off San Diego in California, the solution was far from ideal. Chesapeake Bay is extremely congested and one of America's busiest waterways, making conduct of training very difficult, while the west coast was vulnerable to Japanese submarine operations. The solution came from the fertile mind of a US Navy aviator posted far from the sea. At the outbreak of the Pacific War, Commander (later Rear Admiral) Richard Whitehead, USN, was Aviation Aide to the Commandant of the Ninth (or Great Lakes) Naval District. With America now in the war, an enormous number of keels for new carriers being laid down and the need for an equally enormous number of pilots, CMDR Whitehead cast a critical eye on the training efforts of the escort carriers in Chesapeake Bay and decided that the various disadvantages of using the small carriers in the busy and congested bay required another solution. With stunning originality, he hit upon the idea of using small carriers, converted from merchant ships, on the Great Lakes.

Whitehead's idea, at first glance quite far fetched, had enormous merit. The biggest advantage offered was security. On the land locked Great Lakes, ships would be far from the threat of submarines and could operate almost at will with no escort. Additionally, the Great Lakes region boasted a number of useful military airfields, including Great Lakes Naval Air Station (NAS), Glenview, Illinois. The one major drawback was the extreme and bitter winter weather which was assessed as probably halting training for the duration of the cold weather. In fact, except for a period of three months in the winter of 1943-43, which was a particularly harsh one, the ships were able to operate all year round and, as will be seen, operation in the winter months actually had advantages.

Whitehead was able to quickly convince his superior Rear Admiral Downes, of the merit of his idea and Downes sent an urgent letter to the Chief of Naval Operations on 10 January, 1942. Incredibly, the idea was accepted and acted on immediately and the search commenced for suitable ships. In his original

proposal, Whitehead had suggested that if a suitable ship or ships was not available, then the Navy should actually go to the lengths of constructing small carriers on the Lakes. As it transpired, this was not necessary and two suitable ships were quickly identified.

The two ships identified were the luxury passenger ferry *Seeandbee* and the car ferry *City of Midlands*. The latter ship, which was almost brand new, was not in fact selected, but *Seeandbee* was. *Seeandbee* was a side wheel paddle steamer and had been built in the yards of the American Shipbuilding Co. at Wyandotte, Michigan, in 1912. She had been built for and operated as a luxury passenger ferry by the Cleveland and Buffalo Transit Company (C&B, hence the name), home ported in Cleveland, Ohio. In her heyday, she had been a splendid, even luxurious ship, a favourite with passengers and a well known sight on Lake Michigan. She had also been, as an aside, the largest side wheel paddle steamer in the world. By 1941, however, she had fallen on hard times. C&B had gone bankrupt in 1941 and the company's pride, *Seeandbee* had been purchased by Mr T.J. McGuire, a Chicago businessman, for the ridiculous sum of \$135,000:00. Mr McGuire had operated *Seeandbee* as a pleasure boat on Lake Erie in the last months of 1941 but at the beginning of 1942 she was laid up for the winter season at Cleveland.

The CNO wrote to Commandant Ninth Naval District in February expressing appreciation in the work done on the project and indicating that serious consideration was being given to the proposal. Less than one month later, on 12 March 1942, the navy purchased the *Seeandbee* from Mr McGuire for \$765,000:00 – quite a tidy profit for the Chicago businessman. *Seeandbee* was sailed to Buffalo, New York, where she was put in the hands of the American Shipbuilding Company's yard there and her conversion commenced.

Conversion of *Seeandbee* commenced in May 1942 and the task took a mere three months, a phenomenal effort when it is considered that *Seeandbee* was a ship of quite vast proportions. The conversion of the ship consisted of cutting off all of the upper works until she sat a bare 26 feet above the water. An overhanging flight deck of just over 500 feet was constructed over the hull and a small island constructed on the starboard side. *Seeandbee's* four smoke stacks, previously one her most prominent and distinctive features, were routed to the starboard side and rose above the island. With conversion complete, the former *Seeandbee* was commissioned into the US Navy on 12 August, 1942 as the USS *Wolverine* and commenced service under the command of Commander George R. Fairbanks, USN. *Wolverine* was classified by the USN as a "miscellaneous auxiliary unclassified" (IX) and was allotted the pennant number 68.



