NEW DEPTHS IN AUSTRALIA-US RELATIONS: The Collins Class Submarine Project

MARYANNE KELTON

ANU
Strategic and Defence Studies Centre
Canberra Papers on Strategy and Defence No. 162
Published in Australia at The Australian National University, December 2005.
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National Library of Australia
Cataloguing-in-Publications entry

Kelton, Maryanne, 1959-.
New Depths in Australia-US Relations:
The Collins Class Submarine Project
Bibliography.
ISBN 0 7315 5471 X.
1. Australia - Armed Forces - Procurement. 2. Collins.
Class (Submarine). 3. Australia - Military relations -
United States. 4. United States - Military relations -
Australia. 5. Australia - Military policy. I. Australia
National University. Strategic and Defence Studies Centre.
II. Title. (Series: Canberra papers on strategy and
defence; no. 162).
355.03109940973

Series editor: Meredith Thatcher
Cover design by Emily Brissenden
Cover photo of Collins Class Submarine HMAS Sheehan courtesy of
the Australian Government, Department of Defence, available at
Printed by Flash, Canberra
Published and distributed by:
Strategic and Defence Studies Centre
The Australian National University
ACT 0200 Australia
Tel: 61 (0)2 6125 9921
Fax: 61 (0)2 6125 9926
Email: sdsc@anu.edu.au
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Maryanne Kelton

Published by
Strategic and Defence Studies Centre
The Australian National University
Canberra
2005
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ABSTRACT

Controversy has swamped the Collins class submarine project since the tender process was concluded in the late 1980s. Why was this? In order to answer this question through the course of this paper, I begin by describing some of the intimate project details and then analyse how the project was captive of a change in broad foreign and defence policy orientation between the two governments who assumed responsibility for the submarines' construction and delivery. Whilst the project was initiated during an era where the ALP promoted a more independent policy posture, after its election in 1996 the Coalition prioritised its bilateral relationship with the United States. The policy divergence between these two postures manifested themselves in the tangible tensions surrounding the delivery of the Collins submarines. Concurrently I also suggest how the project’s realisation has been detrimentally affected by its manipulation in Australian domestic politics.

This paper represents the author’s views alone. It has been drawn entirely from open sources, and has no official status or endorsement.
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Maryanne Kelton is a Lecturer in the School of Political and International Studies at Flinders University. Maryanne holds a Bachelor of Arts (Honours) and Bachelor of Education and recently completed her PhD at Flinders. Her primary research interests are contemporary alliance relations and Australian foreign, trade and defence policy. Maryanne also has an interest in Australian political economy having undertaken analyses of the biotechnology, pharmaceuticals and steel sectors.
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ACKNOWLEDGEMENTS

This paper has been written with the assistance offered by the Australian Postgraduate Award. For this I am appreciative. I also gratefully acknowledge those members of the academic and administrative staff in The School of Political and International Studies at the Flinders University of South Australia who offered their support for, and interest in, the project. I have been the fortunate beneficiary of Richard Leaver's scholarly expertise and his enthusiasm for the project. I also wish to thank John Fitzpatrick, Leonard Seabrooke, Andrew O'Neil and Alex Stephens for their ongoing advice and encouragement. I thank Meredith Thatcher for her editorial advice. In addition, Liz Kelton, Moira Gallagher, Ian Jamieson and Nena Bierbaum have assisted in the production of this paper.

This paper emanated from my draft PhD thesis on Australia-US relations since 1996. Since that time it has been revised, and then reviewed, by a number of those associated with the project. Over this period, I have been struck by the remarkable generosity and graciousness of the naval, industry and security experts who have assisted me. I wish to thank Kim Beazley, Roger Creaser, Mike Deeks, Mark Hammond, Paddy Hodgman, Ron Huiskens, Andrew Mack, Andrew Millar, Hans J. Ohff, Rob Walls, Horden Wiltshire and two anonymous referees, all who have kindly reviewed the paper. I have also been assisted either through interviews or via reviews of drafts by other members of the bureaucracy, industry and academia, and retired officials of the armed forces who wish to remain anonymous. I acknowledge their preparedness to share their expertise and encourage analysis. However, not all will agree with the interpretation that follows and I assume responsibility for the analysis and conclusions.
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NEW DEPTHS IN AUSTRALIA-US RELATIONS: THE COLLINS CLASS SUBMARINE PROJECT

Maryanne Kelton

INTRODUCTION

Such was the luck of the Collins class submarine project that when Building K was demolished at Russell Hill in August 2000, it was reported that the classified documents which surfaced unexpectedly in the deconstruction were, of course, those belonging to the submarine project.\(^1\)

While this was indicative of the troubled public history of these submarines, I consider this submarine project as it provides an insight into the Australian Government’s management of both its US relations and the domestic political environment, rather than simply a commentary upon the project per se. Between 1996 and 2003, the Australian Government turned to a re-emphasis of the relationship with one of Australia’s traditional allies as the cornerstone of security policy. This re-orientation was so significant that, in 2003, two alliance analysts claimed ‘the theme of defense self reliance has been superseded’ by an emerging ‘strategic interdependence’ with the United States.\(^2\) Not only did Australia enlist in US military operations in Afghanistan and Iraq, but Australian defence procurement was also increasingly skewed to US suppliers. On the signing of the submarine cooperation statement in 2001, the then Defence Minister, Peter Reith, stated that this was ‘further evidence of this Government’s commitment to the historic alliance between Australia and its close ally and friend the United States’.\(^3\) The Collins project thus was captured within a transition process whereby the government sought to establish greater intimacy with the United States.

In the domestic arena, the Australian Government also utilised an upgraded relationship with the United States to assuage national fears of uncertainty and insecurity. Domestically too, any accentuation of the project’s faults could be employed to criticise the Labor opposition (who initially sponsored the project) and utilised to arrest its then increasing electoral threat. So, in spite of Navy and defence industry recognition that Australia had constructed an impressive naval platform, the government could use the publicity surrounding the faults in the boats, not only to effect US involvement in the project, but also to damage the electoral opposition. It was also clear that the government used the project to demonstrate that, in
the end, only the Coalition was capable of delivering an adequate weapons- and intelligence-gathering platform in the maintenance of security.

This paper begins with a brief history of the project, then examines the politicisation and the nature of the reporting surrounding the delivery and performance of the submarines. It considers the necessity of the Australian Government’s call for US assistance in resuscitating the venture, including the effect of US interest in the Collins class submarine and the consequences of US involvement in the project—namely its effect on the sale of the Australian Submarine Corporation (ASC) and the procurement of US technology and weaponry. There is also an analysis of the submarine project’s manipulation of the transition in Australian defence policy: a transition from Australia’s initial attempts to demonstrate a more independent posture to one that evidenced a desire for a more intimate relationship with a powerful ally.
CHAPTER 1
THE COLLINS CLASS SUBMARINE PROJECT

Originally, this project was imprinted with the motif of independence, both strategic and commercial, under Labor’s press. As the project was borne in an era of Labor government, any publication of the submarine’s faults, or supposed faults, would imply criticism of the Australian Labor Party (ALP) and the Leader of the Opposition, Kim Beazley, in particular. At the time the Collins class submarine project, Project 11L4—New Submarines, was formally established on 20 February 1982, the newly elected ALP government in Australia embarked upon an appraisal of its relationship with the United States. In September 1983 it conducted a review of the Australia, New Zealand and the United States (ANZUS) Treaty and, in June 1984, it attempted to scrutinise more comprehensively the Joint Defence Facilities. The Australian Government rejected offers to cooperate in the MX missile testing programme with the United States and publicly declined to support President Reagan’s ‘Star Wars’ plan, a more wide-ranging predecessor to National Missile Defence. Following this, it pursued a United Nations arms control programme, much of which conflicted with American and British aspirations. By 1985, Defence Minister Kim Beazley had announced that academic strategist, Paul Dibb, would provide an analysis of Australia’s defence policies and propose a strategic plan for Australia. Subsequently, the Department of Defence published The Defence of Australia 1987. Ever conscious of the implications for Australia of Nixon’s Guam doctrine, independence and self-reliance were the themes that welled from the times; although, perhaps ominously, in his critique of the later development of ensuing policies, Graeme Cheeseman warned of the possibilities of increasing logistical reliance on the United States. Thus, it was within the context of Australia’s quest for greater self-reliance that the submarine project evolved.

In 1978 the Australian Navy began contemplating its future requirements for submarine operations. By the 1990s, with over twenty years’ service, the Oberon class submarines would eventually require replacement. Planning for any new submarine necessitated the consideration of Australia’s distinctive maritime location and environment. Maintaining Australia’s strategic regional superiority was an integral part of defence planning. Former Royal Australian Navy (RAN) Commander and Collins project planning manager, Andrew Millar, has stated previously that the
size and range of Collins was determined, after lengthy analysis and study, in order to meet Australia's unique strategic circumstances in our own area of interest which might now, or at any time in the future, extend from the far North Pacific to the Persian Gulf. But by far the greatest contribution made by the Collins to the defence of Australia is its value as a deterrent. By virtue of its very existence it can protect Australia and Australian interests through threat of retaliation and it requires a totally disproportionate response to counter even the possibility of its presence.\textsuperscript{10}

The project considered the needs for surveillance and response to potential conflict in warm waters near to Australian shores. Past experience and operations of the Oberon submarines provided the foundations for the new submarine design.\textsuperscript{11} Given Australia's unique geographic and oceanographic situation, this however did not alter the necessity for the submarines to cover distances up to 9,000 nautical miles.\textsuperscript{12} It also did not alter the fact that Australian planners were fully conscious of the eventual Chinese great power capability and the instability on the Korean peninsula. In addition, around that time, analysts of the Soviet Pacific fleet claimed that by the early 1980s the long term Soviet military build-up in the Pacific had reached proportions that now threaten a military balance so long favourable to the US and its friends and allies in Asia and the Pacific.\textsuperscript{13}

Soviet high-performance submarines and surface ships repeatedly traversed Australia's maritime region.\textsuperscript{14} At this time, US Admiral William Crowe, Commander in Chief (Pacific), sought Australia's assistance in ensuring sea lanes of trade and communication in the Pacific remained open in the face of the 'Soviet challenge'.\textsuperscript{15} In this, ANZUS had a significant role to play.\textsuperscript{16} Thus, the original parameters for the design, range, endurance, speed and weapon load were also commensurate with possible action, in concert with its allies, against the Soviet Union.

The submarines therefore needed to function in environments with great variations in temperature, density, salinity, humidity and climate. Arguing therefore for long range and maximisation of weapon load, the Australian Navy sought large conventional submarines,\textsuperscript{17} with highly advanced sensor and weapons suites. The bigger boat would also offer better habitability conditions for the crew and allow for the installation of more sensors. Importantly, too, the boat would need to maintain depth and slow pace in shallow waters. A combination of these functions, including the operation
in littoral and estuarine waters, created the intricate complexity of the design.\textsuperscript{18}

For the proponents of the new submarine, its ability to provide 'a long term presence in the littoral of a potential aggressor', and perform a crucial role in the gathering of intelligence considerable distances from Australia’s shores, were persuasive arguments for Australia to maintain its submarine capability.\textsuperscript{19} Traditional submarine capabilities included covert posture, long endurance, and diverse sensor and weapon load. These capabilities had also involved surveillance, intelligence acquisition, maritime strike and clandestine operations involving mine laying, anti-shipping activities and insertion and extraction of small parties in areas of conflict, and anti-submarine warfare (ASW) training. As 90 percent of Australia’s trade was conducted via shipping, it would also offer an invaluable trade protection role. In particular, for Australia, these functions could be performed by submarines with relative impunity where it lacked air and sea superiority.\textsuperscript{20}

Although a nuclear-powered submarine may have been a more appropriate design to respond to the long range and heavy weapon component objectives, for Australia there were significant disadvantages associated with this model.\textsuperscript{21} Construction of nuclear energy manufacture plants, transport, storage, safety and eventual disposal of nuclear fuel were unpalatable concerns for the Australian public and particularly the ALP. Left at that time, as were the financial costs involved in the establishment, construction and through-life maintenance of these vessels. Costs surrounding the maintenance of nuclear bases were enormous. It was thus politically, commercially and strategically unattractive.\textsuperscript{22} For Australia, then, a large diesel electric submarine was the preferred model. At the time, these optimum preferred specific design requirements were unavailable in off-the-shelf technology. Australia’s unique geographic and oceanographic environment, together with the RAN’s need for a submarine to operate in the 1990s and beyond, therefore necessitated a new submarine design.\textsuperscript{23}

\textbf{Submarine selection}

In mid-1982, project SEA 1114 was formulated and the invitation to register interest (ITR) in the supply of the submarines and combat systems was issued the following year. Those who had registered interest were issued with a request for tender. Interested parties included Howaldtswerke-Deutsche Werft/Ingenieur Kontor Lubeck/Ferrostaal, (HDW/IKL/Ferrostaal) and Thyssen Nordseewerke Emden from Germany, the French Chantiers Dubigeon, Italy’s Cantieri Navali Riuniti, the Netherlands Rotterdam Dockyard/ Nevesbu, Vickers Shipbuilding and Engineering Ltd
from the United Kingdom and Sweden’s Kockums AB. Following the project definition study (PDS), HDW-IKL (as joint venture partners) and Kockums were let PDS contracts in August 1985. At this point in the tender evaluation, the two bidders formed companies in Australia and each endeavoured to cultivate partners in the local industry and establish the pathways for technology transfer and creation. A similar process for the combat system development identified US defence giant, Rockwell International, and the Hollandse Signaalapparaten (HSA) for PDS contracts, from a field including Krupp Atlas of Germany, Plessey, an Australian/UK bidder, Raytheon International of the United States and the French Sintra Alcatel. To conclude the PDS process, both HDW-IKL and Kockums provided two submarine designs, one with each of the combat system providers. Four designs were then assessed: HDW-IKL/ Rockwell, HDW-IKL/HSA, Kockums/Rockwell, and Kockums/HSA.

Construction of the first of the diesel electric submarines was initially scheduled to take place overseas. However, it was eventually decided to construct all six within Australia so that technology transfer could be assured. After consideration of the Request for Tender (RFT) responses, the government decided that contractors would need to build the new submarines in Australia and supply all necessary support and services, including through-life requirements. A commitment to the transfer of technology to facilitate involvement from Australian industry would be an essential feature of the successful bidder’s tender, as was the bidder’s participation in its own country’s navy. Improvement in Australian manufacturing competitiveness and reduction in the costs of through-life support were also regarded as an important factor in the project.

As the concept of ‘self reliance’ was one of the Labor Party’s central intellectual organising ideas in defence policy in the 1980s, major defence projects were to embody these notions. So, too, did the submarine project. Former Defence Minister, Kim Beazley, reflected that, at the time, three key planks were essential in realising this vision, namely

- rigorous defence planning;
- self-reliance set within the broader wash of Australia’s alliances; and
- that self-reliance was only possible with the development of Australian defence industry capabilities.

