SEAPOWER '87

Proceedings of the Fourth National Seminar
of the Australian Naval Institute

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   b. to provide a forum for the exchange of ideas concerning subjects related to the Navy and the maritime profession, and
   c. to publish a journal.

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In order to achieve the stated aims of the Institute, all readers, both members and non-members, are encouraged to submit articles for publication. Preferably, submissions should be typed, double spaced, on A4 paper; the author's name and address must be shown clearly, even if a pseudonym is required for printing purposes; to be eligible for prizes, original articles must be accompanied by statements that they have been written expressly for the ANI; and short biographies will be welcomed. The Editor reserves the right to reject or amend articles for publication.

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SEAPOWER '87

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of the
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Canberra, 16-17 October, 1987

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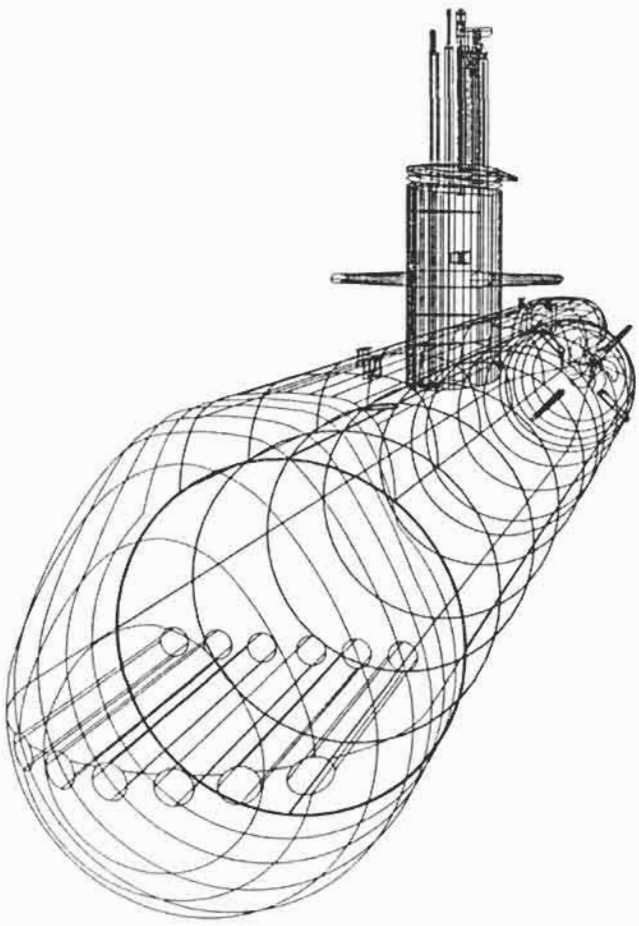

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EDITORIAL

This volume presents the proceedings of the Australian Naval Institute's fourth National Seminar and consists of, in the case of all but two speeches, the transcripts of each session, some modified after consultation with the speakers and comparison with their scripts. I am very grateful to those speakers who took the time to check and edit their transcripts but I should emphasise that any errors or omissions are entirely my responsibliity as Editor.

Due to difficulties with recording, only the final discussion period has been included and identification of each speaker in the body of the hall has not always been possible. Where such identification has not been made the question or comment has been sourced as "Unknown".

Readers of these proceedings are invited to continue with the debate on matters raised at the Seminar. The Journal of the Australian Naval Institute, published quarterly, is always open to all who wish to exchange "ideas concerning subjects related to the Navy and the maritime profession".

I am particularly grateful to Kay Hefferan, of Kay Hefferan Publishing, for her work in transforming transcript and speeches into a coherent and ready to publish form.

JAMES GOLDRICK
Hon. Editor

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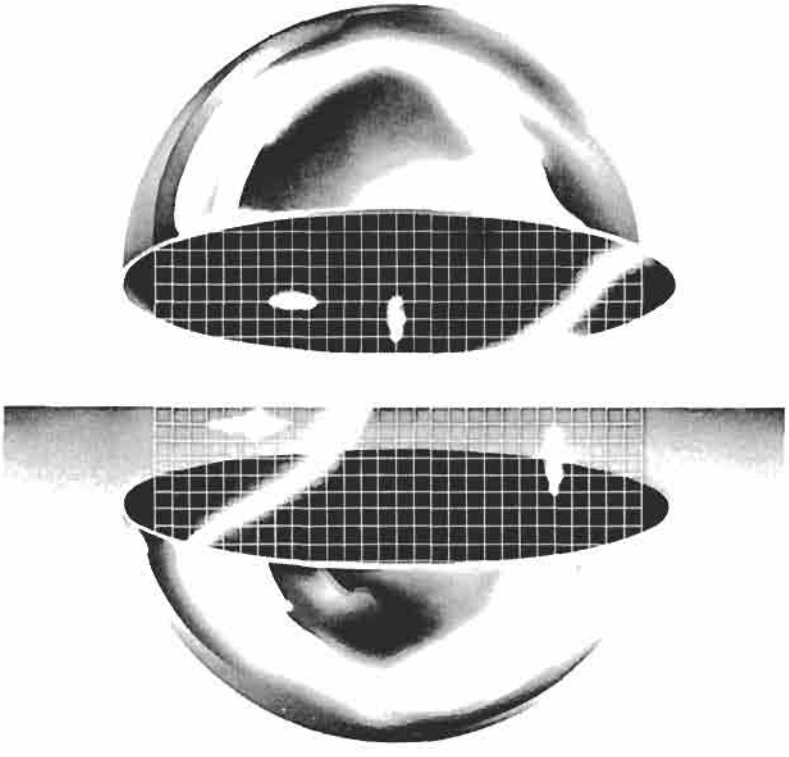

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SEAPOWER 87

PROGRAMME

H.C. COOMBS THEATRE, AUSTRALIAN NATIONAL UNIVERSITY

Friday 16 October 1987

Session One

11.00am-11.05am	Introduction	CAPTAIN A.H.R. BRECHT, RAN (ANI President)
11.05am-11.20am	Opening Address	HIS EXCELLENCY THE ADMINISTRATOR
11.25am-12.05pm	The Strategic Setting	DR CORAL BELL (ANU Centre for Strategic and Defence Studies)
12.30pm- 2.00pm	LUNCHEON	

Session Two

2.00pm- 3.00pm	The Maritime Defence Requirement	VICE ADMIRAL M.W. HUDSON AC, RAN (Chief of Naval Staff)
3.00pm- 3.30pm	Open Forum	
3.30pm- 4.00pm	COFFEE	

Session Three

4.00pm- 5.00pm	Keynote Address: The Challenge to Industry	MR GREG JOHN (Australian Chamber of Manufactures)
6.15pm- 8.15pm	DRINKS & BUFFET DINNER	
8.15pm- 9.15pm	After Dinner Address: The Scope of Technology	MR DAVID CHARLES, MP (Representing the Minister for Defence)

Saturday 17 October 1987

Session Four

9.00am- 9.15am	Introduction	REAR ADMIRAL W.J. ROURKE AO, RANEM
9.15am-10.00am	A Defence View of Australian Industry	MR ROBERT COOKSEY (Ministerial Consultant to the Minister for Defence)
10.00am-10.20am	COFFEE	

Session Five

10.20am-11.10am	The Submarine as an Indicator of Australian's Shipbuilding Potential	AUSTRALIAN SUBMARINE CORPORATION/ REAR ADMIRAL O.J. HUGHES AM, RAN (NCSPD)
11.15am-12.00pm	An Opposition Viewpoint	MR PETER WHITE MC, MP (Shadow Minister for Defence)
12.00pm-12.30pm	A Young Turk's View	LCDR M.J. TAYLOR, RAN
12.30pm- 1.45pm	LUNCHEON	

Session Six

1.45pm- 3.00pm	Industry Panel	MR HENRY D'ASSUMPCAO (Chief Defence Scientist), MR DON FRY (NQEA), MR BRUCE PRICE (HdeH), MR PETER REHN (CSA)
3.00pm- 3.15pm	COFFEE	
3.15pm- 4.15pm	Open Forum	
4.15pm- 4.30pm	Closing Summary	REAR ADMIRAL W.J. ROURKE AO, RANEM
4.30pm	SEMINAR CONCLUDES	CAPTAIN A.H.R. BRECHT, RAN (ANI President)

INTRODUCTION TO THE SEMINAR

Captain A.H.R. Brecht, RAN
President of the Australian Naval Institute

The Australian Naval Institute is pleased to present this seminar, Seapower '87, and on behalf of the Council and Members I welcome you to the proceedings. I suppose as a Canberran I should apologise about the weather, but the Institute can do nothing about that. The ANI believes that the Seminar theme, "The Maritime Challenge to Industry Beyond the Year 2000", will provide a good stimulus to debate and I encourage all delegates to fully join in the discussion.

Some changes to the programme have been necessary due to the unavailability of the Minister for Defence, Mr Kim Beazley, the Chairman of Budget Transport Industry, Mr Bob Ansett, and the Victorian State Secretary of the Amalgamated Metal Workers Union, Mr John Halfpenny. Each of these gentlemen deeply regrets that he is unavoidably overseas, and each has asked me to apologise to you on his behalf.

The Institute has been fortunate to find equally distinguished replacements and I thank them for their willingness to step in at such short notice.

We are honoured by the presence of His Excellency, the Administrator of the Commonwealth, who will open Seapower '87. Air Marshal Sir James Rowland, Governor of New South Wales, has had a most distinguished career in the Royal Australian Airforce in which he continues in an advisory role.

Your Excellency, we recognise your unique position as you open this Seminar. Your experience as Chief of the Air Staff, from 1975 to 1979, gives you a sound insight into the Maritime aspects of Australia's Defence, while your engineering and technical qualifications enable you to appreciate the vital role that must be played by Australian Industry. The Australian Naval Institute and all the Delegates to this important seminar extend to you, Sir, a warm welcome. It is with much pleasure that I now invite you to address this gathering and to formally open Seapower '87.

HMAS Darwin and Tobruk

OPENING ADDRESS

His Excellency Air Marshal Sir James Rowland, AC, KBE, DFC, AFC
Administrator of the Commonwealth of Australia

First, I must thank you for your invitation to be here this morning for the opening of this fourth International Seapower Seminar of the Institute. I regret that I am only a stand in for your patron, who is overseas, but I have taken an interest in the seminars over the years, and I think they have made a very valuable contribution to public discussion and, I hope, understanding of the issues that are involved in Seapower and in Defence generally.

The theme this year, "The Maritime Challenge to Industry Beyond the Year 2000", is a very topical one, following as it does the decision to build the Type 471 Submarine in Australia. The year 2000 is closer than you think, and these boats will be in service until well into the next century. It will be necessary for us not only to be able to build them, but also to maintain them and modify them as new weapons and systems appear throughout their Service lives.

We've not seriously thought, as far as I know, of building submarines here before, although I know there was considerable interest in about 1917 and 1918 in submarines. But of course many surface ships have been built over the years. So the Type 471 decision heralds a new era in ship building for us and it effectively creates a new facet of industry.

The decision also comes at a time when technology has been advancing very rapidly on almost every front. In materials, in construction methods, in hydrodynamics, in propulsion design, electronics and sonar, in fibre optic communications, navigation, fire control systems and weapon systems. And all these have brought corresponding changes in performance and in the techniques and skills of manufacture of operation and of maintenance. Some of these will be directly involved in the construction of the submarines themselves but their impact will also be felt over a wide range of supporting and allied industries, which will play their parts in the project as a whole.

As an example the requirement for training and education alone will be very considerable. It will be necessary to develop training programmes, adequate not only to ensure that future crews will be able to operate and use the new technology to its full capability, but also that the equipment can be repaired, modified and maintained.

I know that the Royal Australian Navy and, in particular, the Submarine Warfare Systems Centre is acutely aware of all this, and has already done a great deal in developing close relations between Industry, Universities and the Navy, and in preparing itself for this challenge.

Industry itself is working hard to come to grips with the project for there are contracts to be won and much knowledge to be absorbed. There will also be unforeseen problems to be dealt with.

So there are many challenges ahead, which will test the skills and the imagination and the capacity of Industry and of the Navy. And a combined and coordinated approach is going to be needed. But the rewards for Australia will be greater self reliance, a better defence capability and a more capable industry. And industry itself will find that there are spin offs from its new technology, which will be applicable in other commercial fields.

Well, perhaps I have spent a bit too much time on the submarine project, for the aims of this seminar extend much further into industry's long term part in the support of our maritime services generally. In this also I think that Seapower '87 is timely, for far too often we think of things in the short term only as more immediate preoccupations press upon us. We tend to deal with them first "sufficient unto the day as the evil thereof". I put that in as I see that you have a predilection for Biblical quotations in this seminar.

But it is an inescapable fact that military equipment is becoming more complex and more expensive as the technology snowballs and as lead times for projects become longer. We are, whether we like it or not, having to stand on our own two feet more and more, and increasingly we are having to look after our own. To do this we must look and plan further ahead than we have been used to.

I note from the brochure that the Institute seeks at this seminar again to follow the Biblical advice that I have referred to, "and the truth shall make you free". May I commend to you also the first part of that quotation, "and you shall seek the truth", for it's finding the knowledge of that truth that is the most difficult part of defence thinking, yet that truth is all that can save us from scenario driven planning.

It's been said that there are two types of ignorance, simple and compound. Simple ignorance of course is when you don't know. Compound ignorance is when you don't know that you don't know. Well, may the Lord help you to find that truth that I referred to and fill the void which is the first kind of ignorance and preserve us all from the second.

Gentlemen, I wish you all success in your deliberations, because they're important. I wish you a most enjoyable and stimulating seminar and it's now my pleasure and privilege formally to declare open, Seapower '87. Thank you.

HMAS Swan

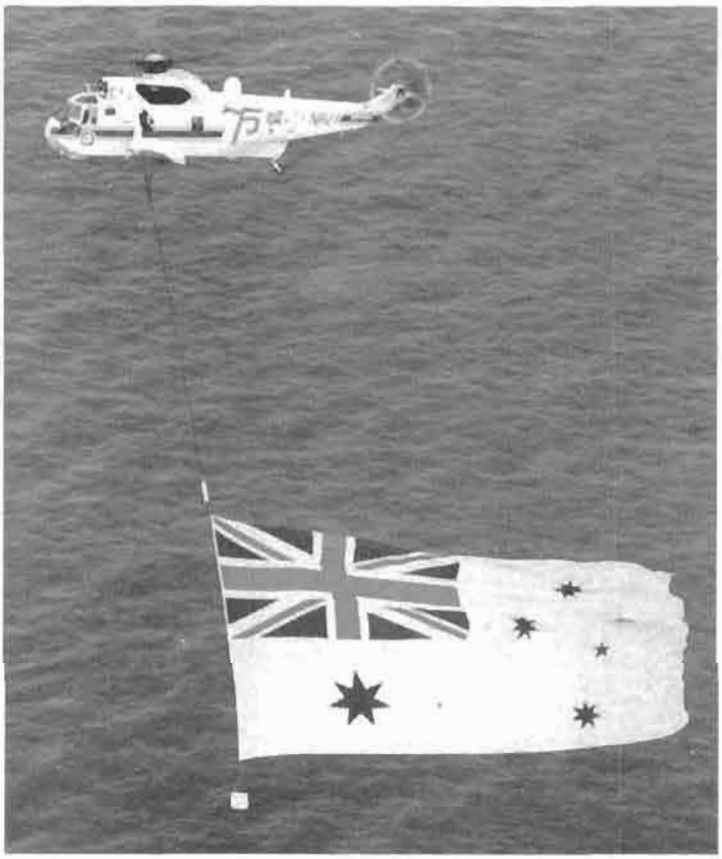
INTRODUCTION TO SESSION ONE

Commodore J.A. Robertson, RAN (Rtd)

When I asked Dr Coral Bell if there was anything particularly I should mention in introducing her, she very modestly said, "It would be enough to say that she began her career in the Australian Diplomatic Service and is today a senior research fellow here at the ANU".

So I hope she won't mind me also saying that the Naval Institute is fortunate that someone of her international standing and achievements should be so kind as to establish the strategic theme for this seminar. Furthermore, Dr Bell has demonstrated that she is exceptional in her understanding of the maritime aspect of Australia's strategic situation. I suspect that she didn't attach any great significance to her revelation of what is unfortunately an all too rare understanding among Australians.

Let me illustrate. Some years ago she wrote a review of the International Institute of Strategic Studies Annual Report of the East West balance, and there was the phrase, "Australia is at the end of a long watery limb", and in that one succinct phrase I think Dr Bell summed up so much of what this Institute is all about.



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THE STRATEGIC SETTING

Dr Coral Bell
Australian National University

It is of course a bold venture, not to say a rash one, to attempt to look 20 years into the future of so shifting and ambivalent a set of relationships as those of international politics. The crystal ball grows cloudy, just in the areas for which one needs clarity. Nevertheless, the lead time for major weapon systems is ten years and much longer for radically new systems like SDI. So policy planners need and must play prophet, though not usually for a point so far in the future as I am contemplating in this paper.

For its purposes I am attempting to assume myself in the position of a medium senior official in the Department of Foreign Affairs, in the first decade of the 21st Century, putting together a preliminary draft of what will eventually go to Cabinet as the strategic basis of Australia's Defence Policy 2010.

I will know of course that, before the volume is ready for Cabinet, there will be many revisions and large inputs from assorted analysts in the Defence Department and the Intelligence Community.

So, though this first approximation can incorporate a personal vision of the world, the final version must and will represent a consensus of sorts - the highest common factor or the lowest common denominator of a varied range of expert and not so expert opinion.

My assumption is that the kind of exercise I am now embarking on will in due course be undertaken by the Canberra bureaucracy, and the volume will in due course reach the Prime Minister of that day, perhaps Mr Kim Beazley, and the Defence Minister of that time, much the same as it does at the present.

That assumption of course rules out some worst case possibilities, which pessimists would assume to be probabilities. It rules out the likelihood of global nuclear war, within the 20 years time span that we are leaping over, and it rules out a transformation for the worse for the current bureaucratic political system in Australia.

It also, in effect, rules out a best case analysis, since if the worst case would be nuclear war, the best case would be a situation of so much international peace, harmony and security that strategic assessments would become irrelevant and unnecessary.

In view of the present state of the world, that strikes me as so wildly improbable that there is no need for providing a justification for neglecting it. And, as for the first case, there doesn't seem much point in forecasting for the horribly transformed, despairing wreckage of a world that would be left after nuclear war.

Thus, we are left with a middle range of probabilities - a world diplomatically and strategically much like the contemporary one, but with considerable demographic, economic, political, sociological and technical changes, most of which are already in the pipeline.

That may seem an unduly conservative approach, but I think one can show its justification simply by transposing the whole exercise back into the past. If, in 1967 one had been obliged to offer a prediction for the world of 1987, the current reality could have been approximated reasonably well by extrapolating the tendencies becoming visible in the middle sixties. So, in effect, I am assuming a rate of change not less than in the past 20 years, but not necessarily much greater.

There have of course been 20 year patches of diplomatic history, which have seen total transformations of the society of states, for instance, as between 1913 and 1933, or between 1938 and 1958. But the centre pieces of those transformations, the great explosions generating such rapid change, were of course World Wars. As I said earlier, I'm ruling out that worst case possibility as rather pointless as far as practical planning is concerned.

But I also regard it as genuinely unlikely. The reasons for that optimism have to do with the contemporary world system, that Canberra policy planners have to see as the overall context for Australia's security problems - that is the global balance of power. The local context, which is the regional balance of power, will be looked at presently.

First, the central balance. Well, despite the pessimists, on the historical evidence of the past

four decades, the global balance of power which defined itself during the years 1946-48, has been more stable than any time since the 19th Century, certainly much more stable than the wretched inter war balance, such as it was, which lasted 20 years from 1919 to 1939.

Relative stability is evidenced by the fact that the central balance powers, NATO and the Warsaw Pact, have avoided serious hostilities with each other through a 40 year time span. There have, of course, been many wars in those four decades and, according to the UN, more than 20 million dead, in or as a result of military action. So they have certainly not been years of peace.

Moreover, there have also been many, many crises during that time, and both the super powers have had to take defeats and set backs to their respective spheres of interest and influence - the United States over Cuba, Vietnam and Iran - the Soviet Union over Yugoslavia, China, Indonesia and Egypt.

Furthermore great changes have occurred in the society of states as a whole with the dismantling of the Western colonial empires and the multiplication of new sovereignties, so the society of states now runs to three times the numbers it did in 1945.

All that means is that the system has been subjected to enough batterings and adjustments for us to say that its survival must betoken an intrinsic sturdiness. If the world had lived mostly uneventful years in the four decades of the present balance, one might argue that the balance might be too fragile to survive the probable tensions and frictions of the next 20 years and therefore one ought not to assume that it will be working as much as at present.

I would concede the visible emergence of many current tensions and frictions. My argument is that they are, however, less serious than those which the system has already survived, and that they will not necessarily undermine the basic elements which have sustained it to date.

Now, those elements in my view are three in number, **reasonably prudent crisis management**, in a situation of **alliance stability** and **overall mutual nuclear deterrence**. All three are undergoing changes, it's true, but not on the whole, in my view, in damaging directions.

In fact the first of them, the current technique of central balance crisis management, has evolved quite steadily through the last four decades, though more rapidly in the period since 1962. And, to the surprise of many people, it has been not only maintained but developed during the Reagan years. It will continue to require reasonable prudence in the chief decision makers thrown up by the American and Soviet political processes and obviously nothing can guarantee that. But to my mind a system which has survived a decision maker with so short an attention span as Mr Reagan, and had earlier survived as incautious or erratic a one as Kruschev, and so paranoid a one as Stalin, must have something going for it. Looking at the way the two political systems are at present evolving there seems little reason to assume that either will throw up future decision makers more dangerous or unpredictable than some of those we have survived in the past. And even if it does, the growth of mechanisms like the nuclear risk reduction centres, which have just been agreed upon by Washington and Moscow, the improved "hot line", the "confidence building measures" in Europe, and some of the arms control measures at present being contemplated, ought to help maintain restraint and induce prudence.

It might seem easier to make the case of the second element of the theme I mentioned, the central-balance alliance relationship, in undergoing changes which will reduce the level of stability it has maintained since the late 1940s. That stability has depended, as far as the Western side of the balance is concerned, essentially on the close diplomatic and strategic connection between the United States and Western Europe, a connection formalised in the North Atlantic Treaty, and consciously and steadily signalled to the adversary ever since the treaty was negotiated in 1948 and signed in 1949. In the jargon of the strategists, those decisions of the late 1940s meant that the security of Western Europe has been closely and deliberately coupled with that of the United States, both at the nuclear level and that of conventional forces, for the subsequent four decades. But by this year 1987, both "couplings" seem to be weakening, though there are still about 330,000 troops in Europe, and about 4,000 US short range or battlefield nuclear weapons there, as well as the intermediate range whose phasing out is being negotiated currently.

The original system meant that, for almost four decades, the US would be in any European war **from the first day**, instead of after two or three years, as during the first two World Wars. And to my mind it was that consideration, rather than the mere existence of nuclear weapons, which precluded the use of Soviet armed force in Western Europe, in the many tense crises of the early cold war, over, for instance, Berlin.

We have, however, to face the fact that Western Europe and the United States will almost certainly become to some extent decoupled during the twenty years of historical mist we are trying to peer through. The change is already beginning to happen, and the kind of technological, diplomatic

and political developments one can foresee appear likely to speed it up. The US/Soviet agreement on the phasing out of intermediate-range nuclear forces is one symptom of that process. The rationale of those missiles was from the first diplomatic rather than strictly military. Essentially they were visible signals to show that a nuclear war could **not** be fought out only on European soil with US and Soviet territory tacitly exempted, through an unspoken mutual agreement between the super powers. (The missiles made that point obvious by the fact that Soviet territory was within their range.) That strong diplomatic signal has now yielded to the drive for an arms control treaty, and it seems not altogether improbable that the short range battlefield and tactical US nuclear weapons in Europe will go the same way in what is currently being called the "Triple Zero" solution.

I do not, however, believe that any such agreement will necessarily mean an era of instability in the central balance, or weakness on its western side. What it will mean is the Europeans needing to take a greater degree of responsibility for their own defence. That will be incumbent on them both at a nuclear and a conventional level. For the urge in Congress to reduce the level of American troop deployments in Europe is, if anything, stronger than the pressure for reducing nuclear weapons. But it will not be so impossible a task to make up the deficiency as it is sometimes assumed. The Europeans already provide 90% of the land forces deployed by NATO, and that's without counting the French. It would be more difficult to make up a gap in air and naval forces if the Americans opted out from those arenas, but even there the Europeans provide 75% and 50% respectively, and in any case I would not expect Congressional pressure to cut naval and air forces to reach the level that it has at present with regard to land forces.

Changes of this kind must affect the underlying balance of power (or correlation of forces as the Russians would say), but such change is the law of life in international politics. The objective of policy makers must be to manage the changes, so that they do not disrupt the system, or increase the overall level of risk. And that ought to be possible. The Europeans are very experienced players of this sort of game; in fact they invented it. So, to sum up, even though I would argue the alliance relationship is changing on the Western side, in the direction of "decoupling" between the European and American security, I do not believe that we need conclude that a major degree of instability will thereby develop within our twenty year time-span, though it is a danger that must be watched.

Finally, we come to the third element, overall mutual deterrence. Will it work as well under the more multi-lateral balance of power I have been envisaging as it has done up to now? And here we have to ask ourselves also if the SDI will prove just an illusion, a mirage personal to Mr Reagan and swiftly forgotten after his time in office, or will it actually come to something? Well, being never one to sidestep controversy, I will postulate that it will, by 2010, have come to something fairly considerable, though not to as much as Mr Reagan predicted when he talked in 1983 of making nuclear weapons "impotent and obsolete". Or that it will, as he put it, protect the American people from missiles "as a roof protects a family from the rain". The true strategic and diplomatic role of the SDI, at least for the twenty years we are contemplating, seems to me quite different. What appears now in process might be called an "SDI-driven" sequence of changes in arms control and diplomatic/strategic relationships. It only affects the central balance powers as yet, but anything that changes the central balance must in due course affect the context in which the peripheral powers, like Australia, have to make their policies.

Paradoxically enough, the changes that I see developing depend on the Soviet interpretation of the function of SDI, not the official American rationale for its possible deployment. That is, the Russians and many of the Western critics of SDI, especially on the left, hold that the system would enhance American **offensive** capacity, rather than provide the sort of population defence that Mr Reagan keeps talking about. The analogy used is that of the sword and shield. The strategic function of the shield is held to be primarily to enable you to use the sword more effectively. In nuclear terms, that is translated as meaning that while the SDI weaponry under contemplation or development could not do much to mitigate the devastation of America from a full scale Soviet nuclear strike, it could have a useful damage limiting function in meeting what's called a **"ragged"** Soviet retaliatory strike; that is, one after an American first strike, or pre-emptive strike during a situation of high crisis. Under the present situation of "mutual assured destruction", a pre-emptive or first strike strategy cannot be ventured, because it would be suicidal for either of the super powers. But a reasonably effective SDI would, it is argued, free Washington to contemplate a first strike strategy.

Now, to my mind, that interpretation is mistaken, since the whole history of the last four decades, especially the period before 1970, when the United States was not as yet very vulnerable

to Soviet nuclear strike, indicates that the inhibitions against Washington decision makers adopting any variety of pre-emptive strategy are very powerful. But Soviet policy planners like Western ones have to look at "worst case" possibilities, so I think we should assume they are wedded to that particular interpretation.

Now what follows? Theoretically the Russians have several options. They can try what's called an "emulating" response. That is, building a strategic defence of their own, and they are certainly working on one. In my view we should hope (for reasons to be developed presently) that they would be reasonably successful, but it will be very expensive for them. They could try alternatively what is called an "offsetting" response, that is building up their offensive strike capacity to a level geared to saturate any American system. That would be a bit less expensive than an "emulating response", but if what they really fear is pre-emptive strike, then it does not guarantee them against that danger; in fact it might increase the American incentive to attempt such a strike. On the evidence of the arms control proposals which the Russians agreed at Reykjavik, and the negotiations which followed and which seemed to be about to culminate in a summit meeting, the Russians are not inclined to try that road, at least while Mr Gorbachev is in control. For what is now "on the table", and apparently under serious discussion, is a very marked reduction in numbers of warheads on ballistic missiles: reduction from about 12,000 to 5,000 warheads on each side for long range delivery systems, entire elimination of intermediate range delivery systems and, if the "triple zero" idea catches on as well, possibly even the elimination also of battlefield and tactical systems (under five hundred kilometres) in Europe. Now that in my view is a very encouraging direction for the arms control proposals to have taken, since ballistic missiles are the obvious, logical delivery system for pre-emptive strike, and mirved fixed site, land based ballistic missiles are the obvious target for pre-emptive strike. Since the temptation to effect a first or pre-emptive strike during a situation of high crisis is the most deadly single danger of the nuclear age, any change in weapons systems which reduces its probability must improve the stability of the central balance.

My reason for calling the set of arms control proposals that have emerged in the final Reagan years "SDI driven", is that the Russians themselves originally made such a point to tying them to abandonment or restriction of SDI. Russian policy in that sphere has changed very much in just the last few months. There are of course other factors involved: Mr Gorbachev obviously wants to make large reforms in the Soviet economic system, and to do that he needs to be able to cut the arms budget, which absorbs as much as 12% to 14% of Soviet GNP already. But that also involves SDI, since if he had to make an emulating or offsetting response to it, he would not only be unable to cut the arms budget, he might actually have to increase funding, which would undermine his plans for reform. So he has every incentive to try whatever diplomatic and strategic measures that he can to avoid such a drain on resources. That provides a very good reason for the current Russian arms control proposals. If the Americans (on the interpretation of Soviet strategic analysts) appear to be acquiring a capacity for pre-emptive strike and the Soviet economy cannot afford the drain of resources for offsetting it, the most logical answer is to phase out as soon as possible the weapons systems which are the obvious "time urgent" targets for any pre-emptive strike: that is the Soviet fixed site mirved missiles. Soviet offensive strike capacity would thus have to be based instead on SLBMs and land-mobile missiles. Such a change would not only allow for a large number of warheads to be sacrificed as is envisaged in the present arms control proposals, but also greatly reduce the possibility and hence the fear of pre-emptive strike.

That's why I would argue that the remarkably sudden arms control progress of the past year or so may be regarded as "SDI-driven". That concept thus appears to have proved the most effective negotiating lever the West has ever invented, even though it is as yet just a research project and may never be much more. So, in an optimistic moment, I would expect by 2010 deterrence will rest on a mix of offensive and defensive systems, substantially "symmetrical" on the two sides. That is, both super powers would have an offensive strike capacity at considerably lower levels than at present (6,000 warheads or less), probably largely submarine based on both sides to reduce vulnerability. (And since some Soviet submarines are rapidly getting better, partly by reason of purloined technology, the decision makers in Moscow should be less reluctant than they used to be to follow this path.) The most invulnerable SDI systems would also be submarine based (the technique which has been called the pop up system), and I would hope, as I mentioned earlier, that the Russians would be well along in this area of technology, since to my mind deterrent systems which are quite "symmetrical" on the two sides are likely to prove much the most stable, and the most conducive to regular

reduction towards the "minimal deterrent" level, which is normally interpreted as less than two thousand warheads on offensive systems. A deterrent system in that mode will obviously provide a very large role for naval forces, especially submarines and ASW. I believe that it would prove eventually far more stable than what the super powers have at present deployed, but of course the transit from the present system to what might be in place by 2010 will undoubtedly have dangers of its own.

Strategic changes of this magnitude will bring others in their wake, and the most important of them, the "decoupling" between the United States and Europe, as I mentioned before, will raise the strategic importance of the two European nuclear forces, British and French, as well as the importance of conventional forces in Europe. Probably by the early 21st Century Europe will be enjoying its best days since the late 19th Century, the largest single high prosperity market, with most of its internal, political and economic problems sorted out, and militarily very formidable, both at the conventional and the nuclear level. If the arms control talks continue along the pathway they have so surprisingly taken during the Reagan years, the tendency will be in due course an evolution from "extended deterrence" as at present, by the two super powers, towards four "minimal deterrence" (that is about 2,000 warheads) forces - American, Soviet, European and Chinese - plus what have been called "basement stockpiles" of nuclear weapons in perhaps Israel, South Africa, India and Pakistan, as last ditch resorts against local threats. Now that will actually provide a further rationale for SDI to reassure Washington and Moscow against "cheating" (that is the concealment of weapons) because, as numbers fall, concealment becomes a much more important danger - and also against the risk, however unlikely, of attack by a minor nuclear power. Within the time span we are contemplating, no SDI system is likely to be more than 50% effective against incoming missiles, so it would not devalue the minor nuclear forces, but even a 50% success rate is enough to discourage any impulse to pre-emptive strike in crisis.

To sum up these reflections on the way the central balance seems likely to move over the next 20 years, though quite large changes seem to be impending, I do not believe they need to be destructive to the three essential elements I have mentioned: reasonably prudent crisis management, a reasonably stable set of alliance relationships, and a situation of overall mutual deterrence.

