



COMMONWEALTH OF AUSTRALIA

# Official Committee Hansard

## SENATE

FOREIGN AFFAIRS, DEFENCE AND TRADE REFERENCES  
COMMITTEE

**Reference: Defence Materiel inquiry**

FRIDAY, 8 NOVEMBER 2002

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**SENATE**  
**FOREIGN AFFAIRS, DEFENCE AND TRADE REFERENCES COMMITTEE**  
**Friday, 8 November 2002**

**Members:** Senator Cook (*Chair*), Senator Sandy Macdonald (*Deputy Chair*), Senators Hogg, Johnston, Marshall and Ridgeway

**Substitute members:** Senator Bartlett for Senator Ridgeway

**Participating members:** Senators Abetz, Bartlett, Boswell, Brandis, Carr, Chapman, Coonan, Denman, Eggleston, Chris Evans, Faulkner, Ferguson, Ferris, Forshaw, Harradine, Harris, Knowles, Lightfoot, Mason, McGauran, Murphy, Nettle, Payne, Stott Despoja, Tchen, Tierney and Watson

**Senators in attendance:** Senators Cook, Sandy Macdonald, Johnston and Marshall

**Terms of reference for the inquiry:**

To inquire into and report on:

1. Whether the current materiel acquisition and management framework of the Department of Defence is effective in meeting the organisation's equipment requirements.
2. In considering this matter, the committee is to examine and report on the following issues:
  - (a) whether the current materiel acquisition and through-life support system is meeting, and will continue to meet, the needs of Defence and Defence industries in a timely, cost-effective and qualitative manner;
  - (b) the impact of the Defence Materiel Organisation acquisition reform program on materiel acquisition and management;
  - (c) the current status of major equipment projects in meeting the organisation's requirements;
  - (d) the impact of the creation of decentralised System Program Offices on materiel acquisition and management; and
  - (e) any other issues relevant to the effectiveness of the current acquisitions framework which arise in the course of the inquiry.

**WITNESSES**

<b>HAMMOND, Mr Nicholas David, Managing Director, SAAB Systems Pty Ltd .....</b>	<b>181</b>
<b>McKENNA, Dr Timothy John, Acting Chief Defence Scientist, Defence Science and Technology Organisation .....</b>	<b>164</b>
<b>NANDAGOPAL, Dr Doraisamy (Nanda), Director, Systems Sciences Laboratory, Defence Science and Technology Organisation.....</b>	<b>164</b>
<b>ROCHE, Mr Michael John, Under-Secretary, Defence Materiel Organisation.....</b>	<b>141</b>
<b>SHEEDY, Group Captain Stephen Charles, Director of Over The Horizon Radar System Program Office, Defence Materiel Organisation.....</b>	<b>192</b>
<b>THORNE, Group Captain Colin Barry, Officer Commanding, Maritime Patrol Systems Program Office, Defence Materiel Organisation.....</b>	<b>192</b>



**Committee met at 9.06 a.m.****ROCHE, Mr Michael John, Under-Secretary, Defence Materiel Organisation**

**CHAIR**—I declare open this meeting of the Senate Foreign Affairs, Defence and Trade References Committee. Today the committee commences its fourth public hearing into the Defence Materiel Acquisitions and Management Framework. The terms of reference set by the Senate are available from secretariat staff and copies have been placed near the entrance to this room. Today's hearing is open to the public, except for one witness whom the committee has agreed to hear in private. In order to facilitate the process, I will request that all those present leave the room at approximately midday. The committee will then resume its public hearing at two o'clock with SAAB Systems. Today's hearing will adjourn at around 4 p.m.

Witnesses are reminded that the evidence given to the committee is protected by parliamentary privilege. It is important for witnesses to be aware that the giving of false or misleading evidence to the committee may constitute a contempt of the Senate. If at any stage a witness wishes to give part of their evidence in camera, they should make that request to me as chair and the committee will consider the request. Should a witness expect to present evidence to the committee that reflects adversely on a person, the witness should give consideration to that evidence being given in camera. The committee is obliged to draw to the attention of a person any evidence which, in the committee's view, reflects adversely on that person and to offer that person an opportunity to respond.

An officer of a department of the Commonwealth shall not be asked to give opinions on matters of policy. However, officers may be asked to explain government policy, describe how it differs from alternative policies and provide information on the process by which a particular policy was arrived at. Witnesses will be invited to make a brief opening statement to the committee before the committee embarks on its questions.

I welcome Mr Roche. I think the appropriate course, unless you have something else in mind, would be to invite you to make an opening statement or some initial comments and then to enable the committee to ask you some follow-up questions.

**Mr Roche**—I appreciate the committee agreeing to see me today. I was to be heard next Friday in Canberra. However, I have to go to Washington for a fairly key initial meeting of the JSF project, which involves the senior principals from all of the other nations represented in partnership. It is a critical meeting for us, so I appreciate your agreeing to see me today.

**CHAIR**—Our pleasure.

**Mr Roche**—Mr Chairman, I thought I would not rehash the statement that we have already made to the committee or the submission that we have presented, but rather try and put some of the issues in perspective. I will start by saying that there is always going to be some risk in defence materiel management. It has been said before that you can take all of the risk out of acquisition, but you are only going to put it on the battlefield. In defence acquisition, while sometimes our ambitions in terms of leading-edge technology may be too great, the reality is that it is not optional to have that technology edge. Particularly when you get to things like electronic warfare, it makes a difference between you seeing the other person first or the other person seeing you first. In many instances, it is quite critical that we are at the technology edge. One example of that is in relation to press reports on the US Patriot missile—the so-called

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PAC3, Patriot Advanced Capability 3—where the US are going into production of that missile, and it is still at a stage of not performing fully to their requirements, simply because it is a weapon that they must have in particular types of conflict.

In other words, I would say that, if there are no problems in defence acquisition, we are probably not pushing hard enough. Having said that, we would more than readily admit that there are problem projects and some of those problems are quite serious. There is considerable room for improvement, although, I would argue, not to the extent of a lot of the press reporting that we have had of late. Only recently there were many press reports of a \$5.1 billion blow-out in costs in the Defence Materiel Organisation. Of that \$5.1 billion, \$4.9 billion related to indexation and to foreign exchange adjustments, all properly payable under contractual arrangements. An amount of \$200 million related to increases in costs, not \$5.1 billion.

Defence has been working at these issues for some time. It has not been idle. A lot of the policies, practices and procedures in the DMO have come from past problems. However, for the last three years we have had a very concentrated effort on acquisition and through-life support areas in the wake of Collins and some other projects. Some three years ago, we reviewed all of the problem areas and developed a package of measures to reform materiel management in the defence department and we have since added to that package.

Our analysis showed that successful materiel management outcomes were influenced by a very wide range of factors. There is no one problem that is susceptible to a silver bullet solution. What was necessary was to get every stage of the process right, from the capability analysis—the first determination of the requirements—right through to equipment selection, contract management, implementation and in-service support. It was not just a DMO problem. The user, the capability staff and industry—to name but three critical players—all had some part to play. As I said, there was no simple solution.

None of the solutions were going to provide an overnight fix, given the complexity and the scale of the projects. Some of them had been ongoing. Some of those projects have been around for 15-plus years. In relation to the scale of the fixes that we have to apply, we have to change systems and some of those systems are so big—Standard Defence Supply System, SDSS, for example, is responsible for managing 1.7 million inventory items—that we cannot fix them overnight. We are working, in many cases, with old contracts. The submarine contracts, for example, go back to the mid-eighties, the Anzac ship projects go back to the late eighties and we have to work within those constraints. The size of the defence organisation is also part of it and, as I said earlier, not all the levers are in our hands. Industry has to perform. In some projects, we are in a cooperative project with other countries.

It is worth making the point that we are not unique. We are not aware of any comparable country which is doing significantly better in defence acquisition and support than we are. We do look at whether it is possible to benchmark, but it is extraordinarily difficult to benchmark our performance against that of other countries. There are quite different approaches to competition. France, for example, single-sources over 70 per cent of its requirements and does not openly compete them. There are differences in terms of the amount that is done nationally. There are a number of countries that do a very small proportion of their defence acquisition outside of the country. There are differing levels of transparency and countries come into projects at different levels of risk. Australia, for example, is at the leading edge on the AEW&C

project, but there are other projects where we would be behind that leading edge. It is extraordinarily difficult to get any sort of decent benchmark.

**CHAIR**—Can I just interrupt? I accept what you say about the difficulties, because Australia is geographically—from a GDP measure—different from a lot of other countries, but what countries do you particularly look to in an effort to try and get some sort of comparison? You mentioned France, but that seems to me to be special in another way and therefore not comparable, which is your point. Which countries would you regard as being worth while?

**Mr Roche**—We mostly work with the UK, the US and Canada. We also work closely with New Zealand, although the scale and the type of equipment is quite different. We are trying to work more closely with them and are certainly prepared to pick up any ideas from them. We do look at what is going on in the Scandinavian countries. There have been some examples that can be picked up out of Sweden, Denmark and Norway. The principal ones we look at are the UK, the US and Canada.

**Senator SANDY MACDONALD**—There is no comparison between the UK, the US and Australia.

**Mr Roche**—Not the scale.

**Senator SANDY MACDONALD**—In terms of the comparable size of defence effort, they are the only countries you could look to with some legitimacy.

**Mr Roche**—Canada would be closest, but each of them has quite differing defence requirements and we either find countries that are significantly bigger or smaller or do it a different way. What we do is try and pick ideas and suggestions from them where they appear appropriate. We have been following the UK's Smarter Procurement Program very closely. If you look at our two-pass arrangements that we have in place now, they reasonably closely mirror the UK two-gate approach. We are picking pieces from them all.

The second point I would make is that the processes themselves are very complex. You could probably write a book on the capability phase alone. Looking at capability gaps and performance of other countries' equipment involves making judgments about opposing capabilities—what we are up against—and deciding in what form we should implement it. The processes include the requirements development process; identification of cost and risk drivers; thinking through support issues; overall risk; developing a budget; the first and second pass approval process, which gives government an opportunity to have an earlier look at it; the acquisition phase itself, which is tendering, evaluating, contracting, contract management and acceptance, with all that that involves; forward phases and disposal. The actual processes are long and complex.

Looking into the problems that we had identified, we came up with a package of solutions. I think that that currently numbers about 110-odd individual new processes—changes that we have made to the way we go about doing our business. I can provide the committee with an overview of that if that would be helpful. We started with looking at introducing a whole-of-life environment—the DMO itself is a result of that analysis—that ensured that all phases had to be taken into account and that we got better decision-making on repair or replace. We ensured that support was properly taken into account at the very earliest stage. We have run with

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environmentally based divisions in Canberra; so we are not divided strictly on service lines, but more in terms of land, sea and air.

One of the initial motivations to this committee was the system project officers, an initiative that was designed to put the support staff out with the customer. We have just introduced the very first integrated project team for the JSF, which involves capability staff, user staff, Air Force people and DMO staff—both on the acquisitions side and on the support side—all in the team, working together right from the outset of that project. At the whole-of-organisation level, we have strengthened the responsibility of individual project managers, so that there is a direct line through me—division head/project manager. The responsibility lines are very clear; they are not diffused in committees. We have introduced project governance boards. We have 10 of those on a one-to-one basis for the most important projects, bringing together a range of critical skills onto those advisory boards.

We have made major changes in the processes that we go through. We are tailoring the process to the requirement. I think that before we were accused of doing the full mil-spec treatment for any project, regardless of complexity. We have shifted away from detailed specifications to more functional requirements. The requirement for the patrol boats, for example—the guts, if you like, of that requirement—runs to 50 pages, and it does not even define the number of patrol boats. It tells industry what we want to achieve in terms of effective patrol boat days. It leaves a very great part of the solution to industry, to allow them to provide their best offer—and that is shown up in the final three tenderers that are now alive in that project, where we have three quite different solutions to the problem.

We have fast-tracked our processes so that we can get capability onstream earlier and so that industry is put to less expense. Air 87, for example, the armed reconnaissance helicopter, went from the request for tender through to contract in less than 12 months, and we have typically done that in the past in 2½ to three years.

**Senator SANDY MACDONALD**—From knowing what you want and putting out to tender that requirement, you seem to be saying, ‘We think we know what we want but we’ll allow other people to make a decision and to tender appropriately on what we think we know we want is delivered.’ Surely that is just giving it to three amateurs who are not Defence people and giving them the chance to give you an option to satisfy what you think you know you want. That is a rather convoluted way of saying it. You are just removing it away from you and from your Defence people, your pointy-end people.

**Mr Roche**—I understand the point you are making, but at the outset one of the strongest criticisms that we had was that we were being too prescriptive and not allowing industry to demonstrate alternative solutions. Take, for example, the fact that we have not specified the number of patrol boats but we have specified the number of days we want and the level of concurrency. The answer is really dependent on how available that patrol boat is and what arrangements you make for support and maintenance so that the tenderer can opt, for example, to provide additional hulls and adopt a process of taking more patrol boats out of service for maintenance and doing it in what they believe is a cost-effective way in the yard, or they can put fewer hulls down, put more money into them and make them more maintainable.

**Senator SANDY MACDONALD**—I understand the concept; there is no doubt about that.

**Mr Roche**—I do not see why we should define which way they do it. If they believe that they can do it more effectively with either more or less hulls, then I think we should give them the opportunity to put that forward during the tender process. I am only just glossing over some of these changes we have made, but one of the things we have introduced is one-on-one tender consultation. We actually go out to tender.

Before, we used to have large tender conferences, where we would present the specification and then ask for questions, and no tenderer or potential tenderer would ask you any sensible questions in that group for fear of giving away a competitive advantage. So we went to individual consultations, all carefully structured and so on, and when we did that for the patrol boats we got some quite interesting results.

One tenderer asked us, ‘How serious are you about this speed in the sea state?’ and we said that it was not an important requirement. They said, ‘If you’re prepared to drop that speed by so many knots, then the size of the scantlings in these boats can be reduced significantly and the cost will come down accordingly.’ We looked at that, took it back to the sponsor, and the sponsor said they did not have difficulty with that. That was a case where an input from industry clearly has made a reduction in the cost of those boats.

**Senator JOHNSTON**—I don’t know whether you have read the Senate *Hansard*, but Mr White from ASPI said he thought it was important that when we approach these sorts of projects it is about ‘getting what we want, deciding what we want and knowing what we are getting’. In the face of what you have just said, am I to understand that you really haven’t reconciled how many boats are needed to do the job?

**Mr Roche**—We have a fairly good idea of the range of boats that would satisfy that, but whether it is 12 or 14 or 11 or 15 is an open issue. In this particular case, I think we do satisfy what Hugh White is suggesting, because we allow the tenderers to put forward the solution. When the solution comes forward it is a fixed solution. It is not a case of a tenderer simply saying, ‘I’m going to deliver you so many patrol boat days. Trust me.’ It is a case of them putting forward then a detailed proposition that does involve the exact number of boats, the specification of those boats, the fit-out and so on, and that is what the contract is based on.

**Senator JOHNSTON**—So you are inviting them to argue their position?

**Mr Roche**—Yes.

**Senator JOHNSTON**—And you are accepting their expertise?

**Mr Roche**—In areas where it is relevant, yes.

**Senator JOHNSTON**—Fair enough.

**Mr Roche**—We have moved to faster contracting. Typically we would spend six and sometimes 12 months after down-selecting to actually get into a contract, and that was not sensible because we were not in a terrifically strong negotiating position at that time. We have revised all of our contractual forms and templates. We put that out at the start of the project and we now negotiate with the final short list of tenderers to get a contract that is pretty close to finality when we down-select. In the case of the armed reconnaissance helicopter I think we

were in contract within four to six weeks of selecting Eurocopter, and that would be the sort of time frame that we are looking to do in the future.

As to better engagement with industry, we were criticised for our lack of engagement with industry. We have increased significantly our dialogue with industry, industry associations, industry visits. We have been going out into the regions with senior levels in the DMO. That means that our knowledge of industry has been increasing. We are in a good position with the Joint Strike Fighter project to make sure that we have given Lockheed Martin and its key contractors a good look at the Australian industry that is out there, and I think that has been reflected in the letters of intent that have come out from that company.

We have introduced company scorecards, which are a formalised way of recording company's performance over about 10 items, and we have now found that we are getting visibility at board level within companies which have problems. One of the things that struck me was that, in companies where we had problems, very frequently the board level people were not aware of it. Possibly people down the line would sit on the problem.

The scorecards are going to the board and most companies are dealing with them at board level. If there are poor outcomes then we generally get a very high-level response. We have moved to a 360-degree scorecard, where we have invited industry to report on our performance as a contracting authority. There are a few home truths shared with us in that process. It is starting to work.

We are having difficulties getting industry to divorce views about budget issues and so on from their views about us as a contracting authority but we are working on that. We are getting earlier industry involvement. They are becoming involved at a very early stage in the process. As to air-to-air refuellings, for example, we have been working with industry for well over a year now on sorting out that tender. We are looking to providing more sustainable opportunities for industry through the sector plans that the government has announced.

We have put an enormous effort into software acquisition. A large number of our problems are related to software. Seasprite is virtually 100 per cent software. P3 Orion and the C130J gave us difficulties with software. The problems with the Collins original combat system are well known. We are putting in place new tools to assist us with measuring and managing risk, safety, performance and so on with software acquisition. We are using the capability maturity model system to assess the people that are providing us with software.

