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DEFENCE AND TRADE DEFENCE SUBCOMMITTEE

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**JOINT STANDING COMMITTEE
ON FOREIGN AFFAIRS, DEFENCE AND TRADE**

Defence Subcommittee

Friday, 21 August 2009

Members: Senator Forshaw (*Chair*), Mr Hawker (*Deputy Chair*), Mark Bishop, Ferguson, Fifield, Furner, Hanson-Young, Johnston, Ludlum, Moore, O'Brien, Payne and Trood and Mr Baldwin, Mr Bevis, Ms Bishop, Mr Danby, Ms Annette Ellis, Mr Gibbons, Ms Grierson, Mr Hale, Mr Ian Macfarlane, Mrs Markus, Mr Murphy, Mr Oakeshott, Ms Parke, Ms Rea, Mr Ripoll, Mr Robert, Mr Ruddock, Ms Saffin, Mr Bruce Scott and Ms Vamvakinou

Defence Subcommittee members: Mr Bevis (*Chair*), Mr Baldwin (*Deputy Chair*), Senators Mark Bishop, Ferguson, Fifield, Forshaw (*ex officio*), Furner, Johnston, Ludlam, O'Brien, Payne and Trood and Mr Danby, Mr Fitzgibbon, Mr Gibbons, Ms Grierson, Mr Hale, Mr Hawker (*ex officio*), Mr Ian Macfarlane, Mrs Markus, Mr Oakeshott, Mr Robert, Ms Saffin and Mr Bruce Scott

Members in attendance: Senator Furner and Mr Bevis, Mr Hale, Ms Saffin

Terms of reference for the inquiry:

To inquire into and report on:

Department of Defence annual report 2007-08

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Subcommittee met at 8.46 am

CHAIR (Mr Bevis)—I declare open this public hearing on the review of the Defence annual report of 2007-08 being conducted by the Defence Subcommittee of the Joint Standing Committee on Foreign Affairs, Defence and Trade. We anticipate that this will be the last of the public hearings we conduct in respect of that review. As those present would be aware, there have been a number of public hearings prior to today's hearing inquiring into this matter. The committee is understandably keen to have the opportunity to talk with senior officials from DMO about the top 30 projects in particular, even though some of those matters have been raised in earlier hearings.

[8.47 am]

CAWLEY, Mr Andrew Charles William, Program Manager, Air Warfare Destroyer, Defence Materiel Organisation

CLARKE, Mr Kerry, Head, Industry Division, Defence Materiel Organisation

FRASER, Major General Anthony Peter, Head, Helicopter Systems Division, Defence Materiel Organisation

GILLIS, Mr Kim, General Manager, Systems, Defence Materiel Organisation

GUMLEY, Dr Steve, Chief Executive Officer, Defence Materiel Organisation

HARVEY, Air Vice Marshal John Paul, AM, Project Manager, New Air Combat Capability, Defence Materiel Organisation

KING, Mr Warren, General Manager, Programs, Defence Materiel Organisation

CHAIR—I welcome officers of the Defence Materiel Organisation to the hearing. Although the subcommittee will not require you to give evidence on oath, I advise you that these proceedings are legal proceedings of the parliament and therefore have the same standing as proceedings of the respective houses.

There are a number of major programs that we discussed at the previous year's hearings. There is obviously an overlap of some of those. I thought we might start with some of the easier ones. There was a recent statement by the defence minister about some of the major acquisitions. One that had been commented on in our earlier reports was AWACS, the Airborne Warning and Control System. Can we get an update on where that is now at?

Mr King—AW&C entered into a standstill deed, which allowed us to make progress with Boeing on the finalisation of the delivery of the AWACS aircraft. The current contract was based on the fact that the aircraft would perform in all areas to the contracted level at delivery. Boeing and we agree now that there are some aspects of the aircraft performance that will not meet the contracted level at initial delivery, in particular some elements of the radar performance and some subsystems. We are going through that standstill deed period at the moment, which included an in country demonstration, which was conducted a few months ago in Australia with, I might add, satisfactory results, and a bridge test and trials program at the moment. On satisfactory completion that will allow us to take initial delivery of the aircraft at initial capability, which is not the final capability. That capability has been determined by the Air Force that will allow them to start operating the aircraft in Australia and commence training aircraft crews in the use of this aircraft. Of course, it is a brand-new capability for the Air Force and it takes quite some time to learn to use all of its features.

The current plan is that this trial period will complete in November of this year and soon after the first two aircraft will transition back to Australia. It is certainly my belief that it is unlikely

that we will meet that November date—it will not be missed by much, maybe by a few months. On completion of that program those first two aircraft will come back to Australia and then in the following period the additional aircraft will return to Australia.

We will then have an incremental period where the full capability is brought into operations, but one fact remains—and we have had some quite serious study of this—that the radar will not meet its full contracted capability. There are about 10,000 requirements on this aircraft. That some standards are not met is probably rational given that there are 10,000 specifications. However, this area of radar performance is important to us. We engaged the Massachusetts Institute of Technology to look at this issue for us. Their conclusions were very similar to ours, which is that there will be this shortfall in this aspect of the radar performance. We are now doing studies to determine operationally what that means. It is one thing to have a technical limitation, but what does it mean operationally in reality?

The conclusion is that there is no technically viable solution for that element of performance to date, so we have to recognise that. Part of our negotiations with Boeing at the moment is to determine a settlement for the delivery of the aircraft in relation to the lateness of the delivery and this performance shortfall and what plan we will put in place to incrementally improve that performance when the technology to solve that becomes available.

In summary, we have identified a technical shortfall and we are looking at the operational impact of that. We are in this standstill period at the moment, which has allowed us to make excellent progress in the last 12 months. We are currently commencing negotiations of a settlement with Boeing to deal with these issues of lateness and the technical shortfall. I suppose the other element is we are about to stand up the in-service support contract that will bring these aircraft back into service. We have stabilised, we know where we are and we have developed a plan to bring this project to a conclusion.

CHAIR—Have we looked at the option of a military off-the-shelf solution for the radar or the software?

Mr King—We have. That decision had to be made right at the beginning. One reason why this combination is challenging and we went for this new development radar is that we wanted to operate it on a smaller aircraft than the normal aircraft that you would use for the off-the-shelf radar.

CHAIR—It is going on a 737.

Mr King—Yes, it is going on a 737.

CHAIR—That is a decent sized airframe.

Mr King—Yes, but it is not as large as it needs to be to use the off-the-shelf sensor suite for the performance level we needed. That dictated why we used what we call L-band radar. It needs to be a smaller radar to fit on the 737. It is still a large radar, but I am talking about it being smaller relative to the off-the-shelf solution.