Having said so much about the global power balance, I want now to turn to the regional balance immediately relevant to Australia's security, that is the Pacific and Indian Oceans and the island fringes of South East Asia. Here we must, I think, recognise at once what might be considered a long term and ineluctable worsening of Australia's security in one respect. The whole of the first century-plus of existence of the present Australian community was in the context of Western ascendency over the non-Western world. In the first half of this century that ascendency was gradually ended by the rise (at first militarily and then economically) of Japan, and subsequently of other non-Western powers. The influence of the West is still enormously pervasive, of course, but it may be diminishing as local traditions are reasserted. Australia must live the third and subsequent centuries of existence near the fringes of an Asian world which is already becoming a society of giants. China, despite its serious efforts at population control, will be moving towards the one and a half billion mark by our assumed data. India will be ready to match or exceed that figure not long afterwards. Indonesians will number well over 200 million and the Vietnamese will be approaching a hundred million at a time when Australian population will have peaked at 20 plus million, and Western populations as a whole will be noticeably shrinking, since their fertility is below replacement level. With luck world population will stabilise at about the 10 billion mark (twice the present level) around the middle of the century, but 90% of that figure will be in the Third World, especially Asia; only about 10% will be Westerners.

Demographic change brings many other changes in its wake. It governs, obviously, the numbers of young men and women of military age, and that in turn must influence strategic choices about weapons systems, for instance. We must also, I fear, concede that Australia on present indications is not much more likely to match its neighbours in economic growth-rates than in demographic ones. We might in an optimistic moment assume a growth rate averaging about 3% per annum over the next 20 years, and that will see us comfortable enough as far as living standards are concerned. But some of our Asian neighbours will, on past form, do much better. South Korea, for instance, had a growth rate of about 15% this year after about a decade or so of about 8%. Others among the "Neo-Confucian" societies have achieved equally spectacular levels: Taiwan, Hong Kong, Singapore and earlier, of course, Japan. The point to note about these societies is that they all, including Japan, extend essentially from the Chinese civilization area, which raises the

question whether China itself, now that the strait jacket of Maoism has been loosened, might not some day follow the same pathway. Rapid economic growth, in a society of China's enormous size, whose development at present is not much beyond the stage of Western societies in the early 19th Century, raises some quite uncomfortably formidable possibilities.

I said earlier that I expected the central balance of power to be more multi-lateral by 2010 than it has been in the last four decades. And that of course raises the question of Japan in the Pacific. Ought one to assume that Japan, like Western Europe, will be less closely coupled with the United States than at present, more inclined to play for its own hand? That is probably the most momentous single question for Australia's strategic future at the period we are contemplating, and a very difficult one to assess. On present indications it would certainly appear likely that the alliance may become looser: there are already many frictions. Japan is (and is likely to remain) intensely vulnerable as a very rich non-nuclear power, situated in a zone where the spheres of interest of three nuclear powers - United States, Soviet Union and China - overlap or rub up against each other, and there are quite a few flash points like Korea and Taiwan. If Japan decided to spend on its defence even the same proportion of its vast GNP as Australian sometimes does, that is about 3%, it would set alarm bells ringing all over the Pacific, including undoubtedly Australia. Japan already has production lines for advanced aircraft and naval ships whose output could be rapidly stepped up. Once the political decision is taken there would obviously be no economic impediments. A great deal of Australia's security these past forty years has depended on the strength of the alliance bonds which have kept Japan closely tied to policies chosen in Washington. We need not assume those bonds will be broken but should, I think, assume they should be looser, and this may produce rather unpredictable changes in Japan's relationships with the Soviet Union and China, changes in which both Taiwan and the two Koreas might be involved.

Australia's own closest alliance seems to me likely to remain that with the United States, though a strong, well armed, independent, technologically-skilled Western Europe will become again a very useful friend to cultivate. The economic frictions which at present somewhat bedevil Australia's relations with both Europe and the United States ought surely, if there is any commonsense left in the world, to have disappeared during the 20 years we are leaping over. They are essentially the problems of over-production and the struggle for markets. The rise in world population which has to be envisaged may end some of them, though the alternative answer to over-production, which is the organisation of a cartel by diplomatic agreement, would operate, could operate much earlier. In my view the social and political pressures to grow basic foodstuffs at home, in whatever country, are not likely to diminish and science and technology will continue (at a price) to produce almost anything anywhere, as for instance at the moment, wheat and dairy products in Saudi Arabia. The main cost in such experiments is energy, to distill water or create artificial climates, and energy by the mid 21st Century might be as cheap as water is in most countries nowadays. That would be from the combined effect of super conductors, to distribute it almost without loss, and probably nuclear fusion reactors to generate it, though they may not be "on stream" until later in the century.

A world of cheap energy will by no means be an unmitigated good for Australia. It will obviously reduce the value of coal, our main export earner at present, and probably the value of uranium as well, since fusion energy is derived from lighter elements.

In fact the world of the 21st Century does not seem particularly promising for those who seek to live, as Australia has done so far, by the sale of commodities. One of the main by-products of scientific discovery at the moment seems to be the replacement of traditional commodities by "knowledge based substitutes" like carbon fibres and silicon chips and plastics of various sorts, whose essential constituents are almost universally available. No doubt Australia will have commodities to sell to the world: apparently we are well endowed with ytrium which is used in superconductors, and gold, diamonds and wool seem likely to retain or even increase their value, especially if there's a lot of trouble by 2010 in South Africa, which seems a near certainty. But I would not be inclined to bet on a sudden recovery of Australia's terms of trade or its exchange rate vis-a-vis the major currencies. That of course means that sophisticated weapons systems priced in foreign currencies will look very expensive in Australian budgetary terms, and the Minister of Defence of the day is not going to be allowed to buy many of them. Short of an absolute threat to our survival, it does not seem probable that Defence is likely to be allocated more than 3% of GNP. In fact, Ministers during the 20 year period we are contemplating will have to work very hard to keep it at that level. So whatever can be done to promote or maintain locally based production of defence goods, at anything approximating competitive costs, would clearly be a prudent

measure, likewise promotion of defence oriented scientific and technological research, such as that, for instance, which produced the "Jindalee" over the horizon radar. Australia ought to have a future in "knowledge based" technologies of both civilian and defence-oriented kinds, but if it is actually to do so, within our 20 year conspectus, then young Australians will have to work almost as hard at school mathematics and science as young Japanese do.

One point that should be noted in regard to relations between Canberra and Washington is that technological change may by 2010 have cut Washington's need for two of the three major US installations in Australia. That is North West Cape and Nurrungar, though perhaps not the need for Pine Gap. Such changes must diminish our diplomatic leverage in Washington, though other factors may compensate strategically, for instance, the increased general American focus on the Pacific and possibly increased US interest in the "south about" route around Australia (as against the route through the Indonesian Straits) for US naval ships. The question of participation in Star Wars technology might also be important there.

The second great uncertainty in Australia's strategic future at the period we are contemplating is uncertainty about the political and diplomatic orientation of Indonesia, and its relations with PNG and Australia. Demographically we know Indonesia will be a substantial neighbour, and economically, although its progress has been somewhat erratic, it has at times been quite impressive. Politically I think we ought probably assume that the decision makers in Djakarta will be the chosen successors of the present junta and may in fact include some of its present numbers, since many of them are quite young and could remain politically active for the next 20 years. I think that we must also assume that Melanesian ethnic feeling which has already shown itself in the coup in Fiji and the reactions in PNG and elsewhere in the Pacific is not likely to vanish. In fact in 20 years it might be quite a dominant factor in the politics of the Pacific. That will not be propitious for relations between Indonesia and PNG, since Irian Jaya is seen by most Melanesians as a Melanesian area subjected to a process of "Javanization". We must expect some friction along the PNG / Irian Jaya border and Australia has, of course, defence commitments to PNG. So I do not think we can be optimistic about smooth relations between Canberra and Djakarta. Prudent crisis management and a convincing defensive stance will be required there. Since the coup in Fiji, both the Indonesians and the Fijians have shown some interest in the closer relationship. Perhaps military takeover chaps think alike and so Indonesian interest in the Pacific in general may increase and I would rather think that may also produce a few complications for Australia.

If we shift our gaze from the north to the west, to Australia's Indian Ocean Coastline and sealanes of communication, the situation seems not much less ambivalent. We must, I think, see India as the paramount power in the Indian Ocean, as it already is in the Indian subcontinent. With a population increasing more rapidly than that of China, and probably at least a small stockpile of atomic weapons and adequate means of delivery by 2010 (that is MIG aircraft probably and possibly missiles) it will be a formidable neighbour to China and Iran, as well as to Pakistan. The whole area of the Arabian sea, the Persian Gulf and the Indian Ocean seems even more likely to be a focus of serious trouble 20 years hence than it is now. Will Iran still be sponsoring Islamic fundamentalism, and might its siren calls have been heard in the Gulf States, or in Pakistan, Bangladesh or Indonesia or among the (by then) 100 million or so Moslems in India itself? The Government in Delhi could be feeling rather beleaguered and in need of allies. On the other hand, it will undoubtedly, on present plans, be able to exercise its growing naval strength in the Indian Ocean, even as far down as South Africa, whose substantial Indian population will no doubt be involved in whatever phase the racial troubles will have reached by that date.

We must probably assume that the Soviet Union will continue to regard India as its most useful ally in South Asia and Vietnam as its most useful ally in South East Asia, and that it will still be more interested than at present in Pacific and Indian Ocean ports, and will have still more naval assets in the Pacific than now. Moreover, I think we can expect the war in Afghanistan and even perhaps the Iran/Iraq war to have been wound up with compromise settlements which allowed perhaps some slight forward movement of Soviet power, though not of a decisive sort. I am more inclined to believe that Soviet forces will still be in Cam Ranh Bay in Vietnam than that US forces will still be in Clarke Field and Subic Bay.

I would assume that Australia will have maintained some effort at a "Two Ocean" Navy and such naval ships and submarines that we have managed to accumulate will be based about equally between Jervis Bay and Cockburn Sound. However, I would also assume that numbers will not be exactly substantial. Probably the Americans will still be visiting Deigo Garcia in some strength, and possibly the Royal Navy will have a presence there and the French a presence at Reunion. Could the new Iran ever revive the

Shah's dreams of being a naval as well as a military power in that part of the world? Odder things have happened to revolutionary regimes. On the other hand, if Saudi Arabia and Iraq increase their programmes of building oil pipelines to the Mediterranean and the Red Sea, and the small exporting states of the area come to an arrangement to use those pipelines as they probably could, the Persian Gulf could become a much less important shipping-lane for any country except Iran. That would greatly reduce the capacity of that part of the world to generate crises, so perhaps we should do anything we can to promote developments of that sort within our 20 year conspectus. So, certainly, should the Japanese, since most of their oil comes from there. However, within 20 years, the oil search in China and the China seas might have come to something and a variant of the North Seas oil boom might be playing itself out around Hong Kong. That would increase still more the reason for close diplomatic and strategic, as well as economic relations between Japan and China - with Japan finding a market for its vast output of capital and consumer goods in China, and China paying for them primarily in oil. China and Japan in combination do of course offer some very formidable possibilities, not only economically but strategically. And not only for the regional balance in the Pacific but also for the central balance of power. In fact when there does arrive, as there must, a transformation of the present central balance, I would expect it to be from that source though 20 years seems too short a time span for that to happen; 50 might be more likely.

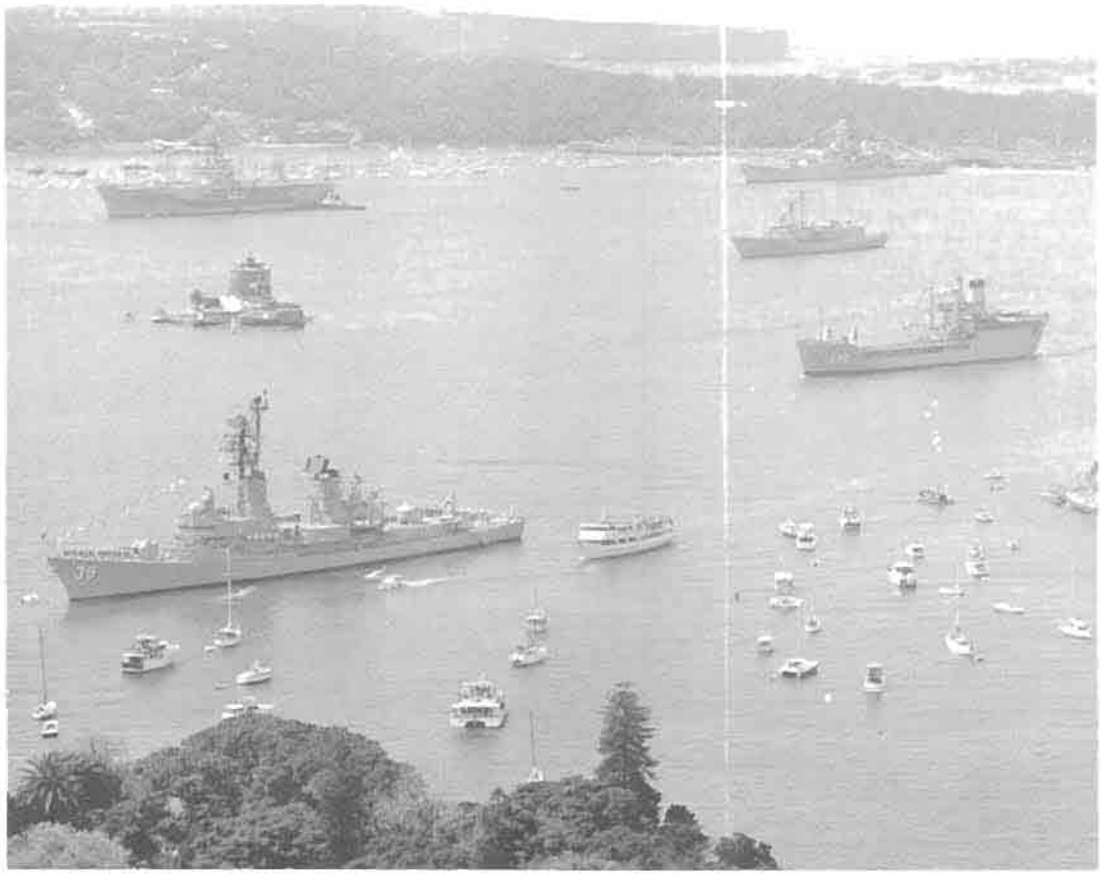
Australians have long been accustomed to think of the international environment of their country as relatively benign, and so it has been in the past by comparison with most other countries. After all there has only been six months of "clear and present danger", that is early 1942, in our 200 years of history to date, and if you compare that with the histories of Israel or Poland, or in the remoter past many of the countries of Western Europe, it does seem to entitle us to an assumption of good fortune. But that streak of historical luck may well be about to run out. The Pacific and Indian Oceans do not seem likely to prove particularly benign environments during the 21st Century. The North Pacific is the "interface" zone of three existing nuclear powers, the United States, the Soviet Union and China, who all have interests to promote and strategies to promote them by. The Pacific rim has most of the fastest growing societies of the world, economically and demographically, with a variety of flash points. Southern Asia is also growing very fast demographically, and it may develop a nuclear balance of triangular form (China - India - Pakistan). Moreover, it is the focus of Iran, of a fundamentalist religious doctrine, which may be at only the beginning of its capacity to cause trouble. And in the southern reaches of the Indian Ocean a focus for a different sort of trouble: a long running racial conflict, one of the parties involved probably being capable, within the time span we have in mind, of making nuclear weapons - that is South Africa of course. All in all, a context that doesn't seem to promote a quiet time for the decision makers in Canberra 20 years hence. We will need adequate defences to combat local threats from our own resources, useful allies to deter threats larger than those, and an adroit diplomacy to keep us from treading unnecessarily on the toes of our neighbours.

INTRODUCTION TO SESSION TWO

Commodore A.R. Cummins, AM, RAN

It is my privilege and pleasure to introduce the Chief of the Naval Staff of the Royal Australian Navy, Vice Admiral Hudson, who will address Seapower '87, on the subject of the Maritime Defence Requirement. Admiral Hudson is heading the Navy at a time of the largest Naval Force structure expansion programme in our peacetime history, where the direction of our policy is to do it in Australia, and to increasingly use Australian ideas, innovation and invention.

There is also an era of substantial organisational and infrastructure change to support the Navy through into the first quarter of the next century. In addition, the challenge to attract, retain and apply the full range of skills of our Officers and sailors remains a constant factor. This is a most important presentation for our industry people and for all Australians as we look to the future security and prosperity of our Nation.



Seventy Fifth Anniversary Review - 1986

Seahawk & FFL

THE MARITIME DEFENCE REQUIREMENT

Vice Admiral M.W. Hudson, AC, RAN
Chief of Naval Staff

Noting that I was first on after lunch, I gave some thought to my introduction, and it crossed my mind that I should present you with some outrageous shopping list which is way in extreme of that that is already contained in the Defence Programme. But then noting the audience, not least CDF and the Acting Secretary, I felt their nerves could not quite stand that; therefore I won't do it and you'll be hearing nothing from me about half a dozen battleships or whatever.

But I emphasise that I see this opportunity as a sounding board for ideas and possibilities rather than any concrete predictions. It's an opportunity that I welcome because the quality of our reaction to the challenge of the future will depend directly on the imagination and the original thinking of our people both within and outside Navy and Defence.

Let me first refresh your memory of the projects now in hand or planned. They include six submarines to be built in South Australia, with the first completing in 1994. There are the two FFG 7 Frigates now building at Williamstown, and they are expected to compete in 1991 and 1993. There is the Anzac Ship Project, which will consist of eight light patrol frigates for Australia, together with four for New Zealand. And they will be built at an Australian site or sites to be determined. And, as most of you will be aware, the selection process is in an advanced stage. Then, subject to successful completion of trials of the two MHI "cats" that have been completed, at least another four more will be built in Australia. There are four survey motor launches that are to be built in Australia, and there are 16 Sikorsky Seahawk helicopters now on order. They will be carried in the FFGs and provision will be made for them to be carried in our new light patrol frigates. In addition to those projects which are well on track, Naval Staff Requirements are being developed for a second underway replenishment ship - simpler and smaller than the *Success*- and minesweepers, for coastal and offshore work, to provide an MCM capability, complementary to the inshore units. There is also the conversion of the Seaking helicopters to mine counter measures roles. And then there will be the future third tier, surface units for the role presently filled by the *Fremantle* Class. It will not have escaped your notice that there is almost total emphasis on Australian build. And those projects mean that we have a good idea now of the strength of the RAN in the year 2001. But I think there are several points that you should note. The first is that the DDGs, to date our most capable first tier combatants, will be gone or going, the second thing is that the earlier FFGs will be reaching their life of type at some stage in the first decade. The Naval aim is also to replace them with appropriate units built in Australia. We will therefore have to make some very critical decisions as to the future composition of our force, and if there is one point which I want engraved on the heart of every long range planner, it is "avoid the replacement syndrome". We must be imaginative and creative in our thinking. Today's solutions will not suffice to meet tomorrow's problems. We have a responsibility to ensure that our requirements and our plans match the needs of Australian defence and of national security. And this, I believe, calls, as it always has, for close analysis of all the elements - strategic, political, economic, social and technological - which contribute to defence policy. And it calls for a very cold and realistic assessment of where our interests really lie, and the courage to take risks in the decisions we make.

What I want to do is to sketch the major issues in areas of strategy, our domestic situation and in technology which I see bearing on the Maritime Defence requirements for the next century. But let me emphasise again that I am not attempting hard and fast predictions, but a survey of possibilities, and if it helps you all to give some thought to broader issues during the course of this symposium, then I will have at least partly achieved my aim.

Dr Bell has given us an excellent summary of the strategic setting. I think you'll all agree that the evidence goes to show that Maritime forces will be more important in matters of regional security and not less. And, as a corollary, the problems with which Maritime forces will be faced will become more complex at every level.

I'd like to give you some examples. If there is now a technological margin favouring the Australian Defence Force over other nations in our region, this will have reduced to insignificance in the first decade of the next century, and I point to the growth of surface to surface and air to surface missiles, which even now pose a very significant air defence threat.

We will be more concerned than ever before with the provision of energy. We may be in a period of low oil and coal prices at present but there is no guarantee and little reason that this will last indefinitely. There are some indications that alternative energy sources such as solar power will be of increasing importance, and I don't think we can discount nuclear power, despite the very significant environmental problems involved. Nevertheless, short of some extraordinary breakthrough, the demand for oil will continue and this will affect our Maritime position in two ways. The first is that offshore exploration and drilling will become even more important than they are in 1987, and if recent trends continue much of that activity will be centred on the North West Shelf. The second aspect is that the prognosis for domestic production is that it will be increasingly insufficient to cover all our requirements, and that means that oil will have to be imported.

The sea will remain the medium for the passage of our trade. And my belief is that the constraints and the costs of energy will force a renewed emphasis on shipping over the more energy intensive aircraft, and I think the figures for international trade in recent years are very telling: 86% of the value of cargoes coming in and out of Australia and 99% of their tonnage have been moved in ships. My estimate is that further development in our export capacity, not only from a revival of the commodities market, but the development of processing and part processing and manufacturing capabilities, will sustain the percentage of tonnage and increase the value of seaborne cargoes. We now depend and will continue to depend on that trade, and we have to have the capabilities to prevent interference with it.

An associated question is the future of the merchant marine. I do not believe that the current surplus of merchant shipping will continue indefinitely. Tankers, container ships and freighters all have relatively limited lives and laying up a merchant ship does not, because of the general inadequacy of the preservation measures, generally extend its life.

I think we may have to wait till after the turn of the century, but I believe we will see a renewed burst of activity brought on by shipping shortages, and Australia, Australian industry and Australian shipbuilders must be willing to make what use we can of such opportunities to develop our own flag shipping. If we do not do that we face the risk of effectively being held to ransom by shipping cartels in a position to set the rates they want. I think it should be remembered and certainly never forgotten that an element of a country's seapower is its merchant marine in all its aspects.

Even if the energy area is disregarded, Northern Australia will in the next century be ever more important to the well being of the nation as a whole. The growth rate of the Northern Territory's population is staggering, as are those for the North of Western Australia and Queensland, and we cannot, if indeed we ever could, think of an Australian heartland triangulated on Sydney, Melbourne and Adelaide.

I believe we will also have to possess a capability to assert our interests in the Antarctic. Now whether such a capability will be military or not will depend on the future of the Antarctic Treaty which has provision for review in 1991.

The South West Pacific will also become increasingly important. The rate of economic progress for the region is very difficult to forecast, because the present bases of development are so limited and the financial resources so dependent on commodity prices and external aid. Nevertheless, again I believe that Australia's maritime forces will be increasingly involved in what will have become a far more developed network of surveillance and patrol. The Pacific Patrol Boat Project is but the first step in that process, and the health of such a network will be of continuing importance to Australia's overall security posture.

Well, if you have received the impression that my view of our strategic situation after the year 2000 is a "continuing on of the same", you are largely right. The problems which we will face will not have altered in their nature but certainly they will have altered in their complexity.

I have two principal observations I want to make concerning our domestic situation; these were referred to earlier this morning. The first concerns the ageing of Australia. The fact is that not enough children were born in 1984 to provide us with a recruiting base for the year 2001 of the size we have traditionally required. The competition for the available young men and young

women with the capability which the Navy needs will be intense. We have to face the prospect of continuing pressure on our manning levels, pressures that cannot be satisfied by budgetary measures, even if such are possible. We will certainly have to be more efficient in the use of our personnel, in assuring that the teeth to tail ratio is as favourable as possible. And this is an area where we have to be wary of continuing with traditional methods just because we have always done it that way. We must be strict in allocating priorities to everything that we do, and we must keep to those priorities.

That brings me to my next point. The considerable effort on Defence Policy over the last few years, culminating in the Defence White Paper of 1987, has created a situation in which there is almost universal consensus on the defence position and the direction we should be taking. But, short of highly undesirable strategic developments that would act as frighteners for the electorate, I don't see any foreseeable major increase in the percentage of the GNP and the federal budget devoted to defence. We will have to manage with what we have and of course there is a major challenge for us here. And the challenge is that we cannot afford to let the efforts that have gone into increasing public awareness flag. Defence no longer has the popular sympathy that it had as a result of the First and Second World Wars. By the year 2010 the youngest man who could have possibly served in Vietnam will be 58 and the youngest operational veteran of the Second World War will be 83.

So, as our efforts at defence continue, as I think we all hope, to be successful, the difficulty of keeping the public attuned to the problem is going to increase, and so must our effort.

Turning now to technology, the RAN is the navy of a medium power facing a funding dilemma, which has been very cheerfully described by the Naval cost analyst Phillip Pugh as "stop the world I want to get off".

Now I offer the following as premises. First, it is an historical fact that technological costs increase in real terms over time. And, as this increase has been pretty consistent over the last few decades and over different types of ships, that trend shows little sign of changing either now or in the future. It is a problem that small and medium sized navies have had to deal with for years, and even the super powers are finding that their options are limited by sheer cost.

Maritime defence costs cannot be reduced without reducing capabilities - that is a simple of fact of life that we have to face. But I do admit that the validity of this proposition depends upon the already efficient matching of resources to capabilities. There is always a point, however, when any reduction in budget, however small, has a direct effect on a Navy's ability to do its job.

I also want to emphasise to you that holding your level of spending is no solution because the problems with which maritime forces have to deal become progressively more complex and difficult over time. Capability in the maritime environment is a relative subject, not an absolute one. That relativity is changing all the time.

It is also true that technological alternatives short-circuit the costing process for only so long as no response has been developed. That means that, however attractive some solution may be, it will not be a permanent answer to your problems. If you have discovered the ultimate weapon you can be certain that your enemies are not going to rest until they have one as well. There is no example in history of a technological lead being sustained indefinitely between rivals. And I think the best recent example of this concerns the apparent extraordinary success that the Soviets have had in reducing the noise levels of their nuclear submarines. That in itself is forcing enormous changes in the United States and NATO methods and equipment earlier than the Allies had expected that this would be necessary. And where low frequency passive techniques were once viewed as the universal solution, now much more attention is being paid to low frequency active sonars.

That is not to say that the alternatives are not valid or even desirable in the short term. They can, of course, be very useful; the point is that they certainly won't be permanent solutions.

Small is not beautiful. For a nation like Australia with very limited resources there always has to be a trade off between the requirement for capability and the need for numbers. We must also realise that there are inherent efficiencies associated with greater size. And to support that statement let me mention Phillip Pugh's estimate of the unit production cost elements for ships configured at 28 knots and 6000 mile range, both of which are highly relevant to our circumstances, and the characteristics we have set for the light patrol frigate. There is no doubt that there is a dramatic reduction in relative move costs between 750 and 3000 tons from 29% to 18%.

In my view there can be no doubt that our future as a maritime force will depend upon the use we make of emerging and continuing technologies, and there can also be little doubt that we face a continuing risk of being rules by the technology which we think we control. History is littered with examples of over-confidence in

equipment and methods. Sophistication does not and never will carry any guarantee of effectiveness - rather the reverse. Working at the leading edge of development carries with it very significant technical and cost risks, even if there is no other way to go.

And again I'll give you a couple of examples. With the sole exception of the Japanese, every major power in the Second World War found that their highly sophisticated torpedoes failed to work correctly. The British and the Germans had problems with magnetic pistols and one poor U-boat commander even had the frustrating experience of hearing a full salvo strike the hull of the battleship *Nelson* without exploding. American torpedoes not only did not explode for much the same reason but they could not guarantee that they would keep their depth.

And there is a second case, perhaps closer to home. Many of you would remember the destroyers - and perhaps would have served in them - *Anzac* and *Tobruk*. When they were commissioned in 1950 and 1951, these ships carried what was one of the most advanced anti-aircraft weapons in the world, the 40mm stabilized, tachymetric, anti-aircraft gun or STAAG, as it was known at the time. Radar controlled, automatic and accurate, it answered its staff requirement very well, with one exception. When taken to sea in an operational ship it rarely worked. The electrics and hydraulics of the gun were so susceptible to salt water that the first burst of spray short circuited the system. The fault was that the designers, in their enthusiasm for a weapon which was a quantum jump in performance over previous AA guns, had failed to account for the severely practical.

Well, you may ask, why did such technological failures occur? There were two reasons as I saw them. First, design and development was being pressed ahead all the time, so that no one had the time or was allowed to accumulate the experience with the systems necessary to de-bug them. The second, in the case of the torpedoes, was that they were so expensive that the navies concerned did not feel they could afford to conduct extensive tests under operational conditions, particularly tests to destruction, during the lean years of the 20s and 30s.

Those are not problems that are going to leave us. As weapons and sensors become steadily more complex and capable, the difficulties of devising and affording adequate testing methods are going to become more acute. Computer control, brilliant systems, are only as good as the software that has been written for them; programmers, no matter how clever, are as fallible and as prone to omit some vital element in their calculation as the rest of us.

So we have to make use of what analysis and testing capabilities we have and we have to improve upon them. We have to devise methods which will allow us to prove and check new technology as cheaply as possible. Our resources are and will continue to be so limited that we have to make every effort to ensure that whatever solution we arrive at is the right one for us here in Australia. And we must accept, as we have already accepted, that some technological capabilities are beyond our needs. We cannot engage in the process of "keeping up with the Joneses" in the acquisition of equipment.

On the other hand there is another side to the equation. The cost problem involves everybody, and thus every navy within and without our region. And the question comes down to one of how great an increase countries are willing and in a position to sustain. That of course is where innovative and lateral thinking will come in, and it leads to a number of questions; what developments can we afford; how can we substitute for some expensive capability; what technology can we leap frog, moving straight from a first generation to a third generation system, and at what risk in the intervening period? We have to keep a close watch on developments that offer significant operational advantages, and we are monitoring, for example, the progress of closed cycle submarine propulsion systems. There is no system available in the world in a sufficiently proven state for us - yet. The important thing is we must keep an open mind and open eyes.

And there are other developments which have potential. I have already mentioned low frequency passive and active sonars. Over the horizon radars may one day become seaborne; phased array radars are already at sea. They're expensive, but development work on units for smaller ships is under way all round the world. Smart missiles of course are available, and they will soon be even more clever, faster and with longer ranges. But the defensive technologies are proceeding apace, and the new active off board decoys are, for example, one of the lines of development in electronic counter-measures.

And we may in the future see lasers as close in defensive weapons. Some of you will be aware that the Americans have recently been accusing the Soviets of using light weapons against their pilots. My estimate in fact is that defensive technologies in all environments are slowly redressing the balance, but the cost is increasing as well.

Helicopters will become more important and useful, and the Seahawk of course has been a major step there. The VTOL Osprey has a lot of potential, as do AEW airships. People ask, "Why not a small airship with each surface combatant?" Why not indeed? Let's look at it. It would certainly be a very potent combination. Airships might also find a role in mine counter-measures, similar to that being taken up by helicopters, and they could also once more become anti-submarine platforms.

Small waterplane area, twin hull vessels and surface effect ships will also bear watching with their promise of improved sea keeping capabilities for reduced dimensions, but possibly not reduced costs.

There are other questions we should ask. Should we continue with as rigorous an application of military specification standards as has generally been the case in the past? Are there not likely to be substantial cost savings inherent in purchase of off the shelf commercial equipment? Can we afford the reduction in reliability and survivability which this might imply? And are specifications developed overseas necessarily applicable to the Australian condition? What alternative technologies will be available?

We in the RAN are already making a lot of progress with mine counter-measures and I expect that role will have continuing importance for some time, but there is evidence that developments in mines themselves will have much to offer Australia in the area of strike and interdiction. Mines certainly are becoming much smarter and, more importantly, more selective. We are not in the business of interfering with innocent neutrals. We have to look for weapons which are not only cost effective in military terms but selective in their targeting, or "responsible".

Again, more questions. With whom can we co-operate to reduce unit costs? Will Australian designed and produced equipment be available to nations with which we should be co-operating? The Anzac Project with New Zealand for the New Surface Combatant is an excellent start in that direction and possibly long overdue. I would hope there will be future opportunities, and I suggest that the cost of research and development of future major weapon and sensor systems will force greater co-operative effort between the Western Nations. It's already happening - the cost imperative seems to be driving us even faster.

Well, I think I have thrown up enough ideas and asked enough questions to show you where I think the future will lie. I would like to summarise the principal points that I have made to date. Firstly, the Navy's job will remain very much the same in principle but will be even more complex in practice. The basic elements of maritime power, the need for presence, the protection of trade, and the ability to support land forces will remain.

Funds and people will continue to be limited, and it may be the latter which constrain us most. Costs will continue to increase. This challenge can only be met by the rigorous assessment of the priorities that we have, by the best possible use of technology, and by a recognition that there are some things that we cannot do, and some developments which we will not be able to use ourselves.

The possibilities of developing technology are of course absolutely immense, and such developments are likely to favour the defensive and thus the multi role - surface combatants that are capable of deploying such defensive measures in all environments - but the submarine will continue as the Navy's major offensive weapon platform.

I think we can save money and increase our effectiveness by the use of developing alternatives, but there can be no expectation that such alternatives will hold cost down indefinitely.

I don't want to pre-empt the presentations which follow, but I do want to conclude my discussion with some comment on the challenge which industry will face in the next century and that of course is what this seminar is all about. If the programmes already in hand have been successful, and I think that this in itself is an extraordinary challenge, Australian industry will be in an excellent position to meet the Navy's continuing requirements, but I don't think that any of us here can be complacent now, in the year 2001 or the year 2015.

I do see industry as having several particular problems to deal with, the first of which will be the need to improve logistic support capabilities. Building our own ships, to our own designs, means that we in Australia will have to be responsible for their support; there will be no lead country to which we can turn for advice or that quick fix. And if Australian firms tender for equipment they must have made allowance for through life support elements and be prepared to provide them.