We are doing a lot to train our senior staff. All of our one- and two-star staff have now been through basic software acquisition training. We are cooperating with the US on that, and we have used people from the US Defense Acquisition University to run those first courses, but the intention is that all of our senior people and all of the relevant project people should be as capable in terms of software acquisition as they are in terms of some of the harder technologies—engineering and so on—and that is starting to show results. We are moving down the path of evolutionary acquisition in software and moving away from the big bang.

I think all of that is starting to show results. The way we have gone about the AEW&C project, which is an enormous software challenge—it has been described as millions of lines of code held together loosely by an aircraft—involved a huge amount of assessment of the architectural issues of that software before we went to contract. We had a very good idea of how

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much of the software had to be written from new. We understood the blocking, we understood the test proposals, we understood at what stages we would start to see some results from early builds of the software, and we understood where the difficulties were likely to be, and I think that is showing up with the way that project is running. We are applying some of those techniques to the rebuild of the work that the Computer Sciences Corporation is doing on the combat system for Air 87.

We have put a huge amount of effort into improving our project management. We have done a lot in terms of accountability and responsibility. We have changed the government approval process to the two-pass process. We have put significant effort into better reporting. Reporting is a real challenge. I noticed from *Hansard* that there has been a fair bit of discussion about project management systems. In my experience over the last three years it is not the case every time that a project management system would indicate the problems to you at an early enough stage. Certainly project management systems will tell you if you are missing milestones or possibly even if you are likely to miss a milestone, but many of the project problems that we run into would need alternative methods to assess what is likely to go wrong to manage the risk and to do something about it before it becomes a major problem.

But we are reporting now at the Defence committee level. The Defence committee get a comprehensive report each month on the top 20 projects and other projects of concern, and they discuss those. The minister gets a report on a monthly basis, and we are in the process of instituting new arrangements for reporting to government twice a year on the same projects.

We are introducing new project management methodologies to the SAMS, which we can talk about later. I mentioned project governance boards. I think the gentleman who made a submission to you in relation to the Prince project management method talked about governance boards. In my view, the Prince project management board system is a weakness because it is neither fish nor fowl. It represents stakeholders, it represents the project managers, it represents the capability staff, but nobody seems to take responsibility. The board can actually make some decisions but the decision-making responsibility between the project manager and the board is, in my view, not clear. In a number of projects I found that that board system was responsible for a drift in the requirement specification. We have shifted instead to a much clearer responsibility on the project manager. We deal with the stakeholder input in a different way, and the governance board acts almost like a company board. It covers financial expertise, project management expertise and legal expertise; it has a user and a capability person on it.

**Senator JOHNSTON**—We have not had any problems with that sort of board, though. We have not had one of those projects go off the rails.

**Mr Roche**—No. To be fair, we have only just got the last one of those up in the last few months. It has been a process that has taken us longer than I would have liked, but it does seem to be working. We are getting some pretty robust reporting from those boards. They certainly put the project managers on their mettle. We are expecting a level of reporting to those boards that is akin to what you would get in a company where you were expecting project reporting. We are trying to keep our expertise for longer. One of the great criticisms in the past has been churn of key staff. The head of the AEW&C project has been put in place for five years. He is an air vice marshal and he is there for five years. The project manager for Air 87 is a brigadier and he is in place until the first aircraft is delivered. The project manager for JSF is also from

Air Force and he will be in position for, I think, the next five years, so he will be there until one of the next major milestones. We are starting to get that right.

**Senator JOHNSTON**—Where does that five years put you in the scheme of the delivery, and why do we choose five years?

**Mr Roche**—We chose a critical milestone and I am just trying to remember which one it was. There was a significant milestone, which I agreed with the Chief of Air Force, that would be the point at which he would have to continue. It is optional for him to continue with the project after that. It is past first flight and it is into another milestone, which I will check and let the committee know.

We are doing a lot with our people. We are trying to change the culture in the organisation. I think we were probably focused on fairly defensive approaches to acquisition. We are now trying to get people to use more judgment but still within an overall accountability framework. We are putting major efforts into training, both on the leadership front and on the technical and professional front. I signed a cooperation agreement only last week with the US Defense Acquisition University who have done some pretty significant things in terms of training acquisition professionals. We have introduced a range of performance measures—plan on a page—and so on. We are at the early stages of work force planning, to ensure that we have the right number of people to do the task.

I am not pretending that all of this is done and all of this is in place. There is a fair bit of work in progress at the moment. One of the critical areas where we have work in progress is on financial and information management because we have some major issues with our computer systems. The SDSS that manages our inventory and our assets is not connected to the department's financial management system, so that we have to journal information across. There are a number of fairly serious defects with the SDSS. We need to sort that out. It may be that we replace that system, so that would be a fairly critical decision. We are in the meantime, though, working to a very detailed financial management improvement plan to try and get our financial management up to an acceptable standard.

We are in the process, as I mentioned earlier, of improving our project management systems and introducing SAMS and we are still in the process of doing the work on the people front, career streaming and the technical and professional training. To bring that together, we believe that we have done a very significant amount to identify the problems. None of the problems are amenable to instant solutions. All of it is going to take some time to work through. There is a high level of commitment in the organisation to working that through. We are reporting against all of those reform initiatives. Internal reporting, traffic light reporting, is done on a regular basis.

You are not going to see dramatic changes in some of the older projects. We cannot recover lost schedule on projects like JORN and so on, nor can we recover the lost schedule on the Seasprite helicopters. But JORN is coming good and is now operational. Has the committee seen that in operation?

**CHAIR**—Not in my time. Other members of the committee may have.

**Mr Roche**—It is very impressive. The LPAs, *Manoora* and *Kanimbla*, which caused a lot of comment at the time of their acquisition, are working exceptionally well. I think, if anything, people are saying, ‘Why didn’t we have them a hell of a lot earlier?’ They have proved to be very valuable resources. We have a way forward on *Seasprite*. We have the new contractor on the software and we believe that will now be on track, but there is no way we can recover that lost schedule.

The submarine capability is developing well. You have seen reports of how they have gone in exercises with the US. We have a way forward with *Bushmaster*, with ADI. They have some critical tests to pass in the next month or so. If they pass those, our confidence in that project will certainly increase dramatically. If they fail, that is the end of it and the project will be finished. We have learnt from all of those.

I make the point about the new projects—AEW&C, Air 87, replacement patrol boat and air-to-air refuelling, which is out in draft at the moment—that you will all see dramatic improvements in the way those projects are managed, although I see that we did not convince Mr Gary Brown, who said that it was early days and we would probably still muck them up. There is a very clear focus in the organisation right across the board on the holy trinity of cost, schedule and performance.

**CHAIR**—Does that conclude your opening remarks?

**Mr Roche**—Yes.

**CHAIR**—Thank you very much. I am sure there will be some questions from the committee. Can I just start, though, by asking a couple of fairly basic questions. DMO has been in existence for nearly 18 months. When would be the first reasonable opportunity to conduct a review of DMO as such—not just what you have done to set it up, but how well the new changes are working? Are we at that point now, or is it reasonable to come back in a year or 18 months time to assess how worth while these changes are and how they actually function?

**Mr Roche**—We have already discussed with Audit when they are coming to look at us. They are coming to have a look at us next year. I think in terms of the things we have put in place, our analysis of the problems and our prescriptions for the solutions I am happy—as much as one is ever happy, I suppose—for Audit to come and have a look at us next year. But for organisational change of this magnitude, all of the experts, all of the books, all of the experience tells you that you are looking at three- to five-year programs to get this change through.

I think that you could look at those four projects I have mentioned and they would tell you a lot about how we were going. You will be seeing a number of critical milestones reached in those by the end of next year. It is a continuing process. I do not think there is a point at which you could draw a line and say, ‘This is the ideal time to look.’ If I were to argue for a time there, I would say you could certainly be absolutely convinced three years down the track that this has been successful, but I doubt that anyone would be content to let it go that long.

**CHAIR**—Yes. It is a question, at least in my mind, of balancing what the changes are and how well they have been implemented and the track record of improvement that can be demonstrated from those changes. There needs to be a bit of daylight between the implementation and when you come back to review the track record—

**Mr Roche**—Agreed.

**CHAIR**—to give you a chance to show whether it does work or not. In any case, we are having a look at you notwithstanding. Do you have any view about whether or not DMO itself would work better as an agency, separate from Defence, or as a commercialised body—something a la the Telstra model of acquisition—so that you are not a government department, you are a freestanding entity? Do you have a view about whether there is desirability for a model like that?

**Mr Roche**—My instinct is that the current arrangement is not bad, because the connection between us and industry and the connection between us and our customers is important. We have to give our customers confidence—that is, the three services—that we listen intently to what they say. The more we try to commercialise the interface between us the harder it is to gain that trust and interaction. I have no real difficulties working within the defence department framework, possibly apart from some issues in relation to remuneration of professionals. We have a very large number of engineers—mechanical, aeronautical, software and so on—and it is a constant battle to keep our expertise levels up. That is partly because of the remuneration we can offer them and so on. If we had more flexibility on that it would be great, but I do not really notice a huge number of other difficulties working within the Defence framework.

**CHAIR**—You were talking about the level of remuneration the Commonwealth provides compared to the commercial field.

**Mr Roche**—Yes.

**CHAIR**—I was rudely reminded of that just this week when on the front page of the *Financial Review* it said, I think, that the General Manager of the Commonwealth Bank is on \$16.7 million—or was it \$6.7 million—but when I used to fix his wage he got no more than you did, Mr Roche. That was before it was privatised.

**Mr Roche**—Yes.

**CHAIR**—Finally—I am sure my colleagues will have some other questions—can you give us a bit of an update on the personnel reforms that have occurred? In your submission on page 5 you say that you expect less than 20 per cent of DMO staff to be in Canberra. Has that been achieved?

**Mr Roche**—Yes, it has been.

**CHAIR**—Perhaps you can give us a bit of background on that. Then, on page 6, you say that there will be a greater opportunity for movement of experienced people from industry to Defence. To what extent has that happened?

**Mr Roche**—I would have to say little yet. It is still very much early days. The move out of Canberra has gone fairly well. There has been a certain amount of personal disruption, which is inevitable and which we have been doing our best to mitigate. Most of the system program officers are now in operation and we are getting very good feedback from the customer. I think the committee has talked to a number of customers. The relationship is working well.

There are some areas, though, where it is difficult to get people to go and difficult to attract the expertise we need—Nowra, with the naval aviation, is one. Any sort of interchange between industry and us is going to be limited by the factors I mentioned in relation to remuneration and I think that is becoming more of an issue for us.

**Senator SANDY MACDONALD**—Mr Roche, when a new project starts, do you take recognition of the fact that it is important that the project director remain throughout the period of the project?

**Mr Roche**—Yes, increasingly I am doing that. It does not always work out but, with the Joint Strike Fighter, the first thing that I discussed with the Chief of Air Force was that I wanted someone that would be with that program for its duration. That program will run from now until 2012-14.

**Senator SANDY MACDONALD**—That is a very big ask. That is a long time.

**Mr Roche**—That is a big ask. You are asking somebody to put their career into one project, but I think that five years to a critical milestone is a reasonable time, and we have achieved that now with—

**Senator SANDY MACDONALD**—Have you done that with the AEW&C project?

**Mr Roche**—We have done it with AEW&C. Air Vice Marshal Norm Gray is with that project for five years, which takes us, I think, past first flight. I think we actually make it to delivery on that. I would need to check that. It is over the hump in terms of all of the critical software milestones and that sort of thing.

**Senator SANDY MACDONALD**—You mentioned the problem with your salary levels. Have you had an unacceptably high level of separations?

**Mr Roche**—Our turnover is not too bad. I would need to check on the exact figure. We are talking around the nine to 11 per cent rate—of that order. I think that the bigger difficulty is that when qualified service people leave us—there is a very large number of, for example, aeronautical engineers in Air Force—we simply cannot match what industry is offering them when they leave us. I would like to recruit a significant number of those people to stay within the organisation. That is more the issue.

**Senator SANDY MACDONALD**—How do you do that? By making them contractors?

**Mr Roche**—At the moment a lot of them do come back as contractors. That is the only way we can get the expertise.

**Senator SANDY MACDONALD**—What is your feeling about tendering for a product where it is off the shelf? It seems to me that, if a product is off the shelf more or less, then tendering is a waste of time. Do you share a similar view? If the product is off the shelf, you can tender, but the more complex the product, the more innovative the relationship has to be between the purchaser and the person providing the product. If something is off the shelf, it is very beneficial to tender, but if it is not off the shelf there may be more innovative ways of doing business.

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**Mr Roche**—Certainly for anything that is off the shelf that is in commodity form, where we can actually compete it, we do as a matter of course compete it. If you look at the AEW&C program, that is an example of a complex platform which was competed. We looked at the broad solutions available from three or four tenderers and went with the Boeing solution. We have a firm price on it and we have a schedule, but we are working with Boeing in developing the detailed implementation of that solution, so there is a fair amount of cooperative working between us. We have a resident project team in Seattle that is working very closely with Boeing on that. I think it unlikely that we would have gone straight to Boeing without testing the market.

**Senator SANDY MACDONALD**—It has been put to us that there is quite a lot of cost in tendering—two to three per cent.

**Mr Roche**—Yes.

**Senator SANDY MACDONALD**—And it is easy to say, ‘Two to three per cent of all purchases by the Commonwealth in a year might be \$200 million to \$300 million.’ That is an easy figure to say and it is nice to think that that money could be used for something else, but a losing tenderer obviously is going to jam up the price on a tender they are successful on, so there is a cost there that is paid. What if there were a recognition within DMO that, where possible, we should cut down the number of competitive tenders?

**Mr Roche**—Where we can see examples of expensive tender processes, we are doing our best to cut them down. We have done exactly that with the patrol boat tender, where we had a two-stage tender. I think we got 12 to 14 bids in the first stage, which was more of a conceptual stage, where there had to be indicative price but not nailed down in detail. Companies had to specify a price and a price range that they were prepared to stay within so that they could say, ‘Well, our price is X and it will not vary by more than plus or minus 15 per cent,’ and they chose the percentage. That enabled companies to determine for less cost—I am not saying cheaply, because even the first stage was not cheap—whether they were going to be competitive. The three that have gone into the next stage will spend serious money. They will be spending money on tank testing and so on. I think that that sort of process is a sensible one.

We are also using RFIs—requests for information, requests for proposal approaches—which try to sort out the field at an early stage at a cheaper rate. The second thing is that we are doing it faster, and that helps. One of the costs to companies is the cost of keeping a project team fired up. If you have a tender process that runs over 2½ years and the company has a project team of 10 to 15 people tied up for that time, that is a fairly big expense—partly because they put some of their best people onto these teams. What we are doing now with faster processes is cutting the length of time that companies, even the unsuccessful ones, have to stay in the bid.

Thirdly, we are excusing people early from the process. Where somebody is not competitive, we will tell them as soon as we have determined that they are not competitive rather than wait until the down-select stage. That is exactly what we did in Air 87, where we released the first tender, I think, within one month of the tenders closing. We said, ‘You’re not competitive. You should stand down your team.’ Three months later we excused a second one and, at the same time, we said to the third one, ‘We’re holding you in reserve. You’re not our preferred candidate. You should stop spending money.’ They were at that point about to commission some

quite expensive test flying for us and we said, 'You should draw a line under that,' and I think we saved the company probably, straight off, \$100,000.

**Senator SANDY MACDONALD**—I think that sounds good. What you are saying you have done is good. I think that is a move in the right direction.

**Mr Roche**—That is what we are trying to do. We are trying also to be a lot clearer in our requirements. With air-to-air refuelling, for example, there are a lot of solutions out there. Some older aircraft—707s—are still out there. There are other types of aircraft. We believe that the field should be relatively new aircraft. We do not want aircraft that are coming up to their first majors or anything like that. We would prefer something that was on the Australian civil register or likely to be on the Australian civil register so that we could take advantage of maintenance capability that is built in for existing aircraft—something that was based around 767 typically, or Airbus or whatever.

**Senator SANDY MACDONALD**—Surely you could find a few Ansett aircraft that are waiting to be sold?

**Mr Roche**—Yes, but with a few miles on them. We have made that quite clear in the tender. We have said, 'We are looking for near new. By all means you can put in something else, but we're looking for near new and we're looking for something that's going to be on the Australian register. That is a very clear signal to you about what will make you competitive in this.'

**Senator SANDY MACDONALD**—It has been put to us that an important aspect of tendering is incremental tendering, especially with a more complex project. Do you see the Anzac Alliance as an example of that, incrementally? Now, every time the project needs to be changed, it is renegotiated.

**Mr Roche**—This is a difficult question. It is probably more common in software, where people are going for evolutionary acquisition, spiral development and so on. I know I have been criticised by some of the people who have appeared before you and made submissions, about trying to nail down requirements and specifications, and getting out of the company's hair. Where I can, I will actually nail the requirements down at the outset, to let the company get through to the delivery stage without us changing our requirements. My experience has been that, where we have allowed the requirements to change in an attempt to keep up with technology, that has led to overall delays and the whole project has been delayed. It means that we need to get a lot more clever, though, about the specification issue.

**Senator SANDY MACDONALD**—That is right. The old saying is, 'Little fish are sweet.' If you can achieve that, then you have at least achieved that. The other thing is—and obviously you are aware of this—that a reliance on saying, 'Well, we're relying on the contract,' and having people retreat into their corners, saying, 'Well, this is the fine print,' means that the game is really over then, when people start doing that. It is something that we all like to do, but the relationship between the purchaser and the supplier has to be stronger than that, especially when you are talking about such incredibly complex products.