CHAIR—So when Boeing brought a 737 out to Fairbairn a couple of years ago, paraded it around and said, ‘This is the sort of thing you are going to get,’ what were we looking at?

Mr King—We were looking at the aircraft. The radar that is fitted to the aircraft is the L-band radar. Because you are using a new development radar with the phased array radar and because of that radar’s position to the aircraft, you get an interaction between the aircraft structure and the radar. That brought in a number of challenges, including cavities inside the aircraft oscillating and feeding back into the radar. Most of those issues have been retired.

CHAIR—Is it a feature of the L-band that it also required every one of those to be individually adjusted? It is not a plug and play. You cannot take it out of one of the aircraft and just throw it in another aircraft. It actually has to be adjusted for the individual frame it is in.

Mr King—That radar as a whole will not be transferred from aircraft to aircraft anyway. If you look at that big physical array there are elements within that array. Those elements are identical and they plug in. Then there is a tuning for each aircraft once you have those elements in. But those elements are not unique. It is software tuning for each aircraft shape.

CHAIR—I am trying to figure out that tuning requirement. Thank you for dumbing it down to my level. I have none of the technical knowledge, only fragments of information. Would that tuning for the aircraft be a requirement no matter what we had picked? If we had a lesser capability off the shelf, would you still have to tailor-make the software for the airframe that it was sitting in?

Mr King—There is nothing unique about that. Almost invariably with electronics there is some sort of calibration arrangement needed.

CHAIR—There are a number of AWACS aircraft in service at the moment in different countries around the world. I assume from the comments you have made and the question of the platform size that we are looking at a high-end capability in comparison to a number of existing options off the shelf. Can you give us some indication, though, of what sort of capability our tailor-made AWACS are going to have when we get the first delivery of the aircraft with a reduced capability? Are you able to give the committee any information either in public hearing or in camera about how that sits with what is around the world today?

Mr King—In public I think the statement ought to be ‘world class’, without a doubt. That is what we will get to start with before we actually proceed to improve—

CHAIR—We are going to get an aircraft more than three years late.

Mr King—Yes.

CHAIR—More than three years after we thought we were going to get an aircraft we are going to get one with lesser capability than we thought we would get. So we are going to get it three years later than we thought and it is going to be less than we thought.

Mr King—Yes.

CHAIR—Not a happy situation.

Mr King—No.

CHAIR—I am just trying to get some measure of that capability on the world stage. We train jet pilots by getting cheap trainers. This needs to be more than a training platform. This is, at the end of the day, going to be the base from which our total capability will be derived. At the point we acquire it, the capability it has is degraded from what we hope it will become and certainly from what we wanted. I am just trying to get a feel for that initial capability—what it is like compared to what is available off the shelf anywhere in the world.

Mr King—I will pass to a person in a minute with some more operational experience. The first step is a significant capability, nevertheless. Even though it is not the final capability it is a large step improvement.

CHAIR—An improvement on what? If it is an improvement on what we have at the moment—we do not have anything!

Mr King—No. The radar detection and picture compilation broadly works. I actually participated in one of the flights in Australia, and I am used to radar picture building and so on, for example, from an engineering point of view. We were able to travel from Canberra up off Williamstown and come back. We built total, complete air pictures and the picture was used by the controllers and the fighters. We controlled fighters and the fighters were able to make intercepts.

I know that the Deputy Chief of Air Force on that flight was very happy with the picture compilation, the detection and the control we went through. We went through very busy electronic airspace off Sydney, which causes difficulty for sensors. All that basic capacity was delivered. The pilots, as I understand it, were very happy with the way that worked. Certainly, in the exercises that were conducted in the demonstrations there was the same result. So that fundamental capability is working.

There are issues with, for example, how long and how stable the picture building is. That is very common with the introduction of highly complex systems. You find over a period of time as you work on that that those things tune and improve. I was most concerned when I got involved in the project about whether we had a fundamentally sound radar, a fundamentally sound basis on which to develop this capability. We believe we did and Boeing believe we did. MIT, a well-respected group, did that independently for us and came in with the same conclusion. It is a very capable system. It is fundamentally sound. There is some work to be done to get the maximum capability that we would expect out of that, but the entry level is still very good.

One advantage of us having the L-band—there is the disadvantage that we have had to have a full development system—is that we get diversity of sensors. When we are working in an allied environment in the future—and I was in the Pentagon for a little while and they certainly made me aware of this—from a joint operational point of view having diversity of sensor suites and frequencies being used will be a very good thing to have.

There are matters to be resolved, but none of them are blocking matters; they are quite often typical of these advanced technology challenges. You can see from the fact that other international customers have also ordered this platform following us that this is a fundamentally sound advanced technology that will no doubt serve Australia well for 25 or 30 years and has a growth path, which is very important.

CHAIR—You touched on this, but I will ask this just so I am clear. What is the process and the partners for getting the platform after delivery closer to the desired capability? What is the methodology? Who are we working with? Do we have a hopeful time line?

Mr King—We are finalising that now. That is part of the settlement with Boeing because it obviously is a very big commercial and financial matter. Boeing and Northrop Grumman, the developer of the radar, must be partners in that. You cannot not do that. We also have DSTO and we are now also looking at other companies that can bring new technologies or advances in technology to the table. My sense is though that we have probably pushed the technology boundary as far as it can be pushed to date. This is still a very big step capability that we will introduce. It might be better to bring it back into service, make sure all the other things that we want working are working—the ESM and so on—and pause a little while until the background technology of the world improves and then we can capture that in a cost-effective way. That is my sense, and I do not have detail about how we would do that. I might ask Mr Clarke, who has operational experience, to comment on anything I have missed.

Mr Clarke—Yes. Just to clarify, Warren has correctly encapsulated the radar, but the difference between this and the existing off-the-shelf stuff is the technology. Off-the-shelf radars are a bit like those you see on the top of Majura Hill out at the Canberra Airport: a rotating array running around at about six, seven or eight RPM depending. What that gives you is a revisit rate which is defined by the rotation rate. This radar is an electronically scanned array and allows you to electronically focus on particular areas, giving you either much greater power, much greater fidelity or much higher revisit rates. Why is revisit rate important? Because, if you are a fighter pilot, the rate of change of things in your environment is extremely fast, so slowly rotating radars, while they are useful to give you a situational awareness, do not give you the dynamics which this radar will get for us straight off the bat. So there are big differences in technology. That is why we went for this path.

CHAIR—I have made the point personally—and I think it is shared by many members of the committee over some years—that we are very keen to see this capability. I think there is a very strong view in this parliament about how important it is, and that would be shared by you. Whatever frustration we have, I suspect, is multiplied in your offices. We will be keen to get further updates down the track about how that progresses, but we do seem to be moving forward, which is something we have not done for a couple of years on this project.