Industry must be ready to identify and propose alternative technologies which result in real reductions in cost. That is the only way in which long term commercial profits could be assured. And, as a corollary of that last point, industry must assist in the acquisition process, by ensuring that it understands what the Defence Force wants; equally it must be willing to recognise that the

buyer may be mistaken and to point that out as well. And there I return to the element of long term innovative thinking being the only key to success.

But, for its part, the Defence Force, Navy in this case, must explain to industry what the requirements are and we must stick to them. I think that industry must become more competitive in international terms. And I do accept that there is a point past which Australian industry cannot go, but acknowledging our commitment to the high wages which maintain our standard of living is not an acceptance of feather bedding, nor is there any reason why Australia should not be able to match overseas building rates and levels of quality.

At the end of it all is that my view is that the challenge to industry mirrors that which faces the Defence Force. Innovative thinking, alternative approaches, a commitment to quality and the timely completion of contracts. All are necessary if Australia is to support effective maritime forces into the next century.

And finally I would just say this. As far as the naval programme is concerned today and looking to the future, for me personally it is a very exciting time which I share with my staff in Canberra. I hope that industry itself will see it through the same eyes. The challenge is there, the challenge is for both of us, that to be successful and to reach the other end we are going to have to do it together.

Thank you very much.

INTRODUCTION TO SESSION THREE

Commodore J.S. Dickson, MBE, RAN

Our next speaker, Mr Greg John, is the Director of Australian Chamber of Manufactures, ACM. Since 1982, ACM has taken a significant interest in defence matters. It played an early and important role in establishing industry understanding of, and interest in the submarine project. In 1985 Greg John visited the UK and Europe and the Netherlands, West Germany and Sweden, in connection with the involvement of the Australian manufacturing industry in the submarine project.

He is a member of the Minister of Defence's committee, which was established for the New Submarine Construction Project, and I think it is also pertinent to point out that that committee is also taking an interest in the new surface combatant, the Anzac Ship Project. His contemporary familiarity with both defence and industry make him ideally suited to deliver the keynote address to the seminar on the "Challenge to Industry".

HMAS Rushcutter

"THE CHALLENGE TO INDUSTRY"

Mr G.D. John
Director
Australian Chamber of Manufactures

Thank you very much for that introduction. It's a great pleasure for me to be here to give this keynote address. It is an important task to make some comments on the very necessary interaction between industry and the defence community. Vice Admiral Hudson has commented on that already, and I hope that in the paper I am about to give you, you will see some points of agreement with what Vice Admiral Hudson had to say.

There can be no better advice to a speaker called upon to tackle a complex subject than that given by the King to the White Rabbit in Lewis Carroll's ALICE IN WONDERLAND:

"Where shall I begin, please your Majesty?" asked the White Rabbit.

"Begin at the beginning", the King said gravely, "and go on till you come to the end : then stop."

What I have been asked to do today in addressing "The Challenge to Industry" is certainly a complex task and though there may be argument with my point of beginning I will nonetheless attempt to outline what I see as the task facing Australian manufacturing in satisfying the needs of national defence.

One of the hallmarks of a fully developed industrial society can be found in its ability to produce from its own resources the essential elements of equipment to meet the requirements of defending its national interests.

While Australia has developed many items of equipment and other elements which have been taken up in our Defence Forces, we share with most other medium powers a necessity to rely on the larger players for vital areas of our defence.

The recent White Paper on Defence and the Review of Australia's Defence Capabilities have provided the defence debate in this country with some of the firmest footing it has ever had.

Industry has welcomed these contributions and has contributed to a general improvement in the quality of the debate. The overall thrust of a more self-reliant stance in the final determination of defence procurement decisions is also welcomed.

Australian manufacturers are more competitive domestically and internationally now than they were at the beginning of this decade. They are capable in a more diverse range of activities than they were at the beginning of the decade. This increased competitiveness does not rely on devaluation of the $A or on an increased volatility in our currency. Such factors, while embraced by the private sector, are only part of the story. Development of the new technology from Australian sources, adaptation of Australian circumstances of foreign technology obtained through technology transfer or license arrangements, investment in new plant and equipment, investment in human capital (i.e. training and eduction), skill enhancement and diversification, and innovation have all played and are continuing to play a major role in the overhaul of Australian industry.

There are some realities to be accepted. Perhaps the greatest of these is that Australia's ability to supply a complete range of defence equipment at requisite levels of technology, within acceptable lead times and at acceptable cost is at present limited and with substantial alteration to national priorities may remain relatively limited.

This reality does not preclude Australa from seeking to maximise the comparative advantage of its local manufacturing industry and enhancing the likelihood of that industry developing further areas of comparative advantage by supporting a self-reliant policy which involves local equipment purchase at high levels.

Development of the capabilities of the private sector is crucial to the achievement of a true self-reliance for Australian defence requirements. These capabilities should not be thought of only in terms of plant and equipment but also in terms of human capital, such as training and education, as I already have mentioned. They should also be thought of in terms of management systems and controls and the attitude of management to defence work.

What are the Dimensions of Defence Business?

The Department of Defence has a budget allocation of $7.4 m in the 1987/88 fiscal year - around 9.5% of the entire Commonwealth budget. Of this amount, over $1.8 b was allocated for the purchase of approved capital equipment.

The 1987/88 allocation is nearly $200 m higher than in 1986/87. However, it is 4% under the previous planning guidance of 3% real growth per annum. Looking at the Five Year Defence Programme (FYDP) it is expected that the 1% real growth in Defence expenditure proposed for the 1988/89 year may be expanded to 1.5% with latter years running at around 2% real growth. This would just about satisfy what has been expected under the FYDP.

Any manufacturer should be interested in getting a slice of that sort of cake. Particularly when one realises that the spending contained in it is by no means limited to big ticket items. There is plenty of room for small manufacturers satisfying the day to day "hiring" requirements of the defence establishment.

In September 1984 the Economic Research and Analysis Department of the Australian Chamber of Manufactures completed an assignment for the then Department of Defence Support which was aimed at looking at the defence/ industry interface.

An analysis of Department of Administrative Services data showed that defence purchases were made from 114 different manufacturing industries at the 4 digit ASIC industry class level. Over the 1981/82 - 1983/84 period these purchases totalled almost $1.2 b. In addition a further $63 m in orders were placed with wholesale retail and service businesses in the private sector.

This data has a number of limitations. For example, it does not include orders under $10,000, subcontracts based in Australia by overseas prime contractors and defence exports (including co-production) from Australian suppliers nor whether orders were placed locally or overseas. However, it does provide an indication of the wide range of industries participating in defence work.

As I have sought to indicate, defence outlays are a substantial part of overall aggregate demand in the Australian economy. The two major components that have a direct impact on manufacturing industry are capital equipment and running costs. The latter includes replacement and stores, repair and overhaul of equipment, repair of buildings and work and administrative expenses.

In 1983/84 $379 million or 30.9% of capital spending was local. In the other cost category $1224 million or 85.8% was sourced locally.

Combined total capital spending and running costs ($2654 m) was equivalent to 1.5% of GNFP in 1983/84.

Average capital expenditure sources locally in the period 1979/80 - 1983/84 was 37.3%.

This locally sourced capital equipment expenditure covers selective local design and development and equipment; Australian adaption of overseas technology to meet particular Australian requirements; local manufacture or construction under licence of overseas designed capital items; and purchasing for military use of Australian manufactured commercial products.

In 1985/86 the Defence portfolio spent $2.7 billion on industry related activities of which 58% was spent in Australia - a pretty big cake.

How does the Department of Defence Approach Dealing with Australian Industry?

When a project is approved and the purchasing stage is commenced, current policy guidelines require that the Defence line of thinking will have already been focussed on "buying Australian" as the first preference. There are obvious reasons for this, such as:

- The Government's desire to maintain a high level of local content which supports Australian industry and keeps the dollars in country;
- The urge to promote a background where industry is encouraged to keep abreast of advances in technology;
- The advantages inherent in maintaining local expertise for through life support.

Even where existing local products cannot ostensibly compete directly with a foreign product, today's climate of a fundamental emphasis on Australian Industry Involvement (or "AII") means that Defence purchase policy is still geared to making the most of the situation through such things as:

- Licensing Agreements - Negotiations with overseas manufacturers can result in a local firm becoming licensed to make a foreign company's products in Australia;
- Preference Policies - The Commonwealth will pay a premium to make the cost of an Australian (or New Zealand) equipment more compatible with the cheaper overseas product if the local items are equivalent in quality and performance; and
- Offset Policies - Despite inducements and incentives to place as much of the contract work as possible with Australian firms, some proportion of the contract may still necessarily be placed abroad. For such proportions of the contract which go abroad, the foreign contractor will be obliged to place work of an agreed value and "quality" with Australian companies as an "offset".

The purchasing and contractor methods employed within Defence to meet the essential terms of acquisition are controlled by the policies of the Capital Procurement Organisation (CPO).

The CPO was created within the Department of Defence in 1984 as part of a move by Government to improve the administration of defence procurement. It has sought to delegate procurement responsibility and authority, reduce complexity and duplication and simplify lines of cntrol. Under its auspices clear lines of authority have been established for major equipment acquisition through every stage of a project.

Anyone intending to do business with Defence should make themselves familiar with the CPO's "Terms and Conditions" and then be prepared to come forward to illustrate their ability to meet those stringent conditions which emerge as compulsory factors in contracts.

Another publication which every manufacturer with interests in or aspirations in the defence business field should obtain and study is the recently published (June 1987) information booklet, "Doing Australian Defence Business". This contains a lot of simple and clear information which is of value, not just for "first timers" but for people who have been in the field to refresh the memory.

Current Major Opportunities

There are two high profile high value projects which have dominated discussion on defence expenditure over the last few years and which will continue to command centre stage over the next few years. Both are naval projects - the New Submarine Construction Project and the New Surface Combatant or ANZAC Ship project.

While many in industry have concentrated on these undertakings I repeat the message I have already sounded. Many on-going business opportunities exist elsewhere in defence and a businessman looking for work and profit in the defence field will not serve his interests well if he fails to monitor the needs of the Army and Air Force.

As with all things, however, it is inevitably the big projects which draw all the attention. In this area naval projects have been and still are at the top of the score table.

The submarine project - that is the purchase by the Commonwealth of six diesel-electric submarines over the period 1987-1999 with logistic support included at a cost of $3.9 billion (June 1987 values) on a fixed price basis with normal (if there is any such thing) escalation - is the largest, most complex defence project ever undertaken in Australia. It offers unparalleled opportunities to spark real and deep technological development in the metal and engineering segments of Australian manufacturing. It is a project which stands astride of the self-reliant policy which now underpins Government policy in the defence arena.

The commitment to a 70% AII in the total contact is a dramatic illustration of the change in procurement practice wrought by this single project.

No-one involved in the project is under any misapprehension about the pressure on industry to deliver. The bottom line will not be filled in by words; it will only be completed by performance.

The project has been marked by what many in industry see as the first time one of the Defence Forces came to industry at the beginning of a project; made an effort to establish an interface; made an effort to understand the way industry viewed defence work; sought to establish a better idea of local capability and illustrated an openness which made it easier for industry to approach the colossus we know as the Department of Defence.

Communication efforts to expose the purpose and structure of the project and to explain the goals of AII were extensive.

Through the 4/5 years of the project up to :ontract award the level of maintained industry nterest was high.

Pressures applied to Project Definition Study contenders to achieve the required AII levels produced foreign groups which formed joint ventures with Australian interests; considered capability studies on industry carried out by the consortia and high levels of interest from European traditional suppliers to the Swedish and German principal consortia members.

Australian companies visiting European firms began to notice something new - a hesitation, a new interest, a querying "We have had a engineering/sales team in Australia looking at the submarine programme. You have developed some interesting capabilities. We did not realise that there was a metal and engineering industry of such sophistication in Australia. Of course there are quality problems and you do not have adequate technology but more than the basics are in place".

The sort of attitude is producing on-going business for firms that will not see anything from the submarine programme.

It has seeded in important areas of foreign industry the beginnings of a view that Australia might just be worth considering in technological manufacturing. Many aggressive Australian interests are discovering just how difficult it is to get overseas interests to accept the fact that

Australian manufacturers are credible sources of reliable supply of high technology products.

The experience of the submarine programme is already a positive benefit in dealing with this. Increased utilisation of Australian manufacturing, engineering, design and project management expertise in the satisfaction of Australia's defence needs is vital to the production of a full and lasting answer to the question.

The submarine programme represented a watershed for defence project management in Australia. In the past twenty years or so there have been a number of badly managed projects. Government and the Defence community were sick of getting it wrong. A new way had to be tried, a last chance if you like.

We do not have a proud history in being able to develop and maintain a cost effective warship construction capability. Sure, there have been some successes and great single achievements but we have not got it right. Management - Private Enterprise, Service and Government - has failed. Poor industrial relations have strangled efforts in this area as have poor project management and poor work performance.

Many would see the reaction of Defence to this state of affairs as a simple logic which involved a decision whether or not local industry could be trusted with a project. If the judgement was a project too risky to do in Australia then you either bought overseas or didn't do it.

The changes which have taken place in procurement policy have put an end to that approach. The challenge to industry is to develop to meet the new demands.

A project as large as the submarine project has a terrifying capacity to produce deep misunderstandings and misconceptions amongst those involved. It does no one real advantage to pursue a course of allocating blame for these events. They must be faced and they must be dealt with, but a great deal of effort needs to be put constantly in to the communication processes between all of the parties involved in these undertakings.

Australian industry understood that all six of the new submarines would be built in Australia. The recent announcement that the Australian Submarine Corporation would be building the first bow section in Sweden has not been well received in some circles. Rightly or wrongly, many in industry believed the Government's commitment was to build all six hulls in Australia. The ASC move is seen as watering this down and creating a two-learning curve situation even with the involvement of Australians in Sweden.

This is a controversial point and may touch a few nerves. I am not a technical person and there may be sound reasons behind it. If there are and they can be simply explained, I have not heard them.

Those who miss out on big projects often complain in their disappointment. However, that fact of human nature can be used to divert attention from the need to look at the substance of issues when they are raised.

Industry operates on confidence and if goals are changed or altered without full and proper notice to all concerned then that confidence wanes.

Manufacturers and others in industry have a concern to become involved in all areas of a project - design, engineering, project management, material and equipment supply, as well as production and through life support.

The Institution of Engineers Australia has been a strong advocate of increased local involvement in design and engineering and their advocacy has a lot of industry support.

The debate currently beng conducted within the Metal and Engineering Industry Council concerning the approach being taken in the ANZAC Ship Project is one which is a sign of the strong desire of industry to be involved and to aid in establishing a sound basis for defence projects.

The success of the submarine project is yet to be realised but no industry person can deny that the alignment of the project with commercial attitudes has not provided a better balanced project basis than has been achieved in the past projects.

Like it or not, in these days of budget constraints it is a commercial attitude to project management which will in the end prevail. Commercial attitudes require a rigorous examination and questioning of long held traditional practice. If tradition is found wanting then tradition goes, to be replaced by the foundation of a new tradition.

I am not here to argue for a particular course of action but I do make the observation that the desire of many in industry to see proper investment in the pre-production phase of projects is based on sound commercial practice. Industry has learnt to its cost that low investment in the commencement phases of a project is counter to proven principles of sound project development and project management.

The ANZAC Ship Project is a mega project indeed and will run concurrently with the submarine project. I have already highlighted the fact that industry and Government cannot afford to get

that project wrong. The prospect of messing up the New Surface Combatant is equally unthinkable.

Industry and Defence Opportunities

The opportunities for work offered by defence projects are not different to any business opportunity. They require industry to aggressively pursue them. The Department of Defence has to be seen by industry as just another client and like all clients it must be wooed.

Defence has an obligation to maintain a monitor on Australian industry and to register and catalogue its capabilities. However, with the best will and with a sound system of active staff involvement, it must be recognised that Defence will have real difficulty in maintaining much more than a broad general understanding of industry.

Aggressive self-promotion of corporate interests is an essential element in securing new business in any field.

To be successful in defence business companies must be able to deliver the essentials their commercial client look for:

- an innovative drive;
- financial soundness;
- efficient and modern management systems;
- modern technology;
- product efficiency;
- competent and skilled workers;
- sound industrial relations;
- a track record of reliability in project completion and delivery.

In the past both Government and Industry have tended to be slow to develop a positive and forceful approach to the maximisation of local content. However, today this scene is changing and Defence is endeavouring to respond to the initiatives of progressive contractors by being swifter and more practical in its own actions. Specifically referring to shipbuilding, because this gives current examples of where high value contracts are envisaged, Defence has shown a willingness to move with the times and accept that traditional ideas, methods and constraints are ripe for challenge. Now, consortia embodying a broad spectrum of industrial capabilities under a strong management team are being encouraged to form to take on major shipbuilding projects. Pure management of these very complex projects is seen as being a major challenge to be met by management teams of proven ability, regardless of past specialisations: in this context the requirement for specific shipbuilding expertise is seen as an important factor in the choosing of membership of the consortium rather than being a driving factor in the whole project.

All these changes are welcomed by industry. However, it is wise to bear in mind the fact that those companies who are aggressive in the pursuit of defence business and who meet the profile I have outlined are going to be demanding in their expectations of how the Department of Defence deals with them on projects. They are going to expect to see evidence in performance of the new "commercial" attitude in Defence; they are going to want to see sound management practice being followed in projects; they are going to want to see decisions being made and responsibility taken by the officals they deal with; they are going to want to see less evidence of management by committee.

The Case of AII in a Wider Context of Value

The benefits of defence projects have frequently been seen in a narrow context - jobs to be provided by prime and sub-contractors; opportunities for technology transfer; increased investment via joint venture activities; skills enhancement; offset opportunities.

It is clear that AII has a wider and deeper significance.

Defence spending, as I have said, is not an insignificant part of overall demand in the economy, and defence industry policies provide a mechanism for an upgrading of technologies being utilised or available for utilisation by Australian industry, management approaches, techniques, project and other skills and quality in manufacturing. All can be affected. As such, they exist as an important linkage with more general industry policy objectives for the economy as a whole.

The development and revitalisation of Australia's manufacturing base has emerged as the most pressing priority in national efforts to secure a lasting reduction in current economic difficulties. Defence industry policy can contribute to this.

In pursuing the AII goal, Defence has required that work delivered by local industry should be competitive in price, quality and delivery with overseas sources.

It has also recognised that it may be *necessary to accept some cost premium in some* areas of AII:

Now justification for any cost premium must be weighed against:

- the strategic benefits of self-reliance that could be expected to result; and
- the risk of the alternative strategy of stockpiling and seeking assurances of overseas supply.

It is also accepted that cost premiums associated with the establishment of new capabilities would be more highly regarded than those associated with additional utilisation of existing capabilities.

These views of AII and cost premiums are almost entirely within the sweep of the defence interest alone. While that is perfectly proper and to be expected because of the interests and concerns of the Department in which they were formulated, they take too narrow a view of the contribution to wider industry policy objectives which AII can contribute to.

I firmly believe in the proposition that AII in defence projects has a general industry policy connotation as well as its defence industry policy connotation. As such, the premium which may have to be considered for maximum AII in the defence projects should not just be viewed against the defence policy contraints. If the prime cost constraint of a particular project is to remain within a pre-determined cost structure with, say, a 20% premium guide for AII, then the achievement of maximum AII may require funding from defence sources and from general industry policy sources because of the recognition of the benefits which flow from defence work being undertaken by Australian manufacturers.

Overseas industry assistance in the defence areas has concentrated on two particular sectors - shipbuilding and aerospace. Canada's aerospace policy provides some comparisons with Australia. Much of the assistance of the Canadian aerospace industry has been directed through general industry support measures (research and development incentives, export assistance etc.). However, the companies involved have a high public sector involvement and assistance has also been substantial in areas such as underwriting of loans and equity investment.

These are the benefits which I believe can flow from defence related manufacturing activities being given a greater chance in the local market and they are all outside the defence strategic requirements:

- increased orders to local manufacturers;
- additional employment associated with these contracts;
- development and retention of a design capability;
- transfer of technology both of a product and process nature;
- improvement in project management, quality control and technical standards both for companies who are direct contractors to Defence and those who are involved in related (or unrelated) offsets work;
- upgrading and strengthening of CAD/CAM capability;
- access to export market opportunities through contact with overseas prime contractors;
- improved knowledge of local and overseas defence tendering procedures; and
- future collaboration potential with other companies both local and overseas.

All these benefits are consistent with the objectives of general industry policy.

Australian industry has to go through a number of steep learning curves in the defence area - a broad curve associated with the common factors in all defence work which differentiate it from civilian work and a series of specific leaning curves mainly project related. We must recognise that if we are to develop and sustain local capability local industry must be given the opportunity for broad scale involvement. Learning curves are about mistakes. Mistakes cost money, work has to be done again and delays arise in meeting project goals. Part of the premium we have to pay for AII is about learning curves. The premium is not only about cost comparisons between local sourcing versus overseas sourcing.

Overseas industry has, in its local environment, gone through the learning curves involved and possesses a tremendous advantage. Significant cost competitiveness flows from having had experience in military work and knowing that as a result you hold a greater chance of doing the job right the first time.

The importance of the linkages between defence projects and a policy commitment to AII involvement in them and general industry policy can be illustrated by the role of quality assurance and quality control in current naval projects. It clearly is of vital importance. Unless local industry can meet the QA standards then its involvement in defence business is under a dark cloud to say the least. Recognising this, the RAN and the Defence Department have put a great effort into activities such as seminars on these issues in order to provide for local industry a framework in which to structure up an acceptable level of QA.

This work, however, has been seen only in the context of the requirements of the two main projects, submarines and the ANZAC ships. It has a far wider general industry policy relevance. There can be little doubt that one of the generators of better performance from Australian manufacturers will be a greater commitment to quality in manufactured goods. This is not lost on Government. The Department of Industry, Technology and Commerce is already actively supporting programmes aimed at improvement of industry quality standards.

The costs involved in bringing industry up to scratch on QA for defence projects are therefore not only to be borne by the defence vote when the wider industry policy benefits are taken into account.

The fit between AII goals in the defence area and national goals for industry development must be recognised as of significant relevance to the cost penalties associated with AII.

Summary

The contribution to the revitalisation of Australian manufacturing industry that defence projects can make is of great importance. Manufacturing industry is in a difficult situation for many reasons. It must be recognised that it is being asked to respond to the specialised demands of defence projects from a debilitated base. To add to the problems of lack of experience in defence work and the uncertainty about the future even in the general commercial arena, there is the fact that defence work is more costly for industry to bid on because of the requirements to be met and the detail necessary to support a bid; the fact that the conversion of bids to orders is low even amongst experienced defence contractors; and the fact that, at best, any successful manufacturer will only utilise a small part of his overall productive capacity on defence work, thereby making investment in that work face the burden of producing returns only from that area. While it is true that capital investment to establish defence production capacity may be able to be utilised in non-defence areas, it may not be easily made available for non-defence work without having to bear some costs flowing from the overall cost associated with its purchase for a defence project or projects.

Industry has to work hard to satisfy any client that it is worthy of being awarded business.

The measure of the maturity of Australian manufacturing in the defence field will finally be in our performance.

We have been given a chance to perform. We are seeking a wider involvement. Delivery is in our hands.

AFTER DINNER ADDRESS

GOVERNMENT DEFENCE POLICY AND INDUSTRY

Mr David Charles, MP

The theme of 'Seapower 87' - 'The Maritime Challenge to Industry' is indeed of particular interest to this Government for it encompasses two issues which are both currently of high priority to defence in particular and to the Government's economic direction more generally.

This Government has identified a major upgrading of our maritime warfare capability as a central component of our defence policy. Furthermore, we believe that a far greater involvement by local industry than has been available to date is vital to achieving our goals. However, before I discuss precisely how this Government sees this new industrial involvement taking shape, I think it is necessary to present the Government's view of the role of maritime forces in the broader setting of overall defence policy.

In March this year, the Government presented a policy information paper on defence - the Defence White Paper. This was the culmination of a long term effort to re-orientate our defence thinking to do away with the outdated concept of forward defence and to develop a strategy of self-reliance in defence. Defence self-reliance recognises that we may have to stand on our own, and that the Government, therefore, has a basic responsibility to plan for this in its security arrangements. Hence the emphasis is on the development of a capability to defend, independently, Australian territory, approaches and interests.

Overall, the White Paper emphasises Australia's membership of the western strategic alliance and it stresses the role we play in contributing to regional security. Australia's defence planning is not predicated upon the presence or absence of an identifiable military threat, but rather on a realistic assessment of what is credible in our strategic circumstances. We assess that the kinds of credible military contingencies which could arise in the shorter term would be characterised by dispersed, unpredictable, low level military pressure, which could require a disproportionate response by the Australian Defence Force. "Low-level" refers to military threats less than major assault or invasion, including some very serious contingencies which would demand an urgent and substantial military response. Threats such as mining of our major ports, attacks in our offshore territories or in our resource zone, the interdiction of our coastal trade, and raids on vital northern installations and infrastructure, could cause severe damage to our national interests.

The extent and remoteness of our territory and maritime approaches make them difficult to protect against this sort of threat: of course it also makes if difficult for any offensive action to be mounted. I should emphasise that self-reliance does not equate with a purely continental focus for our defence effort. There is unquestionably an area of direct military interest which extends more than 1500 kilometres from our shores. The implications of these assessments for the type of capabilities we require are clear. We need a more comprehensive surveillance and interdiction capacity across the whole span of our northern approaches. We need expanded skills in specific areas such as command and communications, mine countermeasures and certain surveillance and intelligence technologies.

We need a Navy that is capable of covering our vast approaches and coastal waters and that is able to maintain skills relevant to higher level

contingencies. To meet these requirements, the surface fleet will contain three broad levels of capability. The highest level will be represented by the larger ships - destroyers and frigates; the second level by the new light patrol frigates; and the third by the patrol boat force.

Each of the three levels fills a particular capability requirement. Ocean operations are sustained by the Navy's ability to remain on station through the deployment of DDGs and FFGs. These high capability combatants will be complemented by our planned light patrol frigates which will also be suitable for independent operations in lesser contingencies.

At the second level the new light patrol frigates will be suitable for dealing with lesser forms of military pressure and capable of extended patrols within our resource zones and proximate waters in our area of direct military interest. They will have superior range, endurance, sea keeping and survivability compared with patrol boats and will be able to carry the Seahawk helicopter. They will be designed so that their sensors and weapons can be enhanced to enable them to contribute in more substantial contingencies. Coastal operations are based upon the *Fremantle* patrol boats. However, recent advances in mine countermeasures have added a much needed new dimension to our inshore capabilities.

The submarine force is the other naval component that completes our total maritime capability. With the introduction of the new Kockums type 471 submarines, our maritime surveillance capabilities and strike capacity will be significantly upgraded. The great significance of our submarine fleet runs in tandem with the major upgrading of the maritime warfare capability of our surface fleet. It will leave us with a major increase in the number of platforms. The increased numbers are no accident. They are a result of addressing the enormously difficult problems of simultaneously confronting our need to defend the choke points to our north and south and develop a capacity to patrol further afield in areas such as the South Pacific.

To achieve the type of Navy I have been describing, we are embarking on the biggest build up of naval forces since World War Two. I have just mentioned the new submarines. They are the vessels which have attracted the most attention as a major construction project, but the proposed construction of the new light patrol frigates (ANZAC Ships) and the two FFG frigates under construction at Williamstown Dockyard are equally vital to the overall development of a Navy that is able to meet our requirements well into the next century. These construction projects, as well as the modernisation and upgrade projects for currently operating vessels, represent significant opportunities for Australian industry.

Let me give some more detail on specific projects either currently underway or planned for the near future. The six new submarines are to be constructed at Port Adelaide by the Australian Submarine Corporation. Together with Rockwell Ship Systems Australia, the consortium is to deliver the submarines between 1995 and 1999. The programme is valued at $3.9 billion.

The project has the capacity to broaden considerably the technological and engineering base of Australian industry. Its structure is consistent with the direction this Government wants Australian industry suppliers to take in their relationship with defence. As well as constructing the submarines in Australia, we have also ensured that most of the work will be done by Australian industry. It is anticipated, for instance, that for the platform element of the submarine project in excess of 70% of the work (by value) will be carried out in Australia.

For the combat system element some 45% of the work (by value) will be carried out in Australia with the balance of work attracting offsets. Eight light patrol frigates for the RAN and up to four for the Royal New Zealand Navy will be constructed in Australia to overseas designs.

Currently the design choices have been narrowed down to three contenders. We plan to call tenders for the ship construction contract by March 1988. Two of the three designs will be selected to join consortia to bid for this. A ceiling cost of $3.5 billion has been set for all activities associated with the procurement, outfitting and suppport of the eight ships for Australia.

The decision to construct two FFG-7 class guided missile frigates at Williamstown naval dockyard was made in 1983. Construction of the first commenced in March 1985 and the second in July this year.

Substantial effort has been made toward maximizing Australian industry involvement. Major orders on Australian suppliers include the steel being used in the construction of the frigates' hulls, the controllable pitch propellor systems, the Mulloka Sonar System and the MK75/76 mm gun mounts. About half of the approved project cost of $1,106.02 m (April 1986 prices) will be spent in Australia. On 1 April 1987, the Minister for Defence advised in his press release on defence shipbuilding decisions that Government had decided to offer for sale a controlling interest in Williamstown Dockyard and that the company would be required to take over, on acceptable terms, completion of the Australian frigates.

As I previously mentioned, the Government has also given a high priority to the development of a capable mine countermeasures force to ensure that our ports can be kept open. Our strategic circumstances dictate that we need both a minehunting and a minesweeping capability. Our minehunters have been designed to use a forward-looking specialist sonar to hunt mines and then to detonate them using charges placed by a remotely piloted submersible vehicle. Minesweepers are needed to complement the minehunters by operation in deeper waters where the nature of the seabed makes hunting less effective.

In 1975 the Government approved the design and development in Australia of a catamaran-based in-shore minehunter (the MHI). The first of these vessels, HMAS *Rushcutter*, was delivered by Carrington Slipways in October 1986. The second (HMAS *Shoalwater*) was delivered in August this year. Both MHIs are planned to enter service in late 1988. HMAS *Rushcutter* and HMAS *Shoalwater* are currently undergoing extensive trials and evaluations. Given successful results, it is planned to seek approval during 1988-89 for the construction of further vessels; four more are presently programmed, at a cost of $270 m.

Apart from construction projects, modernisation programmes offer new levels of industry involvement. Three of the guided missile destroyers are to be modernised at Garden Island Dockyard at an estimated cost of $385 million, with $72 million in this year's budget. The modernisation will upgrade weapons and sensors and generally extend the operational life of the ships. The first two ships will complete the modernisation programme in 1988 and 1989, with the third to complete in 1990.

The greatly expanded naval construction programme requires a radical new approach to industry and Government relations if it is to succeed. The days of inefficient, Government owned shipyards having a virtual monopoly on naval construction in this country are well and truly gone. If we are to succeed in developing the type of Navy necessary for the long term defence of Australia we must have a more efficient, competitive and streamlined shipbuilding industry.

This Government realises that a strong local industrial base capable of supporting the Defence Force is basic to our security. To encourage the development of this industrial base, the Government has implemented a number of initiatives. As far as possible defence purchases, and particularly repair and maintenance contracts, will be placed with local industry.

To encourage greater industry involvement, the allocation of contracts for equipment, stores, repair and maintenance will emphasise competitive bidding. This approach will be reinforced by placing contracts on a fixed price (as opposed to a cost plus basis) and making payments against achieved project milestones (as opposed to time elapsed). With the current pressures on the defence vote our aim is to maximise privatisation of services, as well as initial construction - for instance repairs and maintenance and some food services. To accomplish this we accept that we must contribute forward planning information to industry. To this end, defence will release progressively its forward equipment programme, both for minor and major capital equipment.

Another Government initiative is the restructuring of the commercial relationship between the department and Government defence factories and dockyards. These establishments are now, as far as possible, treated as simply another source of goods and services. The factories and dockyards are encouraged to enter into competitive bidding for defence work. As part of the rationalisation process, the Government has decided to dispose of part or all of Williamstown Dockyard in Melbourne - five tenders from the private sector have been received, of which two have been selected for contract development.

Another Government initiative to develop local defence industry is the programme to encourage better exploitation of defence research and development by the private sector. In particular this refers to greater integration of industry and the Defence Scientific and Technology Organisation (DSTO). Indeed, it is a measure of the importance that the Government places in defence science that a minister has been appointed with responsibilities in that area. In fact three days ago Mrs Ros Kelly announced a reorganisation of DSTO which emphasised a higher degree of cooperation between DSTO and industry, including provision for more DSTO development work to be contracted out.

Naval equipment that DSTO has developed and successfully transferred to industry include the Ikara anti-submarine weapon, the Barra Sonobuoy and the Mulloka sonar. A surface towed acoustic system for anti-submarine surveillance is continuing to be developed by DSTO. This project offers the possibility of a considerable upgrade of our submarine detection capability. The level of industry involvement is yet to be determined.