In this respect, the acquisition of the submarines was a timely project. Not only was it ideally placed to enhance and expand the capabilities of the domestic defence industry in addition to contributing to the revival of the naval shipbuilding sector, it was also a ‘perfect’ opportunity for the ALP
to embark upon a major capital works initiative. Australian industry was to be a significant beneficiary of Project SEA 1114. As the Cockatoo Island Docks in Sydney (then used for maintenance of the Oberon submarine fleet) was inappropriate for construction of the new submarine, a ‘greenfield’ site would need to be established. Importantly, however, this would ensure that the Australian Defence Force (ADF) could provide through-life support for the submarines’ operation. A new site would also offer the opportunity to employ innovative modular construction methods and simplify industrial relations. Site determination was the prime responsibility of the shipbuilder; however, given its potential attractiveness for regional economic development and employment, the determination of the location of the prime construction facility would also have political implications. Lobbying was therefore intense.

After a source selection process that involved the Departments of Defence, Finance, Industry, Technology and Commerce and the Attorney-General’s Department (involving some 300 people), on 18 May 1987 the Kockums/ASC bid was selected as the successful tender. On an overall calculation, which attempted to equate all performance figures based on realistic assumptions of speed and endurance, and the requirements of fuel, weaponry and the auxiliary systems, the Kockums design rated more highly. Kockums (with its close relationship to the Swedish Navy which, unlike others, was prepared to provide independent ‘user’ advice), was contracted to construct six Type 471 submarines, designed by Kockums, with the Commonwealth retaining the option for two more. The essential features of the contract, as identified by Commodore Geoff Rose, former Collins class project director, were

- an Australian Prime contractor;
- a fixed price (variable only for the material/labour/exchange rate);
- government managed exchange rate risk;
- a performance based specification;
- mandatory Quality Systems for every participant;
- a total integrated logistics support package; and
- a green field site for assembly/construction.

Seventy percent of the platform work and 45 percent of the combat system were to be undertaken in Australia. (The project achieved 72 percent and 50.3 percent, respectively.)
Noteworthy too is that the United States, observer of the project at this time, had no objection to either Sweden (as a neutral country) or Germany (as a North Atlantic Treaty Organisation (NATO) partner), submitting bids for the platform and, if successful, working together with US combat system houses on the project.39

The range of the new Type 471 would be in excess of 9,000 nautical miles, with a diving depth in excess of 250 metres and a ship's company of 42, plus five trainees40—substantially fewer than the 65, plus trainees of the Oberon class. Its 3,050-tonne displacement makes it the world's second largest non-nuclear-powered submarine.41 While both the South Australian and New South Wales state governments assiduously sought to persuade the shipbuilders of their location, the newly formed ASC42 decided to construct the vessels at Port Adelaide in South Australia—a state suffering from economic malaise, rising unemployment and the decay of its manufacturing industry, and a state about to face an election.

Coincidentally, at the time of the submarine tender selection process, the Labor government launched its document for industrial reform in Australia. Attracted to the cohesive partnerships established by business, unions and government in some Scandinavian countries, an Australian Council of Trade Unions (ACTU) delegation conducted a reconnaissance mission to Western Europe. With the benefit of this experience, the ALP then instituted its own vision for industrial relations in Australia. In this plan, entitled 'Australia Reconstructed', Kockums was identified as a noteworthy corporatist micro-model of industrial relations.43 It thus appeared to offer the government the prospect of a highly desirable model of industry—stakeholder relations. In Parliament in 1992, Defence Minister Robert Ray read a departmental document which noted that

the original decisions taken by Cabinet were based on long-term strategies for the national interest. ...The greater part of the investment was to benefit Australia, not only through job creation but also through technology transfer, creation of new skills, improved quality practices and ... development of modern management techniques and the introduction of new and more progressive industrial relations practices.44

It is however worth noting that, as these features were entrenched in the Australian Industry Involvement requirements for the project, both Kockums and HDW/IKL, as recipients of PDS contracts, were believed to be able to deliver in this respect.45 As the multi-billion dollar enormity of the submarine project ensured it a prime place in Australia's new defence industry
reconstruction, the appointment of the ASC could also flag the government’s new road to Australian corporatist relations. Indeed, Robert Ray envisaged the ASC ‘becoming one of the two great naval shipbuilders in this country. ... ASC has plans to broaden out beyond submarines into things like patrol boats, minehunters etc’.

Development of a robust shipbuilding industry would be one manifestation of a strategic policy of self-reliance and provide one structure whereby Australia’s quest for independence could be fostered. The project was therefore decidedly redolent of Labor’s strategic and corporatist thinking at the time.

**Combat data system choice**

If the choice of the prime contractor for the new platform was already inherently linked with the government’s national industry vision, the choice for the combat system, arguably, was regarded as ambitious to the point of improbability. Off-the-shelf technology was rejected in favour of the RAN’s complex integrated combat system requirements and Rockwell’s eventual proposal.

RAN planning at the time was of necessity ambitious, if not indeed risky. Although the technology needed to realise the RAN requirements did not exist, it was not unreasonable to set the bar high. The RAN also had a record of successful interest and operation with advanced technology. Calibration of the ambition was the difficult task.

Parallel to Australia’s pursuit of high technology outcomes in the submarine project were other endeavours with leading edge technologies. Others encountered difficulties with the establishment of new technologies. Notable among these were the Turana Target Project (a pilotless aircraft), the Jindalee Operational Radar Network (JORN), and the Inshore Minehunter Project.

Cognisant that the Collins project was bold in its plan, in 1986 the RAN discussed their requirements with their United States Navy (USN) counterparts. While they viewed the project as ‘challenging’, the feedback on the realisation of the project was minimal.

In addition, Australia’s access to USN submarine platform and combat system technology was restricted through US arms export embargoes. These restrictions also applied to US exports to Australia’s European suppliers. Yet the larger navies were unable to prevent significant problems with their own submarine projects. The United States encountered substantial strife in the USSN Seawolf programmes. During construction of the Upholder Class Submarines the British Navy experienced significant problems. The project was $100 million over budget, three years late and had major difficulties with the weapons discharge system. The Royal Navy also experienced considerable setbacks with the
AN/BSY-2 Systems programs.\textsuperscript{55} It is evident that submarine construction remains an extraordinarily complex project.

Perhaps lured by their successes with the \textit{Oberon} Submarine Weapon Upgrade Project (SWUP), which was criticised in its ambitions by the United Kingdom, or enticed by the fact that the United Kingdom, United States and France were also engaged in similar next generation projects, the RAN proceeded with Rockwell’s proposals.\textsuperscript{56} Aware of the limitations of the system bid, Kockums and the ASC were also dissatisfied that the Commonwealth had chosen the American company.\textsuperscript{57} As initially it did not receive the detailed specifications for the combat system, the ASC was disinclined to assume the responsibility of Prime Contractor (nor was it required to). This, together with the fixed price nature of the contract, meant that future relations between the RAN, Kockums, the ASC and the government would require careful management. Commercial arrangements did not appear to be auguring well for the project.

Complicating the design arrangements was that any problem inherent in the combat system would affect the broader operation of the submarine. As the \textit{Collins} class submarine intended to incorporate a completely integrated operational system, the combat system was then crucial to the overall functionality of the vessel. Without a fully operational combat system, the integrity of the other ship functions such as navigation, radar and particularly sonar could be compromised. For all those involved in the project, with by now the set components having been allocated, the task was to make it work.

Even if the eventual performance of the combat system was not perfect (compared with the project’s initial requirements, rather than against other submarines in service), it did not prevent the opportunity for the first two \textit{Collins} class submarines to exercise with the USN’s nuclear submarines.\textsuperscript{58} Australia had eventually been more successful than either the United Kingdom or the United States in realising its combat system plans. Furthermore, not only did HMAS \textit{Waller} (as discussed later) perform well in naval exercises with the United States, utilising the combat system as implemented by the ASC and the original Kockums designed platform—that is, without any US input—the USN was also to realise just how successful a boat had been constructed in Australia.\textsuperscript{59}
CHAPTER 2
A GENUINE SHIPWRECK OR PATHOLOGICAL POLITICISATION?

The substantial risks involved in the submarine project had been acknowledged for quite some time. In 1987, the project management plan identified and addressed the risks prior to the awarding of the contract. Ongoing project management continued this process. In 1992-93, the Department of Defence had outlined an extensive array of risk determinants. These included the

- unique platform and combat system (both of a new design),
- Australia's lack of previous experience, new consortium (ASC),
- separation of design centres from production centres, fast track design and production,
- the long construction phase (about 12 years), innovation (steel, ship control system, towed array, ADA software, anechoics, ILS elements, etc) and the Australian industrial environment.

Yet in 1997, after a politicised series of leaks, anecdotal evidence and press reports criticising the progress of the project, at least three reviews were conducted to formally identify the difficulties and suggest a course of action to remedy the problems. However, as the problems had already been identified and many indeed resolved, this response revealed the pathological politicisation of the project. It is at once ironic and instructive that each of these reviews—the Joint Committee of Public Accounts and Audit (JCPAA), the Australian National Audit Office (ANAO), and the McIntosh-Prescott Report—was reliant on the Project Office itself as the source of their information on the problems and the remedies.

In 1997-98 the Auditor-General completed a review into the project and expressed concerns regarding the allocation of funds to the Project Office while a significant number of commitments were still to be fulfilled. There were also questions regarding the management of quality assurance issues. As a result, the parliamentary JCPAA conducted a subsequent investigation into the findings of the Audit Report of 1997-98 and submarine capability. This culminated in an extensive review that canvassed the evidence of many stakeholders in the project. In response to the concerns outlined by the ANAO, the Department of Defence advised that the Audit Report did not focus on 'what had been done to manage and overcome the problems encountered during the development and construction of the submarines'.
In addition, Defence viewed the risk now as substantially reduced and ‘under effective management, and that the project cost remained within its original budget of $5.05 billion’. Garry Jones, the Defence Department’s Deputy Secretary (Acquisition), stated:

From the point of view of the taxpayer and the question of where we are going with this submarine class, I am really very optimistic that the Royal Australian Navy is going to have an excellent submarine. We have got a few problems to work our way through, but already a very clear outcome can be agreed. The difficulty we have in the public arena is that to prove these claims one way or the other requires the disclosure of what we consider to be highly sensitive information.

He also claimed that, by the conclusion of 1999, the combat system would be the only remaining difficulty in terms of specification.

The parliamentary committee’s investigation, which also included scrutiny on the hull integrity, acoustics and diesel engines, concluded that it accepts that the submarines represent a major advance in conventional submarines, that they are safe, fast, generally quiet and have advanced information and control systems. However, while the problems with the combat control system stay unresolved, the Committee will remain concerned about capability and cost issues.

While the JCPAA Report was published in June 1999, it was overshadowed publicly by the McIntosh-Prescott Report published in the same month, but commissioned and publicised by the new Minister for Defence, John Moore. Eager to establish his credentials in ‘resolving’ the submarine project saga, Moore decided to conduct a separate review. Commensurate with the adverse publicity that the submarine project attracted, the review and reporting process became politicised as Moore sought to establish his ownership of the project. For three years the project had been a highly political issue, both in the Coalition’s efforts to discredit the ALP and within the Navy itself, where some in the surface ship community endeavoured to retrieve funds from the Collins class submarine project for their major surface combatant projects. Yet those interested in a bigger picture understanding of Australia’s capability needs would negate any competitive juxtaposition of alternatives in the achievement of overall capabilities.

Malcolm McIntosh and John Prescott were requested by the Minister for Defence, John Moore, to constitute a Review Team to investigate the progress
of the Collins class submarine project. This report, however, was largely a restatement of problems already identified and dealt with by the ASC and submariners. Andy Millar stated that the

Collins problems have been well documented and extensively reported. The issues are very well understood and effective technical and engineering solutions have been identified and are in the process of being implemented. ... [Moreover] Australia’s experience in this area compares more than favourably with the achievements of those countries much more experienced in submarine design and construction, including the USA, Britain, Germany, France and others.71

Yet McIntosh and Prescott attempted to once again publicly document the deficiencies in the submarine’s performance; the bigger picture of overall progress; how problems could be rectified; and how these problems could be avoided in future Defence acquisition projects. Eventually, they claimed that the project’s ‘lack of overarching capacity to deal with the scale and complexity involved’, was identified as the crux of the project’s difficulties, particularly as a project of this duration could anticipate alterations in mission and technology.72 It should also be noted that, although the fixed price contract reduced the generation of cost overruns, it created difficulties in allowing for the fulfilment of altered naval requirements over an extended period of construction. McIntosh and Prescott also commented on the deleterious effect of up-front payments in complex and new projects. They stated that fixed price contracts also have the effect of establishing financial and then technical barriers to cooperation between contractor and customer and surmised that

particularly in the later stages, it can encourage the supplier to contest the specifications and their interpretation and to avoid responsibility wherever possible to protect profit. Conversely, it can encourage the buyer to incorporate everything possible into the interpretation of the contract.73

This report complicated relations between the ASC and RAN in the submarine project.

McIntosh and Prescott also reported on a raft of specific technical problems (some of which resulted from changing expectations). They stated that defective aspects of the platform itself included a fuel system allowing water contamination of the diesel engines; the defective diesel engines themselves; vibration and focus problems in both periscopes; failure to install satellite communications systems; and an ineffective communications mast.
Significantly, for a submarine platform, the report declared that the Collins class submarine was plagued by noise problems. Emanating primarily from the cavitation and flow characteristics of the submarine design, the hull shape, fin and propeller design all required either alteration or replacement. As the propellers suffered from fatigue in addition to noise creation problems, they saw that particular attention was required.74

As the McIntosh-Prescott Report identified problems that both the Department of Defence and the ASC had stated were now either resolved or in the process of resolution,75 this raises the question as to why these faults were reported upon again. In particular, the ASC contested the claims made concerning the submarine shape and the noise characteristics. They regarded parts of the report as based on incorrect analysis.76 Debatably, too—although the report claimed that, as a consequence of the operational limitations, crew training and morale became difficult to sustain—the politicisation of the project and the Defence Minister’s deleterious public comments also proved sources of crew and industry worker morale depletion. Moreover, they irrevocably skewed the public predisposition of a remarkable project.