**Mr Roche**—We know, for example, that if we get into a tender situation for a software system that is based on commercial off-the-shelf availability and the project is going to run for five or six years, we can say with absolute certainty that a Pentium 4 will be useful as a boat

anchor at the end of that period. We need to construct a contract in a way that allows that technology to be incremented through the delivery phase without the need for us to be changing specification. For example, with the M113 project we held the signing of that contract with Tenix until Army were absolutely satisfied that they had a solution on the turret. The turret is unique to Australia. It has been quite difficult to design one that has the amount of armour on it that Army want and, at the same time, has the room inside it for a normal sized person. It is a bit of an ergonomic nightmare. We could see up-front that that was going to be a significant risk, so I decided that we would not be signing a contract until that had been nailed. In the past, I think we would have been quite happy to let that run and to have solved it along the way. It is a \$25 million component of the project, and you could almost bet that that would have escalated during the time of the project.

**Senator JOHNSTON**—Did we not nominate a preferred tenderer for that?

**Mr Roche**—For the turret?

**Senator JOHNSTON**—Yes.

**Mr Roche**—It was Tenix. The agreement was with Tenix. There were issues over the power pack and drive train on that, which Tenix selected on the basis of tender. Mr Chairman, I have just checked. The turnover rate on our staff is 11.7 per cent for civilian staff over the last 12 months, which is, I think, not unacceptable for the type of organisation we are. I think if you go much lower than that, you are stagnating.

**CHAIR**—That is all staff?

**Mr Roche**—Civilian staff. The turnover on the military staff would be on the military posting cycle, which would be significantly greater.

**Senator MARSHALL**—Mr Roche, at one point in time Defence was a major trainer in the technical field, so much so that it used to be a major feed for the private sector in that area. Given the nature of outsourcing, the private sector partnership arrangements, the alliancing that is going on, Defence has substantially moved away from being a major trainer in the technical areas. I have seen no evidence of anything more than really a token commitment to training by the private sector, which has taken on some of these responsibilities on behalf of Defence. Are you satisfied that we are going to be able to maintain the technical skill base to be able to maintain the Defence Force within these shores? And, if you are satisfied about that, why?

**Mr Roche**—I thought you were going to ask me a different question, Senator. I thought you were going to ask me whether I was satisfied with the commitment to training by some of our private sector providers.

**Senator MARSHALL**—That is obviously something that—

**Mr Roche**—My answer is no. In aerospace particularly there are some issues, both at the tradesman-craftsman level and at the engineering level. What has happened there has been a conjunction of events that involves some outsourcing but also involves some downturns in aviation and some decisions taken by the commercial airlines in Australia in relation to engineering apprentices and so on back in the early nineties. We have recognised that we need

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to do more on that. There are two ways in which we can do that. One is by building into our contracts a positive requirement for training intakes, which is what we are looking to do in our next round of outsourcing. The second way is to give the companies involved in the provision of the support greater certainty.

The argument is, 'If you give us a short-term contract, we are not in a position to make long-term commitments' to the training of apprentices, trainee engineers and so on. In that sense, it is a fair comment. So we are looking at the length of the contracts to see that the companies involved have an adequate opportunity to train them. Internally, I am working with the Chief of Air Force on some fairly detailed planning on what exactly it is we need for particularly engineering capability on the aerospace side and how we might develop that through career choices, both in the Air Force and in the DMO. That might involve us retaining more engineers than might be directly needed for current jobs, to ensure that we have a decent career structure, a progression of the top end people and to enable us to do things like placements in industry for some of our service people.

**Senator MARSHALL**—Would it be possible under the existing partnering arrangements that are in place for, as an example, the deep maintenance on the F111 that a decision of Boeing to do that offshore could take place without your acceptance?

**Mr Roche**—I would be amazed if that was the case. I would need to check the contract, but I would think that the requirements of the contract would almost certainly drive them to provide that service onshore. My Air Force colleagues are nodding, but I will check that. If there is any possibility—

**Senator MARSHALL**—Would that be a concern to you—that they may choose to do some of this maintenance offshore as opposed to keeping the skill and the knowledge and, in fact, control of that maintenance onshore?

**Mr Roche**—I would be quite surprised if they did, particularly in the case of the F111, because the aircraft is unique. We are the only operator of that aircraft in the world, so there would not seem to be a lot of point in moving it offshore. They are looking at some significant improvements in the maintenance arrangements. We are in discussion with Boeing about that at the moment. It is a different matter in relation to things such as aeroengines, for example. We certainly want to have a capacity to rebuild and upgrade jet engines in Australia. But do we need to do every engine type in Australia?

We are in discussion with a number of companies who are putting proposals to us that say, 'If Australia was to become the repair centre and the rebuild centre for this type of engine, would you be happy for this type of engine to go offshore and go somewhere else?' My answer to that would probably be, 'Yes,' because while it is important that we have an industry capability it is also important that it be a sustainable one and not be artificially propped up. If we can get volume to put in place something that is commercially sustainable, I think the trade-off of allowing some of the other stuff to go offshore is reasonable.

**Senator JOHNSTON**—Mr Roche, we have seen, in our travels in the last four months that I have been involved, some very successful outcomes in difficult circumstances by acquisition and the DMO generally. How long have you been involved with this very big organisation?

Have you seen it through the previous organisations of Acquisition Organisation, Support Command Australia, National Support?

**Mr Roche**—I will have been involved in Defence for three years on Sunday morning. I joined Defence into the then DAO—Defence Acquisition Organisation—which was about 2½ thousand strong, out of the Customs organisation where I was deputy chief. My experience in Defence is just that. We moved fairly soon thereafter—I think within 18 months—to put the DMO in place.

**Senator JOHNSTON**—It strikes me that we can only, as parliamentarians and government, point you in a direction. Do you think that the direction in which you are being pointed at the moment as an organisation is the right direction?

**Mr Roche**—I do not have a difficulty in terms of what government, parliament and the public are clearly expecting of us. I think I mentioned earlier the trinity of cost, schedule and capability and I think that is a perfectly reasonable objective from just about every point—from the point of view of the services, the public and public purse.

**Senator JOHNSTON**—Do you see any unreasonable requirements that we or the government are putting upon your organisation in terms of the demand or the time frame for this quite substantial reform, or any other matters relating to the DMO?

**Mr Roche**—I do not believe we are being asked to do this in unreasonable time frames. I think certainly my minister and previous ministers understood that this would take some years to do—that it was not going to happen overnight. We probably feel that we get more than our share of media scrutiny at times, particularly being thrashed more than once for the same offence. I think we have pleaded guilty to the Seasprite, put our hands up to that, and been thoroughly thrashed. It does cost the organisation in resources to respond to that sort of thing.

**Senator JOHNSTON**—And there is not much point in responding if they will not print it.

**Mr Roche**—No.

**CHAIR**—They will be able to have your response on the record.

**Senator JOHNSTON**—The thing that I personally have come to understand is that there is an enormous wealth of ability and innovation out there in small to medium enterprise in Australia. What do you do to try and keep abreast of that, to solve recurring problems and issues that extraordinarily arise with the management of all of your assets? How do you keep up with the technology that is available out there on the floor? How do you get into states such as Western Australia, Queensland or Tasmania to have a look at what is happening?

**Mr Roche**—We work locally through the SPOs and we have a representative office on the industry side in each state and we have introduced a program of industry visits which take the most senior people in the DMO—the two stars. We have been doing that now for 12 months plus on a regional basis. We are slowly making our way around the country. We have not been to Western Australia yet but it is hopefully not too far away.

**Senator JOHNSTON**—That was my next question.

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**Mr Roche**—We have invited industry to help us by setting up those visits and we have used the industry associations to do it. I think the Newcastle region was the first one, the Hunter region, and the local industry association provided a program where we spoke to something like 12 or 14 companies during the day, ranging from shipyard repairs, through to electrical engineering. We talked to people who built safe equipment for mines, electrical equipment that was completely enclosed—which has application in Defence work. We talked to people at Varley Engineering, for example, who do fire engines and explosives trucks in New South Wales, and I see that Varley Engineering have been issued with a letter of intent from Lockheed Martin on the JSF program. I do not know whether they have taken part in any Defence programs before. We went right down to Spunaloy, which is a nonferrous casting company on the New South Wales Central Coast, which has a staff of 12 or 14, so we covered a fair range.

We have done the same thing in Melbourne. We have been to places such as Rosebank Engineering which do very high-precision engineering, and we have introduced them to Pratt and Whitney and Sunstrand. We have been to Adelaide and we will work our way right around Australia on that basis. It is happening on a day-to-day level. The people working in the SPOs—the Maritime Patrol SPO, for example, and I think you will be talking to someone from there later on this morning—have a good knowledge of the people in their field in the state. What I am trying to do is, at the top level of the organisation, introduce my two stars to exactly the same capability.

**Senator JOHNSTON**—The point I make there is that, for instance, if someone has a solution to a problem in an F111 and they are residing in Western Australia, it is very difficult to get access to the SPO because the SPO is never going to WA. Rosebank is a good example. I notice that Rosebank manufacture a particularly valuable component in the wing of an F111.

**Mr Roche**—Yes.

**Senator JOHNSTON**—When they first wanted to manufacture that—because I think the original equipment manufacturer in the United States is either out of business or simply a single company that does not have a great turnover, or whatever—they were told not to develop that replacement part of the intellectual property.

**Mr Roche**—Yes.

**Senator JOHNSTON**—Given that we have a unique term of life application of most of our imported assets—force elements or whatever you want to call them—what structures inside the DMO do you have for intellectual property management and surveillance, such that we can access these parts, do them ourselves, and keep our longstanding assets airworthy, seaworthy—whatever?

**Mr Roche**—That is a good question. In the Rosebank case, of course, they have in fact now rebuilt that part and the result has been dramatic. We were having failures at 50 hours and I believe they are now up around 1500 hours, and they have not reached half-life. The engineering is absolutely first class. It involved not only high-precision engineering but also some product redesign, so there is a fair sort of capability there. We have changed our approach to intellectual property. We have had a number of approaches over the years and a lot of the focus was on trying to acquire the intellectual property that was the foreground intellectual

property related to the project. You are not necessarily going to own the background intellectual property, the stuff that is already there in the company that they use for other sales.

I think we found that many of the contracts we had were simply not adequate in trying to deal with it. You could not work unless you had access to all of the intellectual property. We have shifted away from a position of ownership of intellectual property, even the foreground intellectual property, to a position where our contracts now say that we want access to all of the intellectual property involved in the acquisition to repair, maintain, develop and extend the existing fleet. It has been done in a way that puts the onus on the contractor to identify areas in which they are not prepared to do that. Previously we were trying to identify everything we needed and you could never do that for 100 per cent.

**Senator JOHNSTON**—When did we start doing this?

**Mr Roche**—We have gone to the exclusion method in the last 12 months. It had to do with the close and personal experience of the Collins contract which was less than adequate on the intellectual property front.

**Senator JOHNSTON**—I note in your submission you say that when you tell someone that there has been a preferred tenderer chosen you tell them that they can stop spending and, indeed, to Senator Macdonald's question you indicated that.

**Mr Roche**—Yes.

**Senator JOHNSTON**—What significance do you put in the advice to a contractor that he or they are the preferred tenderer?

**Mr Roche**—It is a very significant advice. It really means that, subject to a satisfactory contract negotiation, we will proceed to contract.

**Senator JOHNSTON**—So the clear inference and the principle and the practice is that that contractor would continue to spend money, having been advised in writing that they are the preferred tenderer.

**Mr Roche**—Yes. You certainly would not expect them to shut down their project team or anything like that.

**Senator JOHNSTON**—Rafale and ADI was a very problematic event, as I understand it, because you told ADI that they were the preferred tenderer in writing.

**Mr Roche**—We told them that they were the preferred supplier, yes.

**Senator JOHNSTON**—Is there not a problem with that modus operandi in that particular case?

**Mr Roche**—No. I think we made it clear, in this particular case, that they were actually a preferred supplier to the tenderer. We asked the tenderers in the patrol boat project to tender a particular gun. We preferred them to produce a tender, for the Bushmaster 25-mil cannon from

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Boeing and the MSI gun mount from ADI, but we also made it clear in the tender document that tenderers were free to offer alternative solutions where they offered greater effectiveness or better value for money. It was always clear that was going to be done.

**Senator JOHNSTON**—You are saying that was a problem in their understanding of the tender document and the structure within the tender document.

**Mr Roche**—Yes.

**Senator JOHNSTON**—That the gun was not a tender as such.

**Mr Roche**—No.

**Senator JOHNSTON**—When they were the preferred tenderer, they were actually—

**Mr Roche**—Preferred supplier.

**Senator JOHNSTON**—They were actually the preferred supplier.

**Mr Roche**—Yes. We did not treat the gun as government furnished equipment.

**Senator JOHNSTON**—How many other situations have we had where we have told someone they are the preferred supplier?

**Mr Roche**—I would like to draw a distinction, Senator, between preferred supplier and preferred tenderer. This is not a Commonwealth tender process where, at the end of it, we have said, 'We prefer you,' because we would not be leaving open the possibility that alternative solutions could be provided. We did that on this occasion; we left open the possibility of alternative solutions.

**Senator JOHNSTON**—I think we have identified and it is pretty clear that software literacy is a fundamental ingredient in most of the big projects and most of the major problems. When you tell us in a submission that you have undertaken some development of policy guidelines, technical expertise in software intensive projects, what exactly do you mean? What steps have you actually taken? How are you getting these personnel that can protect us all when we are dealing in an area that is so remotely understood?

**Mr Roche**—Just before I go on to that, could I make a final point on the subject of the gun for the patrol boats?

**Senator JOHNSTON**—Sure.

**Mr Roche**—When the committee was sitting in Bendigo I thought the gist of the questioning there was whether we had come back to ADI to allow them to offer an alternative bid. The structure of the process was that we told the tenderers that we preferred MSI as the supplier of the gun mount and Boeing obviously as the tenderer of the cannon. I think we were providing the cannon. The tenderers were required to get a price from ADI. The process was that they went to ADI and got a price for the MSI mount. A number of them—in fact most of them—

chose to go and get a price from other suppliers. There were two other suppliers that they got prices from. If you like, there was a minicontest between the tenderers that offered an alternative solution. It was not the case that there was ADI up there in lights with a benchmark price which other people could then shoot at. Each contractor or potential contractor sought prices from two companies. I might have more to say on that if the committee was interested, but it probably would need to be in camera.

**Senator JOHNSTON**—I appreciate that, yes.

**Mr Roche**—Software expertise: I mentioned that we have gone down the path of the capability maturity management model for assessment of companies. That is a critical part of the exercise. I do not know if the committee is familiar with the CMM model but, if you are not, I would be more than happy to have Shireane McKinnie provide some detailed explanation. Shireane runs our Electronic Systems Division and she would be more than happy to give a brief on that particular model.

It effectively assesses the ability of companies to deliver workable software solutions. It looks at the practices and procedures within the company, levels of expertise, skill and so on. It is quite a complicated assessment basis. It rates companies, I think, on a five-point rating scale. Very few companies in the world would be up at CMMI level 5. Around level 3 would be a rather more normal thing. We have been assisting companies in Australia to get that sort of accreditation. We have been working with CSC—Computer Sciences Corporation—for example, on the Australian side, to get the accreditation to assist them in dealing with the Seasprite software combat system project. I regard that, though, as simply a good housekeeping seal of approval. It tells us that the food coming from the kitchen is probably not going to poison you, but it does not necessarily tell you that it is going to taste really good.

The other part of the problem is understanding exactly how software systems are put together and understanding about software architectures. One of the great problems in the past is that some of the systems have not been well architected, and certainly the management of the companies involved, and we ourselves, have not understood what that architecture is. We have not understood how the thing is bolted together, how it is planned to test it and where the areas of risk are. All we can do is look from the outside and measure progress in terms of ‘fail test’ or ‘pass test’.

We have put all of our senior staff through either a one- or two-week course which takes you through the basics you need to be looking for to assess the structure of a software system. It is not going to turn us all into software experts, but it does mean that we are able to make some reasonably informed judgments about what we are being told is sensible. We have also invested a huge amount in the Electronic Systems Division, in people that are well qualified in these areas and are able to get involved in the acquisition of software projects, and we are increasingly insisting that that division be involved as an adviser or consultant. We are putting people out of that division into another division, so that, if a division is buying a weapon that involves a considerable amount of software, we will move in somebody from that Electronic Systems Division to work on it.

It would be useful if the committee talked to Shireane McKinnie because it is such an important area. I think she is due to appear before you on Friday next. Shireane can explain that in far better detail.

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**Senator JOHNSTON**—Project management systems: Mr Ahern was the gentleman who inaugurated the Prince2 system but that is only in Aerospace. What do we do elsewhere? What systems do you use and what is the alternative?

**Mr Roche**—I think Mr Ahern would like to see it everywhere. It is our standard system and we are gradually introducing it across the organisation. It is in the Land Systems Division. I would think it is also in Maritime Systems Division. I see Admiral Scarce is nodding. I would think that nearly all of the recent projects would be using the PMM system. I do not know what their view is about how we are modifying it. We are changing, as I said earlier, the PMM board approach into shifting some of the responsibilities out of PMM boards—which I think are a problem—into putting the management responsibility back in the project manager, moving the responsibility for stakeholder input directly to the stakeholders, rather than mixing it up with project management, and the governance function we are now running through governance boards. But apart from that we are using it. It is going to be integrated into the standard management method, into SAMS. Again, Ms McKinnie is the world expert on where we are going with our project management systems and she will be delighted to tell you more about that.

**Senator JOHNSTON**—In your submission you very candidly concede that there are problem projects. You have adverted to a number—I think it might have been 20, but I am not sure. How do you feel about disclosing to this committee what you perceive to be the problem projects?