A further example of the developing Australian expertise in anti-submarine warfare is the research and development programme that has

been mounted to meet our Sonobuoy requirements of the mid 1990s. Scientific and technical control of the programme is being exercised by DSTO's Weapons Systems Research Laboratory at Salisbury. Australian industry is playing a major role in the development programme and in this respect contracts totalling $1.27 million to support the feasibility studies have been placed with Australian companies. Of this approximately half a million dollars is funding work undertaken by Austek Microsystems and Devtech Consulting Engineers. The work beng undertaken by Austek Microsystems is of particular interest as it addresses the feasibility of achieving Sonobuoy signal processing functions in very large scale integrated (VLSI) chip technology.

A later phase of the programme will involve experimental hardware development and testing to validate feasible Sonobuoy configurations. Completion is scheduled for June 1988 and involves additional expenditure of about $2 million, the major part of which will be used for VLSI experiemtal chip fabrication evolving from current Austek work.

This Government is aware that local defence industries often face difficulties in being internationally competitive because the numerically small purchasing requirements of the Defence Forces do not allow the economic development of large ongoing construction facilities and expertise, such as many overseas manufacturers are able to sustain. This applies particularly to sub-contract suppliers of specialist and high technology equipment.

Successful competition in overseas defence markets is one way of overcoming these problems but defence exports must be considered in the light of Australia's position as a responsible member of the international community. Bluntly, we must be sensitive to the problems of involvement in the arms trade. However, this Government believes there remains opportunity for developing the export trade in defence products.

Consequently, the Defence Minister, Mr Beazley, announced a review of the guidelines for the export of defence equipment. The current guidelines are heavily weighted towards foreign policy interests and give relatively little weight to Australian defence, trade or industry concerns. Defence officials in consultation with their counterparts in Foreign Affairs and Trade, Ditac, and Treasury have now completed a preliminary draft of new guidelines. The Defence Industry Committee, on Mr Beazley's behalf, has forwarded the draft guidelines to various industry associations and is seeking their views before the matter is put to Government for consideration.

Defence-related industry, like Australian industry generally, is able to benefit from the favourable environment this Government has encouraged for industrial development. Additionally, the current relative value of the Australian dollar and the responsible outlook for the ACTU has created an industrial climate greatly beneficial to local industry. In other words, the Government believes that the prevailing conditions in Australia for major naval projects are such that local industry, in close consultation with Government, should be able to successfully meet Australian maritime requirements. However, successful project development is a two way street. I have just explained what the Government is doing, now let me detail what the Government expects from industry.

Australian industry must be cost competitive and efficient. We must get the maximum benefit from the tax payer's dollars. Industry must complete the contracts in time. To maintain the ongoing integration of capabilities relevant to our defence directions, major capital equipment projects must come on line at the projected time. Construction contracts will emphasise this aspect and appropriate penalties may apply. Defence contractors must be sympathetic to Australia's unique strategic circumstances and be capable of adopting current and developing technology to meet specifically Australian demands. Local defence producers must be capable of incorporating the latest state-of-the-art technology into defence equipment, and furthermore should be capable of through life support for their products. These requirements can only be met if there is innovative use of modern project management systems and the development of comprehensive industry support and supply networks.

The question the Government, the Navy and the Department of Defence are waiting on, is, can Australian industry meet the challenge? We believe that industry not only can but must meet these requirements. Together, the Government, the Navy, the contractors, the unions and the Department of Defence, can make this revolution in Australia's naval capability happen. I hope Australian industry is as enthusiastic as the Government is about these possiblities. I suspect they are.

INTRODUCTION TO SESSION FOUR

Rear Admiral W.J. Rourke AO, RANEM

Distinguished guests, ladies and gentlemen. Welcome to the second day of Seapower '87 addressing the Maritime Challenge to Industry Beyond 2000.

That's far out! Thirteen years away ... We need to look first at the next decade, and how Industry meets those challenges, and that will determine how ready we are for the next millenium.

In my last naval post as Chief of Naval Materiel I had a considerable interest in Industry's capabilities to support Defence. Since leaving the Navy and taking up a post with the Institution of Engineers I have broadened that interest. I now have a considerable interest in Industry's capabilities to support not only the Navy, but the Nation.

There has been in a fairly short period a substantial change in attitudes of the community, and of government.

In 1976, Sr Ian McLennan, then Chairman of BHP and of the Defence Business Council, gave an address here in Canberra (to the USI of the ACT) on the defence capability of Australian industry. He warned of the decline of manufacturing as a result of wage increases made possible by returns from mining. He warned that capability lost in capital equipment and human capital might take a long time to replace.

His predictions were sound. The decline of manufacturing continued, with little done to correct matters and little enthusiasm by Defence for getting involved in the problem.

Some at Russell Hill appeared to see local industry as an undesirable diversion of the Defence dollar, and Australian technology's prime purpose as a contribution to informed selection of equipment from overseas.

Attitudes in the Nation - attitudes in Government - attitudes in Defence, have had a refreshing change of late - a "sea change" has cleared the air. We are committed today to a competitive manufacturing sector, to educating and training our workforce, to local defence production, to defence production in the private sector.

I commend you, ladies and gentlemen in the audience, for your contributions to that desirable end, and I commend those on the Hill for taking the decisions that should lead to industrial revival.

When we consider the trends which are apparent in the budget papers on Defence capital spending, we can see both changes in annual expenditures and the steady growth and current dominance of expenditure in Australia.

Let us look more specifically at the shipbuilding programme - past, present and future.

Within the programme of the past 40 years there were many in country projects such as the *Battle* and *Daring* class destroyers, but from the mid-sixties it was predominantly a programme of overseas purchases of DDGs - *Oberons* - and FFGs.

Within the current programme every ship on it is to be Australian built, including as it does the new frigates and new submarines - the largest Defence engineering projects in our peacetime experience - as well as the inshore minehunter programme, our most innovative and exciting. That is the endorsed programme. That is the immediate challenge.

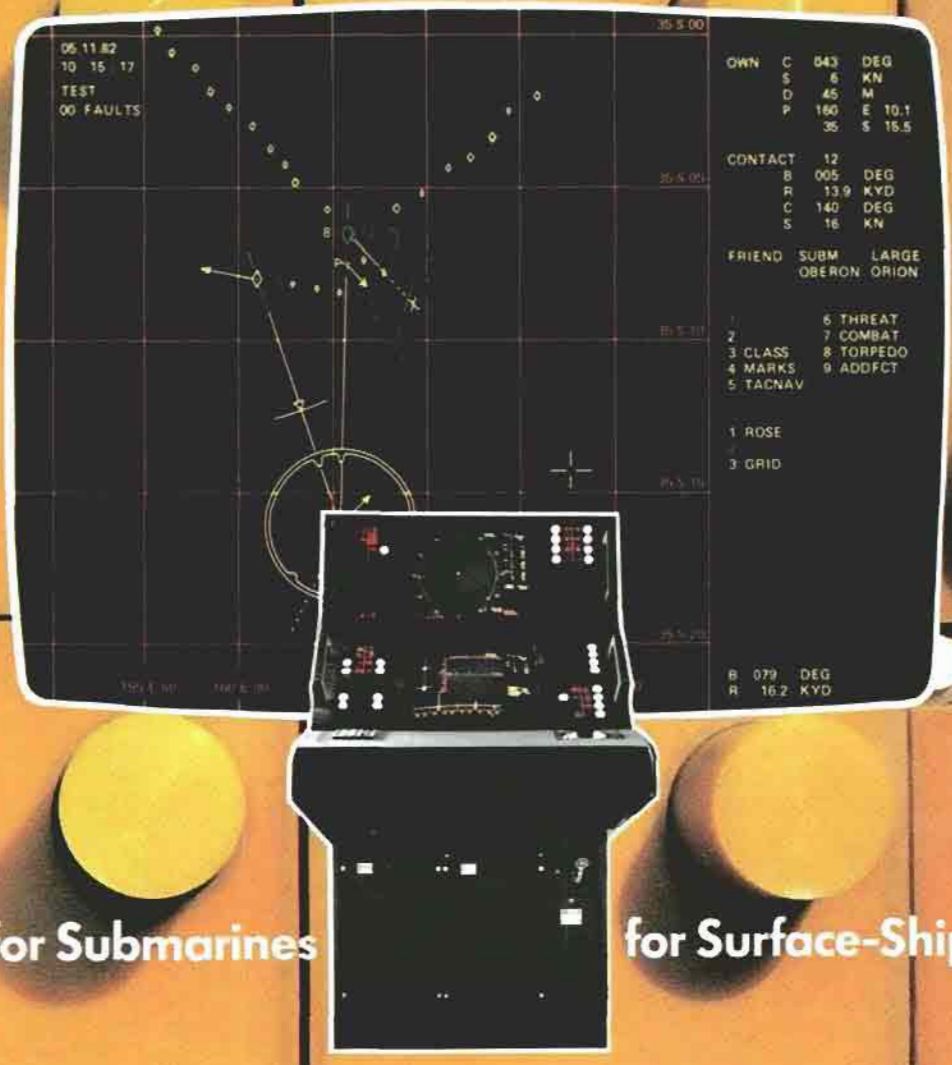
Taking us to "Beyond 2000" there is a possible future programme, including new Tier One and Tier Three combatants, as well as an auxiliary tanker and hydrographic vessels. You can see the longer term challenge and the longer term benefits to the nation which such a progression of projects would allow.

Our business here today is to discuss this *prospect, this challenge, to see how it will be met.*

Our first speaker has been a catalyst for change, an architect of change, a champion of realising our industrial potential, author of "*Defence Exports and Defence Industry*" - Mr Robert Cooksey.

The advanced SONAR concept

Integrated Sonar Systems



for Submarines

for Surface-Ships

for Mine Counter Measure Systems

KRUPP ATLAS ELEKTRONIK

Commodore P.G.V. Dechaineux, AM, RAN

It is indeed my pleasure to introduce to you today Mr Robert Cooksey. No stranger to many of you here present today, Mr Cooksey graduated with honours from the University of Sydney. Almost immediately he started research work, firstly in the Mitchell Library and then at the Australian National University. Whilst at the ANU, he published several books, articles and papers on a wide range of strategic and defence issues as well as on Australian politics, Government and public policy. During this time he undertook extensive field work in Western Europe, North America, South East Asia and the South West Pacific. But it was in 1985 that Mr Cooksey started his significant relationship with defence. In that year he was appointed by the Minister for Defence as a Ministerial Consultant. He has carried out reviews of Government policy and several major reports including his well known report on Defence Exports and Defence Industry, a report on which I'm sure he will reflect in his address to us today. Mr Cooksey is currently on another mammoth ministerial mission, investigating and reporting on defence facilities.

HMAS Perth

A DEFENCE VIEW OF AUSTRALIAN INDUSTRY

Robert J. Cooksey
Ministerial Consultant to the Minister for Defence

I regret that I was unable to be at the conference yesterday and, indeed, arrived late at the dinner. I spent the day at Air Headquarters in Glenbrook and, owing to the vagaries of the weather and problems of helicopter operations, had to drive back from Glenbrook to Canberra.

I am delighted to be a guest of the Institute and the opening speaker for Seapower '87 this morning. Since I began work for the Minister for Defence, in February of 1985, one of the joys of my job has been a growing and, I think, very co-operative relationship with Navy in my various reviews. I presented to the Minister my report on the Defence Cooperation Programme before Christmas 1985. One year ago today, on 17 October of 1986, I presented him with my report on Defence Exports and Defence Industry, which was released in public version in December last year. On 18 December this year I'm to present to him the report of my Review of Defence Facilities. Indeed, when I leave you at this conference this morning, I'll go to my office and continue working on Army assets.

I'm very pleased that Bill Rourke opened this session. He was one of the first people I saw when I began my task in '85. He gave me some good advice about defence industry, and defence projects, the full value of which I think I realised about six or eight months later. He's one of those who set me on the track. I'm glad also that he referred to the McClennan Report, which was unfortunately never released; it was a report on the defence industry, in the time in the great trough of industrial activity in Australia and the dip in Defence procurement from Australian defence industry. That, and the Eltringham Report on defence production, were two of the major documents from which I began my review of defence exports and defence industry.

Since my appointment and terms of reference were announced about two and a half years ago, for my Defence Exports Defence Industry Review, the whole importance and focus became much the greater and not just to defence industry but to the whole country, with that dramatic deterioration in '85/'86 of our terms of trade, and its impact in our current account. And the release of yesterday's balance of payments figure for the month of September indicates that all is not over. We have a very long haul still to go. The worst is perhaps over but the long haul continues. Defence exports can play a modest but significant part in helping balance the current account.

It's extremely pleasing to note that the efforts within the Services and the Department, the inputs of state Governments, of industry associations, of trade unions, of industry companies, either through submissions to my review or discussions with disparate bodies, are now bearing fruit.

David Charles referred last night to the circulation of draft export guidelines to business for discussion, and it is good to see that progressing. I think you are all aware that, on 14 October last year, the Minister released details of measures the Government had approved to assist industry to bid for defence work and to develop exports and military related products. These, he said, related to my interim recommendations to the views of industry and to advice from in the department. It was certainly most satisfactory to me as a reviewer to have something announced on 14 October, three days before I presented it.

The Minister further stated that the flow of information for industry would be improved, that defence export, equipment and manpower would be more readily made available and export controls would be reviewed, and indeed all these things are happening. Indeed, I should add that since my appointment many things have been put

in place by the Department of Defence from the point of view of industry and exports which I think are significant landmarks. There has been, as Admiral Rourke said, a significant turn around in attitudes and policies in Defence.

It is clear, to me at least, that the fact of my appointment by the Minister and his recognition of the importance of defence exports to defence industry and defence industry itself has been part of that turn around. Things may have happened but I don't think they would have happened at least as quickly.

Now my terms of reference asked for a review of Australia's policy on the export of defence equipment, including material, maintenance, support facilities and intellectual property. And this, of course, included my examining the capacity and competitiveness of Australia's defence industry and our market prospects for exports. Within these terms of reference was the mandate to consider any other matters having a bearing and, indeed, this was a most complex review with a range of interacting and overlapping variables of some subtlety.

But I am very pleased that many of my recommendations have been adopted and others are in hand. I am pleased that the report has a continuing relevance.

I think one of the virtues of the outcome of my review is that we focussed on two key areas of recommendation, although there were many other ancillary and supplementary recommendations. And these two key areas concern, as I guess you all know, export approvals on one hand and Government facilitation of the export of defence products and services on the other. And these two I see as necessarily linked. Neither set of recommendations had involved any new expenditures of public money. They rely on the restructuring, re-orientation and recasting of existing administrative arrangements so as to stimulate and support exports.

Well, the more important news that came from my review is four fold, firstly that there is a more substantial and efficient defence industry in Australia than there has generally been realised, and, indeed, I would endorse Admiral Rourke's views that there has been a pick up in defence industry in the last couple of years.

Secondly, in fiscal '85/'86, defence exports were running at a higher level than expected at around 250 million dollars per year including those generated under the offsets programme.

Thirdly, this figure can, at a conservative estimate, be doubled in three to five years by certain modest changes to policy and administration without any financial cost to Government or impost on the economy and indeed my private view is that we can multiply that in three to five years by three, four or five fold.

Fourthly, other and more fundamental recommendations, if implemented over five to ten years, will bring about a qualitative change in defence industry and defence exports. Well, defence related industry is, of course, a microcosm of Australia's overall manufactures and services sector. And I am not suggesting there is about to be a defence led exodus from our current manufacturing problems. Defence industry is turning around but necessarily slowly as new investments do not lead to immediate and rapid returns as we perhaps see in the property market or at other times in the mineral sectors. It is important to recognise that there are a number of growth areas that should be targeted for further development because these are at the leading edge of technology. Some of them have both civil and military applications and can therefore act, if not as a catalyst, then certainly as a necessary ingredient in the process of industrial rejuvenation.

Now it needs to be stated that there are undeniable linkages between policy for industry generally, defence industry policy itself, including purchasing policy in practice and policy that specifically relates to the export of defence material. I believe that all three need to be drawn together with much more clarity and cohesiveness. In the final analysis, politico-strategic considerations aside, the long term viability of defence industry hinges on its ability to export from a competitive domestic base. This could only be of direct benefit to the Defence Force, to the defence outlay to the economy generally.

It has long been acknowledged that we will never be totally self-sufficient in defence procurement, nor can Australian industry be expected to be competitive across the full range of defence requirements.

The Private Sector

Well, let me now turn for a brief look at the private sector. It is Government policy to encourage the widest possible cost effective involvement of Australian industry in defence work.

And, as I have said many times before, and I think is now becoming, not that I was original in saying it, close to an agreed position, the Australian industry cannot be viewed simply as an observer in the decision making process. It must be accepted in its role as an active participant.

And, in turn, industry must demonstrate that it can deliver and accept the responsibility of being a prime contractor rather than merely the sub-contractor. It must also take risks and be prepared to invest more of its own funds in areas other than those which may only realise the highest and most rapid rates of return.

Unfortunately, I have found that some management practises in the private sector do fall somewhat short of total competence. Not every company has a well planned strategy for defence exports or indeed for its own industry policy generally. Some tend to be introspective, and to lack an agressive marketing approach. It is not good enough to say we are Australian and you must look after us.

My research on developments in private sector industry has shown there is a considerable potential for defence exports across a number of sectors, frequently with direct links to overseas industry and these usually have not been fully exploited for export purposes. These sectors include a number of companies that engage in specialised defence work in their normal ongoing commercial activities. There are a number of regular participants, those that supply goods of a very general nature, and there are others which could be called on to do defence work in an emergency situation. The level of private sector participation in defence related manufacturing is in part dictated by the ease of access of that sector into the defence market. Now, the purchasing and procurement arrangements of DOD, are as most of us realise, complex and even obscure.

There have been some commendable advances recently but still purchasing policy needs to be further reviewed for its overall impact on industry competitiveness, and ability to export, particularly concerning lead times, turn around times, costs of tendering, ADF requirements, professional presentations, explanations and exit briefings.

Consideration should also be given to domestic procurement in the first instance, based if necessary on additional premiums that are acceptable in the longer term for projects that have significant export potential.

A major criticism coming from industry is that there has been a lack of information about defence planning and procurement programmes released early enough to allow industry to gear up to compete effectively. Briefings on both major and minor capital equipment projects and the outcome of the tendering process must also maintain credibility, providing the link between the ADF force structure requirements and capabilities and industry infrastructure. A corollary of this, apart from the fact that there is no current and comprehensive data-base on defence industry, is that domestic sourcing, indigenous solutions to service requirements, marketing and sales considerations are still not considered early enough in the equipment acquisition process. This is also part of the arguement for involving industry in earlier stages of the planning cycle where considerations of probity and propriety allow.

I'm very pleased to know that this has been addressed by the Department of Defence. As Mr David Charles said last night, on behalf of the Minister, Defence will release progressively its forward equipment programme so that industry can have the opportunity of participating in all stages of that programme.

Shipbuilding

Let me now turn specifically to shipbuilding. The Australian shipbuilding industry for defence is required to provide a capability to maintain, repair, refit and modernise naval vessels, as well as being able to construct certain types of ships. However, the domestic and export requirements for ships constructed in our yard have been in the past spasmodic and difficult to forecast. Our industry is quite small by international standards and faces a pretty high cost structure. Competition is fierce and this is not helped by the present world wide glut of shipbuilding companies with surplus capacity and the ability of some of these firms to dump ships in the international market place.

Australia does have an opportunity to develop markets in specialised smaller craft and ancillary systems, such as patrol boats, minehunter catamarans, submersibles and underwater acoustics suited to our region and, indeed, beyond our region. To a large extent, the degree of success of such yards as NQEA, ASI and Carringtons, in being able to deliver their products on time and within cost may very well determine the future for this industry.

Recent developments are evidence that the shipbuilding industry is certainly not at a standstill. On 18 May last year the Prime Minister announced that the Government would purchase ship repair facilities for most defence and commercial work for use by Western Australian industry. The ship lift capability at Cockburn Sound will facilitate the development of refit and major overhaul work on the West Coast.

And, indeed, with certain structural and personnel changes in the Western Australian

Industry Portfolio, the establishment of the Technology and Industry Authority, and the appointment of the very dynamic Mr Jim Crawford to head it, I think that the Western Australian Government has at last understood that, where the fleet goes goes a considerable amount of work for industry. It's a point, I can see from Admiral Hudson's face, he's made to them in the past and one I've made on every visit, and finally I think they have the point.

In the East, tenders have been received from organisations to acquire a controlling interest, or indeed all of Williamstown Dockyard, and two tenders are on the short list for that, and indeed others were considering the future of Williamstown Dockyard. Williamstown Dockyard becoming a public company was one of the recommendations of my review. The sale of the dockyard will ensure that it is better place to participate in present shipbuilding programmes and to tender competitively for a part of the RANs new capital equipment programme, including particularly the new ANZAC Ship programme.

However defence exports are generated, defence products and services can rarely be sold overseas without prior acceptance by the ADF. The fact that Navy or Army or Air Force use the product or are considering the product is almost always a critical factor for export. There needs to be a specific Government commitment to encouraging research, design, and development effort, by having a greater proportion of the ADF's technological and production requirements provided domestically.

You'll no doubt be aware of recent projects announced by the Minister that indicate significant and longer term opportunities to Australian industry in general and the shipbuilding industry in particular.

Mr Charles referred last night to the increasing involvement of Australian industry in defence work. We should aim to continue and re-inforce this trend of maximising local content. The construction in Australia of six submarines and the eight ANZAC Ships for the Navy, as well as planned modernisation programmes for existing vessels means that the expertise and the project dollars stay largely in Australia.

The design and development in Australia of the Inshore Minehunter and the construction of the patrol boats have contributed to a stronger local industrial base capable of equipping our Navy. The trend is continuing with the final negotiations under way with Eglo Engineering of South Australia for the construction of the RAN's four survey motor launches. We must realise that import replacement measures are as important to the viability of industry as the development of export strategies.

The Public Sector

Let me turn now briefly to the public sector. I've identified that the Government owned factories and dockyards belong to that part of industry in Australia with the capability of providing equipment, material, repair and maintenance services and logistic support for the ADF. Despite numerous reviews, recovery plans, cost awareness programmes, continual injection of public funds and some attempts at restructuring, the factories have remained largely uncompetitive, though they have undergone in the last eighteen months a very necessary and severe rationalization, lead by the former Chief of Defence Production Mr Lionel Woodward. The basic rationale for the existence of the factories has been to support the Services and provide a base for increased self-reliance and some surge capability, this is maintained through a large amount of unrecovered costs.

These establishments have had little success in the field of exports due to a range of factors that could be broadly described as institutional and attitudinal. Problems include the sporadic and uneven ordering pattern of the ADF as well as Public Service rules, regulations and constraints, which are manifest in procedures, relating to pricing, costing, quoting, delegating, ordering, purchasing, tendering, staffing and I could go on to managing and marketing. Such constraints are not conducive to good management and marketing, in fact they are positive barriers to these. All of these factors affect the ability of the factories to compete effectively for work in the domestic commercial market, as well as export markets.

In line with the need for a leaner, more efficient public sector with improved productivity, I endorse the views and activities from ODP and shared by others, that the totally new approach to the management of the factories must be pushed, and it is being pushed, particularly in the areas of finance, product improvement, marketing and general commercialization. Successful implementation of such changes will only be possible if the factories are allowed to operate in an environment conducive to this approach, free of Public Service constraints and inhibiting institutional mechanisms.

Despite these restraints, the public sector of defence industry and science and technology establishments have produced a number of exportable defence products. The DRCS in South

Australia has been a fine source of defence products with export potential. Since 1968, DRCS has patented or made patented applications for just short of one hundred discoveries with defence applications. Among the better known of these are the Barra Sonar Buoy, the Mulloka hull mounted active sonar, the laser airborne depth sounder LADS, and, of course, the Ikara anti-submarine weapon. I go on.

I guess I haven't time to refer to the ODP's portfolio of products and services for exports. So I really can't talk in detail about the vast range of products and services of the defence sector, many of which have been referred to in the press from time to time. I think all or pretty close to all were taken up in my report. But there is obviously good potential in a number of sectors like shipbuilding, electronics, communications and aerospace, with the real prospect of extending Australia's present performance in international marketing.

While there is little prospect of Australia being a major supplier to the present world market in, say, electronics nevertheless, Australia has particular advantages which we should exploit. And our natural advantages include our proximity to the developing Asian region, South East Asia and the Persian Gulf particularly, a relatively high level of research and technical skills compared with our neighbours, the prospect of marketing niche products which serve a specialised function, and our continuing collaboration with our allies in various projects and memberships of such forums as the Technical Cooperation Program (TTCP).

Given the high level of non-tariff barriers which operate across the world in defence exports, I believe that a case can be made to continue some level of subsidy for manufactured products in some areas where the factories do well or where there is an Australian requirement not performed by private sector industry. This would not be out of phase with the overseas experience of selected countries such as France, Sweden and, in rather more subtle ways, the United States and the United Kingdom. At the same time it needs to be said that an inordinate amount of unrecovered costs is an unacceptable drain on public outlays. In my view this needs to be reduced to an identifiable level of strategic defence capacity, with a management reserve set aside for product development and commercial exploitation of windows of opportunity.

Research, Design and Development

Well now let me say some words, briefly about Research, Design and Development. For some time there has been a growing concern in Australia addressed by Government, and voiced and addressed most notably by Senator Button, that RD&D is lagging seriously relative to our international competitors. Aware of this, I made it my particular concern to look at the capabilities of both public and private sectors of Australian RD&D. And from my visits and discussions I became convinced that expectations for exports direct or derived from that sector are such as to warrant a considerable degree of optimism, but to achieve an improved level of export performance, we'll have to improve our present practices.

In the past, the Australian defence sector has relied on a piecemeal, incremental approach to the acquisition of new technology and RD&D capability by participation in offsets and Australian industry involvement programmes. Overall, Australia has had high reliance on imported technology and know-how, such that our terms of trade in this area are ten to one against us. That is, we export one tenth of what we import, although smaller countries such as the Netherlands, Sweden and Denmark, export ten to twenty times what we do, Australia lies somewhere in the middle of the small to medium performers on a scale of RD&D as a proportion of gross domestic product.

There is, in fact, every reason to expect Australia's performance to improve since we have a good base for RD&D expansion in both the public and the private sector in the DSTO from a total expenditure of $162.2 million in 1985/86, and in large private sector firms which report RD&D investments in the order of from 2% to 15%.

I'm happy to note that Mrs Ros Kelly, the new Minister for Defence Science and Personnel, only this week on Monday announced the re-organisation of DSTO. And Mrs Kelly promised a higher degree of co-operation between DSTO and industry, and that more of DSTO's development work would be contracted out, and indeed she referred to increasing focus on the development of export potential.

This re-organisation will indeed further develop Australia's expertise in critical defence technologies and will allow close interaction between DSTO and industry to provide a range of equipment for both local use and, where appropriate, for export to our Allies, and others.

Summary

Well, let me sum up and conclude. To recap, there have been two major areas of recommendation from my review. The first concerned the revision of guidelines for approval of the export of defence equipment and material, and, as critically,

the process of their administration. It is important that industry receive timely answers to applications. The second involves the establishment of a defence export group in AUSTRADE, which was my recommendation, with strong links back to the Department of Defence and other key departments to facilitate and promote defence exports. There are also associated recommendations of some range. And the great advantage of these recommendations, as I have said before, is that these can be implemented relatively quickly and without financial cost. They don't involve tariffs or other infant industry assistance. In Defence there has, until the last couple of years, been little official recognition of the importance of exporting defence products and services and of the consequential timely approval and of Government facilitation of these exports.

We need the clearest definition of direction and a sustained determination to export. The commitment to promote export equipment must be addressed through the introduction of timely administrative procedures so that delays do not result from bureaucratic delay. And we must deploy all relevant resources of Government in an interlinked process of facilitation. Windows of opportunity as occur, say now in the Persian Gulf, and did occur some years ago as a consequence of the Falklands. They don't remain open forever.

In the end, whatever Government can attempt, all it can do is develop the right environment. It's up to industry to maintain its comparative advantage, in part achieved through devaluation of the Australian dollar. Individual private sector companies and present ODP establishments must develop their own niche marketing strategies and simply get out there to the international market place and sell.

In the process I've recommended, industry is not to be a mere observer, but in turn industry must demonstrate that it can deliver and accept the responsibility of prime contractor rather than merely of sub-contractor. It must take risks and prepare to invest more of its own funds in areas that don't realise the highest and most rapid rate of returns. We are looking at returns perhaps coming in five years from the moment of investment decision. Australian industry does have the capability and the capacity. Should my key recommendations be implemented, and I am confident that they will be, industry must demonstrate its competitiveness and deliver exports and so make a profit and significantly contribute to the current account.

INTRODUCTION TO SESSION FIVE

Commodore A.L. Hunt AM, RAN

Yesterday morning, in his opening address, His Excellency the Administrator outlined for us several of the challenges that flow from such significant decisions as the Type 471 submarine.

Specifically, he stated the need for a combined and well coordinated Navy and industry approach to realise the ambitious and nationally important objectives of such a major programme. To demonstrate something of this necessarily integrated approach, for the next three quarters of an hour we are to be addressed by two men at the heart of the submarine project. Rear Admiral Hughes, the Project Director, and Mr Roger Sprimont, the Chief Executive Officer of the Australian Submarine Corporation - and they intend to show us with some entertainments and other things how the submarine can be seen as an indicator of Australian shipbuilding potential.

Rear Admiral Oscar Hughes joined the RAN in 1951 as an electrical engineer, but his career has included a wide range of engineering and project development appointments with aircraft, ships weapon systems, communications design and aircraft carriers. He will be known to most of the commercial members of this audience either in his previous role as Director General of Naval Production or his current role as the head of the submarine activity.

Mr Roger Sprimont graduated from the Swedish Naval Academy in 1964 and served in the submarine arm of that Service until 1978, which included graduating from the Royal Navy Submarine CO qualifying course and being Naval Adviser on the Type-A17 programme. He has been with Kockums since 1979 and is now treated at Mascot as an Australian citizen who makes a great many trips to Sweden. I suggest that we hear both speakers before we consider questioning either of them. Mr Sprimont has won the toss and sent Oscar onto bat. Admiral Hughes.

THE SUBMARINE AS AN INDICATOR OF AUSTRALIA'S SHIPBUILDING POTENTIAL

Rear Admiral O.J. Hughes AM, RAN
Submarine Project Director

Thanks very much, Tony, for the entertaining and excellent introduction. May I also thank the ANI for its kind invitation to have the privilege of addressing this distinguished audience. I intend to talk on the topic of "The Submarine As An Indicator of Australia's Shipbuilding Potential". I am delighted that Roger and I were able to sight each other's proposed papers earlier on this week and the good news is that we have avoided a good deal of duplication and achieved a fair degree of dove-tailing. The bad news is that Greg John and others yesterday cribbed most of my pearls of wisdom for their own speeches and I am also indebted in that, out of twenty pages of this address, ten pages were devoted to explaining why the bow section was going to be built in Sweden. It says much for Acting Secretary, Mr. Bennett, that he eloquently dismissed that in one line yesterday.

I will begin by outlining some of the factors which led to the Government decision in May 1985 to construct all our new submarines in Australia. I will then outline some of the industry involvement aspects of the submarine programme. On conclusion of my address, a short film on the Type 471 will be shown and then Roger will speak to you about how the Australian Submarine Corporation intends to implement their part of the programme.

The thrust of our presentation will be to explain how, through the submarine project, the foundations are beng laid for new, ongoing and vibrant industry, having great potential and providing enormous opportunities for the future development of Australia's defence industry.

Firstly, I go back almost ten years to the late 70s. In order to determine the capability required in the new submarines and, indeed, in order to justify the continued requirement of the submarines in Australia's Defence Force structure, it was first necessary to examine Australia's unique strategic circumstances in the context of the roles and functions we might expect our maritime forces to perform. Clearly, there are certain significant and enduring features of Australia's physical and strategic environment which influence the size and shape of our Defence Forces. They relate to our maritime circumstances, our relative geographic isolation, (but mindful of the archipelago region to the north), our dependence on lengthy and, I dare say, at times in the future, insecure trade routes, as well as Australia's extensive coastline.

It is these enduring features that gave rise to what Dr Paul Dibb described as our "vital defence interests" and you will recall that these items embraced the exercise of authority over territorial waters and air space, the protection of our resource zones and the defence of our maritime approaches.

At times of peace and low level tension submarines are required to deter potential aggressors, to conduct surveillance and reconaissance throughout Australia's area of influence, to maintain state-of-the-art capabilities in submarine warfare, to provide other Australian forces with anti-submarine warfare experience and to provide a sound base for timely expansion to meet a high level threat should the need arise.

In time of war the roles of the submarines embrace maritime strike operations, anti-submarine operations, covert reconaissance, surveillance and patrol, clandestine operations and mining operations.

While these roles are similar to submarine forces in many other countries, Australia's strategic, geographic, demographic and economic

circumstances give rise to a set of unique submarine capabilities reflecting Australia's environment. The RAN sought new submarines capable of sufficient speed, range, reliability and endurance to enable them to make fast covert passage through oceanic and archipelago areas and remain on patrol for extended periods at long distances from Australian base support. They should also be capable of carrying sufficient weapons for maximum time on patrol in contact with the enemy, remaining submerged with minimum snorting periods in order to present hostile forces with the least opportunity for detection and counter action, detecting, tracking, classifying and destroying potential surface and submarine targets while evading counter attack, acting independently or with friendly forces, performing communications, acoustic and other tasks commensurate with the surveillance, reconaissance and tactical roles. These vessels should have sufficient indigenous logistic support to maintain an acceptable operational and material condition during the patrols and throughout the life of each submarine.