This politicisation of the project also served another function, in addition to the denigration of the ALP. By disregarding the action already in place to address any deficiency in the submarines, and by publicising instead the supposed faults, the government could clear the deck to allocate more funds to the project and invite assistance from the United States. For the Minister of Defence, the McIntosh-Prescott Report also enabled the augmented combat system to be replaced. Arguably, this was done prior to a comprehensive trial and evaluation process.77

Founded on the relationship between Vice Admiral Don Chalmers and the USN Chief of Naval Operations, Admiral Jay Johnson, Chalmers instigated the process whereby US assistance was sought. Early in 1998, Australia’s then Chief of Navy, Vice Admiral Don Chalmers, convened to discuss a range of issues, including the Collins project.78 Even if the ASC and others involved in the project were not seeking US assistance, the USN Chief of Naval Operation’s response to assist the RAN was accepted. As discussed later, the Collins class submarine project was, after all, of interest to the United States. Vice Admiral David Shackleton and US Admiral Vern Clark signed the Statement of Principles for Submarine Cooperation on 10 September 2001 at the Pentagon. Both John Howard and US Secretary of Defense, Donald Rumsfeld, were present at the signing. Enchanced relations with the United States and greater cooperation with the USN were regarded as desirable by the Coalition.
CHAPTER 3

COMBAT SYSTEM SNAGS

In September 1993, while the ASC notified both Rockwell Ship Systems Australia (the initial principal contractor for the system) and the Department of Defence of the contract default on the combat system, allowance was made by the RAN and the Department of Defence for Rockwell to continue, with segmented delivery steps. However, when politically it was necessary for the HMAS Collins to be ‘provisionally accepted into service’ in July 1996, the combat system was not performing optimally.\(^9\) The ASC regarded Rockwell not only as failing to deliver the contracted technology, but also that it was unlikely to do so in the future. From 1993, RAN personnel managed the company’s continued difficulties with delivery. Why did the Commonwealth persevere with the system? It is possible that, once the Commonwealth had agreed to the fixed price contract, it was unwilling to outlay further funds, or it might have considered that to do so was politically difficult. Moreover, some involved may have feared that, after 1996, the Australian Government would have shelved the project if it did not appear to be successful. Furthermore, modifications wrought by those involved in the project had kept the boats functioning. They also continued to train the crews. Concurrently, the Maritime Systems division of the Defence Science and Technology Organisation (DSTO) had established the Combat System Research Centre in Adelaide to best manage the ongoing issues. A practicable solution to the combat system was achieved that enabled the submarines to function effectively, if not perfectly, as the ASC, the RAN and Kockums would have wished.

For the Collins class submarine project, the difficulties in realising the optimal aims for the combat system have been the crux of the issue and, consequently, a key factor in determining the success of the entire project. In part, the issue of the combat system has been its complexity. The combat system intended to integrate five different systems that previously operated as separate units. These were

1. the navigation process, including the speed, depth and position information utilised in the manoeuvring control data;

2. the surface system, which included the surface radar, ship identification and periscopes;

3. the sonar system and data processing system used to track multiple targets;
4. the electronic surveillance measures; and
5. the Tactical Data Handling System (TDHS).

The fifth system was the core system responsible for the data collection from the previous four systems. The TDHS processed and displayed the navigational, periscope, sonar, and electronic surveillance information. It provided data distribution, integrated and processed automated functions, and enabled operator display and control for all combat system functions. Ultimately, it provided the function whereby targets were engaged. Consequently, the TDHS was the most intricate, and clearly the central, problem. It appeared that the complex technical challenge in developing this system for the sophisticated suite of sonars that were installed in the Collins class submarine was gravely underestimated by Rockwell and its subcontractors. This, in part, explains the difficulties with delivery.

As early as 1991, the Project Office had received reports that the installation of the TDHS was subject to slippage and, by 1992, a Project Office Report revealed that testing showed that 'the system was driven by schedule rather than any overriding commitment to achieve the requirement of quality standards'. Although the original submarine schedule allowed for only two releases of the combat system software—in 1991 and with the Collins class submarine n 1993—neither were delivered.

If the TDHS was chronically problematic, the Integrated Ship Control Management and Monitoring System (ISCMMS) was an innovative and reverberating success. This ship management system was responsive to the RAN needs for a minimum crew component. As such, it offered automated control and monitoring of the platform functions, including manoeuvring. While initially perceived as a higher risk enterprise, it was successfully implemented.

Following the acquisition of Rockwell's defence and aerospace businesses in 1996, Boeing assumed the defence arm of Rockwell International. Boeing Australia, as the new combat system prime contractor, then assumed responsibility for the installation and integration of the combat system, the communications suites and overall programme and systems management. The significant difficulty experienced by Boeing was the original Rockwell system, which was restricted by an architecture that would stall the integration of advances in technology throughout its eight-year history. It was thus unable to employ the dramatic advances in architecture that would allow increased processing function, networking and memory availability. And, although workable, it denied possible contributions from companies such as Thomson Sintra Pacific (later to become Thomson
Marconi Sonar), whose knowledge and skill in sonar arrays and electronics were invaluable.  

Eventually, in February 2000, the Department of Defence decided to release a Request for Proposal to four combat system suppliers and the ASC for a new combat system. Governmental approval was eventually provided and, as stated in the Defence 2000 White Paper, all submarines were to be fitted with a new combat system, with work beginning in 2001 and completion planned for 2005–06.
CHAPTER 4
SUBSCRIBING TO US ASSISTANCE

Although the ASC and its subcontractors continued to address the problems—as a prompt and public response to the July 1999 McIntosh-Prescott Report—John Moore approved additional funds of $80 million for a combined RAN/USN programme that would seek to rectify some of the operational problems. Moore would deftly address the ‘crisis’. By December, with the McIntosh-Prescott Report in hand, Moore had approved $266 million for HMAS Dechaineux and Sheean to give Australia two operational submarines when the Oberon class HMAS Otama was retired in 2001. Approximately half of the funds were intended to incorporate new technology, while the remainder were intended to address other performance difficulties, including improvements to the sonars, TDHS, weapons control, noise signature, visual and communications technology, together with upgraded training and personnel initiatives. The submarine was hydro-acoustically tested in Alaska. Propellers were sent to the United States for analysis. Some flow noise problems were partially resolved through the addition of new fibreglass fairings fitted to the fin and other parts of the submarine. The funds also allowed for the trial of certain USN submarine combat system components. In upgrading the communications system, the Submarine Satellite IX (Information eXchange) System (utilising the USN’s Fleet Satellite Communications System (FLTSATCOM)) was employed to provide broadcast and ship to shore communications.

US aid was also pursued by the Australian Navy in effecting an interim solution for the Rockwell’s combat system. Under Project SEA 1446, the USN delivered two sets of augmentation equipment to assist with the combat system problems. Together with the DSTO and the RAN’s Submarine Warfare Systems Centre, the US Naval Undersea Warfare Center implemented a system based on USN algorithms and hosted on stand alone hardware. Rear Admiral Peter Briggs, the new Head of the Submarine Capability Team (formed as a result of recommendations of the McIntosh-Prescott Report), conceded, however, that this was only an interim solution based on ‘flawed foundations’. Flawed foundations proved a correct analysis, as the system, based upon the USN’s capabilities with nuclear submarines, generated too much heat for the conventional submarines. Eventually, this system would need to be replaced. And although HMAS Dechaineux and HMAS Sheean were thus ‘fast tracked’ with the new federated system which sought to achieve a minimal level of operational capability by the end of 2000, the combat system augmentation was still not optimal.
Peter Briggs, nevertheless, paid tribute to the USN for its complete support in assisting Australia's ability to have two minimally operational submarines at a time when the last of the Oberons were being phased out. Furthermore, Peter Briggs pointed out that, as a result of the 'tank testing and work and support of the USN, the Collins had been reshaped with new hull, fin and casing modifications, leading and trailing edges and new casing fairings, all significant in improving the acoustic signature'.

Peter Briggs' statements, however, remain contested. With RAN and DSTO personnel present, a scale model of the submarine had been tested in the USN's hydrodynamic testing tanks, while DSTO Melbourne's wind tunnel had been utilised to test the flow over the hull. The USN modified three of the existing propellers for trial, one of which was discarded. They also offered another of the USN propellers for use. At that time, however, while the RAN had been provided with evaluations, there remained no independent testing available to the constructor, ASC, that had assessed the effectiveness of the US modifications to propellers, the hydro acoustic testing and combat system augmentation.

The subplot: US strategic stakes in the littoral battlespace

It is a mistaken belief that the United States only assumed an interest in the Collins class submarine in 2000. It appears instead, for force capability reasons, that the USN was vitally interested in the submarine technology developed in Australia. Although most certainly it would exert a powerful presence in the selection of the new combat system and sale of the ASC, the US military kept abreast of the Collins project from inception. As the USN was cognisant of the value of the conventional submarine yet unable to persuade the government to construct these boats in the United States as it might jeopardise the nuclear industry, the next best option was to foster allied engagement in their construction and operation. US Joint Chief of Staff, John Shalikashvili, who was in Australia to attend the Australia-US Ministerial talks, also attended the commissioning ceremony for HMAS Collins in 1996.

Throughout the 1990s, the US military altered its maritime mindset from the Carrier Battle Group anti-submarine warfare (ASW) and anti-SSBN operations focus of the Cold War to the littoral battlespace of the 21st century navy. No longer did a single defined enemy preoccupy the US military; instead, operational intent was reoriented to a much less homogenous cache of littoral-based enemies—those of disaffected nation-states or terrorist and criminal groups—as aided by both increasingly technologically sophisticated weaponry and an atavistic arms market. (While China existed
in the forefront of the Bush Administration’s threat perception field and had assumed a new status as ‘strategic competitor’, in 2001, at that time it did not have the power projection, nor pose the same threat, as the former Soviet Union.)

By the mid-1990s, the USN had reoriented itself to a very different strategic view. Navy policy documents stated that the primary purpose of forward-deployed naval forces is to project American power from the sea to influence events ashore in the littoral regions of the world across the operational spectrum of peace, crisis and war. ... Our attention and efforts will continue to be focused on operating in and from the littorals. ... Seventy-five percent of the Earth’s population and a similar proportion of national capitals and major commercial centers lie in the littorals. These are the places where American influence and power have the greatest impact and are needed most often.

In recognition of this, the USN had forward planned the construction of the new SSN, designed for operations both in coastal waters and open ocean. Currently under construction by Electric Boat in Groton, Connecticut, and Newport News Shipbuilding, the USN claimed that this submarine would have ‘unparalleled stealth and survivability’, with specific non-acoustic noise reduction technology appropriate for shallow/ constrained waters. More so, its system of sonar sensors were intended to counter the new generation of exceedingly quiet submarines. Nevertheless, it was only at the conclusion of 1998 that the contract was awarded to begin construction of the new Virginia class submarine, with delivery of the first of class USS Virginia (SSN 774) not scheduled until 2004. With alterations to the negotiations, the final contract was eventually awarded to General Dynamics and Northrop Grumman in 2003. However, with a displacement of approximately 7925 tonnes, the Virginia class submarine was also more than double the displacement of the Collins.

It should also be noted that the US submarine force, although pre-eminent, did not keep pace with its Cold War force structure. The Seawolf class—the most advanced US attack submarine in 2002—was originally intended as a fleet of 29 but was reduced to three because of budget constraints during the 1990s. (As stated earlier, the Seawolf project had also encountered considerable project difficulties, particularly with the combat system, noise and welding issues.) To enhance US capability, however, America looked to its allies. Rear Admiral Al Konetzn, commander of the US submarine forces in the Pacific in 2000 explained:
We are pushing forward our relationship with Australia so it’s as strong as the one we have with the UK in the Atlantic. ... Our nuclear assets are limited, but the missions aren’t. Since 1997, we have retired about half of the Navy’s fast attack boats, leaving me with 26 subs for the entire Pacific. ...That makes it all the more important to work closely with our allies.\textsuperscript{106}

In its 2001 Quadrennial Defense Review Report, the United States stated:

\begin{quote}
Anti-ship cruise missiles, advanced diesel submarines, and advanced mines could threaten the ability of US naval and amphibious forces to operate in littoral waters. \textit{New approaches for projecting power must be developed to meet these threats}.\textsuperscript{107}
\end{quote}

The United States, too, was attracted to the rationalism of Australia’s two-ocean policy. In upgrading the Western Australian naval base HMAS \textit{Stirling} and relocating the submarine fleet there, the Australian Government had five objectives in mind. First, Neutral Bay would not be able to accommodate the \textit{Collins} class submarine, and any east coast location imposed additional time constraints upon the submarines’ usual operational tasks. Second, it could more easily facilitate its sovereign responsibilities (and later assertiveness), with regard to the Cocos and Christmas Islands in the Indian Ocean, Heard and MacDonald Islands in the Southern Ocean, and as it became more acutely conscious of, in 1999, Ashmore and Cartier Islands, south of Timor. Third, it could oversee the Indian Ocean sea lines of communications, where over 50 percent of Australia’s seaborne trade, by displacement, was carried. Fourth, the Navy had more ready access to the North West Shelf, which harboured extensive offshore oil and gas resources.\textsuperscript{108} Fifth, this RAN initiative was premised on both logic and economic viability. Australia’s strategic interests would be best served through the relocation.\textsuperscript{109} Although the US Navy’s base in Diego Garcia established its presence in the Indian Ocean, with instability in both South Asia and Southeast Asia in 1999, the need to fortify its presence and influence in the Indian Ocean and sea routes to South and Northeast Asia was emphasised. Shoring up its links with the Australian Navy’s resources was one method of ensuring this.

**American recognition**

Horden Wiltshire, former Commanding Officer of HMAS \textit{Sheean}, has recorded of the \textit{Collins} class submarines that the ‘media smoke screen has disguised the full potential of the platform which, in an uncertain strategic environment, remains one of the most versatile and potent in the Australian
Defence Force'. The United States was soon to discover just how potent. More positively for those associated with the Collins project, such was the lauded—but little reported—success of HMAS Waller at the RIMPAC 2000 naval exercises off Hawaii in May, that US interest was heightened. Despite being restricted by some aspects of its noise performance and limitations in the combat system, Waller, in these structured events, pursued and ‘sunk’ a Los Angeles class nuclear submarine and, in taking periscope photographs of the aircraft carrier, Abraham Lincoln, demonstrated that it could enter into torpedo range of the carrier, thereby denying detection. Just why there was such a dearth of publicity surrounding Waller’s success may indicate further the strength of the interest in securing US involvement.

Importantly here, Waller operated with the original combat system as modified by the Australian subcontractor, SonarTech, and the original Kockums platform. It did not utilise either of the two augmentation systems proffered by the United States, nor operate with any US alterations. Noteworthy, too, even though the exercises were planned and the US group knew that Waller was in the designated target area, they were still unable to locate it. New Minister for Defence, Robert Hill, recorded later that the Americans are finding them exceptional boats ... in exercises with the Americans they astound the Americans in terms of their capability, their speed, their agility, their loitering capacity, they can do all sorts of things that the American submarines can’t do as well.

Despite ongoing problems—some of them serious, including Dechaineux’s flooding in February 2003—it was increasingly evident that Australia had much more to offer the United States in conventional submarine technology and operations in littoral waters than the reverse. Thus, for allied operations in the littoral and estuarine waters of Southeast Asia and elsewhere, it was apparent that the Collins class submarines were most certainly a valuable asset.