**Mr Roche**—Yes, I do not have any difficulties with that. The top 20 projects are by value. Just looking at them here, we have got Anzac ship, the submarine AEWG, armed reconnaissance helicopters—I could go through these. Anzac ship is not a problem to us. There are a number of upgrades but the thing is rolling off and I think it has been a very successful project. The submarine I think has been well rehearsed—the issues there.

**Senator JOHNSTON**—Would you call that a problem at the moment? I think we have rectified that, haven't we, to some extent? It is too early to say whether it is an ongoing problem, isn't it?

**Mr Roche**—We are having some issues still sorting it out. The capability issues, the issues that I am concerned about, are more ongoing support and how we disengage from Kockums and shift into using Electric Boat as a technical partner. But in terms of capability I think that Navy is pretty pleased with the way that submarine is going. We are close to signing a contract for a new combat system at last and we are not that far away from entering into an MOU with the US for the new heavyweight torpedoes, so capabilitywise it is going well.

Airborne early warning and control is travelling marginally ahead of schedule and budget at this stage. It is under budget. Armed reconnaissance helicopter is a very challenging schedule. The government brought forward the in-service date of that project, but it is on time and we are managing it very intensively. The F18 Hornet upgrade is a complex project. It is an existing aircraft and we are doing it cooperatively with the US and Canada, but overall it is coming together. There are going to be some serious engineering challenges down the road, with the possibility of centre barrel replacement. FFG upgrade is running behind. It is 18 months late.

**Senator JOHNSTON**—Why is that?

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**Mr Roche**—It is software related. Neither we nor the contractor had a good enough handle on what had to be done with the combat systems at an early stage and the contractor had some difficulties with its US partner on that.

**Senator JOHNSTON**—Do we have an alliance there or not?

**Mr Roche**—No, it is a straight contract. Mine hunter coastal ships has been a successful project. We are now coming down to the last of class and there are some minor issues that you would expect in any project. They are really minor technical issues like seawater corrosion in certain piping and that sort of thing, but overall it has been a very successful project—and for the region.

JORN is now coming good. I suggest that if the committee has the opportunity it should have a look at that because there is a limit to what I can say about its capability in this forum but I think the work that RLM—which is a partnership between Tenix and Lockheed—has done has been first class. We are having what I would describe as minor problems finishing it because it is such a big project, and such a large number of people, that RLM are having trouble retaining all of their key experts right to the end without the next job being available. That is an issue of sustainability. Lead-in fighter capability is working well. We are having some issues but it is in there and it is flying. We are having some issues with BAE about some of the capabilities, some of the electronics, which we are working our way through with them. There are some issues in terms of flight line availability but, again, not that I would describe as major.

The Anzac ship helicopter, the Seasprite, is well known. The actual helicopters are there—the bulk of them are now in Nowra. I think that there is one left to come off the production line and one that is retained at the factory for testing; otherwise they are coming through. The New Zealanders have theirs in the air and have, I think, over 1,000 hours on the initial ones and are very happy with the capability. I do not believe that the age of the airframes is an issue. The quality of the anti-corrosion work done on these aircraft is outstanding. They are very good for their type. In a physical sense, that helicopter will be good. The issue is getting that software system up-to-date. The P3 update was a problem, but is now under control. We have now accepted the first six aircraft and that project is coming on stream very well. I do not know whether you saw it yesterday.

**Senator JOHNSTON**—Yes.

**Mr Roche**—The ASLAV project for Army is going ahead without too many difficulties. It is pretty much off the shelf. High-frequency modernisation has been dragging its heels. It has been slower than I would like and has been a difficult project, but not one that I would put in the category of a serious problem. If the committee wanted to explore that further, I would need to come back to you on that.

Air-to-surface stand-off weapons capability is a problem. Air 5398 is the project and AGM142 is one where we have had significant difficulties in interfacing that equipment onto the F111. It is a digital weapon and we need to upgrade the bus systems on the F111 to digital from analog. It has been a lot slower than we would like. We have taken some significant management decisions to force a greater working together of Boeing and Rafale and that is starting to pay off and come good. There is some slight delay in the launch of military satellite communications, but not a major problem.

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Evolved Sea Sparrow Missile is a cooperative project with a number of other countries. It did have a delay earlier this year when it failed one of its tests and is currently running about six months late. Bushranger you know about from your time in Bendigo. In relation to air-to-air missiles, Air 5400 is a cooperative program with the UK. We had issues there, but it is now coming good and the first tests have been going well. ADATS—the Australian Defence Air Traffic System—is a system of air traffic radars. We have had some difficulties with Raytheon on this system. It has been delayed, partly because of the performance of the contractor and partly because of subcontractors to the contractor. ADI is a subcontractor to Raytheon on this and some of it is down to us, but it is now coming good. The radars are being installed and they are becoming operational.

Project Djimindi, which is 2070, the lightweight torpedo, is an alliance contract and I am hopeful that we will be in a position to move on stage 2 of that within the next month or so. The M113 upgrade, which is number 21, is in contract now. That particular project took us a long time to get to contract but, while it delays the availability of the equipment to the Army, I would always rather have a significant delay before contract rather than get into contract and then be fighting afterwards. In this particular case, it was a matter of resolving exactly how we were going to deliver the capability and exactly what Army's requirements were. That is now all sorted. I believe that we have a sound technical solution and I think the project will go ahead without any problems.

**CHAIR**—We might leave it there, Mr Roche. You have indicated your willingness to provide us with further information in camera if we so desire. We will consider that and come back to you. There are some questions we might wish to put on notice, if you would be kind enough to answer those, rather than pursue them here.

**Mr Roche**—Yes. Would it be helpful if I provided the committee with a rather more detailed statement on the reforms that we have been engaged in? It is quite a detailed document, but it might be helpful.

**CHAIR**—That would be very helpful.

**Mr Roche**—It is a decomposition of our themes of reform.

**Senator SANDY MACDONALD**—Who was that prepared for?

**Mr Roche**—We prepared it in-house for a number of reasons. I think the committee may have prompted us—the Auditor-General, next year—and also, from our own point of view, to take stock on where we were at with all of these reforms. It was a useful document.

**CHAIR**—If we have prompted you to do that, maybe we have already served a useful purpose. We will have a look at the document.

**Proceedings suspended from 10.41 a.m. to 10.57 a.m.**

**McKENNA, Dr Timothy John, Acting Chief Defence Scientist, Defence Science and Technology Organisation**

**NANDAGOPAL, Dr Doraisamy (Nanda), Director, Systems Sciences Laboratory, Defence Science and Technology Organisation**

**CHAIR**—Welcome. We had the pleasure of a visit to your establishment yesterday which was, for us, quite useful and illuminating and invites a number of questions before we even turn to your submissions. The appropriate course is for me to now invite you to address what you have put before us and then we will go directly into discussion on that. Whichever one of you intends to lead off, please do so.

**Dr McKenna**—Thank you very much, Senator, and we certainly enjoyed having you out there. Thank you for the opportunity to speak to you do today about Defence's submission and the Defence Science and Technology Organisation's role. As you are aware, Dr Chessell, Chief Defence Scientist, is in the United States at the annual meeting of defence, science and technology representatives from the US, UK, Canada, New Zealand and Australia. As you heard yesterday, a key task for us is leveraging from our international partners. You also heard yesterday, while visiting Edinburgh, that our mission is to provide expert, impartial and innovative application of science and technology to the defence of Australia and its national interests and a key word in that mission statement, for the purposes of this inquiry, is 'impartial'. The DSTO is independent of DMO within the defence organisation.

That said, the first message that I would like to leave with you today is that the new materiel acquisition and through-life support system has allowed DSTO to take a major initiative of greater engagement and support to DMO and DMO has responded positively and effectively to this engagement. The practical result of this engagement is the improved direct support to high-priority projects such as the SEA4000 future destroyer, the Collins improvement project—and you saw some of the good work going on there—and the AEW&C, which Mr Roche mentioned. A further result has been the coordinated DMO-DSTO approach to research and development into finding better ways of reducing operating costs for defence capability when it is in service.

The DMO-DSTO science board has been established to oversight this greater level of interaction between the acquisition organisation and DSTO. The board is chaired by our customer, the Under Secretary, and comprises the executive of both DMO—that is the Under Secretary and all his division heads—and, on the DSTO side, my boss—the Chief Defence Scientist—the three laboratory directors, including Nanda here, and me. The board gives high-level guidance for S&T support to DMO. Typical items for the discussion of the board are DMO priorities for S&T support; specific looks at the S&T support to the key projects, particularly that list of top ones that the Under Secretary mentioned; the project we are undertaking in relation to cost of ownership; the JSF project, taking it forward; the DMO industry sector studies work that is going on; capability technology demonstrator management and the DSTO technology transfer and commercialisation initiatives.

For many years DSTO has had scientific advisers, with a small team allocated to each of the three services and to the central staff of the Vice Chief of the Defence Force. As part of this

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greater DMO engagement, we have had for about 18 months a scientific adviser DMO and a small staff allocated to the DMO. The role of this scientific adviser and his staff is to assist the USDM, the DMO executive and the DMO organisation to gain the most effective support from DSTO. He produces an annual DMO S&T plan and monitors how effectively DSTO delivers against it.

The second message that I would like to get across is that, as stated in the Defence submission, a robust capability development process is critical to successful acquisition. DSTO has increased its support to this process. At the top levels of Defence, a number of committees make the decisions on capability requirements that drive defence acquisition. Either the Chief Defence Scientist or I are involved in all these committees, offering expert, impartial and S&T advice supplied to us by DSTO.

In addition, DSTO—and I mentioned this yesterday—has established a new Defence Systems Analysis Division and a Strategic Analysis Policy Office. Both these groups aid the Chief Defence Scientist and DSTO in providing the S&T advice into the capability development process or improving that level of advice. DSTO takes this a step further by encouraging and supporting joint experimentation to aid in defence decision-making.

The third point I would like to make is that DSTO is working with DMO to assist industry and universities in enhancing Australia's defence capabilities, in particular with the industry sector plans mentioned in the submission. As you heard yesterday, DSTO's people are highly qualified in their own right. However, DSTO is not satisfied to work in isolation from the rest of the scientific community. To increase our knowledge capacity, we leverage off a number of outside sources. These include industry, universities and defence S&T organisations overseas. We have an extensive network of interactions with the S&T sector in Australia that is highly effective.

DSTO this year will spend about 10 per cent of its budget on universities, cooperative research centres—CRCs—and industry. Currently we have 37 research agreements with universities and we are also a major party in eight cooperative research centres, where close interaction with universities and industries is facilitated. Total contributions to the CRCs are increasing, with some \$7.7 million cash and in kind spent in two financial years. We are involved in the current selection round for new bids and for supplementary funds for one that is already going. We have 15 industry alliances with individual or groups of companies. We have 66 licence agreements for IP with industry and significant industry development has been achieved through these licences. I note that you visited SAAB. An industry alliance was signed with Celsius Tech in 1995. That was later purchased by SAAB and we believe that the SAAB-DSTO relationship is very strong.

In conclusion, there are four messages: DMO and DSTO have an effective partnership for better acquisition and through-life support; DSTO is putting more effort into supporting the robust capability development process necessary for good acquisition; DSTO works with DMO to leverage off industry and universities; and DSTO delivers impartial advice to the defence organisation.

**CHAIR**—Thank you very much. Let's go straight to questions. Dr Nandagopal is not going to supplement your submission at this point?

**Dr McKenna**—No.

**CHAIR**—But you will both answer questions?

**Dr McKenna**—Absolutely.

**CHAIR**—Can you tell us what you think are your best achievements and your best contributions that you have made to the defence effort. How do you rank your gold medal performances?

**Dr McKenna**—First of all, in the last three or four years, we have moved to much stronger customer interaction, so that we are considered and valued much more by the defence organisation than we probably were in the early nineties. That move to a much more direct support focus—

**CHAIR**—Is that because you are sitting inside the defence organisation?

**Dr McKenna**—Yes.

**CHAIR**—On the seats in which you are debating the key issues of what the needs are?

**Dr McKenna**—Yes. There are several levels. As I said in the submission, the series of committees, starting right from the Defence Committee, the top committee in Defence—the Chief Defence Scientist is a member of that committee, so he is involved in all the discussions on all the major issues inside Defence. That has always been there. Where we have improved is in the sorts of things that Nanda went to yesterday, which was the Army Research and Development Committee meeting, where we have introduced the system where now a very senior manager in DSTO—in this case it is Nanda—is the corporate leader for the land program, which essentially is the Army program.

**CHAIR**—Dr McKenna, we are talking about a successful process of blending your capability with the needs of Defence.

**Dr McKenna**—Yes.

**CHAIR**—What are the successes in terms of the outcomes? Can you point to some science based achievements which have positively aided the Defence effort, which would not have occurred without you. That is the sort of thing.

**Dr McKenna**—To start with, JORN is a fundamental one going back over 20 years or so; the Starlight capability that we saw yesterday; we brought along Metal Storm, which you saw yesterday. I will probably get Nanda to talk in more detail about the maritime areas. The support that we are now giving to the combat system development in general is another area. Another was an excellent solution for us quite recently in East Timor: we developed in the mid-nineties a concept called Theatre Broadcast, which is based on a satellite pay TV concept, of getting lots of high-quality data into remote locations. We developed what was effectively a capability technology demonstrator—they are not called that. We took it into the field, something that the military had never really contemplated before. General Cosgrove saw it as a commander before

he went to East Timor. Later, when he was going to East Timor, he said, 'I want that capability. Get it to me now,' and a whole bunch of scientists ran around and really got motivated, and we deployed that capability into East Timor, which enabled us to get some quite highly classified information, big data dumps, right forward into the field, and increased the awareness that he had in the process of winning the information war, which I think it was pretty clear he did win in East Timor. That is from my perspective. I will ask Nanda to comment on the maritime side.

**Dr Nandagopal**—I would like to supplement what Tim has been mentioning about the major achievements and DSTO's contribution to enhancing the defence capability, particularly in the maritime area. We would not have had Nulka invented but for DSTO, and that is now entering into service and that is a major capability to the Navy. Nulka is a hovering decoy to protect our ships. It is Australian technology to come out of DSTO. The other one is the LADS, a laser airborne depth sounder. Again this technology has come out of DSTO and has been successfully developed in DSTO. Tenix is now progressing the transition to industry and they are looking at the worldwide market.

In recent times, if you look at what DSTO has transitioned to industry in terms of generating intellectual property, at the same time delivering new capability to the Navy in the area of mine warfare. We have the Australian mine actuation and sweeping system that has been designed, conceptually developed within DSTO, then ADI was brought in and we have now successfully transitioned the technology. Now they are selling all over the world. There is no other system available anywhere else. We continue to promote that. It is contributing not only to our own defence capability but also to national wealth creation.

**Dr McKenna**—Just to take you back to Melbourne: you remember those slides of aircraft being strung up in various rigs. The capability that we have at Fishermans Bend in Melbourne in terms of, for instance, enabling us to maintain the F111 as a single sole ownership country, and the sorts of support services we have for that and also for the F18 program in Melbourne are pretty impressive, in my view.

**Dr Nandagopal**—We have our troops deployed in Afghanistan and they are exposed to quite a significant level of threats. The moment they were deployed, in a very short time we had to design, develop and then transition to industry the development of new desert uniforms matched to the Afghanistan terrain. So we got the digital pattern off the desert terrain sent to us. We used computer technology to generate the patterns to match it and then printed the fabric here and sent it back to the troops in Afghanistan, got their approval and then sent it to the industry, and within a period of three months we did the whole lot and have a new capability to protect them. That is one.

Also, protecting them against land mines: we have the six-wheel drive patrol vehicles being used in Afghanistan to carry our SAS troops around. How do we protect them in that environment? We have developed what we call a survival enhancement kit to augment the vehicles. Again that kit was designed and developed in a short time, with help from LEA, which is the Land Engineering Agency in Melbourne. We shipped truckloads of that kit to Afghanistan and fitted them in the field. We have provided and continue to provide what I call frontline war fighter support, and it makes a huge difference in their ability to operate in those environments, in protecting them.

**Dr McKenna**—Having this close interaction with our customers doing that sort of short-term work quickly is now part of our culture—probably in less time than 10 years ago.

**CHAIR**—You are saying you are more nimble in meeting your customer needs.

**Dr McKenna**—That is what we are trying to do, yes.

**Dr Nandagopal**—Looking at the forefront of technology, during the last two years, since the Olympics, we have developed a unique capability in the country to detect biological warfare agents. We have set up the Chemical, Biological, Radiological and Nuclear Defence Centre in Melbourne as part of DSTO. We applied that initial capability, called a mobile analysis laboratory, during Olympics 2000 in Sydney to make sure that we detect early enough and provide warnings to enable the special forces to deal with situations, and then recently at CHOGM. Also we have developed DNA based detection technology. This is unmanned. You can deploy it in a number of buildings and it will automatically detect and communicate, networked together. If an alarm comes up, it will communicate instantly to the relevant authorities. That is a major initiative by DSTO in giving a new capability to protect our community against this kind of terrorism activity—biological warfare.

**CHAIR**—What is in my head is this equation. The taxpayer supports your endeavours, obviously from your point of view, not adequately, but in a sizeable chunk of taxpayers' money. The outcome for that public investment, these types of 'achievements', is the product that the taxpayers' money buys. Some of those products may well be desirable to keep exclusively for Australia and therefore not commercialised, to give us an edge, but most of them seem to be able to be the basis of a commercial activity. Do the 14 licences that you have cover all of these?