In turn, these capability requirements, when projected into the 1990s and beyond, generated specific characteristics for design requirements for the new submarines and these included, very simply, long range, good submerged endurance, a low indiscretion rate (the time charging batteries in relation to total time), good patrol endurance, adequate weapon load, very low noise and magnetic signatures, deep diving depth, adequate submerged speed, minimum crew, minimum maintenance and, perhaps most importantly, a state-of-the-art combat system which would have the capability to detect, classify, track and, if necessary, engage surface and submarine targets at long range and in real time.

It is therefore important to note that the required ship characteristics which form the basis of the request for tender which was issued in early 1983 outlined a submarine tailored for RAN operations applicable to the 1990s and beyond. In particular, the combat system requirements were in advance of any known or projected combat system and had their genesis in Navy's experience in the Submarine Weapons Update Programme, known as SWUP, for the *Oberons*.

The SWUP programme was initiated early in the 1970s and involved the updating and the upgrading of the *Oberon*'s combat systems, weapons and sensors to deploy the highly effective Mark 48 torpedo and the Harpoon cruise missile. These weapons and the sensors that back them up made our *Oberons* as potent as any conventional submarine in the world. In the process, the RAN acquired expertise in modern submarine combat system technology and it is perhaps worth noting that, at the time, SWUP was regarded by international observers as complex, challenging, ambitous and certainly unique. We would have to say that SWUP was a great success.

Now I want to digress slightly at this stage by saying I need to make an important point concerning the role of the informed customer which was, if you recall, referred to yesterday. It is worth noting that in the defence procurement business you only get what you ask for. For example, the fact that we are acquiring the most advanced submarine combat system of its type in the world is not because someone else thought that we should have it but because Navy as an informed customer specified the system as its requirement. This is a very important observation with ramifications for Australia as a whole and industry in particular. Second class customers generate only second class products which do nothing for self reliance, exports, standard of living or whatever. If you specify a first class product and can produce that product to quality, schedule and price then you are in the international competitive league of users and exporters. Thus, the role of the RAN is central to the establishment and maintenance of a competitive submarine industry in Australia.

The request for tender issued in 1983 sought responses from recognised shipbuilders, designers and combat systems suppliers for a project definition study for the supply of six submarines and, at that time, the first of which was to have been built overseas with the possibility of the remaining five being built either in Australia or overseas.

During 1984 and early 1985 there was a great deal of discussion about the benefits and risks associated with constructing all six submarines in Australia. A number of industry, employer and union groups as well as individuals argued with considerable persuasion that the full benefit for Australian industry could only be realised when all six submarines were to be constructed in Australia. Of course, we know now that is in fact what is going to happen and, in my judgement, the submarine project in its current form satisfies all the major industry aspirations set down for the project some two to three years ago.

During the period leading up to the Government decision in May 1985 to select the PDS contractors, the project was characterised by two significant factors. Firstly, recognition and acceptance that the RAN's required ship charac-

teristics could only be met by a new design or an extensively modified version of an existing design. Secondly, increasing support for an all-Australian construction programme - as I indicated earlier, it is is now a matter of record that the Government endorsed Navy's capability requirements with the new submarines and made the decision to construct the six submarines in Australia.

In my judgement, the Government decison in May 1985 represented a significant and historical land mark for Australia. The decisions were bold, imaginative and very much in the interest of Australia's defence industry. Not only did the Government demonstrate its confidence in the RAN and the submarine arm, it demonstrated that it had confidence in the future of Australian industry and I am sure that the impact of these decisions was not lost on the international defence community.

I now turn to some of the Australian industry involvement aspects of the programme and, to avoid too much repetition of yesterday, I will dwell on a few central points which I regard as fundamental and perhaps worth noting yet again.

Important skills applicable to the management of large and complex projects will be exercised and developed through this project. ASC and Rockwell are both Australian based enterprises with substantial backing from overseas principals. They will draw on that overseas experience and expertise and pass it on the many local subcontractors and others involved.

I would like to stress here that we are dealing with a multi-national project and at least six or seven countries, including England, Germany, Italy, France, North America, Sweden, and the whole matter of just getting all those countries and the companies concerned specifically to get their act together, raises some enormous communication difficulties. So when I refer to the development of management I am really embracing that whole international scene.

Australian engineers and technicians will be deeply involved in the detailed design of the submarines. I am aware of some comment by some that they are disappointed perhaps about the amount of design that will in fact be done in Australia. Let me just say this, that in fact a significant amount is being done, particularly in the combat system area, and there is also a good deal of design and production effects still to come across from Sweden on the side of the platform. In fact, according to the financial information we have got to date, this represents about 30% by value of the total design effort.

The project also involves a wide range of manufacturing skills and technologies but I am not going to dwell on them because they got a good airing yesterday.

I believe that in the submarine project we are laying the foundations for a very successful and competitive shipbuilding industry and, as many speakers have already mentioned, industry has clearly got its part to play. I believe some of the most important things embrace early investment in quality assurance programmes and Industry must also invest its resources early in training, plant, machinery and management information systems. It is also vital that industry comprehends the scope of the task, not only in manufacturing techniques and military specifications and standards but also the management challenges that will need to be met.

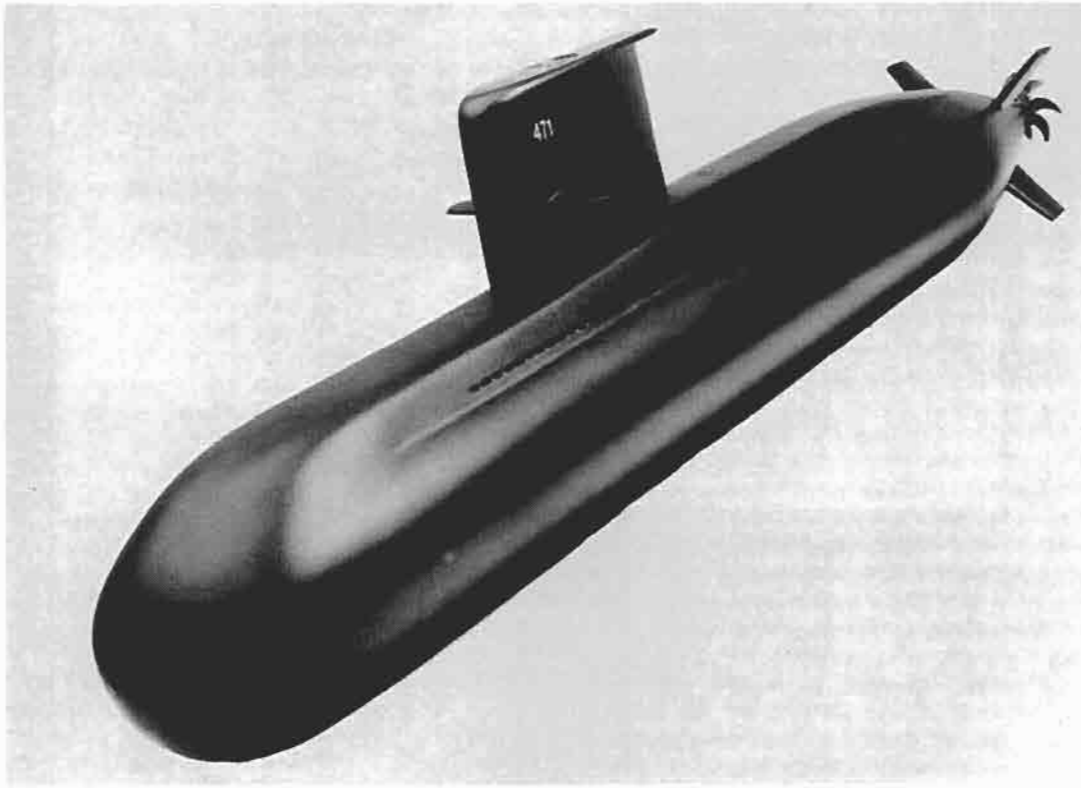
The Navy has specified a warship and not a commercial variant. The submarine, its equipment and systems will have to meet stringent requirements for shock, noise and vibration. All must be accomplished in time and within prescribed costs, price and restraints.

The skills, technology and capabilities outlined go beyond simply involving Australian industry in the construction phase and ongoing support activities. The involvement I have outlined is also about establishing a springboard from which new and ongoing industry capabilities can develop. I see the project as a catalyst for research and development, new design initiatives, improved production techniques, new ways of testing equipment - and so on. It will provide an ongoing nexus between the Navy, the DSTO and industry well into the next century.

I am determined to ensure that industry has every assistance and every opportunity to demonstrate its ability to build the RAN's new submarines to quality, schedule and cost. It is an enormous challenge but one which can be and must be met. If Australian industry collectively fails to meet this challenge and we revert to the cycle of poor quality, delays and cost overruns, Australia would have lost a golden opportunity with untold long term consequences for us all. If we do not perform well on this submarine programme, this Government or any future Government will find it difficult to support any increase in submarine capability such as might be contemplated through new weapons, air independent propulsion systems or whatever. Indeed, the prospect of developing and exploiting our own ideas and establishing a new ongoing and dynamic industry with multi-national roots and associated export opportunities will also be lost.

Despite that sombre thought, I am extremely confident that Australian industry can meet the challenges that lie ahead. Of course we need to keep the pot on the boil and there is much to be done within a demanding schedule. I and my colleagues in the Submarine Project Office, with the support of others in the RAN, the Department of Defence and elsewhere are dedicated to ensuring the outstanding success of this project.

Ladies and gentlemen, that concludes my part of the presentation. Thank you for your attention. I now would call on Roger Sprimont to introduce the film; it runs I think, for eight or ten minutes and Roger will speak to you on how the Australian Submarine Corporation proposes to implement its part of the programme.



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THE SUBMARINE PROJECT - A STATUS REPORT

Mr Roger Sprimont
Chief Executive, Australian Submarine Corporation
Executive Vice President, Kockums Marine AB

I will now try to make a status report on the submarine project and where it stands at the moment.

The decision to build the Royal Australian Navy's new submarines in Australia is the evidence of the Australian Government's firm commitment to the Industry Development Strategy.

It was logical for the Government to choose a large defence acquisition programme as a way to support and encourage Australian industry and to show a way into the future. Military technology is normally implemented before the introduction of civilian applications.

The Royal Australian Navy's demanding requirements, combined with its firm commitment to Australian industry, forced the contenders to a new and somewhat courageous approach to the Project.

None of us foreign contenders who were involved with the project at early stages were enthusiastic at Australian industry involvement above the 50% level.

However, through the funding of the Project Definition Phase, the two selected contenders were given fair financial support and time to team up with Australian partners and to plan for production in Australia.

Since the involvement of local suppliers was made such a significant competitive element in the selection, Australian engineers and managers had to be involved in all aspects of production, planning and vendor assessment.

Finally, and then to our own surprise, a higher level of Australian industry involvement was achieved than initially promised by the competing tenders and certainly by our marketeers.

ASC has contractually committed itself to 70% local involvement in the submarine project. It may seem, as the film said, a bold venture and it is. The Australian defence industry is in its resurgence and has, in an international perspective, not a good track record. I recognise Don Fry among the audience and I may come up with my apologies afterwards.

This can to a large extent, however, be attributed to the fact that Australian industry has previously not really been given a fair chance. Projects have in the past been based on existing designs and on construction plans and schedules created for a totally different environment and without the necessary funding and time for modifying.

Risk Elements

The creation of new engineering processes, techniques and management systems has obvious risks. Risks, however, can be managed if identified and planned for.

When assessing risks, the contractors and the client will most likely have different views and thus arrive at different conclusions of what the priorities are. Through the contract, the parties will have defined and agreed the overall objectives expressed in the contractor's price, scope, performance, delivery time and so on.

Naturally, the main objections have to be substantiated through supporting documents such as price breakdowns, plans, schedules and specifications. Cost and risk of overruns through incorrect assessment of productivity are seen by most people as the major risks.

I would now like to present the key project cost elements seen through the eyes of the Australian Submarine Corporation.

First, actual construction work is a relatively small but not insignificant cost element. The project is, however, dominated by the performance of the sub-contractors, not so much the construction sub-contractors as the suppliers of major systems.

Time is of the essence. Unscheduled delays outside normal planning lead to low productivity and thereby, indirectly, to cost overruns. But time has no limit - budgets have. The Australian Submarine Corporation has still plenty of time to manage and control its own construction activities. In a short-term perspective all attention must be given to the major subcontractors' ability to produce what is ultimately going to be integrated into the submarine.

I am sure that you will agree that the rapid mobilization of a highly skilled management team, supported by every management tool possible, is where to start.

With time - not cost - being the critical factor I would thus assess the project priorities as being:

1. To build up the management team;
2. To secure the major subcontracts in accordance with the main contract;
3. Starting construction of the assembly facility without which you cannot build the submarines anyway; and
4. Developing management information systems.

In this presentation I will concentrate on these project elements in the form of, as I said before, a status report.

Management

I will start with Management.

The Australian Submarine Corporation has, as Admiral Hughes said before, contracted to complete the project to specification, on schedule and within budget. Kockums produces the platform design and integrates the combat system design produced by Rockwell into one complete combat unit. The design drives the construction schedule, however both Kockums and Rockwell are already fully mobilised and manned for the purpose of this project. The Australian Submarine Corporation is not nor would any existing Australian company have been ready to go should they have been awarded by submarine contract.

The Australian Submarine Corporation was deliberately, not incidentally, formed to include partners who could contribute to management - Kockums, as the designers and builders of submarines, Wormald, as Australian manufacturers and engineers, Chicago Bridge and Iron as production managers of large international projects and AIDC the Australian Industry Development Corporation, as financiers and financial experts.

During the present start-up stage, the partners have contributed by seconding their most experienced managers to the Australian Submarine Corporation. At the moment there are about 42 Australians and foreigners. This contribution is over and above personnel involved in subcontracted activities such as design and project management for the construction of the submarines. The Submarine Corporation staff has now reached 100 and will by June 1988 have passed the 200 mark. The foreign element is at present around 30 personnel and will from now on only increase with the future Swedish contribution. We are aiming at, when we are up to speed and up and running, to have a white collar staff of around 280 personnel and a blue collar staff of 300 plus.

The organisation during the mobilisation period balances the functional needs of the project apart from specialist integrated into the organisation. ASC will from time to time use experts from Kockums and from Bath Iron Works for the development of management systems and support to the Australian sub-contractors.

In order to gradually give the Australian Submarine Corporation its own identity, foreign managers will be assigned an Australian deputy being trained on the job for the role as future manager.

Three major recruiting companies are presently involved in the selection from several hundred international and local applications and I may just mention that the other day I got an overseas call from a man who claimed as reference that he had been trained in Vladivostock.

Subcontracting

I will now touch on subcontracting.

In a business which is based on very firm requirements by the customer, the subcontractors' understanding of the project is of paramount importance to the overall project's success. A single subcontractor can, through bad performance, wreck the schedule and consequently the project budget.

Since the Australian Submarine Corporation's in-house construction work represents only 20% of the submarine value, 80% is supply of systems, materials and components and of that 70% is made up by the value of eight to ten major subcontracts for systems such as the combat system, ships' management, batteries, propulsion machinery, electrical converters, diesel generators and weapons launchers and discharge systems.

These subcontracts must and will be finalised during the first year of the project. Altogether, about 350 subcontractors and suppliers are expected to participate. A maximum of fifteen are critical to the project budget although the others may very well be critical for the schedule.

The previously mentioned subcontractors will also impact on the overall operational performance of the submarines.

ASC has chosen to contract with the overseas leading designers and manufacturers, holding them responsible for the involvement of Australian industry.

At present, the Procurement Department is entirely devoted to finalising the subcontracts. Agreements are being simultaneously reached with their Australian partners or licencees.

Surprisingly little attention has been given by the media and politicians to the extremely high technology component of the project. Instead, all interest has been focussed on that 4% - 5% which consists of producing steel, bending plate and welding it together. It is unlikely that Australia's industrial future is to be found in that area alone.

Nevertheless the public may be comforted to know that the steel production programme is already underway and, so far, extremely successful.

Down the track and towards the end of 1988 follow major fabrication subcontracts for outfitted submarine sections. Subcontracts will be let for the forward section, aft section and mid section and for the outfitting of platform decks.

Fabrication, assembly and outfitting will be composed of four main elements which may even be further subcontacted at lower levels and they are mechanical, piping, electrical and steel.

Fabrication work requiring heavy manufacturing machinery will be subcontracted to Australian companies already possessing equipment of suitable size, capacity and providing acceptable tolerances.

The Construction Facility

The Submarine Corporation will build a dedicated submarine manufacturing and construction plant known as the "Australian Construction Facility" (ACF).

As you have already seen in the film, the layout of the plant will comprise twelve buildings, including the Hull Shop, Outfitting Shop, Weapons Workshop, Main Store and Blast and Painting Shop and, of course, the Ship Lift.

The design of the ACF has taken into account the overall construction philosophy of Kockums but the plant has been designed to fit the Australian build plan and subcontract structure.

This had led to a reduction in the size of the construction facility, the spread of the work load throughout Australian industry and spreading employment to many locations within Ausralia.

Although some manufacturing will take place at the construction facility, it will primarily serve the purpose of later stages of hull construction, fitting out assembly and various sub-assemblies, final assembly and set to work of systems and equipment. Naturally, the launching and performing of harbour acceptance trials will take place there.

The site preparation has now been started and contractors designated and appointed for the design and erection of the plant. At the beginning of next year the Australian Submarine Corporation will become one of the more important employers in Adelaide.

Before the final move into the construction facility itself, which is scheduled for the beginning of 1989, the Submarine Corporation will by the end of November this year have moved into a temporary office in Woodville near Port Adelaide.

Management Information Systems

Now I will now touch upon the management information systems scheme development. It is generally recognised that the submarine project is an enormous task that requires support from the most sophisticated management systems available. Although 70% of the work will be performed in Australia, activities will proceed all over the world.

The Submarine Corporation management must have access to all types of information for its decision making and it is our ambition that all aspects of the project will be automated into an integrated management system now under development.

Kockums' existing management information system forms the base line. It has been developed in-house at Kockums, is used to support submarine production in Sweden and has been sold to a number of European ship yards.

At an early stage during the project definition stage, the assistance of Bath Iron Works in the United States was sought to expand this basic system in order to integrate the Royal Australian Navy's requirement such as configuration management, integrated logistic support, and cost scheduling and control systems. The system developed by the Submarine Corporation for the submarine project would probably be one of the most modern and advanced in the world.

As I said before, time is of the essence, but in developing this system our engineers are taking a very pragmatic step-by-step approach to their task. To control contractor progress the Royal Australian Navy has required that the project be broken down into measurable and scheduled elements. A system designated CMACS, Contract Monitoring and Control System, has been developed by BHP Engineering.

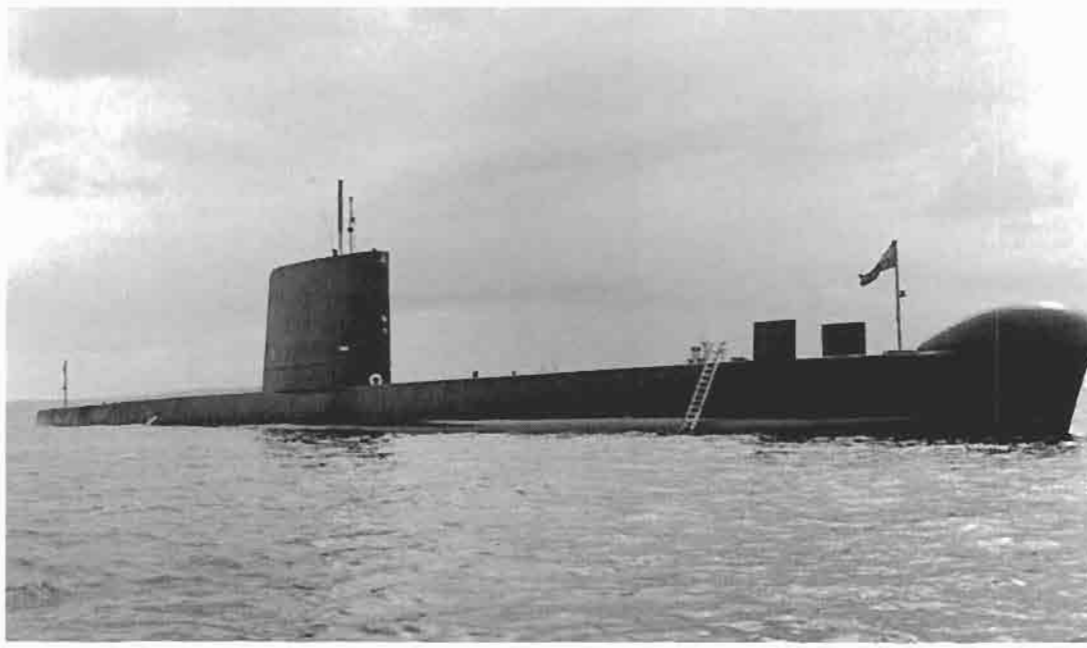
In its formal offer, the Submarine Corporation supported its tender with more than 1,700 priced and scheduled work packages as evidence that

their price and delivery times offered were realistic and reasonable. These work packages are now being broken down into more than 50,000 activities also priced and scheduled so that both the contractor and the client can continuously monitor and determine progress.

The Commonwealth further required and we accepted, implementation of US Defence Cost Scheduling and Control System called CS2 to be used to assess the consistency of any future addition to the final scope in areas to be added to the contract, such as logistic support and software updates. In preparation, approximately 20 of our senior managers have already been trained in the United States and Sweden to fully comprehend the various requirements and to study the systems in use in the United States, Canadian and Swedish programmes.

It is only natural that many observers impatiently await the visible evidence that the submarine project is creating the predicted prospects for Australian industry. In this presentation I hope that the overall perspective and the priorities have been more clarified. The submarine project is up and running, but the project will not create a boom for the heavy engineering industry. Its focus is on the manufacture of high quality hard and software. The fastest growing sector in the world trade is in manufactured goods and it is in this area that technological innovation seems to have the greatest impact.

The submarine project encompasses a wide spectrum of extremely advanced technologies integrated into one sophisticated product - the complete and combat ready submarine. To a large extent the Navy's need for self-reliance and the Government's industry policy serve the same aim. I have aimed at showing that the submarine project is planned in such a way that every opportunity still exists for Australian industry to accept the challenge ahead and to pick up the business.



Oberon SWUP

INTRODUCTION TO "AN OPPOSITION VIEWPOINT"

Rear Admiral N.R.B. Berlyn, AO, RAN
General Manager, Garden Island Dockyard

Ladies and gentlemen, my name is Nigel Berlyn. I look after the dockyard not mentioned by Mr Robert Cooksey, called Garden Island Dockyard. However, my purpose today is not to advertise but to introduce to you Mr Peter White MC, Member for Macpherson and Shadow Minister for Defence. Mr White was educated at various schools in the Southport area and matriculated from the Southport School in 1953, and entered Duntroon in 1954. He graduated as a Lieutenant in the Infantry Corps in 1957; he has held various regimental and administrative appointments including service in Malaysia, Vietnam and New Guinea, the United Kingdom and Army Headquarters in Canberra. His last appointment was as a Lieutenant Colonel, Commanding Officer, 1st Battalion Royal Australian Regiment in Townsville, in 1973-74.

He retired from the regular Army in January 1975. He had been awarded the Military Cross for service in Vietnam. He joined the Southport Branch of the Liberal Party in January 1975 and he became Chairman of the Nerange Branch in March 1976, Vice-Chairman of Macpherson area in March 1976, and served as Chairman of the Liberal Party rural committee from 1979 to 1980. He was also the State Member for Southport from 1977 to 1980 and he was elected to the Federal Seat of Macpherson in February 1981, a seat which he has successfully held through three further general elections. He has been a member of various committees including Tourism, Foreign Affairs, Defence, Health, Welfare and, dare we say it, Parliamentary Accounts. He was appointed the Shadow Minister for Sport, Recreation and Tourism in September 1985 and after the recent general election became the Shadow Minister for Defence.

Now, in this seminar so far, we have heard a great deal about the Government policy. One of the features of a democracy is there may be more than one point of view, and it is therefore a very great pleasure for the Australian Naval Institute to welcome the Shadow Minister for Defence, who is going to put to us an opposition viewpoint.

AN OPPOSITION VIEWPOINT

Mr Peter White, MC, MP
Shadow Minister for Defence

Firstly, could I congratulate the Naval Institute for this seminar. It is very important in my view that we raise the level of debate in this country. As most of us have been aware since after the Vietnam war, defence issues and defence personnel in particular have been pushed to one side in the Australian community and we are seeing that erosion of benefits and recognition day by day in a massive wastage rates from the Services. I will return to that a little bit later.

I would hope that the wheel is starting to turn and we are going to get more recognition of defence issues and personnel in this country because we simply cannot go on the way we are going by failing to take account for what is happening. I was very pleased to see this morning in "*The Australian*" newspaper some remarks by General Mike Jefferies, who some of you might know, about the state of the 1st Division. Now I don't suppose he will get any thanks for that, but I can tell you that he has done this country a great service by speaking out as he did.

There are some of you who saw some of the earlier programmes for this weekend and would have seen that this is the slot that was reserved for John Halfpenny. I am not sure whether to be pleased or not, but I can assure you that I am not here speaking for Mr John Halfpenny. We have a different approach to life and living. It was interesting that he was on the programme and I understand that there was some criticism of the organisers who drew up the programme for putting him on it. I would take the opposite view, and I would urge particularly those who are serving to get out at every opportunity and talk to the Halfpennys of this world. They are a fact of life, they have enormous power - too much, but that is something that we are going to wind back in a few years, and I would encourage serving officers to not only talk to Halfpenny but to get out in industry as much as possible.

I remember some years ago when I was still serving, and it was certainly my attitude and a common attitude then, that the Services were a distinct entity and everyone else didn't understand them - but *"that is too bad, we are not going to have anything to do with civilians and civilian life"*.

Now that has been turned around to a very large extent and I am very pleased to see it, but we still have a long way to go. I have enjoyed this weekend very much. I am learning a great deal and that is because I have a great deal to learn about seapower. I was an infantry officer, as Nigel said. I have never been involved in industry, so there is a great capacity there to absorb a great deal of what is going on this weekend. I might say that I am probably not the least qualified Minister for Defence or Shadow Minister. Some of you might recall a recent Minister for Defence Production who was an avowed pacifist, as well well as being a raving Socialist, and we have got one of the current Ministers for Defence who started her career as a Minister by saying that these wastage rates were good for morale. So I don't believe that I am the least qualified to speak on these matters.

Now, I'm not delivering a paper today. I just want to speak from some notes, express some views, canvass a few ideas and get your opinion on certain matters. The Opposition Defence policy has some way to go; in the normal course of events, it'll be two and half years, I guess, before there's another election, although we can't bank on that. So there is a considerable working up process to go through and this weekend is part of that process.

I was interested yesterday, when someone asked was there any possibility of a bi-partisan view of defence. Well, there is, and to a large extent some of the proposals, the recent proposals of the Government, do have our support - some of the major items have our support. A lot of the White Paper, I think, was generally accepted. We would criticise the White Paper now because the funding arrangements that were there initially to support it seem to be falling into a hole. But you would expect the Opposition, where

it has basic different approaches, to express them, and of course that is what we do and what I do. So while there is a great deal of bi-partisan approach to defence matters, there are some areas where we differ, and we'll continue to express our differences.

I'll just, this morning, briefly have a look at where we are and where we are going as far as naval defences are concerned and the implications for Australian industry. I want to start off by addressing the biggest problem facing all the Services, and that is this enormous manpower and womanpower wastage.

And you might ask, those of you who are here from industry and not Service, why I would address this, because it's not relevant. Well it is relevant, it's relevant for a whole range of reasons. It's relevant because, if we're not careful, the Services will not be in a position to manage these enormously complex programmes that are coming forward, like the submarine programme that we've been hearing about for the last two days. Because their qualified and skilled people will be drained away.

The other problem is the enormous expense of retraining people in the Services, and to give you an example, it costs about two million dollars to train a pilot, by the time he reaches his first squadron. By the time he's got about a thousand hours up, it's about six million dollars. Now those people are leaving in droves, for a range of reasons, and it's very unfortunate. Seventy two, I think, pilots for example have submitted their resignation in the last three months against the twenty year average of about forty five.

Now the cost of retraining, apart from anything else, is enormous. And that money has to come from money which might normally be spent on defence facilities and defence production, so there is a very real reason to address this problem. By June '88 on current predictions, the Defence Forces will have lost 36,000 people, more than half the total uniform strength of the ADF in four years. And I have been, and the Opposition is very critical of the Government for trying now to hide the figures, and I'm told that the September figures are absolutely horrendous. Mr Bennet may be able to confirm that in one way or another.

In the RAN it has the same problem, and a lot of the middle ranking officers, as you know better than I, are starting to drift off, and we have this problem of managing this submarine project which is of enormous importance to Australia.

Now one of the reasons that all this is happening is because servicemen and women have become second class citizens in their own country. I've said that many times before and I say it again. And unless the Government takes positive and urgent action to improve conditions of service, to stop opposing reasonable pay claims, to put proper service allowance in place, to do something about education allowance, to do something quickly and positively about housing, that drain will continue. And it is no use giving it cosmetic treatment, and saying *"we know there is a problem, we'll do something about it"*, something has to be done and done quickly.

And I think it's an absolute disgrace that a paper tabled the other day in the Parliament, it was a budget paper by the Minister, on the budgetary implications for defence, contained twenty seven pages but only one paragraph on personnel, and that was to be so vague as to meaningless.

And I can only endorse Admiral Hudson's statement in a recent paper when he said, *"The most modern equipment is quite useless without the trained and motivated people to use it"*. We simply cannot go on ignoring the wastage in the Forces. And we as an Opposition will place a much greater priority and resources on improving conditions of service for servicemen and women.

Now, ladies and gentlemen, let me turn to other matters, ships and equipment, and see where we are at the moment. I think that we all realise that fifteen years ago we had the *Melbourne*'s Fleet Air Arm, we had the *Sydney* to transport troops and equipment, and we had an amphibious squadron. Now we don't have any. I think it only takes the Fiji crisis, or the last two coups, to indicate to us that in terms of influencing events in our area we have lost a great deal of our capacity.

Now, on a positive note, some of the Government plans and programmes recently we endorse. The self sufficiency of Australia in defence matters must be encouraged. And in that regard we totally encourage the involvement to the maximum extent of Australian industry. There are some penalties and costs, as other speakers have said, and I don't want to dwell on that because of the small production runs and the small amounts involved.

But it's very important to all of us as Australians, that Australian industry supports to the maximum extent our defence in this country. There is absolutely no question from our point of view that that is the way to go.

Mistakes have been made in the past - the *Tobruk* and the *Success*. Nigel referred to my brief period with the Public Accounts Committee, and I was involved in some investigations of those; some of these matters were indeed unfortunate. I do hope that we have learnt from them.

As far as the submarine project is concerned it is a great challenge, as other speakers have said, to the Defence Force and to industry in this country. We have had some questions over recent months about some of the evaluation techniques used by the submarine project team. I raised those in a genuine spirit of trying to find out what was going on, because I was a bit bemused by them, I must say.

We were very critical of the hurry to sign the contract before the last election, and I would have thought that it would have been more sensible to leave it until the election had been decided. We would not have been in the business of abrogating any contracts that were signed and that is finished.

I have had some questions in recent weeks about the degree to which the first submarine is going to be built overseas, and I think they have largely been answered, and also some questions about who is responsible for the final integration of the combat systems and platform. And I have been answered on that and I think it would be sensible if some statements were made so everyone understands, because in a sense I am only reflecting the concerns that are put to me on those matters.

As far as the FFG is concerned, the FFGs at Williamstown, we support that totally, we support the gradual and sensible privatization of Government establishments. I mean, in general, Government can never do things as well as private enterprise.

Garden Island Dockyard is obviously an exception to that, but we're not in the business of having Government involved in anything in which private industry can and should be doing the work. The Anzac Project we totally support. We do have some reservations, I guess, about where the project is at the moment. It's been up to the Government, it's gone back. There are cost constraints. I suppose my main concern is just how serious are those cost constraints on that project and are we really at the end of it going to get what we want. That is to be seen.

The mine hunter and the patrol boat programme we support. In general the only queries I've raised are - is the budgetary support for all these programmes or the cut back in budgetary support going to affect a lot of these programmes? I mean, the White Paper started off on a base that it was going to be funded by an increase of three percent a year, then we came back to zero last year; we're now in a minus one percent, so there has been a cut back in budgetary support. That means, I guess, that a lot of the programmes have to be pushed out. But I think it would be to everyone's benefit that the effect of that budgetary support, that diminished budgetary support, was spelt out in a more honest way, instead of just saying that the White Paper is still on track. Now, looking to the future, I don't need to emphasise to you that Australia does not live in some benign backwater, and the problems we're experiencing in this area are going to increase. And it's the unexpected that will occur. And it's been a matter of history and it'll be a matter for the future, it is always in defence issues that the unexpected will occur, and Fiji is a good example of that.

We have also in our area the enormous build up of Soviet influence throughout the South West Pacific and South East Asia. We have continuing uncertainty in Vanuatu and New Caledonia, the Philippines and certain parts of South East Asia.