Strategic exchange?

While it was advantageous for the United States to have an ally well equipped and less likely to call upon Washington for assistance, there appeared to be more flesh on the bare bones of its attention and support. It is worth contemplating the timing of the agreement to facilitate US assistance in the submarine project with US Secretary of Defense William Cohen’s announcement of Australia’s support for the National Missile Defense (NMD) initiative. In July 2000, Cohen, and John Moore signed the Defence and Trade Strategic Initiatives (DTSI). This was ‘a statement of principles
between two allies designed to enhance defence cooperation in the Asia-Pacific and Australian access to US technology'. More specifically, it included the principles for Australia’s exemption from most arms export regulations. Canada and Britain remained as the only two other countries bestowed with this status. Moore mentioned that the DTSI also allowed for intimate access to US submarine technology that Australia had sought for some time from the State Department and Pentagon. If Australia were to receive specialised assistance to improve the performance of its submarines, how then would the United States benefit from the exchange? In part, the United States may have expected Australia to support its proposed NMD system. Under the umbrella statement of enhanced security cooperation in the Asia Pacific, Cohen explained that the US outlay would facilitate a more seamless and swift exchange of information and technology. When questioned later about Australia’s role in NMD he added that, should the US executive wish to proceed with the NMD system, ‘Australia will continue to play an important role in shared early warning’.

Upon Cohen’s return to the United States after ‘the principles’ signing in Sydney, it was clear he believed Australia was supportive of the US venture. At a US Senate Armed Services Committee Hearing, Cohen remarked that the ‘Australian Government said that if the United States were to go forward, they would be supportive’. It soon appeared that Australia was one of the few lone star supporters of the NMD system. Globally, the response was swift and uncompromising. Russia and China reacted with alarm. Concerned that it threatened the global strategic balance and contravened the 1972 anti-ballistic missile treaty, Vladimir Putin and Jiang Zemin issued a joint statement condemning Washington’s attempt to ‘seek unilateral military and security advantages that will pose the most grave, adverse consequences’ to China, Russia and the United States. NATO allies of the United States voiced considerable reservations, being both sceptical of the threat posed and vitally concerned about the implications. John Moore attempted to assuage the flak by saying that ‘we understand what they’re [the United States] on about, but ... no proposition has been put to the Australian government. When a proposition is put to us, we’ll address it.’ Later, a spokesperson for John Moore responded with: ‘What [Mr Cohen] means is we didn’t say no ... [but] the Australian government has never said to the US it’s a done deal’. Although there appeared to be contrived ambiguity in Australia, Cohen had nonetheless publicly created the sense of at least one ally’s support in the international arena.

While acknowledging that the NMD was a domestic political issue in Australia, the new American Ambassador to Australia, Edward Gnehm,
claimed that US domestic politics would precipitate a renewed effort to complete the NMD. He stated: 'There is going to be public pressure to build a system which protects us, if there is a threat out there, as we believe there is'.123 He expected that Australia, as a responsible ally, would provide the necessary assistance to the United States.

Strengthening Australia’s role in the provision of early warning information had become of even greater importance to the United States in the previous two years, and not just in relation to the possibilities inherent in the NMD. In the 1990s, many countries in the region developed or expanded their submarine fleet. In the maritime battlefield of the future, the USN perceived that possible foes may well be diesel submarines equipped with air independent propulsion (AIP), enabling prolonged periods of submerged operations.124 With the increase in disputes over territorial claims in the South China Sea,125 the development of special economic zones and the advance of long range anti-ship missiles, the submarine had become a higher priority for some in the region. China was modernising its blue water navy to extend its influence not only in the South China Sea, but also the Taiwan Straits and the Sea of Japan. Indeed, the Chinese defence budget had increased by approximately 50 percent, in real terms, in the five years since 1995. This included substantial purchases of Russian Sovremennyy destroyers and Kilo submarines, with both systems being capable of launching cruise and other guided missiles.126

More generally, analysis of the arms acquisition enacted in the 1990s in Asia reflected a maritime dimension. Although traditional security concerns have directed much of the acquisition programmes, emergent regional security issues such as piracy, illegal immigration, incidents at sea, management of environmental pollution, transnational criminal activity, legal and illegal exploitation of aquatic food stocks and seabed resources have begun to assume a greater prominence as security concerns in Asia. Indeed, the Convention of the Law of the Sea has accelerated the formal uncertainties in relation to exclusive economic zones and continental shelf boundaries.127 At present there are collateral claims on the southern Kurils/Northern Territories, Tok Do/Takeshima, Senkaku/Diaoyutai lands in addition to concomitant continental shelf disputes between China, Japan and Taiwan in the East China Sea,128 and Spratly and Paracel Island disputes of the South China Sea. Although the Association of South East Asian Nations (ASEAN) Regional Forum has attempted to address some of these issues of maritime security—with the adoption of the 1997 Guidelines for Regional Maritime Cooperation129—many governments, particularly in Northeast Asia, have little experience in multilateral cooperation.
By 1998, Asia Pacific maritime security had become of such concern to the United States that it increased its surveillance of regional navies via the Pine Gap facility. As internal US Navy documents early in the year reveal:

The US Naval Security Group Command (NSGC) has entered into a host nation partnership at the Joint Defense Facility, Pine Gap, Australia that requires assignment of a cadre of Navy cryptologic officers and technicians. In establishing the NSGC, Pine Gap now hosted a group responsible to the National Security Agency in addition to the Central Intelligence Agency, which had previously been the sole operator of Pine Gap. Furthermore, in 1999, two more radomes were erected at Pine Gap with antennas that could detect the launch of ballistic missiles.

It was also in 1998, following the Sydney (AUSMIN) meeting, that an AUSMIN Defence Acquisitions Committee was established to coordinate Australia’s increased access to US high technology. As interoperability was espoused as crucial to the success of future alliance and coalition operations, it was imperative that Australia had the technology to facilitate cooperative ventures. One area of jurisdiction and coordination for the Acquisitions Committee was in the realm of submarine warfare.

**Contested waters: the necessity for US assistance?**

Purchase of the new combat system was a process principally conducted by the Department of Defence, with representations by other departments, including Treasury and the Office of Asset Sales (an arm of the Department of Finance). Two contenders were short-listed by the Defence Department: Raytheon and STN Atlas.

In May 2000, US company Raytheon (RTNA/RTNB) had acquired Boeing’s naval systems division. Raytheon had been working with Boeing to solve the combat system problems but, with the announcement that the system was to be replaced, Raytheon considered it better placed to assume Boeing’s work on the project, and established a skill base and infrastructure centre in its new base in North Ryde, Sydney.

Raytheon’s Combat Control System (CCS) Mk2, the combat system currently utilised by the USN submarine fleet, would form the basis of their tender system for the Collins class submarine. Proponents of this system argued that, in choosing the CCS Mk2, the RAN would have access to a pre-eminent level of technology and a large parent navy. Moreover, this presented the RAN not only with assistance in the event of difficulties, but also with the prospect of access to a defined growth path in the development of new
technology. Its proponents then continued, and continue, to argue that the desirability of belonging to the networked US system was preferable to any system that operated in isolation.\textsuperscript{134} Advantages of joint training were also identified. Arguably too, the CCS Mk2, in addition to providing command decision assistance for current weapon employment, offered a growth path for \textit{Tomahawk} cruise missile acquisition. Reflecting criticism that the CCS was an unproven derivative of a system for the larger nuclear powered boats, Raytheon made much of its combined efforts with the USN to adapt the system for the smaller crew of the \textit{Collins}. In this, the human/machine interface (HMI) had been adapted to suit the \textit{Collins} class submarine.\textsuperscript{135} It was also contended that, as the CCS had been subject to the US operational and technical evaluation process, it had undergone a rigorous and comprehensive testing process.\textsuperscript{136} While this may certainly have been true of the system designed for US nuclear attack submarines, it was inescapably evident that the system for the \textit{Collins} class submarine remained untried and also embraced a different philosophy. If a generic system could be used as the basis for the \textit{Collins} CCS, there was still the issue of risk in its adaptation for conventional submarines. Specifically, it appeared as though the major challenges for Raytheon would be in the interface of the new CCS with the current \textit{Collins} technology systems, particularly the sonars. Moreover, the CCS needed to operate in a much smaller boat staffed by fewer submariners.

Peter Briggs also observed that Australia was not the first to ‘wade into this swamp’, since both the Americans and the British had experimented with the creative process in combat system production.\textsuperscript{137} Both eventually reverted to more reliable adaptations of commercial off-the-shelf (COTS) technology.\textsuperscript{138} John Moore stated that the combat systems of the British and American submarines went through an evolution not dissimilar to this. ...The difference is that they cut their losses a lot earlier than we did, abandoned that route effectively.\textsuperscript{139}

The most publicised of these has been the SUBACS/BSY-1 weapons control system for the USN \textit{Los Angeles} class nuclear attack submarines and the BSY-2 system for the \textit{Seawolf} class. Both were made by Lockheed Martin, who also designed and integrated the Communications, Command, Control and Intelligence (C3I) system for the new \textit{Virginia} class attack submarines. When questioned in 1999 about the feasibility of replacing the combat system with BSY-1 or BSY-2, Peter Briggs responded that a nuclear submarine combat system ‘would probably not be the answer for us’, but if BSY-3—the proposed architecture for the next generation US nuclear submarine—was being
developed as commercial technology also for use in conventional submarines, then it may be considered.\textsuperscript{140} It was expected that this would be the basis for their \textit{Collins} class submarine proposal.

However, McIntosh and Prescott had recommended that it was, indeed, time for Australia to choose a new system engaging COTS equipment.\textsuperscript{141} Short-listed candidate, STN-Atlas, proposed exactly that. Developed for the conventional submarine market, the STN-Atlas ISUS-90 system was an adapted off-the-shelf modular combat system that was networked using open architecture. Ten of the world's conventional submarine fleets had successfully implemented the Integrated Sensor Submarine System (ISUS). Among these were Germany, Italy, South Korea, Turkey, South Africa and Greece. Furthermore, ISUS-90 had also been interfaced with US, UK, German and Italian weapons. Importantly in this argument, the most intimate of US allies, Israel, operated the \textit{Dolphin} class submarine, as designed by HDW, and utilised the ISUS 90 which controlled the deployment of the US Harpoon missile. COTS technology was also not without its detractors, however. Procurement of spare parts was sometimes problematic.

Nonetheless, in constructing the argument for the STN-Atlas ISUS-90 system, naval consultant, Graeme Dunk, first dispensed with the claims made for the Raytheon system. He suggested that the assertions were often made that, if Australia did not purchase its hardware from US sources, it risked the withdrawal of access to US technology. For Dunk, this reeked of an contested fragility in alliance relations. Instead, he perceived it more likely that

\begin{quote}
the US is prepared to promote its industrial and commercial activities under the guise of alliance relationships; and that the Australian submarine community sees itself as an extension of the US submarine community, and thereby uses technology access as a convenient argument.\textsuperscript{142}
\end{quote}

Moreover, he regarded the procurement of the CCS as an orphan system operating only under the umbrella of a nuclear submarine philosophy. So, controversially, it remained that the Australian Government, through its purchasing agencies, had secured its options for both an independent and proven, if European, operator, and its ubiquitous and powerful ally.\textsuperscript{143}

As regards US political support for US defence industries, Japan would recall only too well the US Defense Department's pressure for Japan to acquire more US-made hardware. Exemplifying this were the inter-agency discussions in 1991. After bilateral defence consultations, Yukihiko Ikeda, the then Japan Defense Agency director, was requested by US Secretary of
Defense, Dick Cheney, to increase direct purchases of US military hardware. This followed on from a dispute regarding Japanese plans to construct a fighter plane in the late 1980s, which was subsequently resolved by a joint venture with US companies.¹⁴⁴

When questioned in an Australian Senate Hearing regarding possible US pressure on purchasing choices, Michael Roche, Under Secretary for Defence Acquisition,¹⁴⁵ answered cautiously. In responding to a specific question suggesting that, unless Australia bought US-sourced equipment, technological assistance may not be as forthcoming in other areas, Roche stated diplomatically that he sought to avoid saying that there are other pressures. ... I am saying instead, in positive terms, that there is an objective process going on here that is assessing the technology available in various countries against the need of the Collins class.¹⁴⁶

However, the short-listing of the Collins Replacement/Upgraded Combat System (CRUCS) contenders was, nevertheless, contentious. While STN Atlas Elektronik was regarded by the evaluation team as the prime candidate, Raytheon Systems Company was also short-listed—despite its third ranking behind Underwater Defence Systems International, led by the French, Thomson-CSF (now Thales). In technical evaluations, Lockheed Martin Naval Systems also finished ahead of Raytheon. STN-Atlas was favoured by the Defence Acquisition Organisation (DAO)—and indeed many submariners—as not only was it proven in diesel electric submarines, but also it was regarded as a more capable system. Furthermore, A.W. Grazebrook, long-time observer of the project, argued that DAO and many RAN submariners believed that the STN bid was attractive in its offering of proven submarine technology. For example, it combined European diesel submarine combat system technology (from STN Atlas), European nuclear submarine technology (BAE Systems), access to USN nuclear submarine technology (from Lockheed Martin), and extensive experience and innovative development from working with RAN submariners for many years (from STN Sonartech). Moreover, they regarded the STN Atlas DM2A4 heavyweight torpedo as superior to the Mk 48 ADCAP.¹⁴⁷

As a response to the perceived concerns over the release of US proprietary weapon interface data to third party interests, STN had brought Lockheed Martin Naval Electronic and Surveillance Systems-Undersea Systems into its bid team as weapon integration contractor. It thus intended that US weapon interface data would be supplied directly from the USN to the RAN via the American company. Although the RAN utilised the US Sub-Harpoon
anti-ship missile and Mk 48 Mod 4 heavyweight torpedo, these weapons were also under review in 2000. Short-listed for the replacements were the upgraded Raytheon Mk 48 ADCAP, STN’s DM2A4 torpedo, and Whitehead’s Alenia Sistemi Subacquei Black Shark. Defence had scheduled the project to replace Australia’s heavyweight torpedo to begin in 2002-03, with entry into service in 2006. Always close to the surface, however, was the question of Australia’s deployment of cruise missiles, especially as, for some, the Collins class submarine was the ideal (and ready) launch platform.

However, the Australian Government’s objectives in welding together its relationship with the United States were so clear that it terminated the selection processes for both the combat system and torpedo selection. In July 2001, Minister for Defence, Peter Reith, stated instead that the Australian and US Navies would enter ‘into a Statement of Principles arrangement to achieve a shared goal of maximum cooperation and synergy on submarine matters’. (This was the document referred to earlier as signed by David Shackleton and Vern Clark.) Unsurprisingly then, a year later, the government announced its intention to purchase the $400 million Raytheon CCS Mark II tactical command and control system. This would be sourced through the US Navy. That it would provide access to the US real time operational network was persuasive for its proponents. It remains, nonetheless, that the mature risk in the current combat system proposal is still to be resolved. And while the desirability of interoperability with Australia’s allies in many situations may be well argued, it is also manifest that capability is the first port of call.