Mr King—I think we are holding to the plan that we said we would, maybe with the exception of a month or two. One of my measures for these major projects is the rate of change of major milestones, and we are seeing that stabilising now, which is great. I think we have the underpinning assurance from our own view and from independent views that this is a sound, capable basis on which to move forward for Australia. I am confident that we will look back a little bit in the future—it may be a little bit like Collins or something; I do not want to draw parallels—and say, ‘It was hard getting there, but it’s a wonderful capability.’

CHAIR—I have a whole host of questions about JSF, but before I launch into that I will give any of my colleagues the opportunity to raise any matters.

Mr HALE—Mr King, thanks for that presentation. With regard to the time line, there are a couple of questions I have. When will we have the full capability? I know it is difficult to have a time line, but it is certainly one of the things that our colleagues will be questioning, I suppose, in the House if this continues to linger on, and we are answerable to the House. That was one of my questions. The other one is: what is the process, if the technology improves, that we could go through to continually update our capability as well as technology evolves into the future?

Mr King—The current planning is that IOC and initial operational release of the full capability would be in 2011. That is highly dependent on, in particular, recognising that there is this area of the radar shortfall that will not be fixed in that time frame. We are still assessing what the full operational impact of that is. But all other aspects of the aircraft should be ready: the picture compilation, the system stability so that it does not crash, data links and radios. In particular, the one area that is causing us trouble and is needed for the complete capability is the ESM system, the electronic surveillance system. That work is being undertaken in Australia by BAE, and it is behind—obviously the whole program is. But it is probably, after this radar performance, our most worrying area. So, from the point of view of having a fully capable system that will be able to make sure we have really competent Air Force crews, that can be achieved.

Where the ESM becomes most critical, of course, is when you want to put these aircraft in an absolute battle environment. I think that, in terms of getting fully competent and trained Air Force crew, we will be right for that 2011 time frame. The exception, the worrying bit and the bit that we are putting a lot of focus on is: will we have all the electronic protection that we need so that these aircraft could at that time be deployed into an absolute hostile environment?

I am sure the fighter pilots will say that there are other ways to deal with that matter as well. Not everything is protected. You can put up other levels. You can have operational modes that allow you to use the aircraft in a way that does not put them at risk. You can put up protection and so on. But, to have that complete capability that we foresee, the big risk area now is this electronic protection.

Mr HALE—And it is hard to put a time on it.

Mr King—We are aiming for operational release in 2011. I have to say that the big focus is this ESM system. A lot of effort is going into it.

Senator FURNER—I have a question to Major General Fraser. The committee was fortunate enough to do an inspection of the Oakey base earlier this year. I am wondering whether you can update us on the status of the Tiger craft in particular and also the simulated training modules up there. Where are they at at this stage?

Major Gen. Fraser—Senator, thank you. We were fortunate that the chair made specific comments last time we met. I have passed those on. They were important for the team. We have accepted 16 aircraft at the moment and three of those are in the mature configuration, the final configuration for Tiger, which is a software based platform, as you saw during your visit. We are

on schedule to achieve for Army the initial operational test and evaluation milestone later this year, where they will take the aircraft, having been individually trained, and migrate across the collective war-fighting skills to truly fight the aircraft. That is going well. Essentially, we have completed most of the risk areas associated with testing. There is still a little bit to be done to tidy up some certification work for night and for instrument flying of the aircraft, but the gun work was done recently, about three months ago. You might have seen some media associated with the aircraft that flew and fired a live fire demonstration in Darwin, with the Abrams tanks, with the light armoured vehicles and with the soldiers of the 1st Brigade. That was very important, I think, for the capability itself and for embedding it into Army operations.

You asked a question on simulators. The full motion simulator has now been completed. I think it was under upgrade at the time that you visited.

Senator FURNER—That is correct.

Major Gen. Fraser—We have achieved that ahead of where we thought we might have been able to. We were planning for it to be completed later this year. We have already completed that and taken the simulator into full operational capability. There is a cockpit procedurals trainer—which is a simulator almost without motion but with very high-fidelity software—for Darwin which is in the final stages of acceptance, and one at Oakey.

CHAIR—Can I just follow that up. This is a new capability—again, one that everyone is pretty keen about. How are we going to get up to speed, to what we would be satisfied is world's best practice, given that it is a new capability? Are we working with partner nations that have more experience in this field?

Major Gen. Fraser—We are. There are a couple of ways of doing it. First of all, we have very good arrangements with the European countries who have bought the aircraft, for exchange of technical information, which is important. The sister organisation to DMO in France, DGA, has been exceptionally cooperative. It has provided us with an enormous amount of work on the engineering side, at no cost to the Commonwealth, which has made a big difference to our program.

On the operational side, we have what is called a Tiger build-up group. It is run by the armies, essentially, of each of the nations, with some technical support from DMO as a fielding agent. That is important for the exchange of operational information. You have seen some media reporting of the French deployment. We are working closely with France to be able to gain those lessons as we can, as they move into Afghanistan, for operational effects. We have offered support. Australia has a fully instrumented test aircraft that no other nation has, and we have offered to provide some support to be able to test further modifications and enhancements, should they require that. So it is a very cooperative approach.

As for the total fleet, we have flown now 4,200 hours and fired about 4,000 rounds out of the cannon, which is an exceptional weapon. I think they briefed you on the accuracy of the hellfire missile. That integration has been a great success. Dr Gumley has provided evidence to you and to other committees previously about the technical challenges we had with the Tiger, as a developmental type aircraft. It certainly was that when we bought it. It was more developmental

than we would have liked, but we have been very satisfied with the contractor and with DGA's support to bring us to the capability we are now fielding.

CHAIR—Do we do work on the tactical deployment of attack helicopters in theatre with the Americans for example? I know it is a different platform but in terms of integrating it into the battlefield space.

Major Gen. Fraser—We have. We have sent people across to work with the US Marine Corps and with the US Army for courses and weapons engagement in particular, for weapons engagement planning, integration into the battle space and for the terminal effects and full coordination of those operational effects from combat aircraft. The Tiger's primary role is reconnaissance but it is clearly capable of providing offensive support as required. It is not just purely the attack apart, which is what the Apache is for, for example, as the US Army looks for in reconnaissance aircraft but Marine Corps use it in a similar way to us which is reconnaissance and firepower.

CHAIR—Thank you. I might move to JSF then. I had some of this material for earlier hearings but I think it is more relevant today. There was a statement that took my attention that was made by the chair of the US Air and Land Forces Subcommittee, Neil Abercrombie, in May this year when he opened a hearing not dissimilar to this one. In his opening statement he said:

The Air Force has just taken the lead of the Joint Strike Fighter (JSF) Program Office. That program continues to have cost and schedule problems, with testing further delayed and greater development and procurement concurrency being incurred ...