**Dr McKenna**—There are more licences. I think I mentioned 66. It was 14 industry alliances.

**CHAIR**—Alliances, and 66 licences. What income stream do you get from the commercialisation end? What percentage of your total income is that?

**Dr McKenna**—It is reasonably small. It is only in the order of a couple of million, if I remember.

**Dr Nandagopal**—\$2 million.

**Dr McKenna**—Yes, so compared with our \$250 million it is quite small. Going back to our output, if you have a look at the annual report, Defence has six outputs. Our program structure is designed to say that we provide support to those six outputs. DSTO, in those client programs that I talk about, 90 per cent of the money is designed to be supporting back end to producing the real outputs of Defence, which are those Army, Navy, Air Force capabilities, and we are in behind that. We do not have money allocated to us separately to the Defence vote. We get whatever Defence decides is an appropriate figure for us.

**Dr Nandagopal**—Yes.

**Dr McKenna**—Probably 90 per cent of our interest is focused on that. The other 10 per cent, as I said, is focused on the new technologies that we hope to feed. We are not looking for

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enormous income streams into DSTO, say, compared with CSIRO. That said, the commitment to supporting national wealth is certainly something that we are increasing and, as we discussed yesterday, since the days of your time in that area, DSTO is now much more open in working with CSIRO, in working with a commercialisation office to dig deeper. We are picking up in that area but really we see still those streams of income coming in as secondary to our main business, which is delivering what our customers want inside Defence. I think that is the bureaucratic line. Would you like to add some technical points?

**Dr Nandagopal**—While our focus is not commercialisation, we do take industry involvement very seriously. As Tim pointed out, we have a large number of industry alliances and we deal with most of the major industries—ADI, Tenix, SAAB Systems, Raytheon and so on—and try to work with them. Where the return comes for Defence for the taxpayers' money is the return on investment. We are in a very unique situation. We operate platforms like F111s, Anzacs and FFGs—keep sailing, make them sail—and they require a significant amount of effort to continue to operate in those regions. One of the areas where DSTO made a huge difference to the ADF as a whole is extending the life of the existing platforms and platform systems like weapons systems.

**CHAIR**—I take that point.

**Dr Nandagopal**—There is a huge return. We have conducted a number of case studies. In the case of the service life extension of the F111 Crew Module Rocket Motor return on investment, the amount of resource DSTO has spent and the cost savings which the Air Force alone achieved is one to 48, if I remember correctly. That is on the investment we put in—somewhere in that order—and we have done some case studies, like extending the rocket motor's life of the standard missile system we have. Again, if you are able to extend the life, you can only extend the life based on very sophisticated analysis and conducting the safety, by extending by two years and seeing what sort of issues you face, whether you are breaching the safety conditions, and then you go through it and give advice that, yes, you can extend the life of this rocket or this weapons system by two years to four years, otherwise you have to buy them. That is where we see a huge return in investment. The investments also in contributing to the new capabilities which I mentioned before, and there are capabilities we cannot mention in this open forum here, where we keep the technology. We continue to invent new technology and embed on board our existing systems, which we cannot discuss here, and that is where we make further contribution and demonstrate return on the investment.

**CHAIR**—I appreciate that. Australia brings a unique talent in this field—not just in this field; the Snowy Mountains scheme was a good example of keeping technology running in modern terms, well beyond its original design life, therefore saving a huge amount in new capital expenditure. That is a big point. The equation that I am talking about is, here is defence, one of the biggest industries in Australia. You guys are the brains trust, you come up with the ideas with a certain customer at the end of the day, and they are two preconditions for successful industry development policy.

**Dr McKenna**—Yes.

**CHAIR**—How that is spun off and how that finances new indigenous owned industry to pick up world market opportunity is one of the issues that I am interested in. That is where my questions are going. Could you comment on that?

**Dr McKenna**—The licences, for instance, that we have with LADS, with Starlight, with the minesweeping and surveillance system, are cases where the licensees exported millions of dollars worth of equipment or services overseas. We acknowledge it is obviously in Defence's interest to have these sorts of industries being very capable, to enable them to support Defence, both with in-service support where we are working with industry and in new projects. It is in Defence's direct interest to support industries that are helping Defence and we do that, and I have quoted some examples. As I said, we have realised it is not just enough to worry about defence industries.

We need to appreciate that some of the ideas that we come up with are of benefit to the whole nation and the commercialisation office has been set up to streamline that process. It has only been set up for a couple of months but it has already identified about 30 candidate technologies that now can be put through a more rigorous process, in particular of market evaluation. One of the things that certainly DSTO has not had until this group was established is an expertise in relation to what good ideas are sitting in DSTO which have a chance of flying in a rapidly evolving market. That is what we have set up this group to do, and we are starting to move down that chain as well.

**Senator JOHNSTON**—I will commence by saying thank you for yesterday. A highlight for me on this committee has been a visit to your installation. I was fascinated with the three items that I saw yesterday.

**Dr McKenna**—Please come back any time.

**Senator JOHNSTON**—I would like to, yes.

**Dr McKenna**—Particularly the Western Australian group. I do not know if you have been over there.

**Senator JOHNSTON**—No, I have not. I would very much like to go. Looking at the background to your science, I see that you have an enormous user capacity for intellectual property management.

**Dr McKenna**—Yes.

**Senator JOHNSTON**—You have 47 collaborative arrangements, cooperative research centre arrangements and agreements, 18 industry alliances, 64 licensed agreements and you are using seven current licences for intellectual property.

**Dr McKenna**—Yes.

**Senator JOHNSTON**—Now, Metal Storm I saw as a patent—probably one or two or maybe 10 in that system. You are enhancing those patents and you are going to augment them. The management of that intellectual property is obviously very complex and quite unique in some respects.

**Dr McKenna**—Yes.

**Senator JOHNSTON**—What do you have on board in ability to do that and, when you identify those intellectual property issues, how do you manage it? Are you passing and assisting the DMO with that quite unique ability in management of these issues?

**Dr McKenna**—First of all, at the highest level, management of intellectual property is an issue that DMO and DSTO cooperate on quite closely. As we move down the chain, we then have a Business Development Office. Warren Canning, who you met yesterday and is here today, runs that office of about 12 people. It is a relatively small number, but they have the responsibility for managing our intellectual property, particularly for projects where intellectual property is going to be used by the defence industry directly for defence purposes where it is a reasonably closed and simple chain. It is a hard business and we have to be on the alert all the time to make sure that it is managed properly. The second issue is, as we are now moving into the areas that may be useful in a fast moving commercial market traditionally like the CSIRO type technologies, we see that as a different problem which needs additional expertise. That is why we have set up that technology transfer and commercialisation office so that they can look for these different sorts of products that are of interest to the Australian market and of interest to SMEs or whatever.

The final area where we cooperate is in our CTD program. The thing that distinguishes the CTD program from a normal project in the end is that you generate intellectual property. That is effectively what the CTD program does. I have embarked on a program, as the CTD program has matured, to improve the way that we manage our intellectual property in the CTD program, but that is another strand to the intellectual property issue in DSTO.

**Dr Nandagopal**—I would like to supplement that. We have a well established and rigorous process in managing the industry-DSTO relationship as part of our industry alliance agreement. We meet regularly and exchange not only information. In areas where we identify collaborative programs—and Metal Storm is a particular example—they brought in a lot of background intellectual property and DSTO added value to that, extending its application to high-pressure areas, area denial weapons and so on.

As a result we come up with new IP and we maintain an IP register which we disclose to each other at every meeting and, depending on our contributions, we come up with an agreement in terms of the ownership of the end product. We do that in concert with DMO, so we have a good process on that. Bringing in DMO also enables us to take this technology overseas. When DMO holds discussions, particularly with the US in annual discussions on acquisitions, we have something to trade, some smart technology, including these technologies that the US is interested in. That way we create opportunities, new avenues, for Australian industry.

**Senator SANDY MACDONALD**—You say you have a very good relationship with the DMO. Are there any specific changes, either structural or procedural, that the DSTO would like to see from Defence in the way that Defence pursues its aim of being at the cutting edge of technological development?

**Dr McKenna**—What I would like to see is the continuation and improvement of the process that we have established with DMO and DSTO. To be frank, Mick Roche has a lot on his mind and a lot of big things to deal with. One of the things that has impressed me is that every two months, despite all that, he is prepared to sit down with his senior team and with DSTO—we only take two per cent of the Defence budget; he has a lot of other bigger issues on his plate

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than us—and we go through the science and technology board, slowly building up what key issues we need to address and we work through them.

The CTD program is now starting to mature and he is very interested in how that is developing. I would like to see that continue. That has been a very good initiative. The key to the improvement we have seen in our relationship with DMO has been the commitment at the next level down with division heads, the two-star officers, getting quite engaged with DSTO. There was in the past a tendency, which is understandable, for a lot of our work to be sponsored in the capability development process and we continue that, but some of these projects are now very long and we are keen to get more engagement, and are getting more engagement, in the acquisition cycle. An example of that has been Shireane McKinnie's visit to DSTO where she met for two days with Nanda and Neil Bryans, the other director. I do not think that has happened in my time.

**Dr Nandagopal**—We have made a tremendous improvement in the relationship with DMO.

**Senator SANDY MACDONALD**—Yes. You said you have a good relationship with them. My question was really about any improvements.

**Dr Nandagopal**—Yes. I will give you an example. Three years back, DSTO were involved extensively in the capability development process. Once the agreement contract was signed, DSTO did not have much involvement. But in the last three years there has been improvement. DSTO was involved extensively in supporting DMO's initiative in addressing the issues relating to the Collins class submarine. As you all know, the combat system has been the one which is giving us a lot of problems. We went for an interim fix to bring at least two submarines to full combat capability and the US Navy has been able to provide us with some software and hardware capability to augment the existing one.

In fact, even the laboratory you saw yesterday, the Undersea BattleLab, was established to support such activities. We have a virtual submarine architecture, where you can roll in hardware and software, integrate and create a virtual Collins there. They addressed the integration issues. We did that to support DMO. DMO is fully behind us and seeking our involvement and support and we addressed all the issues. Integration is not an easy thing. It is a very complex process because the architectures have grown enormously—a quantum jump—in complexity of software architecture—that is, the way the individual pieces are put together. The sonar system, the weapons systems and the navigation systems all work together. Then we provide that information to the crew. We have done that in the lab and then took the pieces back into the HMAS Collins as a prototype.

Following that is the replacement combat system we are going through now. Our relationship with DMO has improved to an extent that now they have involved DSTO in a technical direction adviser role and it is fully funded because it is a commercial activity to support the industry and DMO in making sure that we do not revisit problems we encountered with the integration process. We are now setting up a technical direction advisory role, a cell within DSTO, that is focused to provide support to DMO. We would not have seen this three years ago. That is a flagship in my view to demonstrate the relationship.

**Senator SANDY MACDONALD**—In layman's terms, that is the DSTO responding to a request from DMO to do something. Is that, at the same time, bidding for DMO funds? Do you bid for funds from DMO for specific projects?

**Dr Nandagopal**—DSTO is not responding to just requests. It is a mutual process. DSTO recognised the problems. As a nation, we do not have enough skills to address system integration complexities. We have to face that one. If you look at all the major difficulties we have had in defence acquisition and also outside of the defence sector—if we go to the electronics sector—we have the same problems. Every country, even the US, has the same problem of not having enough skills to address system integration. But they have huge amounts of money and they bring in three companies and fund three different companies to address the same problem and they pick the winner. But we have a problem with the lack of skill base in the country and this is not only in Australia but in the entire region.

**Senator SANDY MACDONALD**—I can understand what you are saying. I am just trying to get it clear in my own mind.

**Dr Nandagopal**—I am just coming to that. We recognise that. We have had multiple conferences with DMO and shared the view that the critical problem which contributed to the failure of these was because of our lack of skill in system integration, so we needed to take a coordinated approach. We share that view and DMO has a similar view, so together what can we do about addressing that? That is how this concept of technical direction advisory outfit emerged.

**Senator SANDY MACDONALD**—You might say, 'Look, DMO have this problem.' They ask you to do it and it is a cooperative and you do it. But you could respond, 'No, the scientists are actually not busy today. They are looking into dolphin technology. That is something we are interested in at the moment. We might come to you in a little while.' I know that is a stupid example, but I was just trying to work out the client relationship, the friendship relationship you have with DMO.

**Dr McKenna**—There are two ways that we can deal with it. One is that a percentage of that DSTO funding allocated to a particular program—be it land, sea or air—is directed to DMO. In different areas that is quite substantial, particularly in the air program. But as well, for some projects, some funds are often allocated by that project to DSTO or to industry. They are the two models.

Having said that, we make a broad distinction between the 10 per cent of money which is the blue-sky work—and that is set aside—and the 90 per cent which is devoted to the particular program. If a customer within that program—let's say it is the AEW&C project, which is in the air program but is a component of that air program—is bringing dollars and saying, 'Use some of DSTO's dollars in this program. We have this serious problem and it needs to be fixed,' then we will drop everything and get on with that.

**Dr Nandagopal**—At the end of the day it is a matter of juggling between support you are providing to keep the fleet going and also enhancing the fleet. You have a fixed amount of dollars in your bucket from an R&D point of view. I am also involved with all the maritime R&D in DSTO, so I go back to my customer, the Chief of Navy and say, 'I'm going to change the shift because I feel this is where the effort should be going.' In a short time you shift the

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balance. If they concur it is okay or if they do not concur renegotiate and then DMO has to come, too, because that is a priority for DMO, then they have to fund that. This is where the relationship we have improved in the last three years goes into understanding and identifying the problems before they occur and then try to develop an infrastructure that will support addressing that problem as a risk mitigation strategy.

**Senator SANDY MACDONALD**—Do you have a formal opportunity to bid for DMO funds?

**Dr Nandagopal**—We have, yes, through the acquisition process. We work with DMO in assisting evaluating the candidate systems, for example, the tender evaluation working groups. DSTO participates extensively in looking at the technical problems, the infrastructure problems, the software integration problems and supportability, reliability and sustainability issues. Then we advise them. If we are going to bring in a capability like the ARH—the armed reconnaissance helicopter—we are bringing a new capability into the country; the Army is not used to helicopters firing missiles. Also it brings with it a very complex mission system. Like, in combat system they have mission systems on airborne platforms. If we want to successfully integrate it and then upgrade it continually, this is the kind of infrastructure we need. We build that into it as part of the project.

**Senator SANDY MACDONALD**—And you have been requested to do that by DMO?

**Dr Nandagopal**—No. We work together. When you are part of the tender evaluation process, you identify these things. The tender evaluation working group consists of people from DMO, people from Capability Systems and in the case of Navy, people from operational Navy and DSTO. So it is a team working together and recognising the need and they make recommendations. It is not in all cases that DMO agrees with us. We always have a difference of opinion. At the end of the day we are going to deliver a capability and it is an Australian team approach.

**Senator JOHNSTON**—Can you tell me what the driver has been for the improvement in the relationship?

**Dr Nandagopal**—It is the reforms that they have been going through and the recognition by DMO, in particular Mick Roche. We have an easy access to Mr Mick Roche and we are able to talk to him. I have had one-on-one discussions several times in the past. That has not happened in the past, so there has been a fair bit of initiative from Mick Roche as well in making himself available and listening.

**Dr McKenna**—To pursue that a little further, the issues around the materiel reform process are not just DMO's issues. It is one of the clear initiatives in the renewal process that was recently announced by the secretary and CDF and has been going on for the last two or three years. DSTO said, 'We've got to play our part in this' and that is why we put those key strategies in our plan and we have been getting on with it. It is not just a question of DMO coming to us and saying, 'What can you do better?' It was certainly us going to them and saying, 'We think we can help you.' We need to learn to do it better. The closer you get to the acquisition process for a lot of scientists the harder it gets. It is a process we have to work on. It is really an acceptance by DSTO that this is a defence problem and that we want to be in there working to help improve it.

**Dr Nandagopal**—DSTO, as Tim mentioned before, is a totally independent organisation. We always have a position and at the end of the day we have to deliver the capability and minimise the risk. We have to work with them.

**CHAIR**—Let me come back to my main interest. Are the 14 alliances that you have set out somewhere here in your submission?

**Dr McKenna**—No, they are not. I think I put them up in my talk yesterday.

**CHAIR**—Could you provide us with a list of those alliances and what their purpose is?

**Dr McKenna**—Yes. If I may, Senator, what I will do is get that presented to you separately.

**CHAIR**—Yes. I am suggesting you take this on notice. I am not suggesting you do it now.

**Dr McKenna**—Thank you.

**CHAIR**—The 66 licences that you have: this is intellectual property that you own that you have licensed for commercialisation or manufacture by some other entity.

**Dr McKenna**—Yes.

**CHAIR**—Is it possible for us to have a list of those licences? If there are any high security matters, you will obviously flag that or not reveal that.

**Dr McKenna**—Yes.

**CHAIR**—I did not take down how many CRCs you are associated with, but there are quite a number. You did show us yesterday the purpose of those CRCs.

**Dr McKenna**—Yes. Would you like information on them as well?

**CHAIR**—I am interested in who are the commercial partners in those CRCs.

**Dr McKenna**—Right.

**CHAIR**—Coming back to the formula of taxpayers' investment for the output: you are an ideas factory with a secure customer. In between someone has to make the goods that you dream up and that Defence wants. Who are those entities and how does it spread in terms of Australian industry capacity? This is not meant to be an odious comparison at all.