In her very first days of operation, it was found that heavy clouds of coal smoke billowing out of the four stacks so obscured the flight deck that landings were a near impossibility. This problem was traced to the fact that the inexperienced navy stokers had not yet acquired the necessary degree of skill in the almost lost art of coal heaving and were unable to pitch the coal far enough into the furnace for fresh loads to burn cleanly. This problem was quickly alleviated as the stokers gained in experience and was assisted by switching to a more clean burning type of coal, of which the ship burned about 150 tons per day.

Even as *Wolverine* was completing her conversion, a sister ship for her was being sought as it quickly became clear to the navy that the numbers of pilots required would overwhelm the capacity of *Wolverine* to cope with. Again at CMDR Whitehead's urging, the paddle wheel ferry *Greater Buffalo*, built in 1924 and operated by the Detroit and Cleveland Navigation Company, was acquired in August, 1942, and her conversion commenced. *Greater Buffalo* was also handed over to the American Shipbuilding Company and work started on her conversion as the finishing touches were being made to *Wolverine*. Slightly larger than the former *Seeadbee*, *Greater Buffalo* was still practically identical on completion to *Wolverine*. In fact, the only major differences were that the new ship had only two stacks as opposed to *Wolverine's* four and she was fitted with a steel flight deck as opposed to wood. This, by the way, made the newly converted ship the first US aircraft carrier to be fitted with a steel flight deck!

The conversion of *Greater Buffalo* was completed in May, 1943, and on the eighth of that month, she was commissioned into the US Navy as USS *Sable* (IX-81). Incidentally, *Wolverine* was named in honour of the former USS *Wolverine*, the US Navy's first iron hulled ship which had been commissioned in 1844 and decommissioned in 1942. The name *Sable* was chosen for her sister to continue the practice of similar class names, the new ship being named after a fur animal native to northern Europe which is a cousin to the North American wolverine. With their conversion complete, about the only resemblance *Wolverine* and *Sable* bore to their former selves were the huge paddle boxes on either side of the ships housing the 30 feet diameter paddle wheels. Truly unique vessels, *Wolverine* and *Sable* were the only two fresh water aircraft carriers in existence and the only two side wheel paddle steamer carriers ever.

On completion, *Wolverine* had been sailed from Buffalo on Lake Erie, up through Lake Huron and into Lake Michigan where she then steamed to her new home port of Chicago, arriving at the Navy Pier on 22 August, 1942. Work began immediately, with the new ship operating in conjunction with the Carrier Qualification Training Unit (CQTU) located at Great Lakes Naval Air Station. The first aircraft to land on

*Sable* touched down on her deck on 25 August, 1942. The aircraft was piloted by LTCDR Edward J. O'Neill, CO of CQTU. Soon after, on 12 September, Ensign Biedleman, USNR, became the first trainee pilot to qualify under the Great Lakes program. *Wolverine* operated on her own for nine months until *Sable* joined her in May 1943. When *Sable* arrived under the command of Captain William A. Schoech, USN, the two ships were grouped together as "Carrier Task Force X." I have been unable to ascertain whether the "X" stood for "10" or just "X" as in "X marks the spot." If it was, as I suspect, the latter, it indicates a hitherto unsuspected sense of humour in a somewhat humourless service!

The training schedule for Carrier Task Group X was gruelling. In the relatively sheltered waters of Lake Michigan, the carriers could operate almost unhindered by the weather year round. Even the foreseen restrictions caused by winter weather failed to materialise except for a three month period during the winter of 1942, a particularly harsh one, when *Wolverine* was restricted to harbour due to unusually heavy ice flows. During other periods of cold weather, problems with ice flows were solved by working in conjunction with Great Lakes based US Coast Guard icebreakers which quickly cleared a path for the carriers out into the open waters of Lake Michigan. The ability to operate the carriers in the coldest weather also had the unforeseen benefit of providing an opportunity for the testing of experimental cold and foul weather gear. The only other two major restrictions were that the carriers were unable to fly aircraft on or off at night, restricting operations to daylight hours, and, because there was no hangar space aboard the ships (and obviously no lifts) and strictly limited deck parking space (three aircraft at most), aircraft landing on had to immediately take off again to make room for the next aircraft.