He went on later to say:

... the Joint Strike Fighter testing schedule continues to slip to the right while the Pentagon insists on maintaining the current production schedule. This creates more development and production concurrency ...

Then he spoke a little about the baseline engine costs. The GAO in the United States has made a series of reports that have raised a lot of concerns. A year or so ago when we were having these inquiries I did raise in some detail a number of the matters in those GAO reports at that time. I thank you for the comprehensive answers we did eventually get about that. Since then there have been at least two other reports from the GAO which are equally worrying in terms of scheduling and cost and exposure to risk. Dr Gumley, I think for one of the hearings that we had earlier you were actually in the United States looking at some of these matters. What is your understanding of the costs and scheduling issues associated with the JSF now?

Dr Gumley—The JSF is on schedule, I think the test program is running four or five months late. The aircraft are going through the factory and being built pretty much on time but the test program has been delayed by about four or five months. Before we get our aircraft that will be caught up of course because this affects the early delivery of the US aircraft and we are some years behind the US. It is not something I lose much sleep about. About this time last year I gave some estimates and they have not really changed that much on cost. The F135 engine though is more expensive than people expect. Lockheed and Pratt and Whitney are working very hard now on how they can get the engine costs down. The airframe itself is coming through at about the

same price as we talked about last year. It is not cost that worries us so much, it is the four or five months behind schedule and how that is going to affect the test program.

Air Vice Marshal Harvey—The recent GAO reports essentially referred to a previous report by the Joint Estimating Team which was conducted in September 2008. They raised some concerns about potential cost increases for development, potential delays in the future for the delivery of the aircraft and also potential cost of the delivery of the aircraft itself. Those reports were done 12 months previously. Since that time there has been updated data based on progress in the program over that 12-month period. Essentially, the Joint Estimating Team report said, ‘From where we are now if things go badly, as has happened in previous projects, where would we get to?’ In that 12 months the project has progressed pretty much as expected, so we do not expect those schedule concerns or the cost concerns that the JET said could happen.

We are offset from the US program by quite a way. Delivery of our first aircraft is not planned until the sixth year of delivery. So there is a full five years of production before we get our first aircraft. We were protected from cost increases in development and our budget for the aircraft is up at about the level that the Joint Estimating Team said it could get to. So we have very good mitigation strategies in place for all those issues.

CHAIR—We are protected against cost increases in development?

Air Vice Marshal Harvey—The system development demonstration phase was essentially based on a contribution by the partners, the US government, where they are responsible for about 90 per cent of total development and they have taken on the increased cost of development, other than in one small area where we contributed or proposed to contribute, but otherwise we are protected because the US takes the lead in the development costs.

Dr Gumley—Australia might choose to invest in some more production techniques that will reduce the price of the aircraft later on. There is a cost-benefit ratio for a number of ways of reducing the cost of the finished aircraft. It might be that the partner countries work with the US to contribute but strictly on a business case basis. In other words, we will save money overall.

CHAIR—So there are a number of points in two separate GAO reports this year that talk about cost implications. If the answer to it is that these additional cost burdens are being met by someone other than us then I guess that is good for us but I want to be clear about that. I am not sure from Air Vice Marshal Harvey’s comments whether I interpret that correctly. Can I read a comment from the GAO report and can you let me know whether that is a cost that is coming our way or whether someone else is picking it up. This is from the 20 May GAO report:

JSF development will cost more and take longer to complete than reported to the Congress in April 2008, primarily because of contract cost overruns and extended time needed to complete flight testing. DOD is also significantly increasing annual procurement rates and plans to buy some aircraft sooner than reported last year. Total development costs are projected to increase between \$2.4 billion and \$7.4 billion and the schedule for completing system development extended from 1 to 3 years, according to estimates made in late 2008 ... Cost overruns on both the aircraft and engine contracts, delays in manufacturing test aircraft and a need for a longer, more robust flight test program were the primary cost drivers.

Reading those statements causes some alarm.

Air Vice Marshal Harvey—If I could clarify, those statements talk about late 2008. They were the outcomes of the Joint Estimating Team review. That was an independent review with the US Air Force, the US Navy and the US DOD Cost Analysis Improvement Group. For the basis of their analysis of the program, or the prediction, they went through, had a look at where the project is and said, ‘If from this point the project experiences the problems that the F22 and the Hornet program experienced, this is what could happen in terms of cost and schedule for the future.’ They identified four key areas. One was the ramp down of staff associated with development, another was software productivity, another was the span time to build the aircraft and the fourth was flight test efficiency. That report was done over 12 months ago. We got data just last week when Mr Tom Burbage, the head of the JSF program, came out and showed us the data on how they were tracking—the Lockheed Martin line versus the Joint Estimating Team line—and they are tracking close to the Lockheed Martin line. So the Joint Estimating Team are doing an update sometime soon. They were projections of things that could happen—not saying they are the status—and I think we will see when the new estimate comes in from the Joint Estimating Team that it is tracking quite a lot closer to the Lockheed Martin estimate than the JET estimate.

CHAIR—Part of the difficulty with a lot of this is that we have relied on the work being done by the GAO because we do not have a comparable window into this. The GAO’s remit of this program has now ended. As far as I know there will not be a further GAO report into the matter unless congress decides to ask them to do it. So I am not quite sure how we are going to get third party verification of those things.

Air Vice Marshal Harvey—The Joint Estimating Team will report out again and we will get data on that. As well we have people embedded in the project both in Washington and at Fort Worth, so we have a very detailed inside knowledge of the project. The next time the JET report comes out I think we will see that they are tracking closer to the project predictions. Even beyond that though, as I say, we are offset approximately six years from the US in terms of deliveries of aircraft.

CHAIR—This aircraft is extraordinarily complex. The point was made in one of these documents that I have on the table in front of me that the F22 has somewhere in the order of I think it was two million lines of code.

Air Vice Marshal Harvey—About six million for the F22 and about 20 million for the JSF.

CHAIR—So we are actually talking about a very complex platform and yet we are assuming that it is going to have fewer problems in design, production and testing than have occurred with less complex platforms in the past.

Air Vice Marshal Harvey—It has been proven to date that it already has had fewer problems. At this stage in the F22 program they were getting stabilities in the order of minutes for performance of the test aircraft. JSF has already proven it is in many hours already. They have got very high stability on the test flight. The other thing that they have done on the JSF is that they invested about US\$5 billion upfront in more test aircraft and the airborne integration laboratories. People do not underestimate the challenges out there, but they have certainly put the arrangements in place to make it a success and progress to date is going very well. To date about 80 per cent of the software is done already and making good progress.