**Dr McKenna**—No.

**CHAIR**—For example, yesterday we were at SAAB, which is a world recognised engineering company. It comes from a country whose population is half that of Australia but whose industry base is probably three or four times stronger than ours. One of the questions for our industry development is—I think you can bypass the smokestacks—how we get to that high technology base for Australian industry. You would have to be, from a public investment point

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of view, one of the strongest institutions to lever from, if that was to be the growth path. I am trying to get a picture of how well we utilise this public advantage.

**Dr McKenna**—We will give you as much information as we can on that.

**CHAIR**—Yes. Is there anything else you can address to us? If I am a scientist and I wander in with some scheme—maybe I am Metal Storm and I come along—how do I present myself to you and what do you then do? Presuming my idea has some merit, what pathway does that take?

**Dr McKenna**—Do you want to talk about Metal Storm itself?

**CHAIR**—Yes, it probably would be worthwhile, because this is world leading edge technology.

**Dr Nandagopal**—Going back to 1996-97, I was running the Weapons Systems Division within DSTO, this came out of the blue. We had no interaction and no knowledge of Metal Storm company and—

**CHAIR**—It is entirely improbable that a supermarket manager would come up with a revolutionary new gun.

**Dr Nandagopal**—Yes, that is right. He is not a scientist and he has come up with a very simple, elegant concept of firing multiple bullets from a single barrel. I have 200 scientists behind me in the weapons systems side and I did not shy away from this. Immediately we went and saw him and brought him here. He was indicating a simple concept and immediately we wanted to see how we could expand and provide an opportunity for this to grow and provide some R&D to underpin this concept, to demonstrate conceptually by developing simulation modelling so that I can convince big players in this game. Warren was instrumental in helping me to get initially an enabling R&D alliance with Metal Storm company. They have provided the background intellectual property, including their gun, which you saw yesterday in the 60-metre long tunnel. We experimented with it, modelled it. Then I went over to the big player in the US. US Defense spend \$7 billion of R&D investment to support the US defense forces, compared with what we spend of \$250 million or so. Nevertheless we have extraordinary scientific credibility with them and as a result they really opened up and gave us a lot of access. We enjoy that position and, with DARPA, I demonstrated this technology for one full day. I had to stand up with Mr Michael O'Dwyer, and talk about the merit of this technology and the jump it has made in gun technology and the applications. They immediately wanted to support it and they have sanctioned some money to support it.

As a result we have grown that one. We have gone to the customers and had a series of meetings with the customers. The DARPA director for the first time visited DSTO with his entourage to come and look at this technology for himself. To cut a long story short, in this whole process DSTO proactively have basically supported this technology and provided the R&D support and contributed towards a new capability, not only to ADF but also to the US. That has resulted in a number of programs going on in support of Metal Storm, including the two CTDs, which Defence is funding, the area denial weapon system and the advance individual combat weapon system.

**CHAIR**—Where is Metal Storm up to now? Is it still a developmental concept? It is not in actual manufacture?

**Dr Nandagopal**—It has not gone into actual manufacturing. The Metal Storm company, I understand, is looking at other avenues in the US to try to buy into a manufacturing company and take this one to a level where we can do some field demonstrations. I think that is where the CTD on AICW and area denial weapons system would have come in handy.

**CHAIR**—Who owns the intellectual property for Metal Storm?

**Dr Nandagopal**—The current intellectual property is owned by them and DSTO has come up with a new intellectual property that would take the Metal Storm technology to high-pressure applications. Although we invented it, we have assigned to Metal Storm the advantage to increase the level of our probability of success in the business, so they own it at the moment.

**CHAIR**—But who owns the developmental intellectual property that springs from their initial concept, which you have invested in? Does Metal Storm own it, do you own it, or do you share it?

**Dr Nandagopal**—We share it. We have unhindered access to it. Metal Storm owns the IP.

**Senator JOHNSTON**—They license it to us and we have expanded and value added to it and we get a royalty back from them for the work we have done.

**Dr Nandagopal**—Correct.

**Dr McKenna**—There is another whole group of scientists that we do interact with, of course, and they are very much fixed in Australia; our universities.

**CHAIR**—Dr McKenna, can we come to them in a minute. I just want to exhaust this issue for a moment. I am one of those people who happen to think that the only commercially available complex and sophisticated technology in which Australia leads the world is in Aluminium Fast Ferries—and it may be that the manufacture of Metal Storm would be another one in which we lead the world—but, because of the operation of the Jones Act in the United States, we cannot sell our world-leading technology for commercial use in their market.

I am one of those people who happen to think that, even if we have a free trade agreement with the United States, the Jones Act—which has existed since the Civil War—is unlikely to be removed and that bar to our exports, which is a major potential market for us, is likely to remain. As a consequence—and I want to make it clear that this is my view and certainly not the view of the manufacturers—to some extent, the Pentagon has used its potential market strength to encourage, along with other commercial considerations, the two Australian manufacturers, Incap and Austel, to buy into American companies and locate behind the export barrier within the United States. This is an example of technological transfer from Australia to the US.

What can you say to me about the manufacture of Metal Storm, given that it is so promising and given that its share market value is still quite strong? A lot of investors out there think that this is going to go somewhere as a real product. What can we look forward to, given the public

sector input into the development of this as well? Will it be manufactured in Australia or will it be leveraged offshore so that the actual jobs that flow from this new breakthrough occur in an economy other than ours?

**Dr Nandagopal**—It is hard to say at this point in time. It is market driven and what is the market within Australia for such technology?

**CHAIR**—But Saab cars are manufactured in Sweden. No, let's not pick on Saab. Mitsubishi cars, in the main, are manufactured in Japan. Some are manufactured here, but mostly they are manufactured in Japan and we buy them. Nissan is a good example. Volvo and BMW are other examples. The site of manufacture is not vitally important to where they are sold in that context. Why is it therefore, in this context, likely to be a decisive factor?

**Dr McKenna**—Senator, I am not sure I can comment on the manufacture. What I can comment on and what DSTO can influence is making sure that we at least keep in Australia the expertise capability, both in industry and universities, in relation to R&D and making this a knowledge centre. The issues of industry support in the manufacturing phase are a bit outside our area, but certainly from our perspective what is very important is that we nurture in Australia the R&D skills to support going forward in our own market. Where those industries are established—for instance, in relation to the F111s where we are the sole owners of that capability and, for whatever reasons, the industry is here—we are in there supporting them.

**CHAIR**—We are essentially the sole user of F111s as well.

**Dr McKenna**—That is correct, yes.

**CHAIR**—It isn't as if there are a dozen countries out there all using F111s to whom we can sell that capability.

**Dr McKenna**—All I am saying is that there is only a certain arena in which DSTO can operate but, in relation to the R&D aspects, we want to nurture that industry in Australia and where industries have been established in Australia—the shipbuilding industries and the support to our aircraft—we are in there working with them.

**CHAIR**—This used to be the formula on the commercial side; the non-defence side: the initial idea is \$1, to develop it is about \$5, to commercialise it is about \$20 and to bring it to market is about \$100. The least value added part of this chain is the initial idea but, without that, the rest of the structure falls down. The initial idea with Metal Storm is the dollar. You are putting up the extra dollars for development, along with their investors, but the real economic advantage comes with commercialisation and bringing it to the global market. I think what you are saying to us is, 'Our expertise is earning that buck up-front. The rest of the income chain goes offshore.'

**Dr McKenna**—I am not saying that that occurs all the time. It is not just DSTO that is a part of this process. An example of one where we have been successful is in relation to Starlight. The initial idea was in DSTO. We involved a small company, which was Vision Able, in developing it. The defence department then realises that this is an important technology for Defence and wants to make it happen. We then establish a major capital project to make it happen. I think there was some support from another program, but I cannot remember that.

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What I do know is that there was a capital program to bring this technology from a bright idea to something that Defence could use. As that was going on, I assume Tenix must have concluded that Vision Able looked like they had something fairly useful there. They were probably undercapitalised—I do not know—but essentially Tenix then takes them over and says, ‘We think we can take this offshore as well.’ So the basic Australian project inside Defence was the seed to enable Tenix to invest some money and sell that project offshore. I understand that that is all being manufactured in Australia, but I cannot comment.

**Dr Nandagopal**—Senator, your question is very complex. It is a real issue. I am not sure how much DSTO, as an R&D organisation, can contribute, but it continues to influence the process. You have heard about the number of licences and the number of industry alliances we have had. Now we have gone to the next level, where we transcend all current projects and position industries strategically, teaming up with them and looking at where the existing industries with good bases—like SAAB, ADI, Tenix and so on—want their niche to be in a 10- to 15-year time frame. They are not putting up a great deal of R&D money, but DSTO has continued to put in 10 per cent of money, looking at long range and looking at whether we have some synergy in terms of where industry wants to be and what DSTO is doing, trying to pool those resources together nationally, and then addressing that and helping to support in the development of that strategic position. I am passionate about developing what I call strategic R&D partnership with industry and we are continuing with that. We are going to sign a strategic partnership with SAAB very soon and we are negotiating with Tenix at this point in time.

**CHAIR**—This is a bigger question than your evidence today and the issues that we are canvassing here. It seems to me that Australia buys so much defence equipment from the United States. If, for example, the US Marine Corps decided that its amphibious vehicle of choice was an aluminium fast ferry, shouldn’t we, at high-policy level, be saying to the US, ‘Build what you require to meet your orders in Australia, get a bit of a balance in defence trade and create the jobs where David and I live and where the real IP and the skills base are.’ The problem for the fast ferry industry in the United States is that they are investing a huge amount of money in simply training people to do the job that Australians can do, but we cannot sell to their market.

That is one of the background questions in this of a higher policy content. That requires a bit of thinking through when we come to our report. Can you tell me what share of R&D expenditure you outlay—what is D and what is R?

**Dr McKenna**—The simplest split is the 90-10 I spoke about before—10 per cent for technologies that we are exploring in relation to bright ideas, if you like; the other 90 per cent devoted to supporting our customers directly. We call ourselves a science and technology organisation, not an R&D organisation, in that some of our science is quite soft. We have a lot of work going on in human factors. It is a difficult enough problem integrating these combat systems, but then actually getting them to work with—

**CHAIR**—These are ergonomic issues, are they?

**Dr McKenna**—That is correct, yes. How do you get these things to work with people that are tired and stressed?

**CHAIR**—Let me know the answer to that one, will you?

**Dr Nandagopal**—I would say that development is minimal. Whenever there is development work, we bring industry in. The bulk of the work is research and the research is split between customers and the really long-term blue skies.

**CHAIR**—Thank you. I have no further questions. You can add my name to David's for the West Australian excursion.

**Proceedings suspended from 12.03 p.m. to 2.20 p.m.**

*Evidence was then taken in camera but later resumed in public—*

**HAMMOND, Mr Nicholas David, Managing Director, SAAB Systems Pty Ltd**

**CHAIR**—Welcome, Nick. I can say on behalf of the entire committee that we enjoyed our visit yesterday to your establishment, SAAB Industries, and thank you for the lunch you provided to us. We apologise for being late back from our lunch today, but such is the service that we were unable to get back on time. However, the floor is yours, and please proceed.

**Mr Hammond**—I have been the Managing Director of SAAB Systems, which was formerly CelsiusTech Australia, since January 1997. Prior to that I had worked in what is now the DMO since late 1989, initially as project director for the Anzac ship and subsequently as head of the Navy Materiel Division and finally the Defence Materiel Division. Our submission and my comments today are based on what I hope is a balanced view between the customer perspective and the supply perspective of Defence acquisition.

There are a number of recommendations in the submission, but this afternoon I want to just emphasise a couple of themes that I think are important. The first is the organisation and structure and the culture of the DMO. I do not think that the DMO is as bad an organisation as you might think from reading press reports and other things like that. In comparison to equivalents in other countries, it holds its own well, and I acknowledge that there have been a number of significant improvements recently, most importantly I think the combination of acquisitional logistics into the single organisation, and the establishment of system program offices which look after systems from cradle to grave.

The potential is there, but problem I have is that I do not think these improvements will be able to yield the benefits until the DMO can extract itself from the department of state organisation that it currently is. It is part of a government department. I think it has to become an organisation which can compete in the marketplace for the skilled labour that it needs, and which can develop a culture where the expression ‘time is money’ means something. To achieve this, it seems to me that some sort of corporatised structure has to be explored. There are some examples. The UK Procurement Executive has gone some way towards that, but not all of the way. There are obvious risks in that approach but the potential benefits seem to me to make the attempt well worth while.

The second point I want to make is on the current excessive use of professional service providers. Given the major loss of expertise from the DMO in the last five or six years, the organisation has had no alternative but to hire consultants or, as they are called, professional service providers, simply because it cannot compete in the marketplace with industry for salary or job satisfaction or anything like that. The contracts of professional service providers are almost always time and materials, and the individuals who are employed that way have an obvious conflict of interest, which I do not think can be escaped, between doing the job for the DMO and in meeting their own ambitions for tenure and continued revenue. The result, I think, has been a continued growth in the cost of doing business with Defence, a proliferation of processes and systems which add very little value, and continued growth in the size of Defence project offices. The two issues obviously are related. A corporatised DMO that could compete in the marketplace could develop its own expertise and could employ PSPs in the role for which they are best fitted, which is to do the basic sort of dog-work but not to be in the decision-

making role. That is all I have to say as an opening statement. I am happy to take questions on the submission or anything else.

**CHAIR**—Senator Macdonald will ask questions first because he has to leave in a few minutes.

**Senator SANDY MACDONALD**—I want to ask you about tendering when the product is not off the shelf. I think there is something in your submission about the fact that where the product is not off the shelf it is very hard to have a worthwhile tender arrangement. Do you have any suggestions that might make it simpler?

**Mr Hammond**—I think what the submission suggested was that normal competition, where you call tenders against the specification and pick the best value for money tender, is appropriate in circumstances where the product is reasonably well defined and, if not off the shelf, is close to being developmental. Once you get away from that, once you get into building a brand-new product, like a submarine, an over-the-horizon radar or a ship combat system, it is much more difficult to do that, for a number of reasons. One is simply cost; the cost of competition when something like two to three per cent of companies' prices are reflected in their marketing costs. A short list of four gives you somewhere around 10 per cent of the total cost which has to be met by the tenders that you win. So it is expensive.

It precludes the ability to have an intelligent discussion between the provider and the Commonwealth on the requirement—the opportunity to identify cost drivers in the requirement—and for some of these complex systems these are very high cost drivers and there is a tendency for a number of them to exist; things like a requirement for a particular range which, if it were reduced by five per cent, might cut the cost down by 30 per cent, that sort of thing. It is almost impossible to identify those prior to going into tender. The result is that—

**Senator SANDY MACDONALD**—It stifles innovation as well.

**Mr Hammond**—To a degree. I think competition is a good spur for innovation as well, so I would not want to say all one way or the other, but it certainly stifles the ability to identify those cost drivers. In those circumstances it seems to me that, where there are a number of well-qualified companies which clearly have the capability to offer what is available, then a tender might be appropriate. Where there is more likely to be a natural monopoly, then some other method of getting to the best value is a much more appropriate way of doing it and will save both industry and the taxpayers significant amounts of money.

**Senator SANDY MACDONALD**—But even where there is a natural monopoly, the preferred method might be to have incremental tendering as well.

**Mr Hammond**—Certainly there are benefits in not trying to take one giant step—in other words, not trying to reach the full capability each time you let a contract.

**Senator SANDY MACDONALD**—Do you think that has been a fault of the DMO or Defence in the past? I guess it is a mistake that we all might make. We might say, 'This is an enormous project. We want to know what it's going to cost. You tell us,' and that's it.

**Mr Hammond**—Absolutely. It is a natural human failing to want to get the most the earliest possible. The people who write the requirements naturally are not willing to downscale their requirements to what might do as an interim; they want to get it now. But I think there are benefits if we can find some mechanism to balance that tendency with the thought that a more incremental approach is likely to give a better result. In other words, small steps lead to a higher probability of success, lower consequences of failure and an ability to understand better for the second step what the real requirement is. It is very difficult to understand initially, if you do not have something, what you really want from it.

**Senator SANDY MACDONALD**—From a national perspective, do you have an opinion on whether, all things being equal, it is better to buy something off the shelf and develop it ourselves?

**Mr Hammond**—I think it is a balance. If there is something on the shelf that clearly meets our requirements and would be significantly more expensive to develop ourselves, then we should just go offshore and buy it. A good example of that is tightly integrated products like fighter aircraft, that sort of thing.

**Senator SANDY MACDONALD**—I was thinking more of software—for instance, in terms of our strategic needs, dealing with an East Timor deployment of ADF troops, where something cost \$30 million to develop but something at \$50 from Dick Smith might nearly do the job.

**Mr Hammond**—Yes. I think probably it is far too extreme an example.

**Senator SANDY MACDONALD**—Yes, that is too extreme.

**Mr Hammond**—I think products that you might deploy in East Timor, for example, are really not available off the shelf. ‘Off the shelf’ in that context I take to mean ‘Buy the UK or the US equivalent product.’

**Senator SANDY MACDONALD**—Yes.

**Mr Hammond**—The problem with that, of course, is one of scale. Taking the US as a source of these sorts of products, they are designed for an army that is 30 times the size of ours and they are designed inherently to use all sorts of assets like satellites and other communications devices we do not have. So we buy it and we plonk it into an Australian context and it really is not very much use to us. With those sorts of systems, there is pretty much no choice but to develop our own in Australia.

**Senator SANDY MACDONALD**—Yes. It is impossible for us to make a judgment, but the American equivalent of the P3s, for argument’s sake, are going to be pretty good. They might not be as innovative or as good as ours, I do not know, but in terms of the interoperability and the common threats that we face, you might have a view as to whether it would be just better to buy a P3 from America and say, ‘Well, this is it.’