The government continued with its US procurement resolve and also acquired the US Mk 48 Mod 7 ADCAP torpedoes. These would be developed through a joint US–Australia programme. In 2003, the United States and Australia signed a memorandum of understanding to work jointly with Northrop Grumman on the sonar system upgrade for the heavyweight torpedoes. It is also worth noting that the CCS MK 2 system, in the US Los Angeles and Virginia class nuclear submarines, will be responsible for the control and launch of both the MK 48 torpedoes and the Tomahawk missile.

**Tomahawk missile deployment**

At this juncture, prior to a consideration of the deployment of Tomahawks in the Collins class submarine, let us briefly revisit the arguments thus far. It is axiomatic that any project of the Collins scale and complexity would encounter problems to be resolved during the course of the venture. This project, however, was subject to significant government and public
investigation and criticism—some justified, but also some contrived and unwarranted. Both could serve to disparage the Labor Opposition who instigated the project. Moreover, the venture partners were given little recognition for their management and/or resolution of the problems experienced. Their difficulties were compounded by Rockwell’s inability to deliver the required combat system technology. Attendant to this was the Howard Government’s interest, since its election in 1996, in upgrading the US alliance. Any politicisation of the project in the domestic arena could also serve to create the space for a supposed US function in ‘resuscitating’ the venture. While the United States could contribute some expertise, its ‘messianic’ role was hotly contested, particularly as it had no recent experience in the construction of conventional submarines. Also running parallel to the exigent Australian political environment was the appeal of the diesel electric submarines for the United States, predominantly from a force structure perspective. Let us now further explore the consequences of these decisions and also those of procurement of US technology and weaponry, beginning with the purchase of Tomahawk missiles for the Collins class submarine.

As an adjunct to the prospective purchase of the new combat system, it is interesting to note that Raytheon was the manufacturer of the new generation Tomahawk missile (the Tactical Tomahawk) for the USN. The new missile, a more versatile, cheaper version complete with inbuilt reconnaissance and re-targeting capability, enabled real time intelligence gathering and battle damage assessment. Mission planning now was not just limited to pre-battle preparation. Raytheon’s initial contract was allocated in 1998. This was followed up in 1999 with a further contract to re-manufacture up to 624 missiles configured with the new Block III global positioning satellite guidance capability, complementing the Terrain Contour Matching (TERCOM) and Digital Scene Matching Area Correlation (DSMAC) guidance.155 It appeared then that Raytheon was well able to argue its primacy should Australia enter into a new phase of armament policy.

Although the deployment of cruise missiles remained an ongoing debate within the ADF, it became more prominent, and possible, in the mid-1990s with the relaxation of US embargoes on the export of the missiles. In exporting the Tomahawk missile to the United Kingdom in 1995 for its Trafalgar class nuclear submarines, the United States signalled its preparedness to sell the missile to close allies.156 This created renewed interest in Australia, particularly with a change of government, in acquiring the weapon for the Collins class submarines. Commander Peter Sinclair (commander of Collins) expressed his support for the Tomahawk as ‘a strategic weapon’. He said
'Australia should enter the year 2000 with that sort of capability'. 157 (The Collins weapons discharge system and combat system would allow for the utilisation of the Tomahawk if approved.) 158 Although the acquisition of the Tomahawk ship launched cruise missile (SLCM) for the Collins class submarine was eventually excluded by the defence framework document in 1997, its currency never disappeared. 159

Both the ADF and the Defence Department continued to consider the possibilities. In 1997 the Department of Defence commissioned a $1.5 million study to ascertain the appropriateness of the cruise missiles for the Collins class submarine. As a long range precision strike weapon, the Tomahawk can be armed with either a nuclear or a conventional warhead. Launched from either surface ships or submarines, it can range up to 1,000 miles with a conventional payload, and 1,500 miles with a nuclear payload. The United States claimed a critical role for the subsonic Tomahawk in operation Desert Storm in 1991, Iraq in 1993, Bosnia in 1995, Iraq again in 1996, 160 and in operation Southern Watch in the Persian Gulf in 1998.

It is also worth contemplating that deployment of the Tomahawk on the Collins class submarine could also provide the Department of Defence with a substitute for the purchase of a replacement for the F-111 fleet. Although provisions were made in the Defence Capability Plan for acquisition of new aircraft to replace both the F/A-18 and F-111, the government reserved the right to 'examine its options'. 161 And examine its options it did. Once again the government had made the decision to sign onto the new US Joint Strike Fighter project. 162 While installation of the Tomahawk could certainly be an attractive cost reduction measure for the government, undoubtedly, it would be contested by the Royal Australian Air Force (RAAF). Arguably, the F-111, as a mobile platform, with effectiveness as a visible threat deterrent, was the more appropriate vehicle for the Tomahawk. The aircraft, however, would need to be pre-deployed in order to match the range advantage offered by the submarines. 163 The F-35 Joint Strike Fighter (JSF) decision, with its long lead times, has also left questions as to the continuity of air capability for Australia and the possibility of a five-year gap in strike capacity. 164

Cruise missiles in the Asia Pacific theatre, however, were a delicate proposition. Gareth Evans postulated in 1987 that the degree of destabilisation created by the US deployment of Tomahawk cruise missiles was a moot point. 165 But Desmond Ball was in no doubt of the implications of its presence. 166 Ball's contention was echoed by the former head of the US strategic armed forces, General Lee Butler, who realised the threat of a regional arms race should Australia purchase the Tomahawk. 167
Eventually it became evident that, during the Howard Government’s tenure, procurement of defence technology and weaponry was increasingly oriented to US systems and suppliers. Not only did the government announce its intention to join the development programme for the F-35 JSF, but also it purchased, controversially, the US Abrams M1A1 tanks and ageing Seasprite helicopters. More recently, again, the tender process for the proposed Air Warfare Destroyer (AWD) revealed the government’s choice for preferred designer to be the US Gibbs and Cox remoulded Arleigh Burke destroyer. Alternate contenders had been the Spanish Navantia’s Alvaro De Bazan Class Frigate (F-100) and the German, Blohm and Voss, Sachsen (F-124) destroyers. Defence Minister Robert Hill had also previously announced that Chief of Navy, Vice Admiral Chris Ritchie and Chief of Naval Operations, Admiral Vern Clark, signed the Surface Warfare Statement of Principles which would include the ‘continuing development of the Air Warfare Destroyer combat system design’. That there may have been appropriate systems other than Aegis has not been discussed. More generally, in their reflection upon recent policy decisions, two of Australia’s prominent defence experts, Paul Dibb and Richard Brabin-Smith, have warned that Australia’s foreign policy independence is in danger of compromise by inappropriate defence purchasing and an uncritical tagging of US security aims. Furthermore, Derek Woolner, long time defence analyst, has argued that there ‘are times when the government’s national security decisions appear to be driven by naive techno-fervour. This is especially so when a display of enthusiasm for a piece of military hardware seems to provide political advantage’.
CHAPTER 5
ON THE ROCKS: THE SALE OF THE AUSTRALIAN SUBMARINE CORPORATION

Initial ALP support for the submarine project embodied a recognition of its associated benefits. Successful development of an indigenous shipbuilding industry could also contribute positively to trade balance accounts, employment opportunities, technology transfer and the development of centres of excellence in technological development. Yet, as the construction phase of the submarine project drew to a close, the Howard Government grappled with the future of the ASC itself. A perception had existed that one of the difficulties for the management of the Collins project had been that the Australian Government was both part producer and customer. That it was the sole purchaser further complicated the arrangements. And, in a climate more inclined to rationalisation and revenue raising, the government looked to a sale of the ASC.

This sale, however, could not be judged solely on commercial exigencies. Imbued instead with strategic, economic and political stresses, the government had a complex problem to resolve. A number of questions arose: How to balance Australia's quest for self-sufficiency in its defence industries, maintain the high quality skills and resources acquired during the project itself, maximise its technological advantages and retain a sense of its broader insurance against more powerful foes? How could this be enacted and achieve a positive domestic political outcome ensuring that employment would be maximised while selling the asset at a commercially acceptable price? More complex still, the alliance lurked in the waters. How could this be achieved in an environment where the government and the USN sought to influence the result? It was the perennial alliance dilemma of balancing the needs of both Australia and the United States. And for Australia, how it conducted its relationship with an ally of much greater strength was the enduring challenge of achieving asymmetry in the bilateral relationship.

Plagued by adverse publicity for the submarine project (often of its own making), by 1999 the government looked to move on. Although ASC offices were established in Bangkok as its Southeast Asia base, Geoff Rose was to note that its exports were 'insignificant in terms of the potential of the industry'. Three patrol vessels and three landing craft were manufactured for the Royal Thai Navy, with delivery by the end of 2001, and three patrol boats were designed, procured and project managed for the Hong Kong Police. Although previously advised by John Prescott, the Department of
Defence and the Office of Asset Sales and IT Outsourcing (OASITO) now appointed two firms, NM Rothschild and Sons (Australia) Ltd and Blake Dawson Waldron, to assess future arrangements. John Moore would then consider the options presented.

However, the sale of the ASC was complicated politically in September 1999 with the merger of HDW with Kockums AB. Celsius AB signed with Babcock Borsig and Preussag to form a new European shipbuilding company that was still under the HDW banner, with Celsius assuming a 25 percent stake in HDW. While Celsius had surprised the Swedish stock market with some significant losses—in part attributed to a reduction in global governmental defence spending—at the time of the pending merger, HDW company chairman, Dirk Rathjens, stated that the submarine order books were well filled. As the world’s leading supplier of non-nuclear submarines, the company was constructing submarines under contract to Turkey, Italy and Brazil, in addition to its production of the new German Type 212 submarine. HDW was also in the process of delivering the Dolphin class to Israel, the Type 209 to South Africa and South Korea, and the Type 214 to Greece. It is believed that the new company had a multibillion-dollar order book. Moreover, the company was also supplying patrol frigates to South Africa, stealth corvettes to Sweden and developing new frigates and corvettes for Germany. At that time it was a healthy company with ongoing work.

Early 2000 saw HDW purchase shares in Kockums Pacific and thus, potentially, ASC. Concurrently, however, the Commonwealth Government, who, through the Australian Industry Development Corporation (AIDC), owned 48.45 percent of the ASC, exercised its pre-emptive rights and eventually purchased the remaining shares on 5 April 2000.

It was nonetheless reported that, in 1999, HDW believed it had tacit approval from Moore, Finance Minister John Fahey and Industry Minister Nick Minchin to purchase these shares. However, six months later, Moore and John Prescott would not agree to the original conditions of the arrangements. Robert Garran, an Australian journalist, reported that there were three conditions under which HDW would buy the Celsius stake, namely

that it be allowed to buy the whole 49 percent stake held by Celsius Pacific; that the existing shareholder agreement governing management and control of the company remain in place; and that, as largest shareholder, HDW nominate the chairman.
Under the original Kockums shareholder agreement, which it would inherit, HDW would also inherit the right of veto on technical matters. It could thus override other shareholders. The Commonwealth, nevertheless, was unhappy about the degree of control that HDW would assume. Strangely though, the government made little attempt to negotiate any solution to this issue. Indeed, Prescott’s discussions with HDW in Germany were entirely unsuccessful. It is not entirely clear at this point, however, why Moore and Prescott did not pursue these talks to a more fruitful conclusion. It is clear however that, at the time, the question of US involvement in the project was running parallel to the ownership issue of the ASC.

HDW did not welcome the Australian Government’s move to withhold approval for the transfer of shares. However, not only was HDW surprised and unhappy with the government’s decision-making, other internal players were also dissatisfied with the possible outcome, including Prime Minister and Cabinet Departmental chief, Max Moore-Wilton. The decision failed to delight the ASC management, who believed that HDW were best and well able to ensure continuity for the Adelaide shipyard through diversion of work from their Kiel shipyards. Furthermore, the AIDC — shareholder in ASC on behalf of the government — strongly objected to the nationalisation strategy, instead favouring the sale to HDW. But the AIDC board letters to Moore, Minchin and Fahey met with minimal response. Other ministers, however, expressed concerns that the market was disqualified from ensuring continuity of work for the Osborne shipyards by Coalition government intervention.184 Although the government did state that it ‘was not ruling out any options, including German submarine manufacturer HDW AG taking an equity position in ASC’, 185 it appeared as though the world’s leading conventional submarine builder was now detached from the sale of the ASC. Why?

The Australian Government explanation was focused on its intention to acquire the remaining shares in ASC as a precursor to the sale of the ASC. In explaining the short-term nationalisation, the government stated that its design was ‘that the company be restructured to implement more sustainable arrangements for the future support of the Collins class submarines and facilitate its onward sale’.186 Moreover, John Moore claimed that the strategy was essential to ensure the long-term access to US submarine technology:

If we had allowed the transfer ... we would have been denied access to critical parts of operations of the submarine. We have complete access to American technology. That was denied to us under the previous arrangements.187
Moore was hoping that Electric Boat (General Dynamics' submarine division) would become involved, in some way, in the ownership of ASC. However, in responding to a question regarding the transfer of US submarine capability and technological knowledge, Peter Briggs replied that it was only 'a problem if technology finds its way outside NATO' and HDW 'exports extensively outside NATO'. Therefore, the eventual sale was intended to retain Australian majority ownership but with significant US industry involvement. Put simply, the government's argument of continued access to the United States took precedence over an assurance of additional work.

**Short-term nationalisation and long-term alliances**

After purchasing the remaining 51.55 percent of ASC shares for $53.49 million, the AIDC then transferred all share capital to the Commonwealth. Senator Nick Minchin, Minister for Industry, Science and Resources, contended that the government wished 'to maintain and enhance the considerable skill base that has been established at ASC'. Equity acquisition was also accompanied by changes to the Board of Directors, with John Prescott appointed as Chair. As a precursor to the sale, the government promptly invited five firms to participate in a funded study to explore future options. These were: Australian-based ADI Limited and Tenix Pty Ltd, together with internationals BAE Systems and General Dynamics/Electric Boat Corporation. The initial contender, Newport News, withdrew. Principal bidders were anticipated as a consortium between Australian defence engineers Tenix, and Electric Boat, the US submarine builder, ADI and Northrop Grumman's Newport News, another US submarine builder, and British Aerospace with its attendant links to UK submarine builder, Vickers. As HDW was absent from the funded study, intellectual property rights were at stake. Hans Saeger, head of strategic development for HDW naval division, contemplated two possible solutions for the intellectual property for the design of the boats. An outright sale of the *Collins* design could be conducted, or a design agreement could be struck with the new owners. Both HDW and Electric Boat were unwilling to enter into a consortium, as each feared a loss of intellectual property technology. Meanwhile, the United States was clear about the nature of its involvement.