On a typical day, the carriers would fire up their boilers before dawn and set sail to clear Chicago by 0800 and operate throughout the daylight hours, making for 12 to 15 hour days. Carrier aircraft require a headwind to take off into to assist with lift. The prevailing winds on Lake Michigan are north to south so the carriers would generally steam north from Chicago all day to make use of the headwind. Pilots found that the low height of the flight deck above the water (less than 30 feet) made for some interesting take offs as their aircraft "dipped" as they crossed the bow on take off. Although there were some near misses and close shaves, there is no record of anyone ending up in the water.

The pace of flight operations was nothing short of amazing. Aircraft would be constantly landing and taking off throughout the day with training squads of five or six aircraft forming up over either carrier and taking their turns at landing on and taking off. In the beginning, carrier qualification called for each pilot to





make eight successful landings and take offs; this was changed in late 1944 to 14. *Sable* set an unbeaten record on her first day of operation on 28 May, 1943, when she recorded 59 pilots qualified in one day, which translated to an amazing 488 landings in 531 minutes or, to put it another way, about one landing every minute for approximately nine hours! *Wolverine* made her claim to fame on 4 June, 1944 when she recorded 633 landings in a single day. Operations continued at this amazingly hectic pace right throughout the daylight hours until it was too dark for landings. The carriers would then turn about and steam through the night back to Chicago, often arriving in port just in time to turn around and do it all again. Operations were carried on seven days a week with the occasional day off operations for coaling.

Aircraft used in qualifying pilots consisted of a number of types used at the time by the US Navy. Types known to have operated with Carrier Task Force X include: SBD "Dauntless", TBM "Avenger", F4F "Wildcat", F6F "Hellcat", F4U "Corsair" and the SNJ "Texan."

Not only did *Wolverine* and *Sable* qualify huge numbers of pilots, at the same time, they also provided invaluable training and experience for the all important flight deck crews without whom carrier operations could not be conducted. The levels of skill in aircraft handling achieved by the two carrier's flight deck crews can be seen by the statistics listed above. Among the most critical skills taught and practised aboard the Great Lakes carriers were those of landing signal officer (LSO) and flight deck officer (FDO). Originally, there were only two LSOs in Chicago, one for *Wolverine* and one for *Sable*. Early in her operational career, *Wolverine's* only LSO came down with appendicitis and all operations had to be halted for two weeks while he underwent surgery and convalescence. This incident brought home to the navy the scarceness of this resource and a training program for LSOs was quickly developed, along with formal programs for FDOs and flight deck crews in general. Fortunately, if that is the word, CQTU was able to commence the LSO training program with five fully qualified LSOs as, besides *Wolverine's* and *Sable's* LSOs, three additional LSO became available throughout 1942 when their carriers *Lexington*, *Yorktown* and *Hornet* were sunk, making them "surplus to establishment" (so to speak!).

Before concluding, it is worth considering the overall statistics arising from the operations of *Wolverine* and *Sable* and making a few quick comparisons. A staggering 40,000 carrier personnel were qualified under the Great Lakes program including pilots, LSOs, FDOs and flight deck crews. Of this rough

total, 17,820 pilots were qualified. Add to this a pilot accident rate of around 0.5% and one begins to appreciate the efficiency and value of these two unique ships. In comparison, while some carrier pilot training was conducted on the east and west coasts using escort carriers, it is illuminating to note that during the period 25 August 1942 to 2 December 1944, *Wolverine* and *Sable* qualified 9,729 pilots while USS *Core* (CVE-11) and *Long Island* (CVE-1) qualified only 372! The entire cost of purchase and conversion of the two carriers came to \$4,833,369:00 which, even by World War Two standards, was a paltry sum and was incredibly inexpensive in comparison to the return on the investment.