**Mr Hammond**—It may be. At one extreme I would put the JSF fighter—an obvious no-brainer to buy it from America. At the other extreme I would probably put a system such as BCSS, as you saw, which is very much integrated with the way the Army does business and with the size and the scale and with available communications. In that range of projects in

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between, it is a judgment call. You have to make the best judgment you can. I think there is probably a tendency to over-Australianise things—the classic case is putting the pie-warmer into the back of a Hercules at a cost of thousands of dollars. There are obvious anomalies like that. But looking back, looking at the range of Defence projects with which I am familiar, I would have said that the judgments have been largely reasonable.

**Senator MARSHALL**—In your submission you are very supportive of alliance contracting and you have talked about encouraging the DMO to continue looking at other innovative ways of contracting and outsourcing. Can you tell me what sort of experience you have had with alliance contracting in particular?

**Mr Hammond**—SAAB is a member of two alliances. The first one was a suballiance for the lightweight torpedo where we were effectively a subcontractor to the lightweight torpedo alliance but the subcontract was in alliance form. That was satisfactory. It was quite a small contract, simple, okay.

The second one which we are currently operating is the Anzac alliance. That is an alliance between the Commonwealth, Tenix Defence and SAAB, for basically future changes of the Anzac ships. We expect in a couple of years it will also roll in the support contracts which Tenix and SAAB have. That has been in place now for about 15 months. I think the results that have been demonstrated already indicate the value of alliance contracting. I will give you a couple of examples. In the seven years now since the first ship was delivered, only one significant change was achieved under the previous method, which was to amend the head contract. That was the integration of the Evolved Sea Sparrow Missile into the ships. We spent several years going around the buoy on other changes like the Harpoon missile, upgrades to the combat system, without ever getting to a point of contract.

In the 15 months since the alliance was formed those two examples that I mentioned are now under contract. The prices have been submitted and accepted and the work is actually under way. A number of other smaller changes which were having the same problem—we could not get them through the system—are either implemented or in the process of being implemented. A couple more—one quite significant, a \$500 million proposal—have gone right through the costing stage, so there is a firm tender quality cost available to Defence for approval. I think on the basis of actual achievement it has done well.

**Senator MARSHALL**—Can I just ask you to explain that a little bit. It just sounds to me like you were saying that effectively the alliance writes the specifications for the tender and then puts it out to tender.

**Mr Hammond**—No, Defence writes the requirement—in other words, what performance the change has to meet. For example, it has to have the ability to fire Harpoon missiles to meet the following performance specifications. That is done by the following performance requirements. The alliance takes that and turns it into an engineering specification. That is approved by Defence. It then provides costings, firstly to develop a target cost estimate—which is the equivalent of a final tender—and then for the whole task. So it goes through that process.

The difference between this and the normal method is that the alliance—that is, Defence, Tenix and SAAB working together—develop the engineering specifications, as opposed to them being developed independently by Defence. That is why it is a much quicker process and, as I

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said before in response to the question about competition, that discussion develops the design which meets the requirements of the lowest cost. That includes negotiating the requirement. In other words, if we reduce the requirement by this small amount, we can save this amount of costs and Defence makes the judgment, 'Yes, that is acceptable,' and we go ahead on that basis. That is something you could not do in a normal arm's length contract.

**Senator MARSHALL**—Do you have any examples of other innovative forms of contracting?

**Mr Hammond**—Partnering was the forerunner, if you like, to alliance contracting. That is one where you endeavour to get the two parties aligned in terms of what the outcome is going to be. The difference between partnering and alliance contracting is that the alliance contracting provides a contracting mechanism that ensures that that alignment is maintained. In other words, the alliance as a whole succeeds or fails in any given contract. If it succeeds, the client, the Commonwealth, is obviously happy because it has achieved the result and it has saved some money and the industry partners get paid more than they otherwise would have. If it fails, it all fails. The Commonwealth has to pay more money and the industry partners take a loss.

The difference between that and the normal contracting hierarchy with prime and subcontractors is that if something goes wrong everybody is in the same boat and everybody tries to fix it. In other words, if Tenix's project manager for a particular component of the work was to be run over by a bus, we would do our damndest to find someone to give to them to get the work done, rather than just sort of say, 'Well, Tenix has got a problem,' because their problem will cost us money. That is a fundamental difference between alliance contracting and traditional contracting which does make a difference. I am not saying it is a panacea, I am not saying all alliance contracts are wildly successful, but I am saying that the mechanism of it, applied appropriately, has a lot of potential.

**Senator MARSHALL**—In terms of your alliance arrangement, especially for the Anzac frigates, where do you source your technical staff from?

**Mr Hammond**—I guess we take about 30 per cent of our staff from ex-military and ex-Defence people and the remainder we grow from graduates or other industry people that we recruit. We have about 30 per cent ex-military and 60 per cent or 70 per cent graduate engineers with experience in the defence industry. We do not have a very high recruiting rate because we put a lot of effort into maintaining or keeping the staff we have.

**Senator MARSHALL**—Are there any arrangements within alliance contracting on mutual obligation for the commitment of training of technical staff?

**Mr Hammond**—Yes, there are a number of what are called key performance indicators. They are basically agreed between the parties, but largely the Commonwealth has the say on what they are going to be. They can be used to provide an incentive for any sort of behaviour that is required. There currently are not any in the Anzac alliance for training per se but, on the other hand, it is in the interests of the companies to train their people. For a company like SAAB, which is basically a systems and software developer, the total value of the company resides in the heads of its people. We put a lot of effort into training and career development simply to grow the value of the business.

**CHAIR**—I do not know whether it is commercial-in-confidence, but you showed us a chart yesterday of your staff, consultants and overseas staff.

**Mr Hammond**—Yes.

**CHAIR**—If that was not, it might go some way to answering our question.

**Mr Hammond**—Certainly, it is readily available.

**CHAIR**—It is a worthwhile chart, I think.

**Senator JOHNSTON**—I must say, Mr Hammond, I was impressed with your submission. I was attracted to a lot of the recommendations and the way you have set out your submission. But on page 2 you say in the middle paragraph, if I can read it to you:

While specific reform initiatives may be individually beneficial, the most productive approach to improvement of performance of the DMO would be to create an environment where delay and poor performance had real and evident outcomes, and one way to achieve this would be to link the organisation's own administrative and salaries budget to its acquisition budget so that delays in letting contracts and achieving expenditure on contracts already in place would translate directly to a reduction in the DMO's budget engendering the same 'time is money' attitude that motivates industry.

Further down, under 'People' you say:

A structure should be developed for DMO which would allow it to compete in the marketplace for skilled and experienced personnel.

Whilst I am very attracted to that approach, given your knowledge—and you are an old Navy man, I believe—is it a realistic option for us with this organisation?

**Mr Hammond**—Which of those, the first or the second?

**Senator JOHNSTON**—The first and the second, to some extent.

**Mr Hammond**—The first, I have to admit, is a bee I have had in my bonnet for some long time. I proposed it to Mr Roche's predecessor and was told promptly to go away. The notion was that the DMO's administrative budget would be affected by its spend on its main acquisition budget, so that there was an incentive for people not to delay. In a government organisation there are always reasons to do things later rather than earlier, and I was trying to find some way to balance that. I think it is feasible. I do not think it is the answer, but I think it would be helpful in changing attitudes.

The second one, in terms of a structure that would allow it to compete in the marketplace, in my opening comments I referred to a corporatised organisation. I have not thought that through in any great depth, but intuitively it seems to me that that is a possibility. In other words, there would be a defence procurement agency which would be run under corporate lines and it would be freed from the constraints of public service salaries and things like that. Perhaps rolling in the two ideas together, its budget could be a percentage of the money it was spending on acquisition and so there would be then an incentive to spend the full defence budget and to minimise its cost. It is an idea which I think is worth pursuing or at least exploring.

**Senator JOHNSTON**—Thank you. Further down, just below that recommendation on page 2, you talk about Defence:

... making some moves towards decentralising decision-making to provide the establishment of project boards but this appears to have been frustrated by delays through decisions being referred for ministerial approval.

Firstly, do you see the sorts of decisions that are being referred as decisions that should be able to be made by the personnel that you are dealing with?

**Mr Hammond**—Yes. Around about the time of the submission we were being told by people in Defence, ‘This will have to wait because it has got to go to the minister.’ The impression we had at that stage was that there was some monetary limit and it was quite small—it was like \$10 million or something—above which the minister had to sign off on it. I have to say that seems to have been relaxed. I am sure Defence can answer this question properly, but this seems to us to have been relaxed over the last couple of months. We are not hearing it so often and it is more, ‘We have to advise the minister but we can make the decision ourselves,’ and that seems to me to be fine. This was, I think, a reaction to a short-term issue that we saw.

**Senator JOHNSTON**—On page 4, the second paragraph, you talk about the ASDEFCON contract. You talk about the battle between lawyers and alliance contracting, I take it, to some extent. Just explain to me what happened with that particular contract and how you saw that regressive move, if you like.

**Mr Hammond**—This is not to do with alliance contracting; it is traditional contracting.

**Senator JOHNSTON**—Sorry.

**Mr Hammond**—The initial standard contract in Defence has been called DEFPER101 for some time. More recently SMART 2000 was developed in conjunction with industry and came to what we thought was quite a reasonable position. In fact, I think I quoted Mr Roche’s comment to the press council or somebody that on the one hand industry was happy but on the other hand lawyers were saying it had gone too far. That has walked back some in ASDEFCON. I do not have the detail with me but I would be happy to provide it later if anybody wants it. There has been a walking back of what I think the lawyers saw as concessions in ASDEFCON. It is not significant in terms of being a showstopper, but it is significant in terms of the fact that it will make contract negotiations more adversarial, more difficult. They will take longer to get to a sensible position than had they started off at a sensible position.

**Senator JOHNSTON**—On page 6 underneath (c) you make an interesting statement, and I think I am coming to understand some basis for this type of statement, but I would like you to put it on the record for me. You say:

The cost and schedule performance of defence projects is an issue in most countries. In general this is because defence projects which avoid all technological risk will almost inevitably deliver a second-rate outcome. Countries which have no failed defence projects—

Can I read in there ‘off the rails defence projects’?

**Mr Hammond**—Yes, projects which are significantly late or well over cost or are cancelled.

**Senator JOHNSTON**—Good. The quote continues:

are simply not setting the bar high enough and we will have an inferior defence capability in comparison to those which are prepared to tolerate some failures.

You then go on to make some general comments which I probably agree with. Could you expand on that for me, because I think we need to hear this perspective from industry.

**Mr Hammond**—Before I do that, Senator, could I point out that I do then say that the rate of project failure is higher than you would expect from just that cause. But it does seem to me that defence is about trying to achieve significant pushing of the edge of the envelope in terms of what is physically possible. Occasionally complexity or an attempt to breach the laws of physics or some other issue like that will cause a failure. There have been a number of failures. The classic was the US A12 aircraft program, which started off with very high performance specifications. After the expenditure of about \$12 billion the payload was reduced to half and the performance had gone down significantly. They cancelled the program. That is probably a bad example, but there are going to be programs where you set a requirement out there and you cannot meet it for some reason or another. It seems to me that if you wanted 100 per cent of Defence projects to come in safely on time, on cost, then you would only do easy projects and you would only get second-rate defence capability.

**Senator JOHNSTON**—I think I agree with what you say, but where do we draw the line and who is the ultimate arbiter of what is a fair thing?

**Mr Hammond**—That is a balance. I am simply saying in my submission that I think the balance that has been drawn by the public and the press and the Auditor-General is too far to the intolerance of failure side of the equation.

**CHAIR**—I will come back to, firstly, a fairly basic question, Mr Hammond. Since the DMO has been established, have you experienced any different behaviour, and what is it, between you and the DMO, SAAB and any of the SMEs with which you are involved?

**Mr Hammond**—That is a hard question for me to answer because I know many of the personalities in the DMO, so the relationships there have not changed. I would have to say that the introduction of the Anzac alliance contract has certainly caused changed behaviour. None of the three participants think we have gone far enough, but the degree of openness and willingness to share ideas and issues is a significant advance. That is a change I would point to. As I said earlier, there has been a greater readiness to consult with industry. The previous Defence acquisition organisation tended to say, 'Here it is.' The DMO has been more consultative. Sometimes it consults and then ignores but at other times it consults and then actually takes on board the ideas. As far as relationships between contractors and subcontractors and with SMEs are concerned, I do not think that has changed significantly, nor would I expect it to, really.

**CHAIR**—You are pointing mainly to more openness, accessibility, transparency—those sorts of issues?

**Mr Hammond**—Yes, I think that would be a fair comment.

**CHAIR**—Does that create a more comfortable working environment?

**Mr Hammond**—I think it creates a more productive working environment. It creates one where problems are likely to be highlighted earlier and fixed, rather than ‘Let’s keep it secret’ until it becomes a major problem and a complete fiasco. So I think it is an important development.

**CHAIR**—As a question of opinion, does that breed a more critical iterative relationship; if I can put it in the colloquial, rather than cover your backside, people are more prepared to participate by more critical analysis and to focus on the job that has to be done, or not?

**Mr Hammond**—The answer is, I think, a bit of both.

**CHAIR**—What, covering your backside while focusing on the job that has to be done?

**Mr Hammond**—People do focus on the job that has to be done. There are some people who congenitally will always try to cover their backside. There is a growing realisation in Defence and industry that the old-fashioned adversarial form of contracting, where you signed the contract, the contractor immediately tried to deliver as little as possible and get the maximum price and Defence tried to hold the contractor to ticking every box and doing everything, if it was wanted or not—there is, I think, a shared recognition between the two parties that that does not make sense. If you are in a business relationship you need to concentrate on what is needed to be delivered and get on with the job. That is a positive change. You would not say that every project officer with DMO has that attitude, but I think more now have it than had it before.

**CHAIR**—Is that attitude taking over?

**Mr Hammond**—I hope so.

**CHAIR**—The old shellbacks are changing?

**Mr Hammond**—I hope so. There will always be some intransigence, but I think it is likely to, simply because it works.

**CHAIR**—You refer to the Anzac ship project as a good example of this system working. How much of that is due to the fact that you, for example, are a key figure here for your company and you have a Navy background, you have the networks in the show and it would have worked anyway because you are able to weave yourself into the fabric of it?

**Mr Hammond**—If we are talking about alliance contracting, alliance contracting is essentially like partnering; it is relationship based contracting. It requires relationships. I do not think my personal involvement is particularly critical. We have a number of ex-Navy people working for the company and they have good relationships and are well respected by their counterparts in both Tenix and the Commonwealth. I do not think any individual is important, but I think the fact that there are relationships and shared knowledge and understanding of the requirement is important.

**CHAIR**—This morning we had Mr Roche before us and this question of whether DMO would be better as a commercial entity or an agency separate from Defence but related to it, or whether it is best as it is structured now inside Defence was put to him and he, I think forthrightly, said that he thought the relationship as it is now is a good relationship and that is the best basis. Now, you have a contrary view of this. Am I right in thinking that one of the key drivers of your contrary view is that DMO is restrained from attracting what might be regarded as the best possible people because of the limitations on salaries and wages that the public sector provides?

**Mr Hammond**—Salaries and wages and decision-making autonomy, and general job satisfaction. Yes, that is it. Clearly the relationship between Defence and the DMO, in terms of relationship with the people that write the requirements, will be easier with the DMO as part of the Defence as it is now. But that raises another problem—that you therefore cannot attract the people that you need. If that problem can be solved within a government organisation and the decision-making and delegations could be resolved, then I would leave it where it is. My submission proposed the alternative simply on the grounds that that is, in my view, probably the only way to attract the necessary quality of people that it needs.

**CHAIR**—It should compete in the marketplace at marketplace salaries for key staff?

**Mr Hammond**—If it wants good people, to my knowledge that is the only way to get them. If I could find a way to get good people below the market price, I would be doing it.

**CHAIR**—The public sector does, because there is a sense of public responsibility, there is the greater sense of security and training and so forth; alternative career structures and things like that.

**Mr Hammond**—I acknowledge that, but that is a number of people we are talking about. We are talking about skilled engineering staff, who are in very high demand in general industry and in the defence industry.

**CHAIR**—Can you give us some idea about the proportionality here of how far below the commercial or the going rate for key personnel is the salary structure within the public sector?

**Mr Hammond**—I would be guessing. My guess would be in the order of 30 per cent.

**CHAIR**—About 30 per cent below?

**Mr Hammond**—Maybe more.

**CHAIR**—In your submission, on page 4, on tendering, you are recommending that an exchange program between industry and the DMO be implemented.

**Mr Hammond**—Yes.

**CHAIR**—Can you give us some further detail about how you see that? For example, what sort of data would you envisage could be exchanged in this way?

**Mr Hammond**—I am sorry. I was intending that to refer to a people exchange program. You would take junior people from the DMO and junior people from industry and say, ‘Go work there for a year.’ In exchange you would get somebody else. It is hard to do. There are costs involved and you obviously need a no poaching agreement. When I was in Defence we had that running in a small way and it was very valuable. It helped the industry, particularly the SMEs, to better understand Defence and the systems there and it helped the people from Defence, particularly graduates from universities who went straight into Defence, to understand the value of a dollar. It was of benefit to both organisations.

**CHAIR**—Mr Hammond, thank you. Once again, let me say how much we enjoyed the opportunity to visit with you yesterday.

**Mr Hammond**—Thank you.

[3.03 p.m.]