CHAIR—The GAO made a statement just three months ago that said:

... we continue to believe that the program's concurrent development and production of the aircraft is extremely risky.

What you are saying is that in practice, even though it is more complex, it has proven to be less risky than the F22 development.

Air Vice Marshal Harvey—The biggest thing the JSF has going for it is actually the F22 program. The first iteration of most of the technologies in the JSF was on the F22 and the biggest thing is that the people who did the F22 are doing the JSF as well. If I can just clarify, the comments they made there were based on the Joint Estimating Team report. The GAO have been consistent in saying that they think there is too much risk in concurrency—doing the development, the test and the production at the same time. The US DOD point of view is that you do have to take some risk in concurrency if you want to get leading-edge systems into the field. It also keeps costs down because if you stop development, have an extensive test program and come back some years later to do the actual production, there is a huge increase in costs because you lay off all the people before you start them up again.

CHAIR—The GAO have previously put the alternative view that there is a huge increase in cost if you go to production and you have made mistakes that you would have picked up in research and development. To then go back and fix the problem is much more costly than to have done the development on a longer time frame. The GAO has certainly put the alternative view to that a number of times in the past.

Air Vice Marshal Harvey—The JSF project officers also looked at that and given the size of the JSF production run they have done some costing based on the F22. They looked at the cost of the retro fit to correct any errors against the size of the JSF program. The business case was that it was far more cost-effective to keep going.

CHAIR—We were just talking before about the AWACS. I suspect the AWACS compared to the JSF is a much easier issue. I know we are stretching the boundaries with some of the technology but we have run into problems with that. We are talking about arguably the most complex airframe ever to take the skies. The people who, in a sense at arms-length, have been charged by the US Congress to audit and keep an eye on it have repeatedly, with the best available information, expressed concerns. Their most recent statement three months ago continues to express the same concerns. They have access to the same information that you do and they come up with a very different conclusion. Knowing all the things that you have described, at least up until three months ago, they continued to hold the view that the approach that has been adopted is, in their words, 'extremely risky'.

I have great difficulty reconciling that third-party informed assessment which has consistently said there are high risks in the way this program is being conducted. This is a very, very complex acquisition, and the methodology being used increases the risk of something going wrong. Whenever the issues are raised, we are always assured that the evidence tells us it is not happening. What I do not understand is, if the evidence tells us that it is not happening, why does the GAO persist in saying, as it did as recently as three months ago, that this is still a problem? I probably need to ask the GAO that question, not you, but I hope you can appreciate that, from where I sit, it is a cause of concern. If we are to acquire the capability we want to

acquire and spend the taxpayers' money in a manner that it should be spent, these are worrying inconsistencies that I have difficulty reconciling.

Dr Gumley—I also have trouble reconciling the two views. I go across to the CEOs conference for the Joint Strike Fighter and we get presented with lots of data and the data looks reasonably positive. I think it is honest—they tell us where there are problems; for example, the four or five months of testing and so on. But what I do is reconcile that against where Australia sits in the program. On Wedgetail, we are the lead customer and we are wearing a three-year delay. On JSF, we take most of our aircraft at years 5 and 6 of the program, so, even if a two- or three-year delay does happen, it affects us a lot less than it affects the Americans.

With all of these acquisitions—and we talked about the Tiger helicopter earlier—there is a sweet spot of where Australia probably should be buying. The sweet spot is about three years behind the American or European lead, because by then if mistakes have happened most of them have been ironed out and by then the pricing has been stabilised. When we go lead customer, we tend to wear all the risk ourselves and, when we are about three years behind the game, we are getting very good capability at reasonable prices. That is the common theme here. With the JSF, as I said, we are four, five or six years behind the Americans.

CHAIR—What is our anticipated date now of acquiring the first squadron?

Dr Gumley—They are decisions for government which we hope government will make over the next six months.

CHAIR—Fair enough. You are right. I read recently some media comment that the UK either had decided or were considering a decision not to proceed—I am a bit vague about whether it was with the STOVL version or a British based engine; I think they had a Rolls-Royce version engine. Does anyone know what has happened there?

Air Vice Marshal Harvey—There are a couple of issues at play with the US. As you know, they are buying the Joint Strike Fighter primarily for their new carriers. The decision was made some time ago that they would buy the short take-off/vertical landing aircraft for that. The government has not made a final acquisition decision yet, so there is still some speculation about that. But everything we have seen is that it is still the short take-off/vertical landing version. On the engine, there is a discussion with the project. It is a single-engine aircraft but at present there are two engines being developed. The F135 is the baseline engine. There is the F136 as well, which is seen as a potential alternative, and US congress is still discussing whether to fund that second engine or not. The UK have a keen interest in the second engine, because Rolls-Royce is working with GE to be part of that. So it gets a fair bit more attention in the UK than it does elsewhere.

CHAIR—Is that second engine only for the STOVL?

Air Vice Marshal Harvey—No. It is for all three. It is fully interchangeable for all variants.

CHAIR—I thought one of the criticisms the GAO had made was that the DOD in America was proposing only one engine type.

Air Vice Marshal Harvey—That was part of the discussion. There were a couple of issues around that. People say it is good to have two engines, both for strategic regions—you could only have half the fleet down perhaps—and because it is good to have competition. They have a strategic reason for their base capability in the country to build fighter engines. The counter argument is that it is a lot cheaper to just design one engine, because it is some billions of dollars to design it. With one engine type, you are producing twice as many and you get down the learning curve and it is cheaper. That is still in discussion in congress at the moment.

Dr Gumley—It is not an easy debate because, although engines are fully interchangeable from a dimensional point of view, they have slightly different technologies inside. The Rolls Royce-GE engine, I understand, runs a little bit cooler and therefore has greater thrust growth capacity into the future. So we are up against quite an interesting business case here where the Pratt and Whitney engine at the moment is more expensive. Then there is the issue of whether you are going to fund the R&D for two engines or one, which is a cost issue against the benefits of competition later in the program. Then there is the fact that occasionally an engine goes crook and a whole fleet can be grounded, so there might be an argument to have two types of engines. It has happened to our Hawk lead-in fighter aircraft recently, where an engine got crook and we had to ground the fleet for a short period of time. So there are reasons both ways and that is why Congress is tussling with it very carefully at the moment.

CHAIR—The US has and will have multiple platforms after the JSF is in a mature state. We will not. The likelihood is that we will have one platform, which makes that equation even more critical for our security.

Dr Gumley—We are watching the debate very, very carefully at the moment.

CHAIR—As a customer, or a small partner, do we get to have any say in that?