All things come to an end of course. With the end of the war, the need for the two Great Lakes flat tops was at an end and both ships were decommissioned on 7 November, 1945 and laid up at Navy Pier, Chicago. Held in reserve for three years, the ships were stricken and sold for scrap in 1948, a somewhat ignominious end for two grand old ladies who had served the United States Navy well.

United States Ships *Wolverine* and *Sable* were two of the most unique ships of the World War Two and were the result of the inspiration of one man, CMDR Richard Whitehead. The two children of his inspiration made an incredibly valuable contribution to the United States' war effort and it is not beyond the realms of possibility that without their contribution, the outcome of the war may very well have been drastically different.

## Acknowledgement

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## BIBLIOGRAPHY

- Dalitsch, J.W., 1992, USS *Wolverine* (IX-64) and USS *Sable* (IX-81): The Great Lakes' Aircraft Carriers, paper presented to US Maritime History Conference at US Coast Guard Academy, 28 Apr.
- Durand, P.H., Letter to the Author and Accompanying Hand Written Notes, Dated 20 December, 1996.
- McMurtrie, F.E., AINA, (ed), 1946, *Janes Fighting Ships 1944-45*, Sampson, Low, Marston & Co. Ltd., London.
- Preston, A., 1976, *An Illustrated History of the Navies of World War II*, Bison Books Limited, London.
- , 1979, *Aircraft Carriers*, Gallery Books, New York.
- Terzibaschitsch, S., 1980, *Aircraft Carriers of the U.S. Navy*, Second Edition, Conway Maritime Press Limited, London.





# Minehunter Launch

*Speech by Ken Harris, Managing Director, ADI Limited  
24 April 1998*

The Honourable Tim Fischer, Acting Prime Minister, General John Baker, Chief of the Defence Force, Councillor Greg Heys, Lord Mayor of Newcastle, other distinguished guests and fellow ADI employees. Could I specially welcome our launch lady, Mrs Jennifer Smythe.

Now, if I was to tell you that the ship you see in front of you is completely empty, I am prepared to bet that you would have the same emotional reaction as you watch it go down the slipway as if I had told you it was full of complex electronic technology.

I suspect that this is a sort of primal reaction to the thought of people setting forth on the great unknown who, when they were beyond the sight of land, were lost and in mortal danger.

But I suppose that is what makes launching ceremonies so emotional. If the invitation had invited you to watch Mrs Smyth break a bottle of champagne over a silicone chip, I suspect all of you would have suddenly discovered other things to do today.

Yet it is the things you cannot see from where you are sitting that makes this class of ship so typical of modern warships, and a wonderful illustration of the technological revolution that is sweeping through the military the same way it is sweeping through the world of business.

The primary purpose of the hull that you see here is to keep the crew and the electronics dry. The essence of these ships, as with all other major items of defence equipment, lies in the systems and their integration rather than in the platform, to use the jargon, on which they operate.

While I would not wish to take away any of the warmth that all of you feel on an occasion such as this, I would ask you to reflect a little on the significant changes that have taken place in the ship building industry, particularly in the warship building industry, in recent years. Just as Newcastle is moving away from the age of steel, so our industry is moving away from its traditions into electronics and information technology.

I would like to spend a couple of minutes, if I could, in saying something about what you can't see from where you are sitting: what it is that makes these ships and this project so successful.

The first thing is the skills of our employees. For a steel city it must be somewhat of a novelty to be

building ships out of plastic. But let me assure you that the level of skill required in building the hulls out of this complex plastic material is very high indeed. Our employees knew nothing of this material before they were trained and, if Gianni Facchinetti will forgive me for boasting, I believe that the quality of our work surpasses that of any other plant around the world.