**SHEEDY, Group Captain Stephen Charles, Director of Over The Horizon Radar System Program Office, Defence Materiel Organisation**

**THORNE, Group Captain Colin Barry, Officer Commanding, Maritime Patrol Systems Program Office, Defence Materiel Organisation**

**CHAIR**—Welcome. Do you have any comments to make on the capacity in which you appear?

**Group Capt. Thorne**—My office is the organisation responsible for managing the through life support for the P3 Orion aircraft, located at RAAF Edinburgh.

**Group Capt. Sheedy**—I am basically responsible for all aspects associated with Australian Defence Force HF radar systems, and that means JORN and the existing Jindalee radar system in Alice Springs.

**CHAIR**—We have what I would describe as a generic submission from the DMO and how it relates to the SPOs, but would you like to give us your views. This is an opportunity for you to speak to our terms of reference in summary.

**Group Capt. Thorne**—Some of the things that are raised in the submission concern the formation of the SPOs and I believe that was the original genesis of this inquiry. It is my opinion that the SPO concept has worked very well in two facets: first, putting the through life support—that is the acquisition and the logistics support—with the customer and therefore there is very much a customer focus in the organisation; secondly, to integrate the acquisition and the through life support aspect. While there is still considerable work to do there, I think it has given the opportunity for there to be more thought and more integration and, indeed, probably more leverage to be made between acquisition and logistics.

**Group Capt. Sheedy**—To set the scene for you, Chairman, I have had over 25 years in the Air Force, during which time I have worked in support command, operational command areas and also in the previous acquisition areas. What we have here within DMO is the greatest opportunity to get things right, from my perspective as a SPO director. We have the opportunity to get the acquisition and the through life support working together. As the director of my particular SPO, I am ultimately responsible for all aspects associated with the projects that I run and the through life support aspects. I think the synergy of that is absolutely fantastic. It adds responsibility to the task but it makes eminent sense to me and it actually provides a clear direction. It is not one of these things that in the past you could have been accused of finishing a project and then throwing it across to the running system. You are now part of that; you have ultimate responsibility for it.

By virtue of setting up the SPOs, we had the opportunity of collocating with our end customer. In my particular case, that is those people here in Adelaide at RAAF Base Edinburgh. Also, from my perspective, because the OTHR community is basically an indigenous product, I also

can colocate with our DSTO scientists that were so much an integral part of the actual development of HF radar systems.

**CHAIR**—You are saying that, in your 25 years, this is the best deal that has come along.

**Group Capt. Sheedy**—That is correct.

**CHAIR**—That's a fairly big wrap. Give us your view about what are the most notable changes for you, at your level, that cause you to make that statement.

**Group Capt. Sheedy**—From my perspective, basically it is the fact that I have to take full account of the long-term aspects of any consideration I make, from a project point of view, to ensure that it serves as a full life type consideration, so that a decision I make early on, from a project point of view, ensures that I have the best value for money for the longer term future of the running system. That would be the key feature I see.

**CHAIR**—Can either of you give us some concrete examples of interactions between you and your industry colleagues that might illustrate significant change in the relationship between Defence and SMEs in particular?

**Group Capt. Sheedy**—From my perspective, as I said, we are an indigenous product. In other words, we are not one that has been developed from an overseas source. As a result of that, what we are trying to create in my SPO—the Defence staff—is actually a common area of usage with contractors, DSTO and the Commonwealth, all working together to ensure that we end up with the best product possible, and basically we are going to colocate everyone in the same area. We are going to get them working together as teams and progress the whole of the OTHR community.

**Group Capt. Thorne**—In terms of our involvement with SMEs, we manage and are busy delivering at the moment a major project, 5276, phase 2A, which is the P3 upgrade. As part of the support arrangements for that, we have signed a contract with RLM Systems for a software and systems support facility out at RAAF Edinburgh, and RLM in turn has subcontracted a lot of that work to local SMEs. Through that exercise, we have fostered the development of SMEs in the area of software support.

**Senator JOHNSTON**—We had a happy customer, from your point of view, yesterday with the P3 operational group. What about going back the other way? When you need to requisition equipment, stores or materials of whatever nature to maintain your conduit of constant and upgraded supply, what sort of response do you get going back the other way?

**Group Capt. Thorne**—Reasonably good, although we are continuing to work that exercise. We have some initiatives to be more open with our suppliers and work more as a partnership. Part of that includes the sharing of information regarding likely need, because one of the things that affects our supplies more than anything is short-notice requirements to ramp up or supply. So we have been working with some of our key suppliers to provide them with indications of use patterns and that sort of thing. That is one example.

Another example is through the company scorecard program that has been instituted in Defence. That is primarily, at this stage, aimed at large capital projects, but at MP SPO we have

been piloting that for smaller arrangements, whereby we are scoring on a set of criteria suppliers for smaller equipment such as parts. We do actually track the performance of our suppliers in terms of parts delivery and we do provide some benchmarking information, because sometimes some of our small suppliers do not really get visibility of how they rate relative to their competitors. I think we are actually getting a very positive feedback from our suppliers. By saying, 'You aren't rating in this area relative to other people we deal with and we think you need to look at this and that,' it is actually helping them with their business.

**Senator JOHNSTON**—Yesterday we put on those earmuffs. Let's say you need to go out and buy 50 pairs of new earmuffs. How do you actually go about the task of doing that?

**Group Capt. Thorne**—Are we talking literally?

**Senator JOHNSTON**—I think we are.

**Group Capt. Thorne**—That level of item?

**Senator JOHNSTON**—Yes.

**Group Capt. Thorne**—At this stage, depending on how expensive those—

**Senator JOHNSTON**—Say \$5,000.

**Group Capt. Thorne**—For small items—in fact, below \$5,000—there is an opportunity, through chief executive instructions, to directly purchase those, although in our division we are still operating under arrangements to tender that. We would go out and obtain quotes from three companies and choose the best.

**Senator JOHNSTON**—When you do that, is there a contract involved?

**Group Capt. Thorne**—There is a purchase order, which is a form of contract.

**Senator JOHNSTON**—It is a simple straight purchase. What is the threshold for a contract? What dollar figure generates a contract that you need to go and buy something?

**Group Capt. Thorne**—The issue is not so much a dollar figure as whether it moves from what we refer to as simple procurement to what we refer to as complex procurement. There is a range of things that factor into that, including whether it is off the shelf or developmental. What are clearly off-the-shelf items would be of low value and would be seen as being a simple procurement. Things that are developmental would move into the more complex arrangement. Sometimes off-the-shelf items can be valued at several million dollars and sometimes procurements of a couple of hundred thousand are developmental and therefore go through the complex procurement arrangement.

**Senator JOHNSTON**—Let's say you had to buy three houses for some new staff.

**Group Capt. Thorne**—I am not very much into facilities purchase, but—

**Senator JOHNSTON**—I just want to know what backup you get, where you go and how quickly you can get a response in terms of the provision of contracts and assistance for you to deliver that particular commodity that does need some sort of expertise.

**Group Capt. Thorne**—In our particular case, we are fortunate—as are a couple of other SPOs—in that we do have embedded contracting support expertise. I have two contracting support officers attached to my organisation. They are part of the defence materiel contracting organisation—

**Senator JOHNSTON**—Are they lawyers?

**Group Capt. Thorne**—The first one we had was. The two that we have currently are not.

**Senator JOHNSTON**—But they have experience.

**Group Capt. Thorne**—Yes.

**Senator JOHNSTON**—Group Captain Sheedy, who is actually your customer?

**Group Capt. Sheedy**—My customer is Surveillance Control Group within the Air Force.

**Senator JOHNSTON**—Where are they based?

**Group Capt. Sheedy**—Surveillance Control Group headquarters is in RAAF Williamtown and the actual day-to-day users of the system are located at Edinburgh. Number One Radar and Surveillance Unit, which is an Air Force unit, and—

**Senator JOHNSTON**—And that is where you are based?

**Group Capt. Sheedy**—Currently, I am physically based in Canberra. I should explain that I am in a virtual SPO at the moment. Because of the JORN project office commitments, I basically have my project office in Canberra, I have my resident staff from the project office in Melbourne and I have my running system people looking after the day-to-day aspects of the Jindalee facility at Alice Springs in Adelaide. My plan is to move the whole SPO, which is all the various parts of it, to Adelaide around about the middle to second half of next year, relocate to a new building and actually set up all parties in the one location.

**Senator JOHNSTON**—Predominantly service personnel?

**Group Capt. Sheedy**—I would say approximately fifty-fifty at the moment.

**Senator JOHNSTON**—Are you experiencing any resistance with that relocation?

**Group Capt. Sheedy**—With a project like JORN, there are a number of people that have been on the project for a significant amount of time within the Canberra area and I do not expect them all to relocate to Adelaide. That is a fact of life, but I think all parties involved see the benefit of the long-term move.

**Senator JOHNSTON**—Do you think you have a happy customer?

**Group Capt. Sheedy**—I think we do. One of the things that perhaps I did not express well enough earlier is the fact that we have a fairly regular dialogue with our customer. They are actively involved in all our trials and testing of the JORN product at the moment and we regularly involve them in all aspects of it. Meanwhile, they are operating the Alice Springs radar. I certainly get regular feedback from them and I have service level agreements with them to ensure that both parties are happy with the product.

**Senator JOHNSTON**—What do you actually supply to them? What do you support them with? I am thinking about electronic apparatus and wondering whether you just have to keep the generators running or something.

**Group Capt. Sheedy**—We are basically supplying them with the radar system, which feeds the information down to the site in Adelaide, and the operators—the end users, the Air Force—take that information, process that information and then feed it up the line into the wider surveillance community.

**Senator JOHNSTON**—How long have you been with JORN?

**Group Capt. Sheedy**—I have been with JORN for just over three years.

**Senator JOHNSTON**—I take it that in that time you have acquired quite specialised and unique skills in terms of radar and radar equipment provision.

**Group Capt. Sheedy**—My background is such that I have spent a lot of time in HF radar systems. In the mid-eighties, I spent nearly four years working with DSTO. I feel fairly lucky that I have had a lot of exposure to HF radar systems. You could say that I have a reasonable background in HF radar systems, yes.

**Senator JOHNSTON**—Do you see that, being on the SPO side of the ledger, you have a viable career advancement path?

**Group Capt. Sheedy**—I suspect that I have basically reached the pinnacle of the SPOs, in that the director of the SPO is basically left at the group captain or colonel level. From that perspective, this would be the pinnacle of my career. That does not mean to say that I cannot proceed further within the DMO or within the Air Force organisation.

**Senator JOHNSTON**—In terms of rank?

**Group Capt. Sheedy**—I would hope so.

**Senator JOHNSTON**—Do you see your time as a SPO as a positive on your CV?

**Group Capt. Sheedy**—I do, because I am hoping to be able to satisfactorily close JORN, and anyone that can close a project like this—I think that would look reasonable.

**CHAIR**—I have a few more follow-up questions. One of the things we have heard a fair bit about in the discussions—and this is informally as well as on the record—is about weaknesses in what is called domain expertise of project managers. This is a new phrase to me, but one that is well understood, I am sure, by you gentlemen. Would you like to comment on whether you think that is a weakness and what responsibilities you have for ensuring that the expertise of your staff is there to run the contracts that you have responsibility for and any views you might have about the professional development initiatives promoted by the DMO for its staff?

**Group Capt. Thorne**—Perhaps I could answer that. I have had nearly 15 years, in effect, with the DMO and over that time have seen the evolution. When I first started, I was in Air Force Technical Services Division, which subsequently was rolled into Materiel Division Air Force, which subsequently became part of the DAO, which subsequently became part of the DMO. So I have seen the full wheel there and, through that iteration, have seen an increasing focus on getting results. We went from a very matrixed organisation in the olden days, where we had an engineering organisation that was matrixed into projects, to an organisation at the SPO level that is absolutely focused, and I would argue that the SPO is effectively an integrated project team of project managers, contracting people, logisticians and engineers.

There are swings and roundabouts in that kind of arrangement in that you have to work a lot harder in terms of the individual disciplines because they no longer live together in one corporate building of engineers that can share stories at lunchtime and that sort of thing. I would have to say that in that evolution we probably have lost some of that expertise and are now recovering from it.

The second point that I would make is that in a regional or provincial kind of organisation I have a work force that is split fifty-fifty. I have about 40 per cent of my work force uniform—that is about 70 people—and about 40 per cent are APS. The remainder are a combination of reservists and PSPs.

**CHAIR**—Sorry, what is a PSP?

**Group Capt. Thorne**—Professional service provider, sorry. On the uniform side there has been a considerable drive recently for career management and for career development, particularly of the engineers. At the moment there is a similar push to reinvigorate the logistics branch of the Air Force, which has suffered a little demise over the years. I believe that is working very well. It is a fairly broad spectrum kind of activity. It addresses salary and allowances but it also addresses things that interest engineering staff, such as professional development, postgraduate training and that kind of thing. I think it has been relatively successful in maintaining engineering staff and technical staff.

On the public service side there is a similar push. I should stress that our main problem is not so much at the technical administrative side, but more in the professional people—professional project managers, professional logisticians and engineers. There is a push to develop APS people in that area, but as yet it is too early to tell whether that is going to be successful. I think there is probably a need to ensure that that is not only focused on Canberra but focused in the regions as well, because you have to get people to come out. Even with a place like Adelaide, only certain people want to come to Adelaide.

**CHAIR**—We won't go into what sort of people they are. From that answer, the image I have is that, yes, the argument about loss of domain expertise is justified from looking at it from the past, but the structure you have in place will overcome that and render it no longer valid. Is that a fair summary?

**Group Capt. Thorne**—Yes, I am confident that we are moving in the right direction there. To pick up my colleague's answer earlier on, the DMO does offer career opportunities for people both in the APS and the military. Particularly in the Air Force, I believe that a career in the DMO is not seen as a negative thing. I have sat on a few promotion board, so I have some insight into that. Particularly amongst the technical people it is seen as essential. I think the DMO has enough size in it. Once upon a time we had separate support command and separate acquisition and, to some extent, if you are a logistician or an engineer, you stayed in one or other of those streams. I think the DMO now provides that critical mass which enables people to have a career and thereby retain that capability in the DMO.

**Group Capt. Sheedy**—Yes, I totally agree.

**CHAIR**—You totally agree, Group Captain Sheedy?

**Group Capt. Sheedy**—Indeed.

**CHAIR**—Nothing further to add?

**Group Capt. Sheedy**—No, I do not believe so.

**CHAIR**—Could I just change gear here for a moment. If we start tracking the dollars, quite a lot of dollars are spent on routine logistics materials. We have heard in these proceedings a lot about the major projects and so forth, but not anything very much about the expense that goes to the routine logistics side of things. Can you tell us a bit about how that operates, from your point of view, rather than looking at it from a project to project sort of thing? Are you satisfied on the routine logistical materials acquisition that things are running smoothly?

**Group Capt. Thorne**—I guess I can answer this—probably more so because I run an organisation that is an in-service support organisation. The processes are fairly well in train for logistics management. There is an issue that our aircraft are not getting any younger and I guess our biggest issue with logistics budgeting, which is where you are coming from, is that our budgets are not necessarily addressing issues of ageing aircraft and obsolescence management. That is resulting in a growing what we call logistics shortfall in our budget.

**CHAIR**—Just on your SPO and its interaction with SMEs, can you point to some examples of where it works successfully in encouraging SME development?

**Group Capt. Thorne**—I guess I answered that question earlier by pointing to the RLM contract, where we have a number of SMEs contracted into there. In addition to that we do manage minor projects in the SPO, of which we have half a dozen. We do, through those minor projects, deal with SMEs, although I am trying to think whether you could really class them as SMEs. Most of the companies that do the modifications to our aircraft are either parts of larger companies—they are probably small from the parts that we deal with—companies like Tenix,

for example, work with us. The equipment that we are putting on is usually OEM equipment and quite often designed and built overseas. In that case we do not—

**CHAIR**—You do not have a lot of SME interaction?

**Group Capt. Thorne**—Not a lot, no.

**CHAIR**—Is that the same for you, with all your indigenous projects?

**Group Capt. Sheedy**—From my perspective, my major two contractors are RLM and BAES. They engage a number of subcontractors, which are basically the same sort of SME equivalents. A lot of software development work comes from small companies that basically provide support as subcontractors through the major contractors.

**CHAIR**—Okay. Thank you very much.

**Senator JOHNSTON**—That flight simulator we heard about yesterday—just give me the benefit of a rough calculation on the dollars, but was I right that I think the air commodore said that the per hour cost is \$49,000 to run one of those AP3s?

**Group Capt. Thorne**—I would have to take that on notice. The problem is that that number is different from a number that we would have, that we calculate on a logistics basis. I would need to understand what he factored into it.

**Senator JOHNSTON**—All I am looking at is that I think we said we would save 100,000 hours per annum with a flight simulator. Is that the right figure?

**Group Capt. Thorne**—The business case for the simulator is to transfer 1,000 hours of pilot training to the simulator.

**Senator JOHNSTON**—Sorry, 1,000 hours; that is better.

**Group Capt. Thorne**—Yes, 1,000 hours of pilot training to the simulator. You need to work out what the operating cost of the aircraft is in that scenario. We generally work out the flying hour cost based on having a full crew, which includes, as you saw yesterday, 14 crew. Obviously for pilot training you would not carry 14 crew around. The wage salary training bill bulked up is a big part of that per hour cost. I think the actual cost of flying the aircraft in a pilot training role would be less than that.

**Senator JOHNSTON**—That is good.

**CHAIR**—Thank you very much, gentlemen. That concludes our hearing for today. We adjourn until Friday in Canberra. Thank you all.

**Committee adjourned at 3.31 p.m.**