Air Vice Marshal Harvey—If there are two engines we can choose which one we want, or perhaps both. Although, on the face of it we think it is more cost effective for it to be one for us. Also, as part of the project we are involved in the discussion about the progress on that, but we will not face any costs associated with which way it goes. We have made the point clear that we see advantages in having two engines in competition—having a choice—but we do not want to see the cost of the second engine affect the project overall.

I will make the general point as well that the JSF will be 90 per cent of the US Air Force fleet and eventually it will be 100 per cent of the US Navy and US Marine Corps fleets. They have some platforms, but JSF will be big for all the players.

CHAIR—Let's all hope that it does everything that it is planned to do.

Mr Clarke—You may also remember that in the Australian instance we flew Mirage for 25 years or so on a single engine and we have a single-engined type in the F18, and it will fly for over 30 years.

CHAIR—That is true, but I am not sure that it gives me comfort.

Mr Clarke—It does at our supply room!

CHAIR—I must confess I would like to have the option that somewhere out there in the world there was a second engine we could acquire if circumstances required us to. But that will be a decision that other people a long way from here end up making.

Air Vice Marshal Harvey—On the point about the engine, DSTO are doing a fair bit of technical analysis on the two at the moment. It is an interesting dilemma between the two. The F136 is newer technology with potential growth for the future whereas the F135 is not as new but it has all of the experience because it is a derivative of the F22 engine. So you have the maturity versus future technology decision as well.

CHAIR—I want to refer you to another comment made by the GAO that goes back to some of the earlier conversations we had. The GAO report states:

Ongoing manufacturing inefficiencies and parts problems have significantly delayed the delivery of test assets. The prime contractor has extended manufacturing schedules three times and delivered 2 of 13 test aircraft.

It does not sound to me that the high-risk problems that the GAO are talking about are illusory. This is, I would have thought, a real outcome.

Air Vice Marshal Harvey—On the point Dr Gumley made before, there is about a four-month delay in delivering the test aircraft. They have delivered now about nine of the 19 aircraft. Three are flying and at least three are in dedicated test articles, so that statement is some time out of date. It is about four months late for the delivery of the test article. Generally—through delivery—it is part of the supply chain with the parts. The current assessment is for by the end of 2010. We have got two years of production aircraft in line as well. We believe the supply chain issues will be largely caught up. Also, we are looking to buying in the sixth production year.

CHAIR—Last time we were talking about the likely cost of aircraft, it was an open question at that point whether or not there would be differing costs, depending on where you were in the schedule. There was some discussion amongst the partner nations and potential purchasers about, perhaps, a common cost that would spread across the production schedule. Can you tell us where that debate has got to?

Dr Gumley—We were not able to achieve the consortium buys we had hoped for a year ago. There was not enough interest amongst the various partners and the US had a problem, also, with their congressional rules about committing to a multiyear buy before a certain stage in the technological development. I predicted two years ago that if we do not get a consortium buy up there is a commercial incentive for people to rush to the back of the queue. That is still the case.

CHAIR—I take from what you said that it is a matter that is yet to be determined. But, from the comments you have made about our acquisition being further into the future rather than at the front end, we are probably one of those people that you have just described.

Dr Gumley—At the moment we are looking at whether we buy two aircraft early recognising that they will be high priced. They would stay in the US and become our test articles and give our pilots familiarisation. Later on, when the program is more mature and some of the technical risk has been retired and some of the things that are in the GAO report may or may not have come about, we would be in a much better position, and a safer one, to buy our main aircraft.

CHAIR—So that I am clear on costs, you mentioned earlier, Dr Gumley, that the figures you gave us last time are roughly in the same ball park. I want to get clear exactly what costs we are talking about. It was an issue that we discussed a little bit a year or so ago. Are we talking about the costs of the fly-away platform; are we talking about the acquisition costs that include support, training and spares; are we talking about the lifecycle, including the full range of through-life costs?

Dr Gumley—We are talking about all of those. You have got to anchor the costing discussion somewhere. Where we tend to anchor it is on the cheapest of all those prices, which the unit-recurring fly-away cost. We are tracking that to see how that one moves because that is actually the fundamental cost of the aircraft.

CHAIR—So that I can find that, we are talking about the airframe and its mission systems and—

Dr Gumley—And engine.

CHAIR—The airframe, the vehicle systems, the engine, the mission systems—we are talking about the fly-away platform.

Dr Gumley—That is it. But, as we know, to get an operational capability you have got many other costs to add onto that, and you build up the cost from the unit-recurring fly-away cost right through to a whole-of-life cost. We could cause a lot of confusion to the public and to parliament if we kept swapping our definition of what cost we are talking about.

CHAIR—We could. That is why I wanted to get clear which apple we are comparing it with.

Dr Gumley—What we have been tending to do is use the unit-recurring fly-away cost as, if you like, the definition. We will watch how that one will move and then we will add the other items step by step and build up the total cost of the capability.

CHAIR—That is the lowest accepted definition for cost. With things like spares, facility construction, technical support, training and all the ancillary equipment that has to go with the aircraft, where do we factor them into our considerations? Are they part and parcel of what is going on now?

Dr Gumley—Yes, we are looking at all of those costs. From the unit-recurring fly-away cost to the total cost of the acquisition aircraft you have probably got a 60 or 70 per cent additional cost between the two numbers for spares, technical data, ferry flights across the Pacific, ancillary equipment and all of those other items. We are tracking all of that. When we get project funding from government they give us enough money to do the full picture but for the sake of discussion with committees and everyone else we are using a common basis to start that discussion to track our price movement over time.

CHAIR—Going back to those figures, I found the note about lines of code. According to the GAO, for what it is worth:

The JSF aircraft is expected to require 7.5 million lines of computer code—the most by far of any aircraft. By comparison, the F/A-18E/F has only 1.1 million and the F-22A 2.2 million.

Air Vice Marshal Harvey—The total project for the JSF is about 20 million and the airborne is about 6.5. The F22 airborne is about 2.5, which I think is the number there. The JSF counts the total program but the airborne is about 6.5.

CHAIR—They say 7.5, but the comparison is still the same. You are talking about a substantially greater—

Air Vice Marshal Harvey—In the current situation, approximately 80 per cent of that is done now.

Proceedings suspended from 9.45 am to 9.59 am

Mr HALE—I have a few questions that Senator Furner wanted me to ask in regard to some ADF stores that are on loan to the Fijian military. He was wondering what the status of those stores was.

Mr Gillis—I will have to take that on notice. I do not have that specific data in front of me.

Mr HALE—No wonder he wanted me to ask it!

Mr Gillis—Does it say what sort of stores?

Mr HALE—No. It just says ‘stores on loan’. It refers to page 45 of the report.