Our skilled workforce also includes a breed of people that would have been in the background in conventional ship building programmes. These people's skills lie in software, communications systems, understanding highly complex technology, and integrating these diverse technologies into a total system that performs in a way that will delight even the most demanding of customers.

The other things that are not visible from where you are sitting are the systems that go to make up this ship. The need for this ship to operate in very dangerous circumstances to seek and detect some of the stealthiest and most lethal weapons, requires a package of complex systems that is designed to make the job of our customer as efficient and as safe as possible. This package of technology makes this minehunter the most modern and capable ship of its type in the world.

The other feature that is embodied in this ship is partnership. Modern, high technology projects cannot be carried out by any single company. ADI has been blessed in the relationships and partnerships it has built up during the course of this project. I am very pleased that so many of our business partners are with us today. We want all our partners to look back on this project with a feeling of achievement and pride in being involved in something very successful and important, and to be able to look back on a profitable business arrangement as well. It is only profitable companies that will stay in the defence business. Importantly, the partnership between the Company and our customer, the Royal Australian Navy, is a key element in the successful progress on this project, and I would like to thank Captain Ken Joseph, the Navy's project director, for his support, and congratulate him and his team on the professional way in which they have carried out their side of the contract.

The other thing that is not visible from where you are sitting is project management. Coordinating a contract such as this with 1,700 subcontractors, a customer with a strong interest in a successful outcome, with so





much money involved, and our reputations on the line, is no easy task. Like the crew of the ship itself, our project managers have at their fingertips highly sophisticated software to assist them in dealing with this complexity. But, like the systems available to the officers and sailors who will use this ship, this technology will amount to nothing unless it is used by people of intelligence, integrity and imagination.

The last of the invisible factors that I want to mention today is design. Those of you who are familiar with the Gaeta class might look at the shape of the two ships and see a lot of similarities. The reality is, however, there has been a very significant amount of redesign of the ship and its equipment to make it suitable for Australian conditions and to satisfy the needs of the Australian customer. This design work was done in Australia, here at our site in Newcastle, again using the combination of very powerful software tools in the hands of highly skilled and committed Australians. You might be surprised to know that the Huon class is approximately 80% Australian designed and, I believe, it is a great credit to Australian industry generally that a project of this size and complexity can be carried forward from beginning to end with such a high level of Australian intellectual and physical content.

I use the expression "Australian industry" advisedly because we have with us today some key people from

the Department of Defence, as well as people representing international companies. Between ADI and other companies in Australia – our competitors and partners – the intellectual and industrial base in this country is capable of taking on the most demanding projects, and no one should have any nervousness at all about the ability of Australia's defence industry to take on the most difficult challenges.

As to ADI's future, those people who are managing the Company's privatisation programme, and those who might be contemplating investing in ADI will, I am certain, get detailed and expensive advice about the Company's balance sheet. You would, I am sure, appreciate that the key assets that make this Company tick, and make projects like the minehunters succeed, are not shown on our balance sheet. These assets have the disconcerting habit of walking out the front door at the end of each day to go home to their families. I, for one, am very grateful that they come back again the next day.