Now we have embarked on a policy of self sufficiency, and that is absolutely right, but we have a long way to go. Because if we're talking about exerting some influence in this area that we're interested in, we have very little capacity at present to do it. And so self sufficiency is one thing and a very strong system of alliances is another.

And I for one take great exception to the Prime Minister overseas threatening the use of our joint installations and porting facilities for the Americans as a bargaining tool in a trade war. That in my view is no way to go at all, because the fact is that the American alliance is of more importance to us than it is to the Americans.

As far as the Navy is concerned we have the plan and programme for a three tiered Navy. The highest level is the one that concerns me most. The White Paper says we must be capable of reacting positively to calls for military support further afield from our friends and allies. It goes on to say, *"The area of direct military interest includes Australia, the Territories, proximate ocean areas, Indonesia, Papua New Guinea, New Zealand and other nearby countries"*. So we are talking about a very, very big area indeed. In the White Paper again, *"The ADF will be involved in tasks beyond our direct area of military influence and support of regional friends and allies"*.

So there is no doubt that it's the Government's intention to have the capacity if required to have some influence in these areas. But the problem is that if we sent our Navy to sea where there is any sort of aggressive air threat, it would be absolutely naked. I don't have to dwell on that. And you simply cannot rely on the RAAF with all the best will in the world, with land based aircraft, with no aerial refuelling at present, and with no airborne early warning radar.

Now, there is there a gaping naval deficiency. And one of the things that I would hope that the Navy and you in industry would look at is a concept that has been raised before, many times, and that is supplementing what we have at the moment with some converted or purpose built merchant type vessel with a flat top which is capable of carrying troops, which is capable of carrying helicopters, capable of carrying equipment, and, maybe in due course, capable of carrying V/TOL aircraft. And I come back to our lack of capacity in Fiji.

There is also the question of the support of the Western fleet, and again that is an area which in my view should include use of some of these merchant ship derivatives.

It is time to tackle those problems, we just cannot accept that we're going to leave this gaping hole in our naval capabilities.

Turning to some other matters for the future, the Two Ocean Navy is one that we do support. The pace of development in the West is one which I know is exercising Admiral Hudson's mind, and many others. It will depend on budgeting. I look at the White Paper where it says there will be an emphasis on avoiding duplication of specialised support facilities already on the East Coast.

Now, that raises some alarm bells in my mind. If you're going to have your equipment support facilities over here and you're going to have half your Navy over there, you're going to cause enormous strains on personnel and in other areas if they have to come back all the time to the East Coast.

The move to Jervis Bay we support in principle as well, but it is a matter of how quickly or how slowly it should be done, depending on some of the other more important issues.

Nuclear submarines are something we must consider for the future. I'm not raising this and I certainly don't want to be misunderstood that I'm raising it now, as a substitute for what is already in place - I'm not doing that. But in terms of their speed and endurance, as a defence item in the years to come, they must be examined and the noise factor, as were told yesterday in answer to a question, is being diminished. It is an option that must be studied.

Northern surveillance of this country is something that worries us very much. It is my view that the Australian Defence Force should take over the control and coordination of all the Northern surveillance issue as it affects Australia. It is ridiculous to have it in the hands of the Department of Transport and we've seen what a mess they've made of it, as well as the Federal Police, who don't want the job or have the experience or the facilities to carry it out. Now that doesn't mean that the ADF should use a lot of its very expensive military equipment on doing some fairly simple jobs. It can use, for example, civilian planes in littoral patrolling and in other areas. But when you're talking in the future about Jindalee, about naval patrols, about army patrols, about health, customs, immigration and the job that would be done in war, who would do it in war? The Defence Force would and it should be doing it now in peace time.

There are enorn ous implications for Australia in what is happening in the Philippines, and I won't dwell on that because I'm running out of time. Japan was raised by Dr Bell and rightly so. The implications for Australia and the gradual expansion of Japanese influence in our region of influence is going to be enormous. You only have to see the numbers of Japanese in Canberra as tourists, or up on the Gold Coast where I come from, to see their economic influence spreading out, and it's a matter of interest to me as the Fijian economy declines, as it must, who is going to step into that breach with offers of economic assistance? Is it going to be Japan, the Soviet Union or some other country? There is, however, no doubt that the Japanese influence in our part of the world is going to increase.

I would hope that we would get more involved, and I'm talking about another matter now in the Strategic Defence Initiative, which again was mentioned yesterday. We are very much opposed to the present Government's ban on getting involved in that issue.

Specifically for industry, let me say just a few things. The opportunities are there, it's a matter of whether Australian industry does want it. It's not so long ago that a view was expressed to the Public Accounts Committee of the Parliament that Australian industry was only interested in defence projects if they were desperate and had no other work to do, because it was so difficult to work with the Department of Defence.

Now, that is not a criticism of anyone here, and that was a few years ago, but I know that some of those views are still lingering, and I hope that we have turned that around. I must say that the attitude of Defence and Defence personnel and industry today and yesterday has been very heartening.

The Services of course have to learn to manage these projects in a professional way. On that, of course, I harp back to some of the earlier projects which we have already talked about. It's not in the best traditions of the Service, the way they were managed. We look to future projects, the DDGs, which will have to be replaced in due

course, the destroyer escorts which will have to be replaced, the support and replenishment ships, and I look particularly to the development of a flat top vessel to fill that gap that I have talked about before.

I want to place particular emphasis on export industry. The Opposition has absolutely no hangups for the maximum support for the export of defence industry from Australia. Now there have been problems. Bill Hayden has got some reservations about all this. I think the Government has gradually overcome them; I very much hope so.

But if we think as a country that in the future we are going to wake up one morning and find that our future has come back to exporting wheat and wool and beef, we are very much mistaken. Our future lies in manufacturing, exporting our manufactured goods. There are niches in the market that we can fill. And everyone quotes the Pacific Patrol Boat Programme, and I think that is excellent. If we had a few mine hunters sitting around on the docks now, I don't think we would have too much trouble selling them to the Middle East.

In conclusion, ladies and gentlemen, let me say that there are great challenges ahead for all of us. We've had two hundred years, we'll be celebrating it next year, of European settlement in this country. To a large extent over those two hundred years we've never been able to make up our minds just where we want to go, or whether we're masters of our own destiny. We've been mothered by the UK and to an extent by the Americans in recent years, certainly in defence matters.

We've never fought a war on our own. The reality is we might well be approaching a time when we have to and we've got to face up to the fact that if we don't look after ourselves no one else is going to come running to our aid. We've got to make sure that we get our priorities right. We've got to put the defence issues firmly back in the forefront of community issues in this country. We've got to take the defences out of that back room where they've been like mushrooms for too long.

We've got to get the Defence Forces and defence industry working closely together because they are going to very much depend on each other. And when I see all the civilians who are going to work on this submarine project, volunteering to be the first man and woman to go down in the first dive of that first submarine, then I'll know we've achieved that integration.

We've got to stop the debilitating wastage that's happening in the Services. The Government has a role, a very positive and urgent role to improve those conditions of service. The Services and the Navy have a very important training role, in training their own people to manage these projects, and industry itself, I believe, has a much more important role than it has in the past in training its own people so it won't keep poaching on the Services.

So the challenge is there, the spirit is there, the ability is there and I can't think of one good reason why we're not going to be successful in the end.

INTRODUCTION TO "A YOUNG TURK'S VIEW"

Captain C.J. Skinner, RAN

This Institute is about debate and scholarship, by people of all levels and ages and experience, and this session is from a Young Turk. I looked up the term "Young Turk" - it derives from a group of agitators who precipitated a revolution in 1908. And it is now used to describe a new pressure or tendency for change, but I hope not necessarily by armed revolution.

Lieutenant Commander Mark Taylor is currently serving as the Assistant Director of Naval Force Development, responsible for strategic studies, and I'm sure you'll agree with me that is an appropriate place for a Young Turk to be working. Highlights of his career include service in HMA Ships *Brisbane*, *Melbourne*, *Sydney*, *Stuart*, *Vendetta*, *Swan* and *Cessnock*. He was in command of HMAS *Acute*, an Attack class patrol boat, in both Western Australia and Darwin. He was the assistant Fleet Navigation and Plans Officer. He's attended the RAN Staff Course and was a graduate of that in 1985. And his most recent posting before the present one was as Research Officer for the Chief of Naval Staff. He's married with two children. He maintains interests in military history, strategy and policy, carpentry, cooking, messing about in boats and twentieth century literature of all kinds - a very suitable profile for a Young Turk, I think.

Regrettably, due to time constraints, there won't be time for questions after his paper, which he assures me will take 29 minutes precisely. But I'm sure there will be ample time during the forum this afternoon. So now I call on your behalf Lieutenant Commander Mark Taylor to deliver his paper, "A Young Turk's View".

HMAS Tobruk

A YOUNG TURK'S VIEW

Lieutenant Commander M.J. Taylor, RAN

There's no need for questions. I have the answers.

You've heard me billed as a representative of some nebulous body of young Turks, but my acquaintance with such a group, if it exists at all, is limited to working within rather than against a system, every bit as Byzantine as the court of the Ottoman Emperor. As for youth, it's perhaps an outlook of that system to note that my 35th birthday seems to be receding faster than my hairline.

What I represent is the meat in the naval sandwich, answerable to both those who demand their thoughts to be translated into action and to those who have to make the physical effort. We are usually exhorted from on high to put our thoughts and talents unstintingly to work, to find innovative solutions to old problems. On presenting such break-throughs, we are told either *"it was tried before and failed, so no point in trying again"*, or *"if only we had real experience of how hard things were at the top we wouldn't even have proposed such a simple idea"*.

We'd like to think we're the heart of the Navy, but we're mostly known as "them", to senior and junior alike. We appear to have that in common with middle managers everywhere and with the middle of society. When our disagreements are being voiced we're being disloyal, when we merely express concern we're nervous nellies, when we remain silent it's because we're too bovine to produce a useful comment.

What a life it is, and it's too bad therefore that we'll be inheriting the running of the Navy come the turn of the century. I wonder what will be left to us. I wonder how much control we'll have had over the shaping of our inheritance, and of our legacy.

In his much quoted study of the profession of arms, General Sir John Hackett observed that what a society gets in its armed Services is exactly what it asks for, no more and no less. What it asks for tends to be a reflection of what it is. When a country looks at its fighting forces it is looking in a mirror, the mirror is a true one and the face that it sees will be its own. I think that's a fair statement of fact.

The material state of the Navy reflects the state of the country. Parts of it are modern, others are almost antiquated, much just barely keeping pace and all in danger of being overtaken by regional and world developments. We're short of cash, we're short of skilled people and struggling to hold things together, while attempting to remedy the effects of a longish period of complacency, a degree of oversight and a few rude shocks.

Our plans for the future are ambitious. We're expecting to not only turn the situation around and refurbish our forces but to improve many areas of capability in a force to be mostly built and supported in Australia. Our plan for the future is risky, but like the nation we have no real option other than to take the risk. With our fleet ageing rapidly and the region becoming ever more turbulent, time is the commodity in shortest supply.

What will be the outcome for tomorrow's Navy with the changes underway in industry and the society at large? The big intangibles of the Navy's gamble lie in these areas. Will Australian industry be able to adapt itself to the high technology, high quality, high pressure industrial environment of the 1990s and beyond? And will the Australian public be willing to devote the resources needed to see our programmes through? What if these things don't happen?

Certainly, industry and the tax payer will be taking risks but only commensurate with the potential gains. The Navy is risking its future as a viable force, fit to protect Australia and its wider ranging interests.

My colleagues stand to inherit either a growing modern Navy, well equipped and served by well established progressive industries or an obsolescent runt. The challenges to be faced, the great investments in time, money and manpower are essential risk capital put up by the Navy.

We are staking all on the single throw of the dice, and the next few years will not be a time for the faint hearted, indeed nothing short of iron

resolve to see our projects through to a successful end will be required from all participants.

And I don't mean the sort of purblind stubbornness which sees good money thrown after bad. Because there won't be time or sufficient resources to nurse along those who thought they could deliver and then find they can't. The Navy has endured decades of acting as a de facto source of covert subsidization for any number of inefficient to downright incompetent domestic producers of all forms of goods and services. It has been we who have suffered the opprobrium of poor choices, shoddy workmanship, late delivery, abysmal work practices and generally any other shortcoming you'd care to name.

Sure enough, the Service itself has caused or contributed to some of its own problems. As an organisation which takes perhaps too much pride in its efficiency and readiness to respond to any circumstance, we have tended to avoid admitting our mistakes and have encouraged unreasonable expectations of what the Navy should be able to do. We've constantly deluded ourselves and thus our political masters that more can be done with less. And that a few extra hours in the workplace can overcome any shortfalls, spare parts, training, manpower, equipment, ammunition or whatever.

The Navy has often been lukewarm in its support for indigenous research and development. Our preference for the tried and proven, preferably compatible with other Allies, has caused us to neglect or place impossible demands on potential suppliers. We have offered local industry little guidance as to the likely future requirements, nor have we explained why our standards may differ from apparently civil applications.

The failures of industry and the failings of the customer - the Navy, usually through agencies of the Department of Defence, have often led to acrimonious exchanges over who is most to blame for the ultimate effect of the shortcomings of both, which is an ineffective and/or excessively costly product.

This belies an underlying lack in both sides of an appreciation for each other's points of view. There is no harmony of thought or purpose. While we are busy plotting our billion dollar contracts talking of the immediate benefits to the nation, in investment, and job creation, the real purpose of that creation, its ultimate aim, is rarely expressed and often seems to be dismissed as simply another complicating factor in the already tortuous process of procurement.

The Navy's aim as I see it is not to be an engine of national economic and industrial restructuring. We aren't simply sponsoring some kind of import replacement programme to help out with the national debt. We aren't building facilities around the country because of a burning desire to inject cash into faltering local economies or to compensate for lack of long term capital investment.

Laudable and politically attractive such side effects of naval development might appear to be; one could advance the counter proposition that such activities only breed and re-inforce a hand out mentality that is seen as one of the basic ills of our present society.

Our purpose is not to disperse funds and favours as a uniformed extension of social welfare agencies and industry assistance schemes. Our purpose is to forge an effective fighting unit, remember that, an effective fighting unit, for the defence of Australian society and the sources of its material prosperity and regional political standing.

You might see this as a rather narrow view and it is, it would be unsound business practice to give your organisation more than one prime aim, since by definition it can't be done anyway. But having a single purpose doesn't cancel out the need and responsibility to appreciate other points of view. Or to take into account the aims of those we have to work with to achieve the various objectives we've set to support attainment of our aim.

A major objective for an effective Navy is that it be as logistically self supporting as possible, it's an essential part of the widely accepted concept of "self reliance".

Logistic self reliance involves far more than the acquisition of ships designed to move fuel and stores from depots ashore to combat forces at sea. Rear Admiral Henry Eccles, one of the US Navy's foremost logistic practitioners and theorists, considered that logistics is the bridge between the economy of the nation and the tactical operations of the combat forces.

Eccles saw that the total logistic effort comprised of two general phases - producer logistics and consumer logistics. Producer logistics starts with the human and material resources of the nation, and by a process that is largely business management and control creates the paraphenalia and infrastructure that have become integrated into the armed forces.

Consumer logistics can be seen as two related processes. Firstly, the integration of the products of the economic business and industrial actions of the producers into organised military units and facilities. And, second, employing logistic resources and organised units to equip and support combat operations.

At the start of this process, overall control and executive authority is civilian in the shape of the elected Government, control at the other end is entirely a military professional matter. In the middle there is considerable blending and overlap of civil and military activities.

Eccles identified three fundamental elements in these processes: determination of requirements, procurement and distribution. And it's important for the parties involved that they clearly understand who should be giving the lead in which area.

Since the consumer is military the determination of requirements is primarily a military responsibility. Since the producer is civilian, procurement including production is primarily a civilian responsibility. Since distribution proceeds from the producer and delivers to the consumer it must be a blend of military/civilian knowledge.

The logistic process is effectively a closed loop. Requirements are determined by informed military judgement, and the nature of the product which is procured and distributed to the field affects the success of operations and hence the formulation of new requirements. If everything has worked out well, the requirement may be simply for more of the same. If it hasn't worked out, through flawed perception of requirement, inadequate fulfilment of requirement, or failures in distribution there may be no further need at all.

It is naval commanders and their people who will bear the most immediate cost in failed plans and loss of life of failures at any point of the logistic process, remembering that, if it worked properly, those same commanders will reap the immediate benefits.

The national price of failure may be felt less immediately but it will be much greater and infinitely more enduring, as of course will be the benefits and success. The immediate interests of the Navy and the long term interests of the nation are therefore best served by military professionals who know their responsibilities and stick to them, informing but not meddling in the procurement and production processes which are the rightful province of others.

Similarly, the formulation of requirements no less than the conduct of operations should be informed but not directed by the concerns of producers and administrators. The policies and practices of Government should ensure that these boundaries are maintained while preserving the required degree of cooperation and coordination.

The overall division of responsibilities between the armed forces command, procurement instrumentalities and the producers of goods and services was neatly summed up in the 1950s by a United States Congressional Committee on special personnel problems, the civil/military interface being one of these. And it concluded that military leaders should emphasise military requirements while someone else needs to determine what the country can afford within the risks the country is willing to assume.

And it's worth pondering what the country can afford and most especially what risks the country is willing to assume. We are repeatedly assured that, irrespective of economic circumstance, it can't reasonably be expected that the Australian public would accept defence expenditure higher than 3% of GNP except in time of war.

The public itself seems to accept such statements without a murmur, although one seldom hears similar pronouncements on the proportion of GNP that should be spent on education, health or social security and welfare - the latter incidentally absorbing close to 30% of Commonwealth budget outlays, as much as defence, education and health combined.

I venture to say that the public is not only better informed of what goes on in other areas of Government but that through daily contact with the effects of Government policy it's in a better position to form opinions on value for money which don't rely too much on whatever information the responsible departments choose to impart.

But the activities within the Department of Defence or in Defence Force units have little effect on the daily lives of most Australians and they are seldom seen by them. They have to take on trust what they are told by departmental spokesmen, supplemented by scant and infrequent media coverage, by correspondents who mostly dabble rather than specialise in defence matters. And who as a result are often remarkably ill informed.

It's no wonder therefore that, while the dismal results of decades of economic profligacy and industrial complacency are subjects of daily discussion in virtually every walk of life, the state of our Defence Force and the implications of this barely rates a mention. The public simply doesn't know what risks it's being invited to afford, so how on earth can the people of this country determine what is an appropriate level of preparedness, assess the discrepancy between what is being done and what is needed and then decide whether they can or should bear the costs involved?

I believe this may have important implications for industry involvement in building the Navy of the future. Not least because of Government's expressed intention to meet the equipment requirements foreshadowed in the White Paper, while simultaneously accommodating real cuts in projected expenditures by stretching its acquisition times.

I suspect this could cause major problems with workforce stability and productivity and in achieving the cash flow required to service debt or return dividends on equity. I'd be glad to hear otherwise.

It may also mean that where we intended to support flourishing growth industries based on development and production of sophisticated technology, we are in fact stuck with a commitment to outdated techniques and obsolescent products, not to mention having another slice of the workforce struggling to preserve jobs in an industry where the sun is setting yet again.

And I believe there is another danger involved, which is that we'll become so involved with the mechanics of procurement the process itself will acquire greater importance than the end it is supposed to achieve.

Eccles called it the principle of the logistic snowball and he described the phenomenon thus: all logistics activities seem to grow to inordinate size and unless positive control is maintained this growth continues until, like a ball of wet snow, a huge accumulation of slush obscures the hard core of essential combat support and the mass becomes unmanageable. The snowball permeates the entire structure of military organisation and effort, it applies to both personnel and materiel and is both interacting and regenerative. It is similar to the concept of a chain reaction and to Parkinson's law. It is particularly evident in crash programmes.

And when you consider the very narrow base of expertise from which our major programmes are proceeding and the great things which are expected from them, they have many of the hallmarks of crash programmes, including their apparent status as industrially glamorous.

We in the Navy wouldn't necessarily see it that way. Most of our programmes have undergone a gestation of years and the time of initial concept and final delivery is measurable in decades. Nonetheless, the effects on resource allocation, personnel, materials, facilities, money within the Service and the Defence Force and in the community are those of the crash programme.

The inter-related regenerative effects of the snowball are felt in all these areas and can lead to a rapid escalation of the indirect costs nowhere more so than in people. The introduction of advanced technology inevitably increases the demand for highly skilled people, producing heavy competition for this scarce commodity. Pirating from other areas is the norm, resulting in a continued rise in the value of those skilled people and the same situation applies to general management, to production personnel and skilled labour.

The supposed beneficiary of all this activity, the Navy, soon starts to become the victim, because it simply can't compete in the labour market, and it sees its own skilled personnel slowly draining away. This makes it even harder for those who remain, since to keep up, all the specifying, advising and double checking still has to be done. They are working harder than ever for no greater reward and probably at increasing personal cost.

So more leave and the snowball keeps rolling. The Navy itself begins to pirate skilled people from its other projects, deferring or even cancelling them, and perhaps negating years of development.

Exasperation and frustration drive more people away. The ability to respond to changing circumstance diminishes with the decrease in experience. The expertise available for higher management posts is diluted and the quality of decision making begins to decline.

The standard remedy for diluting quality is to increase quantity, further diluting expertise while increasing the administrative manpower bill. Within a fixed personnel budget the people are now drawn away from the operational areas, often to be pressed into service without the additional training needed for their new responsibilities.

This only makes it harder to cooperate with the supplier, who by now may have figured that if the customer can't tell him what's needed then he'll hire experts of his own, more naval people, to work it out.

Still the snowball rolls and, as the customer begins to react to wayward initiatives from the supplier, he becomes more concerned with error prevention than with positive direction.

Meanwhile the supplier's manpower overheads and the constant change in direction are eating into the programme's overall budget. The men can't be sacked because they're all supposedly essential and the project was supposed to create new jobs, not extra redundancies.

So the only recourse is to get more money or cut the costs of materials, spares and training equipment, that is - change the requirement. The end has successfully been subverted by preoccupation with administering the means.

It's a gloomy enough picture, possibly an exaggerated one, but I believe and it gives me no pleasure to observe it, that the snowball is already in motion and we need to take measures now to arrest its growth and momentum.

Industry can help by training its own people. Over the past decade or so the collective follies of what has been called the industrial relations club seem to have coalesced in an almost total

unwillingness to invest in either new plant or new people. Privately sponsored training programmes and apprenticeships seem to have dried up overnight.

And, for all the lamentations about lack of Australian venture capital to start new industries, there seems to be plenty of money available for speculation in property and pieces of paper.

It's no wonder that our education system trained so few engineers and technicians. The way things have been there was no place for them to get a job anyway. Those who have continued to train such people, the Services now find themselves in the peculiar position of being harmed by the more positive attitude of business toward productive endeavour, because it wants ready made experts with which to expand and which it claims the education system can't produce.

There is more than a little truth in that, as the Government has acknowledged, but I have to point out that the people trained by the Navy came from the same pool of unsuitables that industry finds so depressing. So please bring your own, or hire them from somewhere else.

More positively, industry can held reduce our manpower overheads and workload by developing recognised expertise and reliability in many design and testing functions, where the Navy currently employs hundreds of people who for the most part evaluate other people's products.

If we know private enterprise will do the job right anyway, why retain that capacity and continue to compete for skilled people? Industry can help, too, by continuing to demonstrate the advantages of decentralized control and slimmer, flatter management structures, which I fervently hope will be slavishly imitated.

Within the halls of the Department of Defence and the Service Offices, the snowball is getting out of control and the reason in this case seems to lie mainly with the adoption of and the persistence with so-called business-like procedures which modern business has long abandoned as inefficient. The basic assumption is that the system can improve efficiency and eliminate waste by consolidating and centralising its activities. This has been, in today's horrid vernacular, an "on going initiative" since 1973.

The overall result has been the creation of a most remarkable edifice, a monument of the inability of man to learn from the experience of others. The following words were written in 1962, by two members of the US House Committee on the Armed Services. With a little amendment they could have been written yesterday, and I quote:

"The new Department of Defence agencies, although perhaps conceived as coordinating agencies are, in fact, operational and directional in nature; as time goes on, with all decisions being made at the highest levels, lower levels will develop a no decision or indecisive philosophy. Individuals who once made decisions will be gone, and replaced by individuals who, having been raised under the new system, will never be required to make decisions. We believe this situation already exists and that testimony or in some cases the lack of testimony establishes this conclusion, thus the systematic authority and responsibility for decision making at appropriate levels is eroding. Those entrusted to make decisions with the accompanying authority and responsibility will increasingly turn to the next highest authority until ultimately all decisions, large and small, will be crowding in at the top and awaiting resolution. Imposition and operation of an over-centralized system will eventually result in breeding mediocrity of its members, except for a very top few. Such a system will no longer attract the aggressive, decisive, quick thinking men of action and will degrade the ability of those now serving in our armed forces."

You'll probably see the same thing written tomorrow. And these observations give some point to the complaint of a recently resigned colleague who commented, *"they want us all to be acountants"*. And so, indeed, it often seems to be.

There is a danger that the attempted transformation of requirement formulators into asset conservers and rationalisers will deprive the Navy of many potential higher leaders, while discouraging others from a desire to occupy those higher positions. We run the risk of developing an administration that has lost the attributes of leadership and command and has thus lost its sense of empathy and common purpose with the slowly diminishing number of people in the field to whom the whole organisation owes its existence. We could certainly achieve an unhealthy climate in which disagreement is equated to disloyalty, and where decision passing substitutes for decision making.

I wonder how we can achieve a self reliant Defence Force without self reliant officers and men. A further effect may be to distort priorities within the Service so that what is asked for is not what is needed but what can be bought for whatever funds thought likely to be available.

This does no service to the nation. An American Admiral put it this way: *"Our military people are not hired to see how little they can get along with, they are hired primarily to seek enough materiel to meet their responsibilities"*.

Those responsibilities are clear enough and they include the protection of the very raw materials and energy sources which are the basis of industry. If we fail, you fail. If industry fails the nation faces penury.

For my part, I have no particular gauntlet to throw at the feet of industry. Just do what you say you can. Do it properly, do it on time.

The greater challenge is to see that we both work constantly and harmoniously to overcome the obstacles of public apathy, institutionalised inertia, inconstant policy and improvident budgets. If our endeavours don't succeed, I suppose we could say that our failure is merely a reflection of a wider failing in society - it's not really our fault.

Then again, it could just be that we did not bother making sure that our objectives were compatible, our responsibilities defined and agreed and that we were aware of and sympathetic to each other's particular problems.

It's certainly no time to be waiting for society to heal its divisions and conflicts, and why should the Navy or industry be content to be society's mirror when we can instead provide the beacon, bright enough to lead the way and, I hope, hot enough to melt the snowball?

HMAS Success

INTRODUCTION TO SESSION SIX INDUSTRY PANEL

Mr Henry d'Assumpcao
Chief Defence Scientist

Let me explain the format of this afternoon's session. Each panel member will speak for about eight minutes, the panel then will receive questions and discussions from you in the audience. The member on this panel have been chosen from enterprises with strong ties to defence. As such, they will be at the forefront of meeting the challenges to be discussed here today.

The panel consists of Mr Don Fry, Chairman of North Queensland Engineers and Agents Pty Ltd. Don is an engineering designer, innovator, entrepreneur, and successful businessman. Under his leadership his company successfully built 14 *Fremantle* class patrol boats for the Navy. He wil address you on the topic "Can we develop a defence export market; what are the necessary conditions?"

Mr Peter Rehn is General Manager of Computer Sciences of Australia Pty Ltd. Peter has had over twenty years experience in computer technology and electronics. He has had a wide range of appointments in management, engineering, research, and academic posts. He will speak on, "Australian capability in defence systems engineering and systems support - limitations and prospects."

Mr Bruce Price is Chairman of Hawker de Havilland Ltd. Bruce practised for eleven years as an accountant and tutored at the University of Queensland before joining Hawker de Havilland. He is a director of a number of other companies and Deputy President of MTIA NSW. He will speak on, "Interdependence or independence in defence production."

I myself will shall say a few words about the DSTO and changes planned for the future, in particular as they affect industry.

From the topics to be addressed by speakers in this session, you can see that we will be looking at the role industry will play in the future in meeting Navy's expectations and aspirations. Will Australian industry continue to develop so that we in Defence will be able to rely on local industry to undertake more and more of the development of the equipment we will need. Will we need to turn to overseas companies for the design and initial development of our equipment? Let us see what our panel members think.

Defence Science and Technology Organisation

Let me begin now by saying a few words myself, on the DSTO. The DSTO is the second largest organisation for research and development in this country after the CSIRO. We'd like to think that we have focussed our attention very specifically on what Defence needs in trying to be responsive to our customers.

Let me list DSTO's objectives. The first objective is to establish and maintain a competent technology base. By the technology base I mean that body of skills and equipment and facilities which enables us to meet all the other objectives.

From this base of technology, we provide policy advice to the Defence Department and to the ADF, embracing many fields, some with wide international ramifications. In particular, we assist the Services to be smart buyers and smart users of that equipment.

Our customers - principally the ADF and also other elements of the Department - have problems of various kinds, some of major proportions. Sometimes these problems arise with little warning and we have to be responsive and react quickly. One of our objectives is to solve them. This underscores the value of a sound technology base.

Perhaps the DSTO is best known for the large projects in which we've been involved. In fact, for all their high profile, such projects only consume a small part of our resources. We have to be judicious in selecting projects for development. We tend to undertake local full scale development

principally when a requirement cannot be met from overseas. In addition, we adapt overseas equipment to function better in the Australian environment.

We also provide support and advice to other agencies, when priorities permit.

That then is the span of DSTO's objectives. The kind of work we do can be divided into the categories of short, medium and long term. I mentioned the short term problem solving for the customers. Then there are medium-term projects which vary from quite small to substantial - in some cases up to hundreds of millions of dollars in production and industry. Finally, we have longer-term research to maintain the technology base.

So much then for the DSTO as it stands. I want to say something about the future of the DSTO because it has received some publicity in the last few days.

The DSTO has had difficulty in the past in coping with the span of technology which we require to meet Defence's needs for the future.

It might seem odd, but in an organization of 4,300 there are only 1,000 professional people to cover the entire technology spectrum for all three services and also to be able to produce equipment and solve problems. In fact the technology base in some areas of critical importance to defence is non existent and in other areas it has been stretched so thin that the capability is about to vanish.

Clearly, we have to expand the technology base and reinforce these fragile areas.

We also have to apply resources to critical areas identified in the White Paper. Such areas as mine counter measures, surveillance and intelligence have to be addressed.

Lastly, I believe we need to give more attention to streamlining the transition from research to engineering out into industry. I think it is not untrue to say that often researchers are only interested in research and don't put as much time as they should and could into developing their ideas into a product. It is probably also true to say that sometimes engineers in the DSTO like to hang onto a task longer than they should - certainly well past the time when it should have been handed over to industry.

I think it is also true (and I say this with some slight fear before this audience) that industry occasionally does not take on the task that it should; it looks to a hand out rather than putting time and effort into establishing an overseas market for its products.

All these barriers need to be overcome. It is with the intention of streamlining the flow from research to product that I have embarked on a reorganisation of the DSTO. In particular, I am trying to bring people together in teams, so that we don't have artificial barriers between scientists and engineers, and can achieve, I hope, a smoother transition to industry.

As a general rule, full scale engineering development will not in future be done in the DSTO. Where industry can take on the work, it should be encouraged to do so.

I think I've said enough for the moment on the DSTO; there may be opportunity to pursue this with questions later.

CAN WE DEVELOP A DEFENCE EXPORT MARKET - WHAT ARE THE NECESSARY CONDITIONS?

Mr Don Fry, Chairman, NQEA

It would probably come as no surprise to you to find that I've somewhat changed the title of the paper. And some of you may have had a similar experience in changing the details of the specification.

But nonetheless, I think it appropriate at this stage that I aim my remarks to the theme that I have seen evolve at this particular gathering today, which I am finding quite encouraging and proud to be a participant of.

You would need little convincing that the officers and men that staff the Defence Force of Australia, should in fact be Australians. It is equally important that the weapons our defence personnel use be made in Australia if there is an ability to be well equipped and be able to sustain the supply of those weapons for all occasions.

Many of you will say and, indeed, some of you have already said so today, that Australia is not large enough as a country to support the complex industry necessary to meet all the full requirements of defence manufacturing disciplines, and therefore an all Australian made force is not cost effective or in the best interests of Australia.

Well, as you can imagine, I have something to say about that, and I would urge you to think again about this policy and suggest that you reflect upon the present situation, which is at this present time current.

Present employer/employee relations in Australia are in a better situation today than they have been for the last twenty years.

The Button effect, and I'm referring to Senator Button, has certainly played a prominent role in helping that come about, but I also think that it is an act of reality that has bought it about. The latest trends in manufacturing using relatively simple to use programmable C and C machine tools afford us a cost effective and flexible method of manufacturing most complex components accurately and in small quantities inclusive of mechanical, electrical and electronical items.

The recirculating monetary gains of manufacturing within Australia, I believe, are not adequately assessed and the losses to Australia for importing, are, I would suggest, much greater than we may actually believe them to be.

If we are to capitalize on the present climate and adopt a fresh look at maximizing Australian industry involvement, it will reach an effective level when we adopt and accept a policy of conceptual and detailed design in Australia by Australians. Australia does have the necessary design expertize which can be expanded to cope with the Defence Force requirements of the future.