Further complicating relations between the designers, Kockums, and the Department of Defence was the ongoing dispute regarding US assistance in resolving the propeller problems. The Australian Government took the view that, given the propellers functioned inadequately, it was of little consequence that others were party to their assessment and modification.
Moreover, the Commonwealth argued that, as Kockums did not have the resources to resurrect the propellers, they were entitled to seek assistance elsewhere. Submarine technology is tightly held, and so the European conventional submarine technology is of particular commercial and strategic interest to the United States. As Australia had shipped submarine propellers to the United States for modification in 1998 and 1999, Kockums were concerned that Defence had deliberately passed on confidential submarine technology to the United States. The company duly protested to the Department of Defence. They contested the claims made that

- the propellers did not meet the specifications; and
- they did not regard US modifications as an improvement under the specifications. Nonetheless, Defence remained dismissive. Although these early problems regarding authorisation were dropped, they resurfaced again in 2001.

In March 2001, Kockums sought federal court assistance to withhold the release of a propeller about to be shipped to the United States for modification. Concerned that the propeller technology would be leaked to third parties, Gunnar Ohlund, executive vice president of Kockums' submarine division, claimed their federal court action was based on both the protection of commercial intellectual property and a desire to protect the interests of the Swedish Navy. Kockums had worked closely with the Swedish Navy in the development of the technology. Justice Wilcox of the Federal Court found in favour of the Commonwealth, but he also found that the intellectual property rights belonged to Kockums. No doubt, by 2001 the increasing tension between Kockums' new owners and the Australian Government over the sale of the ASC itself, and then the related issue of ownership of design property, did little to ameliorate relations between the groups involved.

Alliance issues, however, were clearly not the only seas to be navigated. Employment and economic issues were also at the forefront of the ASC sale. For the government, the complexity of the problem was to marry its strategic priorities (once decided) with the exigencies of a commercial sale and a satisfactory employment outcome. Yet, already in circumventing HDW's participation in the sale, strategic concerns had overridden economic interests that included maximising both employment opportunities and the prospects of a profitable sale. Marginalisation of HDW had, initially, relegated economic, and possibly employment, concerns as secondary to the alliance relationship.
Persistently problematic has been the sale of the ASC. By January 2002, Robert Hill (now Defence Minister) was continuing to explore the relationship with Electric Boat. While discussions ranged over their option of a 40 percent share holding and a consultancy service role, the privatisation deal remained in doubt. Later that year, the government stated that it sought to assign Electric Boat, manufacturer of nuclear submarines, as a capability partner. To that end, the corporation commenced a 'scoping study of the ASC's capabilities in order to assess where it might be able to add value to the corporation'. By October 2002, Electric Boat had agreed to provide specialist management and technical advice for the ongoing maintenance of the submarines at a cost of $20 million. However, the corporation declined to purchase shares in the ASC. Logically, for the nuclear submarine builders, there were few persuasive reasons to purchase the ASC shares. Technically, as capability partner, it would have access to the submarines, but commercially the sale was complicated.

In 2003 the unresolved intellectual property issues with Kockums were still outstanding, there was an absence of orders for new submarines, and the Department of Defence took some time to settle its budget allocations for the through-life maintenance of the Collins class submarine. Endeavouring to focus the process in January 2004, Ministers Hill and Minchin appointed Carnegie Wylie to advise on the sale of the ASC. At this point it was unlikely that Electric Boat was either interested or able to locate an appropriate Australian partner. Tenix, a seemingly suitable candidate, desired a controlling interest and remained in private ownership, and ADI, with its French partner Thales, again raised the question of European ownership. The United States had continued to remain sensitive to any prospective loss of intellectual property. Eventually, at least, the intellectual property dispute with Kockums was resolved in June 2004 when the federal government agreed to pay Kockums $30 million for the rights while Kockums would fund the welding repairs for one submarine.

Privatising the ASC is also closely connected to the consolidation of the naval shipbuilding sector in Australia. Spending on major naval projects over the next fifteen years is anticipated to be half that of the previous fifteen years. Consequently, this sector will be subject to significant structural adjustment. Nonetheless, in addition to the construction of the AWD (project SEA 4000) by the ASC, it is possible that, under the new strategic plan for naval shipbuilding, the future Amphibious Transport Ship (JP2027/2048) and/or future Replenishment Ship (SEA 1654) could also be constructed by an upgraded ASC.
One of the features of the Collins project—and as embedded in the original vision—had been the extraordinary opportunity it offered Australia to realise, demonstrate and reward the technological expertise and entrepreneurial elements of its educated workforce. Only occasionally in the life of a small country does it have the opportunity to pursue a project of this enormity and deliver upon its aims so well. As a multibillion-dollar project, it could act uniquely in the attempt to redress some of the vulnerabilities of Australia's economic profile.\textsuperscript{206} Public support of the ongoing project by government and an ongoing commitment to its workforce, in both industry and navy, would thus seem not only desirable but also responsible. Yet political objectives remained paramount.

At stake in this, clearly, were both Commonwealth and state political interests as a result of the sale's direct personal and social impact. Election results in Western Australia and Queensland, together with the results of the federal by-election in Ryan, Queensland, starkly revealed an electorate deeply dissatisfied with governmental management strategies. Any scent of a further mishandling of the much publicised spectre of 'globalisation', in an ASC dismembering of the 900 skilled workforce in Adelaide, would directly impact on both the Coalition's Federal and South Australian election prospects with elections anticipated in the latter half of 2001 for both. Nevertheless, if a rationalisation of the shipbuilding industry in Australia should require Tenix to relinquish its Williamstown dockyards for the Osborne site, then similar employment, social and economic concerns would confront Victoria. State governments, too, were active participants in the process, and sought to represent their respective interests, including those decided in upcoming elections. South Australian Premier, John Olsen, turned to Electric Boat, in endeavouring to ensure that the state's defence and electronics industries would be preserved and developed through the establishment of a regional base for the US company.\textsuperscript{207}
CHAPTER 6
DOMESTIC MANAGEMENT:
THE OPPOSITION SUBMERGED

Clearly, the political contours of this project exemplify the intricacies of the government's interest in managing threat on two different levels. That the Minister for Defence in 1999, John Moore, could publicise the McIntosh-Prescott Report\textsuperscript{208} to orient greater US involvement in the project and for domestic party political gain is demonstrative that the government was intent on managing threat on two different levels—international and domestic. Elsewhere I have argued that the Australian Government sought US assistance because of the way it perceived threats. As a response, it sought solace with its traditional allies\textsuperscript{209} and, in the construction of policy, the Australian Government needed to accentuate the 'crisis dynamic'. Following Carol Johnson's argument that the Coalition's politics of reassurance was necessitated by a crisis of the position of the Anglo identity,\textsuperscript{210} I contended that, in foreign policy, the failure of public emphasis of the US alliance by the previous government was used by Howard to effect greater domestic political support. Here, I argue that John Moore's actions in establishing and utilising the McIntosh-Prescott Report constitutes a demonstration of the government's interest in furthering ties with its traditional ally in addition to a specific policy manifestation of the deployment of this crisis dynamic. Moore managed this report, not only to disparage the ALP, but also both to prompt and then defend greater intimacy with the United States.

It has been observed that one of the central problems an Australian Government faces in naval shipbuilding is to find a balance 'between often irreconcilable pressures'.\textsuperscript{211} Certainly a tension between a desire for a more independent strategic posture and one that asserted the centrality of the US alliance has emanated from the handling of the Collins class submarine project. Explicit in this project have been the problems that have arisen as the government attempted to mediate between the production of an effective submarine platform and its desire both to exert its role in the success of the project and to affirm the US alliance. This was clearly evident two days prior to the 2001 federal election. Former Minister for Defence, Peter Reith, argued at a business lunch in Adelaide that the Collins were 'six reasons why Kim Beazley shouldn't be allowed in The Lodge'. Later that same day, at the launch of Rankin, he praised the ASC for 'its remarkable achievement'.
The ‘Rankin and her sister submarines will keep Australia at the forefront of submarine technology’. The politicisation of the project was similarly evident in the continued criticism of the then Leader of the Opposition, Kim Beazley. Reith had earlier stated that

most Australians will remember he is the man who is responsible for the Collins class submarines and we are still trying to fix up the problems that he created at a very significant cost to the taxpayer.

Clearly, through further criticism of the Collins class submarine project, the Coalition could target Beazley. As Beazley had enjoyed popular support for much of the pre-election period up until early September 2001, it was vital that he be neutralised electorally. As John Moore had so effectively publicised any fault in the submarines previously, Reith could reasonably expect that discrediting Beazley through this project would be successful.

Thus, both John Moore and Peter Reith in their public rhetoric to rectify the ‘dud subs’ had acted to allay the domestic threat and sustain the Coalition’s incumbency. Former ASC Managing Director, Hans J. Ohff, pointed to government intrusion in the project for this reason and cited John Moore’s tenure as Defence Minister as the ‘most difficult time in the life of the project’. One question worth asking here is the whereabouts of the South Australian Government in defending the project during this time. It can be assumed only that deference to the agenda of their federal colleagues may have taken precedence over any reasonable defence of the project.

These domestic party politics were also exacerbated by some political manoeuvring within the armed forces. The $5 billion outlaid for the submarines jeopardised other projects. Funds for other weaponry such as the AWD, amphibious transport ship and replenishment ship were endangered by the massive outlay for the submarines. Other armed services projects were also at risk via the costs of the Collins class submarine project. These included the Air Force replacement for the F-111 and F-18, the $3.5 billion Airborne Early Warning and Control (AEW&C) project, and the Army’s replacement of its Leopard tank. As funds were demanded from the budget beyond the initial commitment, pressure increased. Condemnation of the project emanated not only from interests outside the RAN, but also from within. These criticisms were utilised by others in furthering their political agendas.

Unfortunately, both submariners and ASC personnel had to continually battle this manifestation of governmental risk management. RAN Rear Admiral K. J. Scarce, Head of Maritime Systems, took to the papers in this skirmish and publicly defended the submarines:
Today, Australia’s submarines are regarded as arguably the most capable conventional submarines in the world—in my book, it is submarine performance that is the true measure.217

So, when Tore Svensson of Kockums Pacific Technology wondered, 'just why a submarine hailed by leading naval officers throughout the world is subject to a concerted campaign of derision at home is hard to understand',218 there was much more than just the government’s intellectual property (IP) dispute with Kockums beneath the surface.
CHAPTER 7
US CONCENTRATION ON A SUITABLE RESULT

As some ironic testimony to the eventual success of the Collins class submarine project, the United States began to exercise its presence in the decision-making processes for both the ownership of the ASC and the choice of combat systems and torpedoes. In order to glue US involvement, senior officials plunged into the fray. New US Ambassador to Australia, Edward Gnehm, called on Australia to install a combat system compatible with US hardware and, as the tender and sale process intensified, a high level US Defense official (on instructions from William Cohen) and four senior naval officials informed John Moore, in November 2000, not only of US preferences on both issues, but also of the consequences for Australia if it did not bend to these desires. First, the United States had expressed objections to the possible presence of European equity partners in the ASC. It foreshadowed insurmountable difficulties in technical cooperation should the Europeans become involved in the company. Safeguards to protect US technology and intelligence utilised on the submarines were thought to be unavailable from its European competitors. Second, US Admiral ‘Skip’ Bowman, Director of the Naval Nuclear Propulsion Program, would not countenance non-US-built torpedoes being fired at US submarines in exercises on safety grounds. Third, the United States believed the new combat system should be fully compatible with US systems in order to maximise the military partnership. Failure to comply, for Australia, would preclude any strategic submarine partnership.

It is also worth acknowledging one dynamic and reiterating another. First, while the US defence industry was undoubtedly competitive in marketing its products in the 1980s, it had not reached the same intensity in aggressively seeking opportunities as it has done more recently. By the mid-1990s US commercial interests were also actively supported by an Administration seeking to enhance commercial claims and to reduce its budget deficits. With the change in the US Administration in 2000, trade and security became increasingly intimate. Second, whatever the US response, it was the RAN, together with the Australian Government, who initially approached the USN for assistance. Former senior members of the RAN assiduously maintain that it was for the mutual benefit of both navies that assistance was solicited.
The USN had taken the lead interest in the combat system, heavyweight torpedo supply and the ASC sale. With industry partners Raytheon and Electric Boat, the USN sought to construct a ‘co-operative development program’. It appears that, in the United States, the USN might have needed to persuade Electric Boat (the manufacturer exclusively of nuclear submarines) to participate in the project. More broadly, associated with the reduction of funds to maintain the numbers of submarines in the US fleet has been the lack of available funds for the US Naval Sea Systems Command to complete the development of the CCS Mk 21D combat system. Although simple examination of the prime contracting arrangements is not adequate in determining the contribution of various companies to the combat systems, it is worth observing that Raytheon is not the combat system contractor for the US Seawolf and the new Virginia class submarines currently being constructed. It is, instead, Lockheed Martin—a member of the STN-Atlas consortium. Similarly, these constraints also apply to the United States in its production of the new ADCAP torpedo. At present, the United States still needs to develop this capability for littoral operations. Australia’s sweeping experience in these areas has become attractive to the United States in the development of specific technological expertise (which is also precisely the kind of expertise offered by Sonartech). So, again, the choice of the US torpedo would assist the United States in extending its capabilities and extending its influence in the littorals.

Raytheon made astute use of the dilemma that then confronted the Australian Government and bureaucracy. Even though the Defence tender evaluation project team recommended to John Moore that STN Atlas (as represented in Australia by SonarTech Atlas) was the tender of choice, Raytheon arrested that process. The US company was believed to have made a complaint to the Australian defence inspector-general, Claude Neumann, on 7 December 2000, that project requirements and selection criteria were altered after the tender closure date. Communication of the contract decision was duly delayed. Although the Inspector-General rejected the protest five days later, Thomson Marconi Sonar (Raytheon partner) lodged a similar protest. This prohibited an announcement of any decision by Moore during a visit to Western Australia on 14 December to inspect the two submarines fitted with the US augmented combat systems. Thomson Marconi’s protest was duly rejected on 17 December 2000, but John Moore announced his resignation the following day.

Confronted with a battle of some proportions to win the combat system contract, the United States then employed a fleet of tactics. Even Malcolm McIntosh and John Prescott (as appointed by Moore) had recommended
that the project (with a history already damaged by flirtations with experimental technology) reject this course. Instead, they recommended that the system of choice should utilise COTS-proven technology. Moreover, the Defence evaluation and acquisition teams rated the Raytheon proposal as a lesser prospect. In order to counteract this, the USN and the US Defense Department sent high level representatives to Australia to further their claims. The government thus was shortly confronted with performance or alliance imperatives.