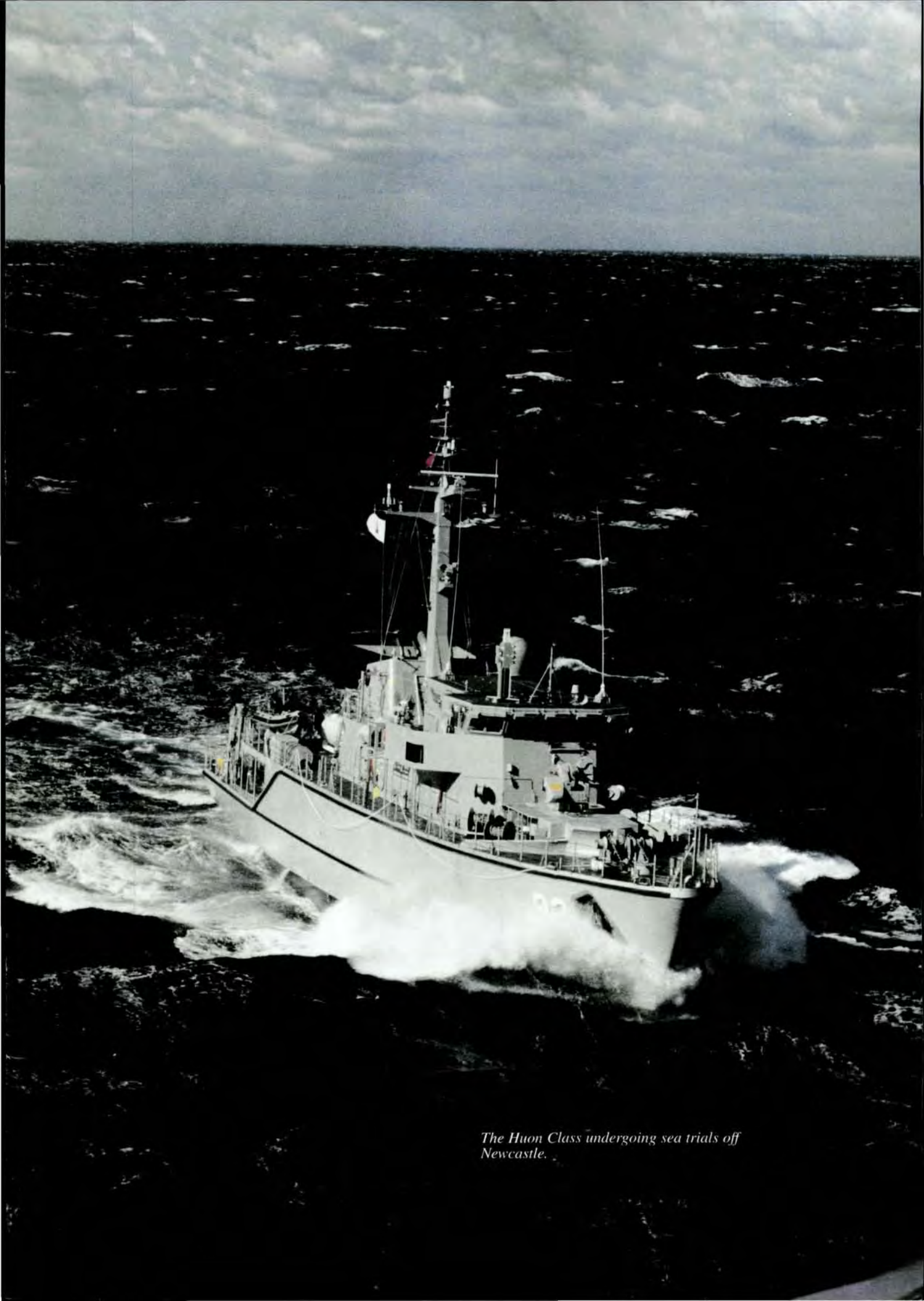
Thank you again for spending time with us today, and I hope you enjoy your visit to our Newcastle facility.

ADI Limited

21 April 1998







*The Huon Class undergoing sea trials off Newcastle.*



# The Newcomb Building

## HMAS Watson

On 28 October 1997 the Royal Australian Navy's Surface Warfare School Building was formally renamed the "NEWCOMB BUILDING", commemorating the service of Captain Harvey Mansfield Newcomb.

At the end of 1938 LCDR Newcomb RN was serving as First Lieutenant and Senior Instructional Officer at HMS *Osprey*, the Royal Navy's anti-submarine training establishment. War with Germany was becoming increasingly likely, and with the threats presented by U-boats in the Great War still fresh in their memories, the Lords of the Admiralty decided to establish an anti-submarine training school in Sydney.

Newcomb was selected for the task, given the rank of Acting Commander, and sent to Sydney at the end of that year. He was accompanied by 9 A/S trained ratings.