Some would argue that we lack the technical knowhow for some of the more advanced equipment incorporated in modern day defence equipment. I would, however, suggest that where such is lacking it is no more than either a phone call or a jumbo jet ride to the other side of the world away.

The time has come for collective effort to arise and head Australia towards being totally self reliant and I am confident the Australian innovative ability will take us to the lead very quickly.

It will also be necessary, if the strategy is to succeed, to adopt different attitudes towards the letting of defence equipment contracts. This country cannot afford the luxury of calling public tenders for every government item. Where centres of excellence are in existence and have a proven track record of competitive production, the philosophy of on going design development and construction needs to be implemented. The rate of production must also be geared to the attrition rate of the related items and margins included for export.

Only when we get to this stage of trust between the defence forces and the defence manufacturer where cooperative development of our defence equipment needs are met will we ever have truly well equipped Australian defence system and give rise to the opportunity for export of those equipments used by our own services.

The present system of letting the next contract to whoever submits the lowest tender, irrespective of the consequences of crushing those centres of excellence which have previously been established to serve the country's needs, cannot continue.

It is indeed false economy and against the interests of maintaining an effective defence force and there are already in place effective means of guarding the public purse without the recourse to public tender.

Whilst the major equipment procurement policy is now directed to greater Australian involvement, and I can assure you gentlemen it is very much welcomed by the Australian industry, the opportunities will only be maximized when Australia is involved through all stages of concept and design to meet the staff requirement.

And here two things will be absolutely necessary. Firstly, staff requirements must be precise, and secondly, defence personnel have to enter into an unprecedented trust between themselves and industry leaders.

I hear it so often in Canberra *"Australian industry is not competitive, it does not have the technical expertise, it cannot meet our delivery requirements"*.

Let me give you some examples from my own company's operations, of whch many of you are well aware. This year seventy five percent of my company's relatively high-tech ship building effort was exported well outside of Australia and into areas where it would have been possible to also secure defence related contracts. Regrettably, the opportunity is denied as we do not have in service a copy of a proven in-service Australian designed craft.

Yet, in the commercial sense, we are being successful, we are cost effective, we are competitive, and we are winning and we are making quite an impact on the world at this present time.

To overcome this deficiency in our defence related objectives we have commenced construction of our own design of high performance catamaran patrol craft and entered an ambitious R&D programme to develop and build in Australia our own weapon and fire control system.

Our first warship for export will be ready early next year. In fact, we are building two of these craft, the first will enter service patrolling the Torres Strait and the second will become a demonstration model to gain export business.

There are within Australia companies like mine and we are very much aware of the presence of companies like Carringtons who are equally trying their damndest to enter the export scene and who are having difficulties.

You might, in fact, like to know that we share the same agent in some areas as a joint marketing effort and yet our success rate is close to negligible. I do believe, however, with the enterprises that we are now talking of building for stock and entering very intensive R & D programmes, that we will in the future be successful. But it is going to need a lot of support from you gentlemen here and particularly from the serving officers and I was very heartened during my informal discussions with CNS last night that support would appear to be well on the way to becoming a reality.

We should be aware that some of the Australian companies like mine are not so much dollar driven but do so as a commitment that in fact is most analogous to the reason that many of you are still in uniform and are in fact here today.

Our Defence Force must beeen seen as a successful marriage between the serving Australian officer and a well established and efficient all Australian enterprise and I urge you to let it happen.

AUSTRALIAN CAPABILITY IN DEFENCE SYSTEMS ENGINEERING AND SYSTEMS SUPPORT - LIMITATIONS AND PROSPECTS

Mr Peter Rehn
Computer Sciences of Australia

My topic for this afternoon, as Henry pointed out, was "Australian Capability and Defence Systems Engineering Systems Support - Limitations and Prospects".

Like Don, I guess I wanted to define and slightly re-define the topic for this afternoon's purposes. The notion of systems engineering is an increasingly important one in our world but particularly so for defence. In this context I'd like to define systems engineering for this afternoon's exercise as the process through which we synthesize complex systems at an affordable price using as much existing or common systems as possible.

I am reminded by one of my colleagues that 'an engineer is a man who can do for a dime what any fool can do for a dollar'. I suppose 'systems engineering' is doing for an affordable price what we couldn't afford to do if we had to start from scratch; only through the adoption of this sort of approach to the provision of defence systems can we afford to provide our Defence Force with the customized equipment they require within the meagre budgets that we have.

However, perhaps there is an even more important industry implication, since that is the sector that I represent; only through the systems engineering approach can industry share in a major way in many of our sophisticated programmes. We can involve ourselves in total systems or in sub-systems, not just in component manufacture.

A quick look at modern defence systems gives a clue to our likely capabilities. I am going to be parochial in my views, recognising the industry sectors that I'm associated with. While I acknowledge that ship builders who take a propulsion system that's available and gear boxes and drive components and the like are equally in the systems engineering business, it is not my intent or within my competence to consider this field today.

I am going to stick broadly to what I call 'electronic systems engineering' and today a lot of the systems engineering that goes on is indeed electronic systems engineering and, increasingly, digital systems engineering as more and more of the sensors and weapons are digitally interfaced to data bases and more of the operator's focus is on the presentation of information allowing better, quicker decisions and action.

So, while I don't want to ignore the world of anlaogue or RF or pulse emitters or optics or infra-red or TV or all those other things, increasingly the role of the systems integrator is selecting the best sub-systems and integrating them using digital systems technology.

In the last decade, particularly, much of this has been done by software based systems, bringing as they did the potential of flexibility, processing power, enormous capability in display techniques, and, oh by the way, the problems of a new technology, new development processes to understand.

I guess we understood them reasonably well but controlling them was a bit of a different issue, and a potential to evolve the system that sometimes seemed to be an obligation.

One of the great things about our flexible systems is they are to be changed. We seem a little to have accepted that attribute often ascribed to the feminine sex that because we can change our mind we ought to.

For the remaining time, then, I want to address myself to the area of electronic digital computer software systems engineering, call it as you will. Our capabilities here are good, at least they have the potential of being so. While, perhaps, our electronics industry suffered from the ravages of perhaps ill conceived policies of the 60s and 70s, not to forget the ravages of the Japanese, we have nevertheless a base of highly skilled people in this industry who have been exposed to the best, most up to date, technology available.

The capacity and style of our manufacturing facilities perhaps are more in keeping with medium scale production but in defence that is generally all that we need. Some of us have signficantly upgraded quality systems and the like over recent years. In the computer and software technologies we have significantly benefited from the fact that Australia has always been a user of up-to-date, and, regrettably perhaps, imported technologies at least in the commercial data processing sector.

We have needed to provide local support, and, I suspect, we have indeed honed our skills, being an importer of the technology and a group of people who always figured they could do a little better than the originator of the equipment and the software thought.

So we have had quite an innovative industry in conventional data processing technology area as a base for this sort of system engineering.

We have in many ways been a pioneer of computer application of the fundamental systems technology. In defence, we in industry have benefited from involvement in DSTO programmes of yesteryear where equivalent technology was very important, we've got the raw ingredients to have a well educated, albeit a little sparse, professional engineering work force and I think a history as a nation of having a great deal of ingenuity in solving our problems with imagination, flair, and, regrettably, a low budget.

The facts are these, we're good at it, we've proven in many programmes with Defence already in the various industry participation schemes that we are as good as many of our partners overseas and, dare I say it, sometimes better. In today's climate we're cost effective.

As an aside, it was an interesting experience for me to be in the US about 18 months ago as we wrestled with problems imposed on us by one Oscar Hughes who had invented the ceiling price and it was interesting to recognise that the major tool in getting the price down in that time was to do more things in Australia. I think it was good to recognize that in an environment where too often we recognize the statement that *"you can't afford to do things in Australia it's too expensive"*, there are areas of technology where the cheapest solution was to do more work in Australia.

We've got the skills, the prospects are great, Australian defence equipment requirements in future are very significant. We have some exciting programmes that we have talked about over the last day and a bit.

I have not specifically addressed the question of support which was part of the title of my paper since, in some ways, it's an extension of the systems engineering process. There are opportunities to take this technology selectively into friendly parts of the world.

The opportunities exist in today's programmes and some that come to mind are in the Navy's current Seahawk helicopter programme. It would be a great pity if Sikorsky didn't sell it somewhere else in the world with the same combat system in it. There is the New Construction Submarine, there are a number of us who wish Roger Sprimont well in selling it to someone else along with the standard combat system and some shore facilities built in Australia by Australians.

We need to ensure, however, if we are going to do that, that we set up programmes in an appropriate way so that we can take these products into the world.

Limitations fall, in my view, into three categories; first is the lack of people. Sadly, our once high profile in engineering has gone and technology schools in the universities and colleges do not command the best young people nor turn out enough engineering graduates to a society that, in my view, is mildly anti-technology. Our education system has not produced a solution to the needs of successful technology industry.

Lest it be assumed that I'm putting all the blame with educationalists, industry also needs to figure out how to take these graduates and indeed produce more of their own trained people. Perhaps the collaborative degree scheme recently introduced in computer technologies in NSW might be of some assistance here.

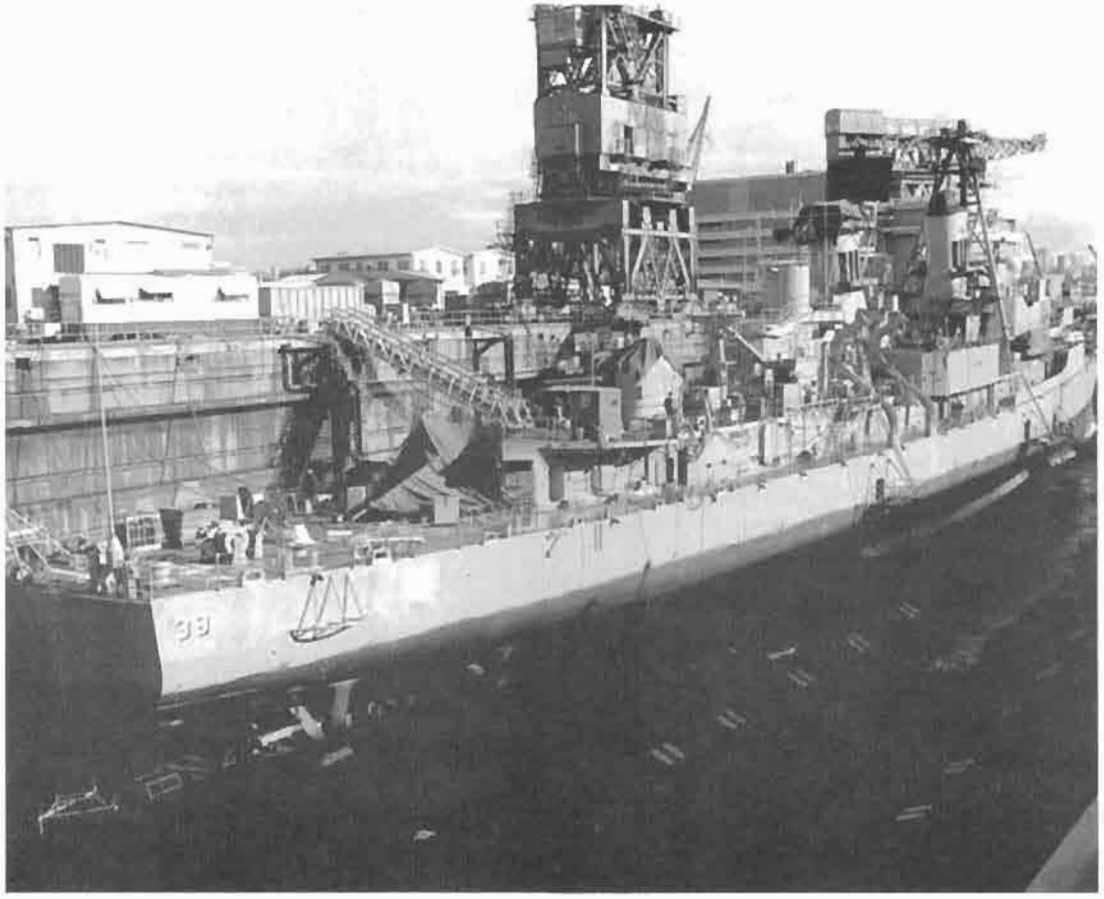
The second is a lack of vision. If we are to make it, we need to invest more and accept longer term returns; even that doesn't seem very palatable to any of us. I suppose ours is not a very popular industry to invest in. While our culture is developing the world's largest brewers and media owners we don't seem to be developing the technology greats in the same way.

In a second sense we also need another kind of visionary, and for those of you who are serving officers, it needs to be in your place and ours. Because programmes, major programmes, that are going to be successes, the submarine

programme being one if you will that's topical today, need visionaries to promote them. Within your organisation and indeed within industry we have a premium on people with that sort of vision.

And, thirdly, we have a lack of marketing and commercial skills. Our culture is not aggressive enough in the world marketplace. Too often, we do the work and others reap the benefits. We need to improve on both counts.

For my part I am fortunate to be a participant in what I think is a pretty exciting part of Australian industry. We as a nation have a great capability in this area, we have a supportive customer, with our friends from Defence, we have a world marketplace for our skills and products. From here it is up to all of us.



HMAS Perth

INTERDEPENDENCE OR INDEPENDENCE IN DEFENCE PRODUCTION

Mr Bruce Price
Hawker de Havilland

Everyone knows that in the last few years we've had an impressive review by the Government and its consultants on Australian defence policy. Quite rightly, industry's role has been included in that process. The Government's defence policy for industry has established clearer goals for defence planners. From industry's point of view we now have a better idea of what is required of us.

Our industry welcomes the changes that have been made and also the stated commitments to further changes. These changes include, industry access to forward equipment plans, which is very important, a realistic approach to the export of defence products, the privatisation of defence factories, the removal of direct and indirect preference to Government factories and in-house military units, defence designated and assisted work, offsets policy, the encouragement of international collaboration, and lastly the commercialisation of the Government design and defence development organisation.

In the new defence industry policy there has been a commitment to greater competition in the allocation of the defence work load, and, on that point, I really have some disagreement with the comments of Don Fry, but really of emphasis. It's a concept which is creating some transient digestion problems, but it should in the long run be good for both the defence customer and good for industry.

There are some digestion problems, as I have said. The defence procurement organisation must be careful to ensure that this greater degree of competition is sensibly handled and must be seen to apply equitably to all organisations that are vying for defence business, be they commercial firms, government operated establishments, in-house military units, or, importantly, overseas firms.

I still am concerned that the concept of competition applies very strongly to Australian customers, to Australian industry, yet we still see some instances of components, small ticket items, I agree, bought off the shelf from overseas which could have been procured in Australia and yet through the competition process that opportunity is not available.

The process must be seen by all to be consistently applied, the defence customer must quickly acquire greater capacity to handle the increased need for clear, definitive specifications, against which meaningful competition can take place and also the organisation must have the ability to objectively evaluate the competing submissions.

The old adage that the cheapest tendered price, we've heard in the last couple of days, is not necessarily the cheapest project cost is still valid and we don't have to look past the fiasco on the coastal surveillance contract to demonstrate this point.

In the short time I have available, I would like to canvass some other areas of defence industry development that I believe still require attention. We currently have significant aerospace industry involvement in programmes for new equipment and these involve licenced build, local assembly and test and after sales support.

The programmes are mostly fixed price and, providing industry performs to its own cost and schedule targets, we should, as business people, achieve a satisfactory product and it should be commensurate with our investment.

You could say, that as investors what more should industry want? Well, talking about the aerospace business particularly, because it's the one that I know a little about, the area of defence industry development where these programmes

are somewhat deficient is in the area of attraction, training and retention of competent experienced engineers. Recent Australian involvement in capital programmes does not, in my opinion, pay sufficient attention to the need for Australia to retain an adequate corps of competent engineering people.

I believe that there are many in military that share this view. I understand and appreciate the concept of low level and higher level conflicts as outlined in the March '87 Defence Paper and I understand that the time required for a substantial threat to develop would allow the development of additional capabilities as well as redirection of civil and industrial capacities for defence work.

But last year we were reminded by Dr Farrens at the Australian Academy of Technological Science symposium in Adelaide that it was pointed out that, of 36 significant conflicts studied in recent years, governments did not respond to the perceived threats by preparation but they waited for what was called the "civic threat" phase. Dr Farrens went on to say that one would have to be naive indeed to expect anything different in the future.

The question then becomes, what can we do about retaining an appropriate corps of skilled engineering people? I think the Defence Paper itself points to many of the answers, it talks about the forstering of niche areas, the Australian Industry Development Policy and international collaboration.

But to make it happen, both industry and government must be more aggressive than they have been in the past and it's my opinion that the current big ticket projects in our industry do not pay sufficient attention to the need to involve our engineers in the design, development and certification process. It's these activities that will attract and retain competent experienced engineering people.

I do not say that some of these projects do not involve valuable experience and, as an example, the RAN Sikorsky Seahawk programme does meet this goal to a great extent, but there are other programmes in our industry which have no engineering participation whatsoever.

The AII policy has been providing and will continue to provide important leverage to direct work to our industry.

The offsets policy, which is a segment of that policy, can provide our industry with and involve our industry in design and development projects, and it is interesting to see a number that are being pursued at the present time, but we must be careful not to weaken our resolve to demand offsets.

Australia's offsets policy is far less demanding than that of many countries, and if we were to relinquish those demands, the slack would quickly be taken up by other countries who have much more demanding policies. There are many people in academia and in the bureaucracy who are convinced the offset policy is costing the tax payer money but, despite a number of formal enquiries, no hard evidence has been put forward to support that view.

On niche areas, every industry and most companies have pet projects where they believe a niche exists which can be exploited to develop successful products for export. Australia has in the past been successful on guided weapons and RPVs and I think it is an area where we should be a little more aggressive. The cost of development is not as demanding as for conventional aircraft projects and it should therefore not unduly stain our limited defence and corporate budgets.

In many cases the environments, particularly in Europe, for guided weapons and RPVs are a lot different to the needs of our region and it's an area where there is scope for exploitation. The Nulka project certainly has the potential to exploit our already existing capabilities and I think we're all pretty ambitious that this will succeed. Space engineering is also an area which I believe can be used to attract and retain skilled engineering people.

In comparison to countries like Britain and Canada, Australian defence does not, in my opinion, appear to exhibit the same interest in space engineering. I would have thought there was a need for greater participation in space for defence people and, because of its rapidly changing technology, we must be careful to ensure that our own people are at least cognizant with developments that are happening in space which will have an impact on segments which are especially interesting to defence in Australia - surveillance, communication, sensing and navigation.

The '87 Defence Policy Paper raised the question of international collaboration. It rightly states that military equipment has become more capable, more complex and much more expensive.

Along with civil aircraft projects, military aerospace is becoming increasingly an area embracing international collaboration. It's an area where Australian industry can participate to a minor, but still meaningful, level in major projects and it would acquire skills that would not otherwise be available.

Unfortunately, Australian industry does not have the financial capacity to participate on a risk

sharing basis to the desired level on either civil or military international collaborative projects without some measure of government support. For industry to do it on its own, it would involve debt equity gearing ratios which are quite inappropriate to the size of our industry. Some government support is required to complement the resources of industry and to place Australian organisations on a comparable footing with those of potential overseas partners.

It is an area where even the purer marketplace policies of countries like Great Britain provide extensive government support for international collaborative programmes. Australian industry finds it difficult to compete with overseas firms who receive this level of support. There is some concern by military customers in Australia that participation in international collaborative projects could prejudice their ability to freely choose defence equipment. Realistically, it would influence these decisions.

But it is happening elsewhere and it must always come down to a question to priorities for Government.

In summary, Australia's defence industry policy has been more clearly stated in the past year or so than it has been for many years, it provides a hope for a measure of stability that contrasts to the "stop and go" circumstances which have characterised defence industry policy for years and it provides a stability on which we can make our own investments with some degree of confidence.

Nevertheless, I am concerned that we still need to answer this question of how to attract, train and retain skilled engineering people. The recent decisions on new military equipment haven't paid, in my opinion, sufficient attention to this point. We must create a corps of experienced engineers if industry is going to be able to respond to the Government's relatively modest objective of industry; that is, industry having the capacity to modify, repair, maintain and adapt defence equipment to the Australian environment independently of overseas suppliers.

FFG

DISCUSSION

Mr d'Assumpcao

We seem to have slipped in time with the late start, but I gather there will be more opportunity for an open forum where I guess the people could bring up points that they may have missed out on the opportunity for at this panel session.

We've had presented before you various views, some consistent and some in conflict with each other, now it's your turn. Perhaps you could preface your remarks by mentioned your name and affiliation.

LCDR Lawrence, RAN

A remark was made yesterday from the audience concerning shipbuilding. Perhaps this long heralded assumption that continued shipbuilding is essential might not be true.

The remark was made yesterday specifically concerning the FFG7 project and the DDGs that the firm building these ships is pretty well an agriculture machines specialist and not absolutely a shipbuilder and afterwards is going to get out of it.

That causes me great concern, not least because for the last three years I have been developing a creed which suggests that we need to support our shipbuilding industry. In fact, Mr Fry's earlier statement tended to bear that out. I would like Mr Fry's views on that statement that was made yesterday "but it's no big deal this continuous shipbuilding". Perhaps companies can build up and run down without any loss of efficiency. I personally can't believe it but I would like the point of view of an expert.

Mr Don Fry

I can't believe it either. I must tell you that on the weekends I often go farming but it doesn't mean that I'm an agriculturist and, more specifically, as an engineer, I confirm the view to sustain a viable shipbuilding industry it is absolutely important that those particular skills are retained, that it be continuous, and it be at a level that is geared to meet our continuous needs and that there need to be margins built in to cope wth export.

We need also to recognize that naval shipbuilding should be paralleled by the higher, sophisticated, commercial building such that there is a continual transfer of technology from one to the other so that we ensure that we retain the best possible solution and the idea of turning a workforce on and off, I can assure you, is very costly and I have had personal experience with this, having had the opportunity of retrenching 500 people, as a consequence of a situation arising.

The rebuilding effort is very, very costly and I can only urge you that where you have a centre of excellence, for goodness sake, look after it and keep it going and allow the fluctuations to occur by having the employment levels going up and down a little bit and absorb a little more of that fluctuation by working at the shift or overtime. But to sum it up, continuity is the only way for success.

Major General Cape

As a very retired soldier - we've heard a lot these last two days about this tremendous, and I think, wonderful change in the Government's policy on defence in relation to industries. I think that is jolly good. It is really not for a soldier but I think the sailors ought to be congratulated, because, if we look at Admiral Rourke's diagram of this morning, practically everything there is from Australian industry and I think they're jolly lucky.

However, I'm worried, while this policy was being announced and developed, two very major projects were canned and I refer to the trainer aircraft and to project Whaler, and I'm worried that perhaps it is only an opportunistic situation the Navy are in having all these big projects done in Australia and perhaps this worthy policy is going to be much more difficult to implement in other areas.

I would like to ask the panel two questions. Firstly, do they genuinely accept and believe that the cancellation of those projects were fully manifested and justified and not just a short term and expedient choice for good reasons in Government and if the answer to that is yes, what prospect do they see of this policy developing into wider fields other than the two major projects we've been on in this symposium, the submarine and the ANZAC frigate programme?

Mr Bruce

I have a view on the cancellation of the trainer. I would rather not go over the old ground on that one, except to say that one of the agonising parts on whether to proceed with the trainer or whether to acquire an overseas license build programme was how to retain an engineering base and part of that was that as part of that deal we would have been involved in collaboration with this overseas firm on a new venture.

It was sad to see that that potential for collaboration disappeared very rapidly once the contract was signed and I think that is the worry that I've got this ability to retain skilled engineering people who are involved on design certification development and so on. As far as the potential for it to happen to big ticket programmes we have here, I have no comment to make, it would be inappropriate to make.

Mr d'Assumpcao

I think the cancellation of any project into which one has put one's heart and soul is disappointing and upsetting, the importance is for the forum to look towards the future to learn from those mistakes and see that they don't happen again.

Captain Skinner, RAN

Dr Bell mentioned, and again it was mentioned this morning, the strategic defence initiative. Mr d'Assumpcao I wonder if you might outline for us, in the event that the acceptability of SDI in Australia was recognised in the manner that many European and other countries have in being a vehicle in which to conduct research into export and other abilities, where would you see Australia putting emphasis in any work that fell within the SDI area?

Mr d'Assumpcao

That's a rather complicated question. I may be wrong but I'm not aware of any clearly defined Government policy statement on participation by industry on SDI. There is a clear statement that the Department of Defence and the Government agencies will not participate and that is a clear and unambiguous statement. Indeed from my perspective, I have to ask the question, given that we have more customer demands to address Australia's priority problems than we can cope with now, what justification is there for solving problems of SDI which in the White Paper have little relevance to Australia?

Should we not be trying to be truly self reliant and addressing our problems rather than somebody else's problems? That is talking purely from the point of view of the DSTO which is already stretched too far in trying to respond to its customers. We can't respond to our customers adequately so why should we respond to some other customers overseas? That was only one part of the question, I'm sure there is more.

Captain Skinner, RAN

If I may just follow up very briefly. It's the point of keeping up with the state of technological development for export purposes.

Mr d'Assumpcao

To whom would one export the SDI technology itself? If you are talking about general "high tech" with an ill focussed expectation that some good will come of it if we do high technology and science, then I think that somehow I haven't been communicating properly. I think that we have to focus on what we have to worry about in this country for our defence and there is plenty of work out there, more than we can cope with, and we've heard of the shortages of engineers in industry. The demands of the Australian defence organisation alone exceed what we cater for.

LCDR Lemon, RAN

I would be interested, observing that we have representatives from Plessey, Thorn, EMI and Hawker de Havilland, and other companies of overseas origin, I'd be interested to hear the panel's view of the Government's AOKY policy - how they feel that effects Australian industry.

Mr Bruce

I think the aspirations of the AOKY policy are admirable. I think we've got to be very careful that we aren't too inflexible in its initial implementation to the fact that if some people get bloody minded about it you will be excluding some firms that would be otherwise be bringing a lot of capabilities to bear. Our own firm is trying very hard to organise itself so it will meet fully the AOKY requirements.

They were modelled, I understand, on the American ones and the American ones have a little more flexibility in application that the policy as it has been written for Australia. And I think that all I ask is from industry's point of view and from the people who are trying to administer the policy - try not to be too ambitious to implement it quite fastideously the very first year because I've heard some of my colleagues in industry organisations who are saying to me "to hell with it we are not going to bother it and if they don't want us they don't get us". From my own company's point of view I think we will be able to cope with it and it doesn't bother me too much.

Commodore Hopkins, RNZN

As New Zealand Adviser in Canberra, I wonder if I could just wave a little flag for New Zealand.

You have been putting a very heavy emphasis on Australian industry in your briefings on the seminar and of course one of the big letter projects is the ANZAC Ship which is just that 'ANZAC quotient'. It is imperative, I believe, that New Zealand industry is very involved if this project is to succeed, especially from a New Zealand point of view. We, certainly at home, need to build up the necessary momentum within the decision making forums in New Zealand to ensure that we succeed.

New Zealand industry is a little bit immature as regards defence projects but it does wish to contribute as as full a partner as possible and certainly we'd like our share of the cake. If we are buying four ships out of twelve, we'd like a third of the action.

I believe New Zealand industry, too, is capable of not just manufacturing components for the ships or other big projects that might evolve, we're also a major force in the financial service industries and we are capable of putting our money up front. I think many of our manufacturers are very willing to do this. We financed the show 'Cats' in Sydney and made a big profit out of it, perhaps we can make a bit of a profit out of the various projects.

Finally, I would just like to ask you to remember New Zealand industry. I believe we have much to contribute and both Australia and New Zealand have much to gain.

Unknown

I'd like to make one comment as someone that also runs a company in New Zealand. I think the aspirations are obviously admirable and I think that you have also to learn a lesson on the Australian environment. If you are going to participate in these technologies, you've got to start somewhere and one of the problems that we've had as an organisation trying to do business of this kind in New Zealand is that the money and the programmes don't indeed afford participation in those technologies.

It is very difficult to come to a flying start in a major programme and I think it's a two way street in a New Zealand environment. New Zealand industry obviously has to do some things, I think. The New Zealand Department of Defence and the Government also has to participate in that process to get people up to speed, if you really expect to participate in a major way.

Mr Don Fry

If I could just go on to answer the New Zealand interest. As one who is trying to spearhead a consortium to tender for the frigate programme following the rather successful meeting in New Zealand to announce the project, we have inundated by New Zealand company interests. They have all been registered, there is a lot of talent, it is being collated, and I think that one can sum up that under that particular project there will be New Zealand involvement and, Sir, if I could just have a private word with you later on I'm a little short of cash for my programme. If you would see me outside!

Commander Stevens, RAN

My question is addressed at Mr Fry. I've been delighted to hear each time he has spoken of the desire to get involved in weapons system design and development in Australia and I would just like to hear him, at zero notice, briefly outline how he would go about developing a gunnery fire control system, for example, within Australia because he obviously has mentioned that he has thought along these lines.

Mr Don Fry

One of our greatest problems in exporting the Australian platform is the inability to provide it with a weapon system we can offer at competitive prices and that has tended to drive the initiative to enter the weapons system area.

As to how we go about it, I am not prepared to disclose the full details at this meeting. Suffice to say that the programme has commenced, it has had its origins by walking around the world with eyes open with a lot of people coming to see us offering support and, I guess, the thing that I would tend to leave you with is that, when you do undertake an enterprise like that, you find yourself in the situation of needing expertise to augment those that you already have.

And it has been my experience in dealing with several naval orientated projects that it became not a problem of where would I find this expertise to help us do it but who will I select from those that have applied? We are facing that situation and I believe, given the particular momentum, it's likely to continue and I do hope to be successful with that.

I hope Australia will be successful as a consequence of that in the export of the fully integrated system. But we will be looking at fairly low levels in the initial stages, and presently under consideration for the first craft is nothing more than a stablized optronic sight which will then go into the full fire control system given that we make the first move financially viable.

Unknown

Sir, I would like first of all to throw this group's mind back some 45 years to the days of World War Two when Australia was faced with the necessity of building a fairly large number of ships at short notice with a very small trained shipbuilding force. The answer was not to employ bums but to employ diluted tradesmen and perhaps this may have some applicability today in the question which our friend raised from over there.

But perhaps what we should do is to keep a small force of thoroughly trained tradesmen capable of expanding, as the military try to do, in time of necessity to build a larger force of competent men to build our ships. It has been my experience that agricultural type persons tend to build agricultural type machines.

Unknown

I would like to ask Mr Fry if he would like to expand on the question of the centres of excellence. Having been, as he knows in the Department of Defence I agree with him, as with my friend here, that the Government requirement for tendering goes to ridiculous extremes, but, Mr Fry's suggestion could also, if it got out of hand, go to ridiculous extremes because it could preclude the intervention of new sectors of excellence upon those that already exist and that would be to the detriment of Australia.

So perhaps you would like to tell us how new organizations can break into the field and, with regard to buying Australian as opposed to buying overseas, perhaps the panel would like to give some views on the desirability of waiting for Australian tender.

Mr Don Fry

I am certainly one that supports free enterprise, I'm not against competition, and I believe that when I referred to the centres of excellence and, let me use my own company as an example, we were in the business of producing a product and there was an opportunity there, I believe, that had the Government gone along with our suggestion that there be a change to an *Australian design midstream we would be in a* much stronger position to continue in the export market.

I'm equally aware that there are other companies, in Australia, that could find themselves in a much more viable situation and the country would be in a much better financial situation as a result of those export opportunities. The Commonwealth does have a very good cost investigation system and for any of you that are in the business of period contract you would know only too well that that does mean a very good method of controlling the cost and making sure that the public of Australia are not being ripped off by the contractor.

As far as going to the more technical aspects of the shipbuilding, I was delighted that General Cape should have risen up and asked a question some time ago. In fact, my origins in shipbuilding were building landing craft for the army and, if I recall rightly, it was his wife who launched the first craft.

And so from humble beginnings you can become involved in more complex things, and I believe that it is always a continuous evolution, starting somewhere, being recognized, and then expanding upon that. And opportunities will continue to arise and through the opportunity of tenders for new projects people will tender. They will either be successful or fail, and I'm talking about when those people are exceptional and prove that they can do it and that there would be a tremendous loss to the country by abolishing it and repeating it somewhere else; we need to look at the cost effectiveness of that situation.

Mr d'Assumpcao

Perhaps I would add another word to the centre of excellence debate by citing a specific example. We wanted to set up a centre of excellence, we recognized that it did not exist in Australia, so the Commonwealth funded for five years a centre of excellence. It was established by calling for open tender expressions of interest. The winner was selected and funds were put into that one area for five years, at the end of the five years it was open tender again and there was competition so that we do not make it a closed shop. In answer to your particular point there was a fair bit of competition and we made sure that we met the requirements of both fairness and an open handed approach and ensured some level of continuation of funds into one area.

OPEN FORUM

Introduction

During this open forum I would like you to offer up follow on comment on matters which have been discussed over the last two days. I'd like you to add your own viewpoints on those matters and I also want you to interact amongst yourselves to bring out any further points.

I also want the pearls of wisdom that will fall out in the next hour to be recorded for the proceedings. I will indicate one questioner, so if you will just make certain that you have the microphone in the appropriate place before you open your mouth.