Mr Gillis—The only thing I can think of is our international Pacific relationship with respect to the Pacific class patrol boats. There might be some stores there, but I cannot give you any details on those specifics now. I can take that notice and get an answer back to you.

Mr HALE—It says ‘for Fijian military force serving in Iraq’.

Mr Gillis—We will have to get the specifics.

Mr HALE—Senator Furner also wanted me to ask for an update on the C17 Globemaster with regard to the final operating capabilities and when they will be due.

Dr Gumley—The C17 is going well. It has reached operational capability. As you are aware, we have had our first flights into Afghanistan with it, so it is already carrying important stores for the ADF into theatre. The aeromedical evacuation facility for the C17s has been enabled. It is one of the projects that have gone extremely well and that are already producing capability for the ADF.

CHAIR—I want to ask questions on a different topic: the rapid acquisition program, particularly for TAG-East and TAG-West. The committee has had the benefit of visiting those units over the course of the last year or so. Whilst there are examples of that rapid acquisition program working well, there were certainly examples drawn to our attention where it does not seem to work very well at all. I am not sure where in the chain of events these things break down. Examples include the provision of the night-vision goggles that TAG-East people use and interchangeable short barrels for weapons. These things seem to be comparatively low cost and straightforward but are nonetheless essential for the sorts of operations engaged in. However, the rapid acquisition program does not seem to produce an outcome. Can you tell us anything about that?

Dr Gumley—I would not categorise the night-vision goggles as an easy thing to procure. First of all, there are very strong releasability issues with the US as to what technology we have access to. Secondly, some of the delivery periods out of the manufacturers are very long. We are hearing figures like one, two and three years for certain components of some of the most modern night-vision goggles. So I do not think it is some form of bureaucratic delay. I think it is just a delay related to how long it takes to get things from the manufacturers.

CHAIR—What about things like interchangeable short barrels for weapons?

Dr Gumley—I would have to take that one on notice. I do not know about short barrels.

Mr Clarke—The original short barrel requirement required a certain barrel fit to be put onto the weapon. That is what the troops in the field wanted. Barrels were bought which did not require specific testing, but those barrels would have required the weapon to go through another qualification testing in Australia. I think we have just delivered something like 250 of the combined weapon back to 1 Commando as a result of that requirement.

CHAIR—What do you mean by ‘combined weapon’?

Mr Clarke—In other words, the qualified weapon with a shorter barrel. I think we should take it on notice. There is progress, that has been done and it is working, but the exact detail does not stick in my head.

CHAIR—I appreciate the answer, but please take it on notice. My recollection is that what they sought was an interchangeable barrel and that other forces that they work with on operations have the same weapon and the same option for barrels.

Mr Clarke—I think it is that latter qualification that is not exactly true. I think they do have interchangeable barrels but they are not on exactly the same weapon and therefore would need a requalification. I will take it on notice.

CHAIR—Can you give us an update on that because I know a number of members of the committee were interested in that when we visited.

Can I turn to public-private partnerships. I notice that the Australian National Audit Office had a look at this issue with respect to the construction of the joint operations headquarters. PPPs come up every now and then in a range of defence procurement environments. The conclusion that the Audit Office came to with respect to that project was:

... at the time the final decision was taken by Defence to enter into a PPP arrangement ... Defence estimated that the financial benefit offered to the Commonwealth for doing so compared to using direct procurement was a potential saving in NPC terms of \$0.94 million, or 0.18 per cent, over 30 years.

If you can predict within 0.18 what any of the budgets are going to be over 30 years you deserve more than the medal. So it seems to me fair to say that it is hard to demonstrate that there was any financial advantage at all with that project in having a PPP. When acquisitions come forward and PPP is on the table, what is the benefit to the taxpayer, if that is any example to go by?

Dr Gumley—PPPs fall into a couple of categories, from our experience: a black set, a white set, and perhaps a grey set somewhere in the middle. There are areas where we find that it is very hard to do a PPP, so I will go to left of arc and say: military assets that get shot at—very hard to get the risk transfers right that cover that, and probably best not done with PPPs. Right of arc might be: any military facility which has multiple sources of revenue so that you get better asset utilisation. So if you have got a particular training facility or something where you can get another source of revenue—you might have trucking up and down the Hume Highway or

something like that—that is where a PPP could make a lot of sense because you are using your assets harder. Then there is a grey area in between, where you have to do the full public sector comparator in every part of the work.

Clearly the merchant banks and others have a vested interest in pushing the PPPs. There is always an issue of getting over the fact that government has the lowest source of funding in the economy, so therefore it is rarely a finance type decision; it is how well do you operate the assets? And that is where we have to do the analysis rather carefully. So for single use, 100 per cent military, it is quite hard to make a PPP work, as you have seen with that Bungendore example, but it can work in other areas where you have got training facilities and you can have multiple use. So we have a very open mind about it and we will look at different approaches for different types of projects.

CHAIR—Okay.

Mr HALE—I have a question on the managing of public roads and the like around military assets. In my electorate up in a Darwin we are in the process of putting in the Defence Force hub, basically to service the Robertson Barracks and the other barracks in the area. Generally, Defence used to go to somewhere a little bit out of the way, but now we are wanting to integrate our service people into the community more than we might have in the past. As Robertson Barracks has grown, people living on its outskirts who brought five-acre and two-acre blocks are suddenly finding the traffic encroaching on them, with more human and more machinery movements, so that their Territory lifestyle has been affected. I wondered if there is anything Defence is doing to investigate how we are going to address the issues of residential areas close to Defence Force bases. There are 70-odd defence bases at the moment and I know we are trying to rationalise that, so there may be bigger basis in the future. Will we be looking to have a strategic plan going forward to address those issues of extra traffic around residential areas?

Dr Gumley—Unfortunately, my people at this table cannot really help you with that one because we deal with the equipment. The basing is probably better directed at the Defence Support Group. I know they have a group of experts that look at just the sort of questions you are asking.

CHAIR—Finally, can you update us on where we are at with the Seasprites. A year ago we had a bit of a discussion about the Seasprites; 12 months down the track, what is the story?

Major Gen. Fraser—In February of this year we gained the US government approval that was essential to be able to transfer the aircraft back to command for sale activities. Then we exchanged a bank guarantee at that point in time which would guarantee us the \$39.5 million as a minimum, but the objective is to sell the aircraft. We have now been provided about \$500,000 for sale of parts which are essentially not required for the major sale that we are trying to make. Command has conducted marketing activities. We are satisfied that command's approach has been professional in trying to sell the aircraft. We are aware of some of those discussions at the moment. There has been some recent media about some air frames that were in storage that have been sold to another country for its use for training. We are expecting to see some revenue from those at some stage in the near future. We will be visiting them very shortly to discuss and to confirm their marketing activities.