The story of HMAS *Rushcutter* has been told in the book "CONTACT!", produced by the Anti-Submarine Officers' Association, and need not be repeated here. Suffice it to say that by the outbreak of war 66 officers and 32 ratings had completed anti-submarine training.

A flow of officers and ratings to the Royal Navy began almost immediately, so that when the German invasion of France saw fighting begin in earnest *Rushcutter* trainees were already serving in the North

Atlantic. For example, in the ill-fated Norwegian campaign there was an Australian A/S officer in each of the 8 large trawlers comprising the 15th and 16th A/S Striking Forces. In the crucial Battle of the Atlantic *Rushcutter* men comprised some 20% of the Allied A/S personnel, the best record going to Stanley Darling, who was credited with sinking 3 U-boats and finished as Captain RANR. *Rushcutter* graduates were regarded by the Admiralty as being of top calibre.

By the end of the War 326 officers and 1286 ratings had been trained in A/S in *Rushcutter*, while a large number of officers had completed short courses, including a league of nations of foreign officers.

Newcomb himself was denied the chance of exercising his skills in action, but there is no doubt that by putting his stamp on the A/S School he made made a remarkable contribution to the final victory. The local manufacture of A/S equipment would warrant a story in itself. His responsibilities grew until they embraced the Gunnery Instructional Centre, the Radar School, the Motor Launch



Display of Newcomb memorabilia in the entrance lobby.





School, the Mining Service, the Naval Auxiliary Patrol, Randwick Hospital Naval Wing, Canonbury Hospital, DEMS Staff and tenders.

Late in 1945, by then an Acting Captain, he was invited by the Naval Board to stay in Australia and organise the new Electrical Branch of the RAN. He accepted the challenge and produced a most efficient and successful branch, the members being much sought after by civilian firms. His promotion to Captain RN (Rtd) paralleled this employment as Captain RAN.

As his children had grown up in Australia he decided to stay here, and "swallowed the anchor" on 27 September 1956, after eighteen years of outstanding service to the RAN and to Australia. He died in Adelaide on 16 January 1991.

Captain Newcomb never received a decoration. The inevitable question is: "Why?" His contribution to the war effort was immense. Those who knew him well dismiss any thought that he could have offended a single one of his seniors. The explanation appears to lie in the fact that for some time after the War the RAN saw him as an RN officer, while the Admiralty regarded him as the responsibility of the RAN. The fact remains that he was overlooked. "Newcs", as one and all called him, just got on with his job.

The failure to accord Captain Newcomb his just recognition greatly concerned his "old boys", some of whom received decorations for using skills learnt at the School he ran. It can now be revealed that over several years efforts to rectify the omission were made by various of the "old boys", one of whom was a Cabinet Minister. There was no success, perhaps due to the passage of years. The award of a Chief of Naval Staff Commendation in 1989 was appreciated, but was only a minute tribute to his services.

The posthumous dedication of the NEWCOMB Building gave great satisfaction to Captain Harvey Newcomb's many admirers. Captain Martyn Bell CSC ADC, RAN gave the address of dedication, asking Chaplain John Connolly MSC RAN to perform the blessing. The Chaplain said, inter alia, "*May the name Newcomb be an inspiration to all who serve their country with diligence and honour*". The ceremony was attended by members of the ASDIC Association and the Anti-Submarine Officers' Association, while Watson turned on an excellent lunch in the Senior Sailors' Mess. Mr Simon Newcomb unveiled a plaque provided by the two Associations, which paid tribute to his Father's memory and included the message: "TO YOU WHO FOLLOW WE PASS THE TORCH".

## NEWCOMB BUILDING

This plaque commemorates the naming of the Newcomb Building

on

28 October 1997

in honour and everlasting memory of

Captain Harvey Mansfield Newcomb – Royal Navy

***'TO YOU WHO FOLLOW WE PASS THE TORCH'***

Presented by the ASDIC Association and the Anti-Submarine Officers Association

Unveiled by his son Simon Newcomb

*Memorial plaque at the entrance to the Newcomb Building.*





***"The People Resource - Reason or Rhetoric"***