New Minister, Peter Reith, together with bureaucrats from the Department of Defence, toured the United States to consider the American proposals. Although the formal recommendations were delayed, the STN-Atlas system was preferred by the Undersecretary for Defence Acquisition, Michael Roche, the ADF’s tender evaluation working group, source selection board and submarine capability team. This, however, was contested by the Navy’s Chief of Navy, Vice-Admiral David Shackleton. Shackleton argued forcefully for the Raytheon system, as it was necessary to enhance navy operational relations with the United States. His concurrent concern was that Australia had no comparable operational alliance with either the Swedish or German Navies and that US apprehension over foreign access to US technology may compromise existing arrangements and preclude Australian purchase of future US technology.\(^2\) John Moore also regarded technical cooperation with the United States and ownership of the ASC as issues weighing heavily on the procurement choices confronting Australia.\(^3\) A deferral of the combat system recommendation from the Department of Defence to the minister gave the Australian Government, military, and bureaucracy sufficient time to grapple with the exigencies of the issue and to ponder the storm warnings—and not only those of international origin.

Cooperative development: and what of this scenario? Taiwan has been in the market for at least six diesel attack submarines. Although it was possible that the ASC, with US capital, could construct the boats, it remained a highly dubious political enterprise for Australia. This was particularly so, as the Chinese Foreign Ministry stated

we hope, and are confident, that the Australian side will scrupulously abide by the one-China policy and by no means participate in the sale of weaponry to Taiwan in order to avoid creating serious harm for Sino-Australian relations.\(^4\)

Instead, it seemed for a while that two US nuclear submarine constructors were bargaining for the contract. These were General Dynamics’ Electric Boat and Northrop Grumman’s Newport News. One of these tenderers
recently had its diesel submarine technology and construction experience enriched by their partnership with the ASC.\textsuperscript{232} a liaison that did not escape the Chinese either.\textsuperscript{233}

In what was revealed as an ironic twist for proponents of alliances in all respects, Northrop Grumman, the last constructor of conventional submarines for the US Navy, reputedly held talks with HDW to provide submarines and frigates to 'the US and its allies'. Moreover, Kent Kresa, Chairman of Northrop Grumman, countenanced the possibility of the company assuming a stake in HDW Group. There was also speculation that this company was behind the acquisition by One Equity Partners (the private equity company of Chicago's Bank One Corporation) of 75 percent of shares in HDW in 2002.\textsuperscript{234} Analysts commenting on this transaction recorded Bank One's acquisition of the HDW Group's highly desirable technology.\textsuperscript{235} It is worth reiterating that, during the course of the Collins class submarine project, Australia had also acquired much sought after technology.

Other matters merit contemplation. What might this say of US pressure for Australia to rebuff HDW's interest in the ASC? What of the technical arguments that interoperability issues were insurmountable if Australia persisted with its European partners? Alternatively, while intellectual property issues require resolution, if HDW was owned by a US company, could it be considered as a possible equity purchaser of the ASC? Did this now provide the United States with a conventional submarine combat system? No doubt there are complex commercial and state-based IP issues inherent in these transactions, but, arguably, solutions such as escrow arrangements have provided opportunities for resolving related issues in the past.\textsuperscript{236}
CONCLUSION: INCREASED INTIMACY

A significant feature of the alliance with the United States for Australia has been 'preferential access to US technology'. This has been important for the development of Australia's high technology defence strategy. This was maintained in the Defence 2000 policy document and is necessitated by the peculiarities of Australia's demography and geographic and oceanographic environments. Would the rejection of the US combat system proposal jeopardise this? If so, it then would indeed indicate more than the trace of fragility in alliance relations. The more likely result is that it may occasion a pause in submarine cooperation rather than a panoramic seizure of defence cooperation. Even so, if this prospect arises, does Australia not possess the sophisticated skills to diplomatically resolve issues of difference with the United States?

Could it jeopardise Australian access to RMA technology and systems? The choice of a European submarine combat system does not exclude Australia from force planning machinery and systems, nor would allied planning interfaces be short-circuited at this level. NATO exercises are conducted utilising both European and US technology. European and US submarine technologies are utilised together elsewhere in the world. Moreover, as Desmond Ball has argued, the Revolution in Military Affairs (RMA) is not applicable to all defence contingencies and less relevant to low-level situations and the 'new strategic agenda', which may well be the threat more germane for Australia. And, while interoperability with the United States is an asset for Australia, as is the access to appropriate high technology equipment, it cannot precede the achievement of capability. Further, as Hugh White has argued, interoperability 'must never be at the expense of our ability to operate independently'. What was evident in this case instead, it seems, was the government's utilisation of the US alliance not only to resolve the 'crisis' and dispense with political opponents but also to further entrench Australia's strategic and cultural ties. Furthermore, it remains indicative of the difficulties for the smaller power in asymmetrical bilateral relations.

It also appears that the need for greater intimacy has presided over an independent conceptualisation of Australian defence strategy not in evidence in the sale process for the ASC. If the zeitgeist of the 1980s had emboldened an independence of strategic thinking and practice, by 2000 the Coalition had reaffirmed its desire for US intimacy. This is despite the swelling evidence that Australia had achieved many of the 'national interest'
objectives initially prescribed for the submarine project. As a major capital works initiative, it did indeed provide for Australia extensive job creation, extraordinary technological gains, and valuable new skills development. Increasingly, too, it is perceived as delivering on its naval objectives, and thus revealing significant achievements in Australian industry. While this may take some time to permeate into the public consciousness after its history of poor media coverage and political manipulation, in the RAN, the USN and the defence industry, the Collins class submarine is regarded as an exceptional conventional submarine: one that had few rivals.\textsuperscript{243} And while the project did encounter significant difficulties, for a high-risk venture of this scale and complexity, it would have been naïve to have anticipated otherwise. How this was managed and resolved, however, by all the stakeholders, was of greater importance. In part, Australia gained the problem-solving experience necessary for the manufacture and maintenance of a successful product for the RAN and for the reinvigoration of a successful Australian shipbuilding industry.

Poised at a juncture where the realisation of 'self reliance through industrial capability' may have been before the horizon, the Australian Government chose to relinquish its opportunity to do so, via the effective circumscription of the contenders in the sale process. Consequently, at that time the pathways to a slate of options in shipbuilding and export development in Australia were also contained. Through this project, the Australian Government has chosen to pursue greater intimacy with the United States and attempted to shore up relations. Now, however, even though the Collins project, of itself, may well be redeemed, alliance relations have become more pervasive and the strength of Australia's independent defence posture has been further eroded.
Notes

Introduction

1. Lincoln Wright, 'Secrets Blow About Building Site', Canberra Times, 23 August 2000, p. 3. Note: I have not confirmed the veracity of this report.

2. Rod Lyon and William T. Tow, The Future of the Australian-US Security Relationship, Strategic Studies Institute, US Army War College, Carlisle, PA, December 2003, p. 34, available at <http://www.carlisle.army.mil/ssi/>, accessed January 2004. It needs to be noted that Australia's aspirations for greater defence independence were formally expressed in 1972 while it was later in the 1980s that the concept of 'self reliance' was articulated as embedded within the alliance relationship.


Chapter 1: The Collins Class Submarine Project

4. Andrew J. Millar recalls that the project's inception occurred on 24 July 1978 with Captain Barry Nobes' paper to the Chief of Naval Operational Requirements and Plans detailing the need for a replacement for the Oberons. Commander Andrew J. Millar, CSC RAN (Retired), is both a submariner and anti-submarine specialist who had been involved in the project since 1982. Personal communication, 17 November 2003.


8. For a critique of the success of these policies, see Cheeseman, The Search for Self Reliance: Australian Defence Since Vietnam.


Information from interviewee.


It should also be noted that the ANZUS signatories concluded the Radford-Collins Agreement in 1951. Thomas-Durrell Young observed that this ‘maritime security arrangement, named after its signatories, Admiral William Radford, U.S. Navy, and Vice-Admiral Sir John Collins, Royal Australian Navy, provides for the implementation of allied naval control and protection of shipping in the Pacific and Indian oceans. The present members of the agreement are assigned “areas of maritime responsibility,” where, in times of tension or conflict, each nation is to provide command and control of shipping as well as direct antisubmarine warfare operations. In recognition of its limited defense capability, New Zealand is not expected to be able to provide for all the vessels and aircraft that would be required for the complete security of the New Zealand area.’ See Thomas-Durrell Young, ‘New Zealand Air Power Requirements and Force Determinants’, Air University Review, Maxwell Air Force Base, AL, March-April 1986, available at <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1986/mar-apr/young.html>, accessed December 2005.

See A.W. Grazebrook, ‘Collins class comes up down under’, Jane’s Navy International, vol. 103, no. 1, 1998, p. 21. At that time, at 3,500 tonnes, it was to be the largest conventionally powered submarine. Nuclear powered submarines may be six times as large. One of the difficulties for large submarines is that, because of the greater transparency of tropical waters created by the low levels of biomass, they are more likely to be visible from the air in some situations even when submerged. Information from interviewee.

Two of the major challenges for submarine constructors relate to noise signature and sensor effectiveness. Again the nature of shallow tropical waters makes it more difficult for the effective operation of sonars. Information from interviewee.
2000, pp. 22-24. Note also that littoral waters can refer to waters as shallow as 70–80 metres.


For the argument for conventional submarines see, Commander Andrew J. Millar, CSC RAN (Retired), ‘Conventional vs Nuclear Submarines: The Case for Conventional Submarines for Australia’, RAN New Submarine Project, undated, copy in author’s possession.

The then Minister for Defence Kim Beazley provided a summary of the advantages and disadvantages of nuclear powered submarines in response to a question upon notice from Dr. Krugman, Commonwealth Political Debates, House of Representatives Hansard, 9 October 1985, Question No.2039, p. 39: ‘not only were they noisier and with a high infra red signature, more vulnerable to detection, in inshore conditions the nuclear submarines were less effective than conventionally powered submarines.’ However, given the nuclear submarines’ unlimited mobility, they were a highly attractive option for the US and Soviet Navies.

For a brief technical summary of the Collins design, see Commander Andrew J. Millar, RAN, Profile of the Collins Design, Australian Navy, 1992-93, pp. 44–46.


Ray, Commonwealth Political Debates, Senate Hansard, ‘Submarines’, and Grazebrook, ‘Collins class comes up down under’, p. 21. The PDS scope was to define the contract design baseline, management arrangements, the Australian Industry Involvement programme, and to develop costed production proposals.


Information from interviewee.

Information from interviewee.


Information from interviewee.

Instead of thirty or more unions to represent workers, the ASC eventually negotiated this to just three. It was thus known as the ‘Three Union Agreement’. Andrew J. Millar, personal communication, 17 November 2003.
Grazebrook, ‘Collins class comes up down under’, p. 21. This article also provides an overview of the variety of subcontractors involved in the construction of the Collins class submarine.


Many of the defence contracts issued previously only required 12-15 percent Australian content.


Information from interviewee.

The Collins class submarine, however, rarely put to sea with less than 55. More engineering submariners were required to crew the boats. Information from interviewee.


The ASC was originally owned by Kockums Pacific Pty Ltd (30 percent shareholding), Chicago Bridge and Iron Pty Ltd (United States) (20 percent), Wormald Pty Ltd (Australia) (25 percent), and the AIDC (25 percent). Government requirements were for a majority Australian shareholding, hence AIDC and Wormald. Chicago Bridge and Iron was included for its expertise in large project management. However, it soon departed from the project.


Information from interviewee.

Robert Ray, Senate Estimates Hansard, Programme 5, Strategic and Intelligence, 10 November 1993, p. 209.

During both the First and Second World Wars Australia had constructed many ships for the RAN.

Mike Gilligan, while never a proponent of the submarines, made a claim that scientists at the Naval Research Laboratory in Sydney, who were Australia’s experts in joint technical cooperation programmes with the United States and the United Kingdom, advised the Defence procurement management team at the time that, even though the contractor had agreed to delivery, this was no indication that it was achievable: in short, the system would not work. See, Mike Gilligan, ‘Time to Scuttle the Submarines’, Canberra Times, 20 March 2000, p. 9. As the Research Laboratory had been integrated into the Defence Science & Technology
Organisation some time prior to this, and were not responsible for this work, these comments remain unsubstantiated. Another commentator saw that, 'in its desire to win the contract, Rockwell Systems committed itself to supplying a system technology well ahead of its time, but was beyond Rockwell’s ability to manufacture. It did not have sufficient technological expertise to meet both the Australian requirements and what such a system offered when operational.' See, Samuel Loring Morrison, ‘Australia remains a dominant naval power in the South Pacific', *Navy News and Undersea Technology*, vol. 17, no. 10, 6 March 2000, p. 2. These claims, nonetheless, undemanding as they are to make in hindsight, also reflect the political differences within the Navy itself regarding the project.

Australia’s sonar industry has a recognised world class record.


For a discussion of these projects, see Gary Brown, ‘Decades of Disasters: Major Project Management in Defence’, Submission to the Senate Committee on Foreign Affairs, Defence and Trade, July 2002. Brown also includes the Collins class submarine in this paper and is particularly critical of both governments’ continued allegiance to the US combat system houses, Rockwell and (eventually) Raytheon. It should also be noted that Brown was a defence advisor to parliamentarians for many years.

Information from interviewee.

Exceptions here included the weapons and associated fire control interfaces for the Submarine Weapon Upgrade Project (SWUP).

Millar, ‘The Collins is a first-rate sub’, p. 9. The Victoria-class diesel electric submarines currently being reconstructed by the British for the Canadians have also experienced 25 percent cost increases and are around three years later than their scheduled delivery date.

Paul Dibb, Emeritus Professor and former Head of the Strategic and Defence Studies Centre at the Australian National University, and Terry Roach, former submarine commanding officer, not only identify some of the problems with the *Seawolf* and *Upholder* programmes but, in very favourably reviewing the submarines, also conclude that ‘none of the problems that have arisen with regard to the Collins is insurmountable’, in ‘Collins: The Submarine We Had To Have’, *Australian Financial Review*, 17 February 1999, p. 17.

Information from interviewee.


Two of the interviewees have commented that the submariners became adept at disregarding the Tactical Data Handling System picture, and utilised the sonar picture in similar fashion to their experience on the Oberons. One stated that the
Waller's successes in 2000 were achieved 'in spite of' the combat system then fitted.

It should be remembered here that the exercises are constructed to engage the submarines, so any result must be considered with the artificial nature of the situation in mind.

Chapter 2: A Genuine Shipwreck or Pathological Politicisation?

For an expert review of the project and its successes, see Commander Andrew J. Millar, CSC RAN (Retired), 'Naval Ships: Collins Class Submarines', Australian Ships and Ports, December 1999.

It was pointed out by one of the interviewees that this should not be confused with the 'fast track' modifications to the Dechaineux and Sheean in later years.

This is a reference to the anechoic tiles as created by the DSTO with the ASC.