Unknown

As a weapons engineer I have the same training as gunnery officers and I do not need microphones. We've heard talk from many of the presenters during this two days about quality, or the word quality has been used in the same sense as cost and time and certainly it is a more fashionable thing these days and is certainly being focussed on a lot. My current job in the Navy is to do with quality assurance and I'm aware that there are several hundred people in the Department of Defence in all three services, mainly civilians, but employed by the three services, involved in quality assurance.

But I'd like to get some reaction from the industry representatives here as to whether they think that our efforts have value and help them as well as helping ourselves. So I'd really be addressing this question to any one or more of the industry representatives here today.

Mr Don Fry

It's a good question. What is the worth of QA and QC. During the patrol craft period we introduced QC as a fundamental requirement of the contract and I can only say to you that it was the best thing we ever did, it paid dividends and even in the commercial world we continue to use QC through most of our disciplines.

I would have, however, added a word of caution that when you get it in place you need to be sure it does not become top heavy. I do recall on one occasion where there are too many QC people in the organisation so I gave the QC organisor the job of procurement officer for a couple of weeks just to slow him down and bring him back to reality, and it was a good strategy.

And equally I'd like to suggest that in the services sometimes you become a little heavy with the QA in the number of GOSI representaties that you would put on site for a refit. In fact, let me suggest to you that I now have twice the number of representatives as I did during the build and I don't believe that is a good policy.

And equally I'm aware that there are moves afoot to have the QC of our own organisation introduced into refits and I commend you for that as I think that's the right approach and it tends to relate to what I was speaking about earlier, that where you have got a centre of excellence you keep it going.

Just to help a couple of comments that come up at smoko time, when I was quizzed a little more in depth about this continuation of this centre of excellence, I think that there was a classic that immediately we went from a build to a refit mode you did away with our QC requirement. That was no longer needed; you thought you would do that yourself and five years later we're now re-introducing it and I would suggest that is a more cost effective approach to the solution and a good reason for continuation once excellence has been achieved.

LCDR Weekley, RAN

I address the subject of the single most important resource, that is the people. The conditions of service case been most forcibly put here over the last couple of days and there is a case for some real optimism of developments in this area sooner rather than later.

There are three other matters arising, however. Firstly, there was the claim that Australia lacks capable systems operators for the high tech equipment. I would dispute this and put it to you that misspent youth in the 80s ferments not in snooker halls but in fact video parlours and perhaps the young people to today have the mental ability and agility and are not frightened or awed by the new pieces of kit.

The second point is that of poaching of service trained personnel and expertise and of the need for perhaps a more Japanese attitude to maths and science.

My third point is the admirable abilities and acumen of personnel both artisan and agricultural. I ask three questions then, do we in fact have capable systems operators in the country, secondly, who other than the Services is training and producing this pool of expertise and who should take the lead and thirdly, is anyone else worried that we may continue to reap as we sow?

Commodore Hunt, RAN

Hunt, a recently posted naval asset conserver. We got some pretty good and wise warnings this afternoon it seems to me, but I've certainly picked up a sense of general optimism that in the twenty five years time that we are looking at we ought to be able, if we get down to a few basics, in this country to build platforms, develop sensors, assemble aircraft, adapt and develop control software but perhaps be still missing the self reliance on what might turn out to be the one thing tha matters. Dr Bell mentioned to us yesterday what will become increasingly difficult to get at the rush and that is weapons.

Now I wonder if there is anybody here able or willing to address the question, and whether we see in the twenty five year period the need for and the probability of a change in our national attitude to be willing to invest in and indeed see as a requirement to be designing and building at, perhaps, some cost, a torpedo, or a missile or whatever the strike weapon is that our sons are going to invent for us in the next twenty five years.

Mr d'Assumpcao

You mentioned design and build, I wish you had also added sell because I think that is the key to it all. If we ever think of providing weapons for our very small market, we're doomed to inefficiency and we're doomed to perpetuating the way of thinking that we have been going along for the last couple of decades. I think it's time we changed this, I think we have to think of outward looking markets not just catering for the indigenous Australian market.

Now, without doubt, there will be some wonderful things, and Jindalee is one such, which will be purely Australian. We'll only ever do it for ourselves but if you're talking about guided weapons or torpedoes or something I don't believe we would ever in have in peace time a sufficient requirement for training to make the production line viable and to justify the enormous R&D expense. So the sequence that I put this to industry is to think of selling; marketing has got to be the approach.

Mr K.J. Farmer for GEC Marconi

Some four and a half years ago the company I work for attended up in Brisbane a then Department of Defence Support seminar. One of the cells of excellence that was called up was one for guided weapons. The company that I work for has instituted a deliberate policy to establish a weapons capability.

Some time ago we won a contract to provide the Navy with naval exercise mines, those mines we are now manufacturing in Australia and we have overcome a number of manufacturing engineering problems to get them in production. We hope that in the future the skills that we have developed will be utilised in developing a weapons capability within industry in Australia. It's not a high profile project and depends as to who you talk to in Navy as to how well it has gone but I can assure you that Marconi is committed to developing a mine as a first step and in the longer term light weight and heavy weight torpedo manufacturing capability in this country and hopefully for the region.

Captain Skinner, RAN

I would like to respond to Ian Weekley's question about system operators and just develop the point for a few seconds. The video parlour is a very good object for us to study, I believe, as it effects Australian industry more generally and the absence or the difficulty in obtaining sufficient trained operators is a very good way to start. The operators are very valuable assets; as has been well recognised, it costs a lot of money to train them. You may lose them.

One other aspect that hasn't come out over these two days is the difficulty of continuing the training, not just a big burst at the beginning and they're trained for ever more, but keeping the skills going particularly in remote locations including ships away from the resources needed and so this has a number of implications.

I think that if I could just develop them very quickly and show that there is an answer to Ian Weekley's question and furthermore there is a very exciting prospect for Australian industry.

In order to provide the training in the remote locations you need some form of ability to give the operator the environment that is representative of that which he would ultimately use, in other words, a simulator. Now Australia has broken some very new ground in these sort of areas, the bridge simulator at HMS *Watson*, I think, is a classic example. We were having difficulty in getting enough billets at sea to train officers of the watch so we used a simulator. Of course the airlines have been doing it for many years. It may interest

people to know that in the power station industry Australian companies building power station training simulators are exporting them and they have a very high reputation throughout the world.

Within the DSTO aeronautical research lab there's some very interesting three dimensional graphics simulation going on. And those of you who have had the opportunity to see the Seahawk simulator and things of that sort will know how much difference it makes if you can get that sort of colour graphics and so on involved.

Anyway, to return to the point, the way of obtaining these trained operators is to present this somewhat fun, but serious as well, ability to continue the training wherever it's needed, wherever the people are located. They will find it an easy transition from the video parlours but what I think is most exciting of all, is not only would we then meet the operator requirement but much of this simulation equipment can be done with "non-mil" standard equipment.

In other words it is something that we can draw directly from the civil industry and vice versa. As I said, the power station trainers and so on and I'd be interested if perhaps Peter Rehn or others might see if whether they could agree with my proposition. The ability to train operators is one area where we could have a real growth industry with export potential and not have to introduce everything from overseas because it doesn't require to be military standard.

Captain Dalton, RAN (Rtd)

I would like to take up Chris Skinner's argument in relation to simulation. I currently have a task in Western Australia for setting up a quality system for a company that manufactures a train driver simulator for these very large two kilometre long ore trains. It has an input not only from the engine system, speeds, etc, it has a strain gauge input coupled to the couplings in between, I think, every tenth carriage in which it provides an indication to the train driver of the speed which he should be doing, whether he is accelerating, decelerating, going up or down a hill and it is a magnificent system and I think that the company would be quite capable of providing defense simulators as well. The industry is there and in fact the company is just about to sell simulators to British Rail.

Unknown

If I could ask a direct question of the Shadow Minister of Defence, if I may. Mr White, in your speech you said that the Government was going to fill some obvious gaps in the Navy, particularly the Tier One, not having any aircraft at sea, and some of the supply vessels, by either taking up ships from the merchant marines and converting them or building ships to merchant standards. As a potential operator I think that this is a very scary concept as there are many good reasons that military ships are built to such a high standard and why those standards have been in place for such a long time, as basically people try to put holes in them. I was wondering whether there is a good justification for this or this is just a cost cutting measure?

Mr Peter White

Well, it is an entirely reasonable question. Especially if you've got the prospect of serving in one of them. The last thing that I would want to do would be to increase any risk for Australian servicemen or women, but there is no doubt that around the world, in particularly Britain, they are looking at taking what are basically merchant vessels and strengthening them to required naval standards and using them for the sort of support roles that I was talking about. And particularly for troup lift and heli lift and re-supply functions that are required for the front line Navy.

No, I'm not an expert in this and if I'm completely on the wrong beam someone's going to tell me. But, as other navies are looking at it, I strongly suggest, and it has been suggested by one or two people in the audience in various articles that I've read, it seems to me a logical answer to fill that gap. I didn't actually say the Government was going to do it, I'm urging the Government to do it. I might also add on that we do have naval vessels, at the moment that are laid up and it's through them being laid up and rotting away in Cairns at the moment, three LCH's. Now that's a tragedy, for example, when we are talking about filling that gap that we've got that LCH squadron just disbanded, three of them are in service but not for the purpose for which they were designed, and the other three are just rotting away. So it's that sort of capacity that should be utilized to make sure that that gap at the top tier of Navy is filled.

Mr S.J. Youll

I am working with Australia's foremost military simulation company, who will commission a $6 million air traffic simulator at RAAF Base East Sale on Monday and we were successful in winning one of the competitive proto-type studies that Chris Skinner mentioned with development of the computer generated imagery for a visual tower simulator for the Air Force.

We would have rather worked for the Navy, reflecting my background and close friends,

however, there does not seem to be a naval simulation policy. It is also interesting that the principal naval simulation at HMAS *Watson* is also a Solartron installation, we have one at RMIT as well. But it has been my lack of success over the last two or three years to find out what the Navy's training policy is in regards to simulation. I go into all sort of areas of Navy Office and try and determine this, I know there are certain trains of thought that have not been yet fully developed, but one of the problems is I find that the areas of Navy are so stretched that their problems is "sure we want help, sure we would like some unsolicited proposal, but we haven't got the time to write the statement of work".

Now, the challenge to industry is to second guess what might be the perceived requirement and then what might be the funds available, one of the silliest things that we do is that we hide with almost cryptographic effort the price, the money we've got available. It would be a much better idea to say "what can you give me for two dollars" rather than "I want something" and then we'll do it on the basis of cost.

Mr Fred Bennett (Acting Secretary)

First, I would like a big round of applause for my self-control today. And actually, it was a good lesson because I've discovered that if you wait long enough someone will say it for you. But I do want to make three points, and first let me say, I'm greatly interested in the way the seminar has covered so many of the dilemmas and difficult policy questions that we face.

Let me touch first of all on self reliance. It does not mean self sufficiency, indeed it cannot mean self sufficiency, our first priority must be the completeness, or indeed perhaps I prefer the word wholeness, of our Defence Force, that is, a Defence Force fully capable of independent operation. We're working on it, we've got some way to go. Our second priority must be our abilty to keep it operating when it needs to. When we've achieved both of those perhaps we can give some higher priority to some of the other objectives that we would all wish to pursue.

My second comment goes back to Lieutenant Commander Taylor. I was struck by the sense of frustration that he articulated so well and the way the audience responded to it, and indeed so did I, but we cannot look back to a simpler society where things were more easily done. That is gone for good. We now live an an open society which scrutinises everything that its servants does much more closely than before, in a very complex society with more strands of interest and more ambitions spread through it than ever before, and in a society with many fairly deep strands of conflicts, not at the level, fortunately, one finds in some other countries. But given these three things, no organisation, is able to have a single minded objective in the way that LCDR Taylor and indeed all of us would wish. But suffering from the frustration nevertheless I'm going to stick with it and I trust that the LCDR Taylors of the Services and indeed all of you will stick with me. If I might pass on a few words to our representatives of the Parliament, be satisfied that we do our best to take the right decision. Do not ask us to prove time and time again that it was not wrong.

Finally, a lot has been said about one of my favourite dilemmas and that is the dilemma of competition versus centres of excellence. Indeed, I would have to say that this has tested my mind as much as anything I've ever done in the pure procurement side of the Defence Department, and I frankly come down on the side of competition, but it's a choice I make on balance and I can see the desirability of true centres of excellence if we could be sure that they did not become centres of slothfulness. The ideal, without a doubt, and this is my ideal, is to have excellent centres of competition.

Commander Whitehouse, RAN

Perhaps I could direct the forum's attention to, in the last 48 hours, at least, Australia's quietest centre of excellence and that is Garden Island Dockyard. As a very interested associate of the DDG modernisation programme, I've cast my eyes around and I've the seaman's observance that there is a good deal of shipbuilding infra-structure and activity presently being conducted within Garden Island and in particular the DDG modernisation programme and the FFG refit.

Perhaps my question is directed to perhaps the General Manager of Garden Island Dockyard, Admiral Berlyn, and perhaps Mr Fry as a representative from civilian industrial enterprise, but with our purpose now to construct the new surface combatant in Australia, have we not lost the opportunity, or should we perhaps examine, future opportunities to do away with what could be preceived as a traditional Garden Island monopoly with regard to the major refitting, and if you like re-construction, of our ships now and would private enterprise like to whet their teeth, so to speak, on some of the refitting programmes that are presently being proposed within naval circles, or do they see that they've missed a golden opportunity to perhaps have whetted their teeth, on the DDG/FFG refit programme?

RADM Berlyn, RAN

Don, as I took the question it was would you like to have undertaken the DDG modernisation programme or indeed the FFG helicopter conversion programme. I could perhaps remind the audience the DDG modernisation programme is about 180 million a copy and the added value of Garden Island Dockyard, and thank you very much Commander Whitehouse, CO of *Perth*, for that unsolicited commercial. Our added value is 45 million. We argue that it is the most complex project we've ever undertaken, I was interested in Australian Submarine Corporation's figures earlier today of 50,000 separate activities in their project. Our project, which is roughly a tenth of that in total financial cost, is about 5,000 separate activities. The FFG helicopter conversion, is, I think, a very interesting case and perhaps it's worth just reflecting on the dilemma that faced the decision makers.

In this audience is a distinguished former naval officer who believed that the helicopter package was ideal, I think it's true to say, to go to the commercial sector of our shipbuilding industry, and a lot was made of this as a tidy package. All you have to do is to cut off the back of the ship and put a different stern on and put some recovery gear on the quarter deck and put a couple of stabilizers in the bottom, that is a tidy package, and, by the way, it has all been done in America.

Well, that was true to a point, except that nobody had done it to the first flight of the first model, if you like, of FFGs and three of our FFGs happened to be the first flight and the long and short of all that is that there was no package.

When it was considered where would a package come from, ie. a package of documentation, specifications and a technical description of what that work really is for those particular ships, guess where it would have had to come from, Garden Island Dockyard, and we had a great interest in doing that work ourselves.

I'm not trying to say whether the decision was right or wrong, what I am trying to say is that the naval engineering skills, in Australia, are actually limited and one hell of a lot of them, at the moment, are in Garden Island Dockyard. My prediction is that quite a few of those skills are going to find their way into these high profile projects that are around at the moment. My concern is that I've already lost quite a few people that I'd much prefer not to have lost, I've lost them for exciting jobs in projects of national importance and for much higher salaries than, realistically, we are ever going to be able to offer with some nice fringe benefits like cars. And when a Lieutenant Commander leaves you for a salary that is greater than yours and a motor car that he can use for anything, it does make a slight impression.

Now that's a very long answer to the question. Personally, I don't believe that Don's excellent shipyard was ready for a DDG, don't forget in the modernisation we completely re-built four boilers including making in Australia for the first time super-heater headers, they're actually high tech bits of engineering, though they don't sound glamorous. Nevertheless, I'd be interested in Don's view as to whether he'd have liked to do what we have just done with the first ship or almost just done.

Mr Don Fry

I would first like to announce that a part of my business deals extensively with the design and construction of sugar mills, super-heaters and headers and boilers are a component of them and I dare not use the next expression that comes from the field.

In terms of the programme that is currently going on at GI, I find myself torn between two restraints. There is a degree of excellence at GI which I believe needs to be sustained and the current work which they are currently undertaking is necessary if they are to be sustained. And providing the right measures and cost effective control are exercised, I see it as a sensible thing to have done.

Let me just go a different direction. There does exist within Australia the need to introduce a commercial facility that can undertake the refit of boats up to FFG size, and one of the problems that we in private enterprise have is developing the nerve to invest in something of the order of probably 15 million dollars to undertake the refit with no guarantees whatsoever that you will get any follow up work. Probably that alone has been the only reason why my own facility was not upgraded long ago.

Yet, nonetheless, we're starting to take a different approach to it and if you would like to test me now and write me an order to refit the next one I can guarantee I'll put the facility in and we'll get cracking. Because I believe that, the way the Navy is now heading, those opportunities can now more effectively be realized and the commercial risks can now be taken, and as I even sense the feeling of this gathering, I can sense, that there is emerging a need that areas where excellence has been achieved have to be kept and I hope there will always be a GI and I would hope that there will always be a commercial enterprise that can equate to it elsewhere in the country.

Commander Stevens, RAN

By way of trying to consolidate the last three comments, I'd like to draw attention to the fact that this seminar has largely been concentrating on the Navy of tomorrow and industry participation in that tomorrow's Navy. I'd like to point out that you cannot have a Navy of tomorrow without sustaining a Navy of today. There is no discrete separation between the two. It is a continuous process.

Admiral Berlyn is constrained in his ability to satisfy the requirements of the FFG helo modification programme and the DDG modification programme through the loss of trained personnel, particularly in the combat systems area. Those personnel are going to many of the industries represented here who have well published commitments to the projects of tomorrow. As Commander Whitehouse has said that perhaps some of those industries would like to 'whet their teeth', get their procedures in force for those high visibility projects which we've been talking about. They might like to whet their teeth by participating in some of the tasks that we have outstanding.

I suggest that if these organisations continue to "poach", and that is a word that should be used with inverted commas, poach the personnel from defence forces, paticularly the Navy, both civilian and uniform, which they are continuing to do, then not only might they like to whet their appetite by doing these tasks, but perhaps they are beholden to, they have an obligation to. Because, unless we keep the Navy of today functioning, and the personnel aspects have been addressed elsewhere, because that also is relevant, the loss of personnel and their interest, we will not have the skilled personnel available to run tomorrow's Navy.

Mr R.E. Kane, DSTO Salisbury

There has been a number of comments about the drift of qualified personnel from the Services to industry, and I would just like to put on record that we, too, in DSTO, are getting that drift, and I think Admiral Berlyn put it very well when he made it clear that we are simply not competitive.

Now, in that environment I have to pose the question, given that Admiral Berlyn can't pay the man whatever it may be and give him his car to use, but nevertheless given that the man is still being paid by the defence budget, there may be a matter of balance that needs to be addressed. Is anyone asking the question, is it that more productive to operate in private industry, is that extra money a good investment, we are questioning the productivity of those extra benefits to those highly skilled people and is it beneficial for those skilled people to be drifting to industry in numbers they are?

Mr Peter Rehn

I think that there are two bits to that. I guess the reply to the first point that was made "would industry like to participate" is yes, any time that you would like industry participation at a greater level in Navy or in other places we're very happy to respond.

I think the second question that's raised, and while I have some sympathy for it indeed, we suffer for it in our own organisations. I don't think that one should believe, first of all that industry is actively poaching service people, I'm not saying that it's never happened in the past, there is not an active campaign out there any more than there is an active campaign of taking employees from one another, and indeed one of the things we find to our peril, the higher your profile goes, the more liable you are to attack.

And we suffer from the problem, that people are taking staff from us, that our staff are continually under offer, if you will, from other organisations, not only defence organisations but commercial organisations. It's the bane of our existence following the spiral up.

And, with due respect to Senator Button and his new initiative on corporate partnerships, I think that it's going to get worse. We're working in a community that has comparatively few well trained people compared to the opportunities, and, while we still live in a free country, market forces are going to prevail, and I don't think that it's a campaign of poaching but it's very difficult when you see good people come knocking on your door saying, "you've got an exciting project going, what sort of jobs are going?" to say, "well it's a bit embarrassing we wouldn't really like to take you on", because if we don't somebody else will.

I think it's a problem that to some degree you have got to solve within your own organisation, and it might be unpalatable but the Government has to find a way in its commercial data processing and other technical areas, and indeed, in my view, Defence has to find a way of being competitive. If it's not money, if it's not cars, it has to be other things that attract people and get them to stay. We do live in a free market, it's one of the penalties of being there.

RADM Griffiths, RAN (Rtd)

We've been in the heady stuff for quite some time in this symposium of really "how do we implement the policy? What's the relationship

between industry and the Navy in getting products on line to the Navy for operating?" And it has been difficult really to see what we're doing it all for.

What is the corporate objective of all this? Yesterday morning we kicked off the symposium with Dr Coral Bell and she talked about the strategy in the region and outlined some ideas for Australian strategy in the future, and I think it would be right to say that she suggested that our region would be more complex in the future than it is at the present time.

When we left strategy, it's gradually drifted into the distant past and we'll leave this room forgetting all about the word strategy, but I thought about that and I thought "No, Let's bring it up and sort of try and update a thought on it". This is not really a question it is really a statement, so bear with me. In *The Australian* this morning, we once again in the leader article have the spectre of invasion of the country. Fellows up the north have discovered they can't sustain themselves for more than six weeks in the Cape York Peninsula and therefore they can't resist invasion if it ever happens.

We have faced in this country now of it being rammed down the throats and in the ears and eyes of the population for about the last three decades that we've got to defend ourselves against this invasion. Dibb had a crack at it and in the next couple of paragraphs said nobody could ever manage it. People accused the Japanese of going to invade the country and then they discovered later on that, in fact, they never intended to. You begin to wonder what our strategy ought to be at the present time. At the moment I think that it would be right to say, on analysis of this White Paper, that we are structuring the Defence Force into a waiting game for the next conflict. So all the grandfathers, fathers, mothers etc. around the country are putting fellows into the Defence Force waiting for them to enter conflict.

Our strategy surely, ladies and gentlemen, ought to be a strategy of trying to avoid conflict in the future, and developing a strategy for that purpose. But I would suggest that we think about having a strategy of deterrence. The very one that Dibb ruled out and said was too complex to structure the Defence Force for/or it was to difficult to do it. Which I thought for some time was utter rubbish!

Surely you can structure the Defence Force for it. What you have to do, of course, is to place some emphasis on the offshore region of the maritime area in which we exist and get back to looking at the First Tier of certainly the Naval forces and perhaps a re-emphasis on some of the other two forces, the Army and Air Force, a structure to suit a strategy of deterrence so that we can control and influence things offshore.

This, I believe, is a strategy that will give a great deal more sense of purpose to the three armed services at the present time and perhaps with a sense of purpose we might get a little more job satisfaction and may well contribute to the retention of people in the services, which the experts have given a great deal of emphasis on their drift today.

But retain some of them because not all of it is conditions of service, part of it is job satisfaction. And if they know what they're there for, I'm sure that trying to prevent this country getting into conflict is a much more purposeful thing than just sitting around waiting for something to happen. That is really what we're doing at the moment.

So, I would ask everybody to think about strategy, not neglect it. All industry people here today have their corporate objectives, I think it would be rather nice if we could find some because it's well known that since Federation, in fact, the country hasn't had really a corporate strategy and never announced one, certainly the Federal Government has never announced one since Federation that we the population can understand.

CDRE Adams, RANEM

I guess my question follows on from what Guy Griffiths has said and it really relates to the First and Second Tier ships which we see as being design Australia build Australia and sustained from Australia and I don't think people would argue against that.

However, as the Admiral has indicated, we do live in a time of unpredictable events and, of course, we know that navies will be required to operate throughout the Pacific and Indian Oceans. And, as we know in the past, we've operated British sourced ships which we operated in the Far East through Singapore dockyards and we had the technical and logistic support that came from the British in the far east and, with an inspired decision in the 1960s, we went from the British gold standard to the American gold standard. As the Brits withdrew east of Suez we found ourselves with modern US ships which we were able to sustain using US logistics systems, throughout the Far East and the Indian Ocean.

We are now moving, as I see it, towards the next generation of ships which would appear to be sourced in Europe. We haven't got onto the First Tier ships at the moment, but my question is that it

would appear to me that the blue water elements of our Navy need to retain some degree of, a high degree, of technical and logistical compatibility with the United States Navy, if we are to maintain a degree of operational compatibility and sustainability in our area as well as drawing on our own resources. There is a great advantage in being able to draw on the resources of our great and powerful ally. So my question would be as to what extent in these new generation of ships are we aiming to retain the degree of technical and logistical compatibility with US sources?

HMAS Success

CLOSING SUMMARY

Rear Admiral W.J. Rourke AO, RANEM

I'd like to congratulate you in the audience on staying the course, for providing such an intelligent group because, I think, that, just as industry needs an intelligent customer, so do speakers need a constructive audience, and I think they've had that today. Even those who felt it their duty not to say much but to listen not to speak, when they were forced to speak, made positive contributions, and I thank them for it.

The Administrator, Sir James Rowland, opened yesterday's proceedings. In addition to being Governor of NSW and a previous Chief of Staff he is a Fellow of the Institute of Engineers, and he introduced what was to be a general theme, I believe, and that was the value of good communication between defence and industry.

Coral Bell provided her view beyond 2000 and forecast a continuing symmetry and stability between the great powers, but in our region she saw increasing tensions and an emerging dominance with the strengthening economic power of Japan, Korea and of developing China.

I returned only yesterday afternoon from a week of discussions with the engineering profession of Bejing in China and I share Dr Bell's view of China's future influence. Their gross national product has doubled in the last eight years and continuing rapid growth is in prospect. They're hungry to learn and are doing so fast.

The Chief of Naval Staff set out the maritime requirements for today and tomorrow and canvassed some possible futures including nuclear power. I noticed from recent press reports, which I suppose you always have to be cautious of, that Oscar Hughes is looking forward to submarine 7 and 8 and that he might need to choose between Stirling cycles and nuclear power at that time. CNS also referred to the problems of containing costs and of the need for new developments that would find out innovative solutions without additional expense and he also referred to the manpower needs to operate the force.

He said, too, that industry has to understand defence needs and I'm sure that he would accept the corollary advanced by Greg John yesterday afternoon that defence needs to understand industry. Greg John, in fact, gave a strong view that this is happening and used the example of the submarine project as a watershed in defence project management. He emphasised the need for proper investment in the pre-production phases of projects, and I think he hinted at some concern in the area of the ANZAC Ship Project.

Last night David Charles stood in for the Defence Minister and gave an account of intentions to provide further improvement in advising of defence plans.

Today, we continued the general theme and Bob Cooksey talked about changes in defence policies, particularly relating to defence exports and many of them arising from recommendations that he made twelve months ago today. I just have a slight comment that, with the need for pace in development, one would hope that some of the other recommendations are soon addressed. We then went on the major procurement project in the New Submarine, and Admiral Hughes reviewed the background to that project and Roger Sprimont was most informative on the project implementation plan. And I'm sure that we were interested to note what he had to say about the way it was proceeding. I was particularly interested in the clear expression of the comparatively small proportions of work on the pressure hull and the overall assembly and the much higher proportions of project management.

If I could just add a slight personal note and perhaps forestall any questions about of change of heart from the ANI Press representative, Alan Robertson, I was personally, originally an advocate of keeping options open about where the submarines should be built, here or overseas, and I was persuaded and others were persuaded by the visions of local capabilty held particularly by an earlier submarine project director, Graham White, and people like John White in industry, and we have got visionaries there and they are effective in persuading people of the way to go.

We had another White in Peter White, the Shadow Minister, who spoke to us and gave us some of his visions and concerns. He, too, took up the theme and emphasised the personal needs of the forces. I think he also struck a responsive cord with many of the needs to improve outreach capability.

At the risk, perhaps, of referring back too much to China, but there might be some analogy between the damaging policies of the Ching Dynasty who decided that the coast lines should be regarded as another Great Wall and their ships should not go beyond it and I think that led to the Chinese problems with foreign shipping and their domination over many years by outsiders.

We had the most interesting views of a Young Turk who described himself more appropriately as, he felt, the meat in the sandwich. He struck a responsive cord with the problems of a cog in Byzantine bureaucracy of a feeling of diminished responsibility and a neglect of the first duty of operational needs. He said, and here I disagree with him, as I think Mr Bennett said, and after all what are Young Turks for if not to disagree with, he said we need self reliant officers and men who will buy not what is needed but what we can afford.

As I say, sympathetically, Mr Bennett commented that we can't afford this single mindedness. I would say that a naval ship at sea can have a substantial degree of self reliance, but no project manager, no project planner, can have any self reliance without a prospect of funds and hopefully a security of funds.

General Cape, I thought, made a perceptive question, he said "is the Navy programme the result of opportunism?" I think it's partly at least the effective reconciliation of needs and affordability. Nonetheless Lieutenant Commander Taylor did get home a message for concern of the job satisfaction and the lack of it in a number of head office fields. I believe, I hope, that in the procurement field that much has been done to add to the responsibility, and I know Mr Bennett was a particular contributor to this, to add to the responsibility and financial responsibility of project managers, and I think there has to be that search to provide responsibility in other fields.

We concluded this afternoon, before the recent open forum, with an excellent industry panel lead by the Chief Scientist Henry d'Assumpcao, with Don Fry, Peter Rehn and Bruce Price. We had a useful discussion on such matters as centres of excellence and competition. I remind Commodore Hopkins that he has been offered a joint venture with the deal with Don Fry after the meeting.

Let me identify, finally, a few main themes. Much of the development that we've been talking about of Australian industry needs vision, we need a partnership and an understanding between defence and industry and much has been done of late to create this, and the Australian Naval Institute, in this seminar, is contributing substantially to the further development of understanding.

We need more and better trained manpower in the Navy, in industry, and in the nation because there, probably, more than any factor, depends our future.

We need, as several speakers said, to have that manpower trained in all fields but probably particularly in the technician and engineering fields.

Given these underpinnings, given these commitments, I believe we can look forward, and I believe this was the theme of all the speakers, I think it was an optimistic feeling that came through to me, we can look forward to a strong, competitive defence industry and a strong Navy beyond 2000.

Thank you all for your contribution.

PRESIDENT'S REMARKS

Captain A.H.R. Brecht, RAN
Present of the ANI

My task in formally drawing Seapower '87 to a close includes a number of acknowledgements but before I turn to them I'd like to express the sentiments of the Institute.

You'll be aware that the ANI exists to promote the exchange of ideas and views upon the maritime profession both inside the Permanent Naval Forces and without. This we achieve, primarily, through a quarterly journal but seminars such as this provide a more visible focus on such exchanges and therefore enable the Institute to more readily achieve its aims.

Seapower '87 has drawn together the individual strands from industry, Navy and Defence to weave the framework and patterns of discussion and debate necessary to forge a clearer understanding of the vital role to be played by Australian industry in this country's defence future. The ANI therefore sees the seminar as having met its objectives and, as President, I hope that you would share this view.

Success in such ventures rests in the final analysis with you, the delegates. My first acknowledgement is of your willing participation throughout discussion periods and of your interest in attending.

Next, I would like to thank all of the speakers on your behalf as well as the Institute's for their thoughtful, well researched, stimulating, and sometimes provocative papers which provided the framework that I mentioned earlier.

Lastly, but by no means least, I thank the organisers and the host of workers behind the scenes. Particular recognition is due to Commodore Ian Callaway and Commander Ken Railton, Seminar Directors, who have carried the brunt of the responsibility.

The Australian Naval Institute has enjoyed Seapower '87. I hope that you, too, have found it to be worthwhile and I thank you for attending the seminar and look forward to meeting you again when our next venture takes place and I say, possibly, Seapower '90. I therefore formally close the seminar and thank you very much.

LIST OF THOSE ATTENDING

Organisations and Companies

Department of Defence
MTU Australia Pty Ltd
Blohm & Voss (Aust) Pty Ltd
Compucat Pty Ltd
GEC Marconi Defence Division
Futuretech Pty Ltd
NQEA Pty Ltd
Gaveng Pty Ltd
Stanilite Electronics Pty Ltd
Thorn EMI Electronics Australia
Plessey Pacific Defence Systems
Krupp (Australia) Pty Ltd
Computer Sciences of Australia
Thomson - CSF (Australia) Pty Ltd
Aviologistics (Australia) Pty Ltd
Carrington Slipways
Ericcson Defence Systems
AWA (Australasia) Ltd
A. Goninan & Co. Ltd
ASC
Siemans Ltd

Members

Title	Name	Service or company
CDRE	H.J.P. Adams AM	RAN (Rtd)
Mr	D. Anderson	Dept of Defence
Mr	B. Arden-Wood	MTU Australia Pty Ltd
Mr	C.S. Arnold	
Dr	G.F. Ashton	Dept of Defence
CMDR	J.R. Baker	RAN
CMDR	M.W. Bell	RAN
Mr	R.A. Benedet	Dio-NSW Premiers Dept
RADM	N.R.B. Berlyn AO	RAN
CAPT	A.H.R. Brecht	RAN
CDRE	I.M. Burnside	RAN (Rtd)
RADM	R.R. Calder	RAN (Rtd)
Mr	G.C. Calderwood	
A/CDRE	I.A. Callaway	RAN
MAJGEN	T.F. Cape	(Rtd)
Dr	D.G. Cartwright	Dept of Defence
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