Commonwealth of Australia, Joint Committee of Public Accounts and Audit, Review of Audit, pp. 2-3. Merrilyn McPherson, Acting Deputy Secretary, Acquisition, Defence Acquisition Organisation, Transcript, 29 April 1998, pp. PA 38-9. The original project cost in June 1987 was identified at $3.892 billion, however, with currency alterations, inflation, and labour costs, the project expenses increased. The contingency for the project was 5 percent. The usual 10-15 percent was unpalatable for the then Hawke Government.

Garry Jones, Joint Committee of Public Accounts and Audit, evidence transcript, 5 March 1999, p. PA 87. Also quoted in the JCPAA Review of Audit Report, p. 64.

Commonwealth of Australia, Joint Committee of Public Accounts and Audit, Review of Audit, p. 64.

Commonwealth of Australia, Joint Committee of Public Accounts and Audit, Review of Audit, p. 72.

To read John Moore's statements at the launch of the report see, John Moore, Minister for Defence, 'Transcript of the press conference to launch the McIntosh-Prescott Report', 1 July 1999, available at <http://www.minister.defence.gov.au/1999/ml0499.html>, accessed December 2005. One interviewee also reminded me that there were also instances when Moore endeavoured to remain removed from the project. At the time Moore requested the Report, Malcolm McIntosh was
head of CSIRO and also a former Chief of Defence Procurement in the United Kingdom. John Prescott was the former Chief Executive Officer of BHP.

Information from interviewee.


McIntosh and Prescott, Report to the Minister for Defence on The Collins Class Submarine and Related Matters, p. 6.

McIntosh and Prescott, Report to the Minister for Defence on The Collins Class Submarine and Related Matters, p. 17.

McIntosh and Prescott, Report to the Minister for Defence on The Collins Class Submarine and Related Matters, pp. 6-10.

By way of example, leakage from the propeller shaft seal was a manufacturing error and had been fixed some years prior to the report, while satellite communications were not part of the technical requirements until after July 1999.


Information from Interviewee.

Information from Interviewee.

Chapter 3: Combat System Snags


I am indebted to several of the interviewees for an explanation of the TDHS.


Australian National Audit Report, Performance Audit, New Submarine Project, p. 103.

Millar, 'Collins Class Successes', provided by Andrew J. Millar to the author in October 2003. It is also worth noting that it remains difficult, internationally, to recruit and maintain submariner numbers.

Ohff, personal communication, 22 May 2001.


Chapter 4: Subscribing to US Assistance

91 McIntosh and Prescott reported that the combat system was inadequate and now obsolete, with a consequence that the sonars were only about 25 percent effective. Thomson Marconi Sonar, producers of the sonars, claimed that when the combat system was fully operational, the sonars would also perform as intended.
95 Ohff, personal communication, 22 May 2001.
96 Andrew J. Millar has offered this as an opinion on the US submarine industry and allied engagement. Personal Communication, 17 November 2003.
97 Colin Blair, ‘Collins’ platform is fine but combat system still needs tuning’, Asia-Pacific Defence Reporter, September/October, 1996, p. 27.
99 United States Navy, ‘Forward...From the Sea: The Navy Operational Concept’, March 1997, pp. 1-2, available at <http://www.chinfo.navy.mil/navpalib/policy/fromsea/ffseannoc.html>, accessed May 2001. One of the interviewees has also observed that joint exercises such as RIMPAC have often served to remind the USN of the risks presented by conventional submarines.
100 Given its size, it would be impossible to conduct operations in shallow water. Terry Roach argues, however, that the United States does have experience in shallow water operations. This was achieved through its activities in the territorial waters of the Soviet Union, during the Vietnam War in the South China Sea, and towards the conclusion of the Cold War when the Soviet Union operated SSBNs closer to home in the Barents Sea and Arctic Ocean. He argued that conditions under the polar ice cap resembled the reverberation-rich environment of shallow seas. See, Terence Roach, ‘Opportunity knocks for the Collins class’, Asia-Pacific Defence Reporter, October/November 2000, pp. 38-39.


I am grateful to some of the interviewees for the information in this section.


One of the interviewees has noted that the constant problems with the TDHS ‘robbed the submarine of even more success on several occasions’.

Information from interviewees.


India was also a supporter of NMD.


Although Hasjim Djalal points to the ARF proposals identified to defuse tensions in the South China Sea, no timeframes have been allocated to their implementation, see ‘Preventive Diplomacy and the South China Sea’ in Desmond Ball and Amitav Acharya (eds.), *The Next Stage: Preventive Diplomacy and Security Cooperation in the Asia-Pacific Region*, Canberra Papers on Strategy and Defence No. 131, Strategic and Defence Studies Centre, Australian National University, Canberra and the Institute of Strategic Studies, Nanyang Technological University, Singapore, 1999, pp. 187–97.


The UN Convention on the Law of the Sea was ratified in 1994. All countries in Asia, with the exception of North Korea, have signed the Convention. Although the ‘sea enclosure’ section, that is the creation of exclusive economic zones, has been regarded positively, there has been some dispute that the international standards are not appropriate in all scenarios. For a discussion of the issues in maritime security in Asia and the prospects for multilateral resolution, see Mark J. Valencia, *Prospects for Multilateral Regime Building in Asia* in Sam Bateman


134 Information from interviewee.

135 See Raytheon's presentation at the 2000 Undersea Technology Conference, Sydney.


138 John Moore, Minister for Defence, 'John Moore on the Collins Class fiasco', interview transcript, *7.30 Report*, ABC Television, 1 July 1999. It should also be noted that COTS technology is not without its own difficulties, such as the procurement of spare parts in service processes.


140 Briggs, Head Submarine Capability Team, Transcript of Press Conference, p. 15.

141 McIntosh and Prescott, *Report to the Minister for Defence on the Collins Class Submarine and Related Matters*, p. 21.


143 Gary Brown and Laura Rayner claim that this decision was 'a clear case of the alliance inappropriately overshadowing operational priorities. It seems clear that the Navy's submarine professionals wished to acquire the German combat system offering but have been overruled in favour of an unproven solution to be developed
by a state, the United States, which has had no experience of conventionally powered submarine operations for at least forty years.' Gary Brown and Laura Rayner, 'Upside, Downside: ANZUS: After 50 Years', Department of the Parliamentary Library, Current Issues Brief 3, 2001-02, available at <http://www.aph.gov.au/library/pubs/CIB/2001-02/02cib03.htm>, accessed December 2005. Derek Woolner concurs with this assessment, writing that 'the lessons of recent history are that neither sponsorship by the US Armed Forces nor development by corporate America can guarantee success in systems integration programs. ... The problem is that ... the Minister's decision has placed the future of the Collins class in the hands of a supplier who does not have as yet an operational system, let alone one proven by Service use in conventional submarines. Should problems develop, there is no body of operational experience on which to call.' See Derek Woolner, 'Getting in Early: Lessons of the Collins Submarine Program for Improved Oversight of Defence Procurement', Department of the Parliamentary Library, Research Paper, No. 3, 2001-02.


Following the recommendations of the McIntosh-Prescott report, John Moore moved to restructure the defence acquisition group and thereby give added impetus to the ongoing submarine project. Not only would a new position of Head of Defence Acquisition be established at the level of junior secretary, but recruitment and secondment would look to industry to strengthen its commercial and project management skills. Both procurement and acquisition officials would be required to report in greater detail to Cabinet.


Scott and Bostock, 'Final countdown for new Collins combat system', p. 13.


Information from interviewee.

I thank some of the interviewees for a reminder of this at this juncture.


In 1995 the United Kingdom signed a Foreign Military Sales Agreement with the United States for the purchase of 65 missiles. After testing procedures, it was pronounced operational in 1998.


Graebrook, ‘Collins class comes up down under’, p. 21.


Forbes, ‘Subs chief calls for cruise missile strike power’, p. 3.


Cruise missile deployment, however, was but one of Ball’s concerns for regional security. He regarded acquisition of new armament technologies such as the purchase of ballistic missiles and weapons of mass destruction as ‘disturbing’ features of regional security. See Desmond Ball, ‘Strategic Planning for the Defence of Australia in 2015’ in Desmond Ball (ed.), Maintaining the Strategic Edge: The Defence of Australia in 2015, p. 8.


The Abrams tanks were also manufactured by General Dynamics.


**Chapter 5: On the Rocks: The Sale of the Australian Submarine Corporation**


I thank one of the interviewees for this point.


Australian Submarine Corporation, ‘Success in Asia for Australian Submarine Corporation’, 9 August 2000, available at <http://www.subcorp.com.au/fca.html>, accessed May 2001. The $58 million contract was for the design of the patrol boats with Cheoy Lee completing the production phase. Repair and maintenance for Indonesia’s Type 209 submarines were also conducted.

OASITO, Rothschild and Blake Dawson conducted a ‘due diligence’ of the ASC in 1999–2000.


John Moore, Minister for Defence, Media Release, ‘Commonwealth acquires full ownership of the Australian Submarine Corporation’, MIN 319/00, 30 October 2000. The media release denotes a sum of $43.49 million for the sale of the 51.55 percent of the shares. However, $53.49 million was eventually paid, comprising $33.49 million from the Australian Government plus a $20 million fully franked dividend from the ASC.


Garran, ‘German firm out of submarine race’, p. 2.

Lincoln Wright, ‘Defence gave sub secrets to US, say makers: More choppy waters for troubled Collins’, *Canberra Times*, 20 August 2000, p. 11.


Sale of the ASC was also dependent upon the resolution of the set of IP, design and business issues; see Department of Defence, *The Australian Naval Shipbuilding and Repair Sector Strategic Plan*, Canberra, 2002, pp. 40–1. Most significant in the ongoing maintenance and alterations in equipment and weaponry was that safety issues should remain the priority. On the subject of Kockums’ possible separation from the ongoing maintenance of the submarines, Patrick Walters claims that a ‘deeply troubling aspect of the pending breach with Kockums, according to some defence and industry experts, is the risk it could pose to the long term safety of the navy’s submarine fleet’. See Patrick Walters, ‘Skirmish for the Collins Class’, *The Australian*, 15 November 2003, p. 27.


Mark Thomson assesses the options for naval shipbuilding in Australia in ‘Setting a Course for Naval Shipbuilding and Repair Industry’, A Presentation to the Maritime Building, Repair and Maintenance Conference, 26–27 March 2003. In each of these options the sale of the ASC assumes centrality. Paper accessed via the Australian Strategic Policy Institute.


Electric Boat, together with Northrop Grumman’s Newport News, are the two nuclear submarine manufacturers for the USN.


Chapter 6: Domestic Management: The Opposition Submerged


212 Terry Plane, ‘Reith shows two faces in one day on Collins subs—Election 2001: 2 days to go’, The Australian, 8 November 2001, p. 3.


216 Some of those interviewed commented on the range of other armed services projects that were jeopardised by the Collins outlay.


Chapter 7: US Concentration on a Suitable Result


Information from interviewees.

Geoffrey Barker claims that, in Defence industry circles, Electric Boat was thought to be under pressure to assist Australia; see Barker, 'Suboptimisation', *Australian Financial Review*, 25 July 2000, p. 42.


It was expected that Raytheon and SonarTech were to be advised of the decision on 8 December 2000.


David Shackleton has also stated that the 'defence industry exists to support the defence force and national defence capability. The defence force does not exist to support defence industry'. See David Shackleton, 'Conference dinner speech' in David Wilson (ed.), *Maritime War in the 21st Century: The Medium and Small Navy Perspective*, RAN Sea Power Centre, Canberra, 2001, p. 281.


Lynne O'Donnell and Sid Marris, 'Beijing warns on sub sales to Taiwan', *The Australian*, 22 April 2002, p. 7.


O'Donnell and Marris, 'Beijing warns on sub sales to Taiwan', p. 7.

Baumgardner, 'Butler: Taiwan Submarine Program Appears Delayed Until 2006'.

The German Government would argue that any transfer of the HDW Group's submarine technology is still subject to Berlin's approval. There is also some suggestion that Bank One's ownership of HDW may only be temporary.

Conclusion: Increased intimacy


Worth remembering here is that the British furore over rejection of their bid for the submarine platform soon dissipated.

For a discussion of the operational consequences of RMA, see Francois Heisborg, 'The Revolution in Military Affairs' in Desmond Ball (ed.), *Maintaining the Strategic Edge: The Defence of Australia in 2015*, pp. 127-40 and, in particular, p. 139.

One interviewee pointed out that this would not be with the same degree of intimacy as the Australian-US relationship.


Hugh White also argues the necessity of a regional focus in 'Why we still have to be ready to fight', *The Age*, 30 July 2003, p. 13; and in 'Beyond the War on Terror: Australian Defence Policy in an Age of Uncertainty', Address to the National Press Club, 1 October 2003.

BIBLIOGRAPHY

Books


**Book chapters**


**Interviews**

Beazley, Kim, transcript of the doorstop interview, Melbourne, Media Release, MIN 412/01, 6 October 2001.

Hill, Robert, interview with Matt Abraham and David Bevan, 5AN, transcript, Media Release, MIN 681/02, 27 November 2002.


**Journal articles**


Blair, Colin, ‘Collins’ platform is fine but combat system still needs tuning’, *Asia-Pacific Defence Reporter*, September/October 1996.


**Media/press releases and press conference transcripts**


Department of Defence, 'Federal Court decision allows submarine propeller modifications to go ahead', Media Release, Departmental 93/01, 11 April 2001.


Moore, John and Nick Minchin, ‘Government to Review Options for Future Support of Collins Class Submarines’, Joint Media Statement, MIN 070/00,


White, Hugh, ‘Beyond the War on Terror: Australian Defence Policy in an Age of Uncertainty’, Address to the National Press Club, 1 October 2003.

**Newspaper articles**


Plane, Terry, ‘Reith shows two faces in one day on Collins subs—Election 2001: 2 days to go’, The Australian, 8 November 2001, p. 3.


Walters, Patrick, ‘Skirmish for the Collins Class’, The Australian, 15 November 2003, p. 27.


White, Hugh, ‘Why we still have to be ready to fight’, The Age, 30 July 2003, p. 13.

Wright, Lincoln, ‘Defence gave sub secrets to US, say makers: More choppy waters for troubled Collins’, *Canberra Times*, 20 August 2000, p. 11.

Wright, Lincoln, ‘Secrets Blow About Building Site’, *Canberra Times*, 23 August 2000, p. 3.

**Other**


‘Collins Class Successes’, undated, provided by Andrew Millar to the author in October 2003.


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For most of us, it is easy to recall the spectacularly poor press that dogged the *Collins* class submarine project from its inception: the 'rock concert' analogy, the 'dud subs' tag. Some sections of the national psyche are still beholden to this legacy. But now that the submarines continue to perform adeptly and the public static has subsided, it is possible to reflect more clearly upon some of the features of the project, including the project's development and the effect of both the transformation of Australia's strategic posture on the project as it altered after 1996 and the domestic political environment.

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