CHAIR—How many do we have in storage at the moment?

Major Gen. Fraser—There are no Seasprites in Australia. All of the aircraft and equipment moved back to the US after we gained that approval from the US government early this year. So command has full liability for warranty issues associated with the sale and responsibility to rectify the issues that we identified as to why we did not bring the aircraft into service at their expense in order to make the sales.

CHAIR—The longer it goes, I assume, the less return we get.

Major Gen. Fraser—There is no doubt that the economic environment has not helped, but I have been pleased with the feedback we have gained. It looks promising that there are some countries genuinely interested to acquire this type of aircraft from command. We will need to validate that and I could take it on notice, if you wish, to provide you some further information. But you are right—we would not have had the aircraft and brought into service for some years yet. The combat system in it is excellent but there was still an integration issue. Our issue was trying to integrate something so sophisticated into the older air frame. It is command's obligation to rectify that in order to make the sale.

CHAIR—I guess it is impossible to put some sort of time line on that. It is what it is.

Major Gen. Fraser—It is. Importantly, I am comfortable with the approach that command has taken since the resolution of this. They have been most professionally trying to market the aircraft. I believe that the Commonwealth's interests are being represented in that regard appropriately.

Ms SAFFIN—I have two questions. One is to do with the Auditor-General's report on the contracts and about the reportability to parliament. It says in the report that you are reviewing having a standard operating procedure for reportable contracts, and there were two specific recommendations.

Dr Gumley—Are you referring to the major projects report?

Ms SAFFIN—No—the Auditor-General's report about the reportable contracts. Some of the contracts you signed actually precluded them from being able to be reported to the parliament.

Dr Gumley—The contracts register?

Ms SAFFIN—Yes.

Dr Gumley—I will have to take the question on notice.

Ms SAFFIN—Sure.

Dr Gumley—We report all of our contracts except when they are in the classified space where occasionally we do not report them for obvious security reasons. But I will check the exact details.

Ms SAFFIN—If you could just follow up on the two recommendations, that would be fine.

Dr Gumley—Sure.

Major Gen. Fraser—If I could just correct that figure: it was \$580,000 as of yesterday.

CHAIR—Thank you.

Ms SAFFIN—I have one other question, which is to do with legal expenses. It says the external ones are sitting at about \$14.5 million and it was \$12 million in the reporting year before. In a general sense, can you give the committee an idea of what they would be spent on?

Dr Gumley—Most of the legal expenses are based on working around negotiating these large contracts. Occasionally when we get into contract disputes with contractors the legal costs come in there. Given that at any one time we have typically somewhere between \$70 billion and \$100 billion of contracts in place or being looked at, I do not think \$14 million is an excessive fee to try to get the contracts right from the start.

Ms SAFFIN—I thought it was for that.

Dr Gumley—It is mostly contracts. There are a few administrative issues with the lawyers involved, but the vast majority of it is procurement and sustainment contracts.

Mr Clarke—This year we had to prepare for the potential sale of ASC, which the government decided not to proceed with, for example. We used lawyers to help us with that.

CHAIR—Looking forward, the white paper includes a commitment to what I think is a welcome expansion of our submarine capability, but that is going to be a pretty challenging acquisition. How are we putting in place best practice to ensure, from go all the way through to whoa, that we are planning to mitigate the risks involved in a project like this? I suspect, given similar acquisitions, we will not find a military off-the-shelf solution for what we want. Whilst some of the systems inside may well be military off-the-shelf, where we are going to have to do some modifications to get a vessel to do the sorts of things we require of it, we have no doubt learnt a few things from Collins class acquisition and through-life operation. How are we, from the get go, putting in place the necessary procedures to avoid as many pitfalls as possible?

Mr King—That project is in my area. I think there are a number of things that we are doing and they are probably reflective of what we are doing in DMO in general with this idea of lessons learned and how you feed that in. A belief I have, and I think all of us in management have, is that capturing lessons is one thing but you have also got to have experience, maturity and focus to put those into practice. We are seeing that happening in DMO now, with more stability of our managers, more knowledge being shared across our gate reviews and so on. That is the first thing.

The second thing is that we have stood up the project team very early, with an admiral leading it—a very experienced person from both project and operational areas. So in this early phase we have got Admiral Moffitt running the project, supported by a small but very experienced team. That team is working inside the general manager programs area, which is the area that looks

after major projects, so there is feedback with me and people like Andrew Cawley and all the major projects program managers. We are sharing that knowledge about things that we have uncovered on Collins, and we have certainly taken the lessons learned from Collins. There are things that we have learned from, say, the AWD program on alliance in contracting, design requirements, the LHD project and so on. I think that structural arrangement is very important in learning the lessons—commercial lessons, technical lessons, international relations lessons and so on. That project team has been stood up early. It has been funded early. We are interacting with government regularly and formally as we go through this process, identifying the risks areas. For instance, recently you might have seen we have released an RFI to look at what design capability the country might need to handle a program this big. So we are looking very early at the structural changes that we might need in Australia and at our international relationships with various companies to take on a project of this size. We are also identifying key technical risk areas.

One of the pieces of advice I got when I came to government work for project management rather than outside work was when I spoke to the original manager for the Collins program. His advice to me, which I live with quite strongly, was, 'Don't have too many unknowns on a program.' We are not there yet—at this stage it is very open and we are looking at all matters—but you may consider, for example, that one of the high risks on Collins was the combat system. Combat systems are evolutionary. Combat systems exist around the world. Of course we are very close with America and its Collins combat system. As we evolve this program, government might decide, for example, that we are going to minimise risk and maximise operational capability by reusing proven combat system elements and adding to them or changing them. For example, we have propulsion issues. So I think structurally we have started early. We have it sitting in a group that has a lot of experience. We have experienced people in the team. We are identifying the key issues. My personal view is that this project—beyond my time, no doubt—will take Australia to a new dimension in capability in our own indigenous Australian capability, and we need to prepare for that. It will be a major step forward. It will be a great step forward. But preparing to move the nation to that decision is an important part of the planning.

CHAIR—One of the benefits of getting 12 vessels is that the through-life support becomes, effectively, an ongoing activity for industry to provide. Rather than the peaks and troughs that you might have with a lesser number, you can actually maintain that as an ongoing capability. At this early stage, has any thought been given to that?

Mr King—Yes, definitely, we are looking at that. As a CEO would say, you need data to inform you. But intuitively you can see that 12 will take you to that domain. What we might need to consider is what batches we buy. It would probably be quite a mistake to imagine that you will build 12 identical submarines. That period of build is just too long. So maybe you are looking at three-by-four flights.

CHAIR—That is not a bad thing.

Mr King—No, it is not a bad thing. You can quite clearly see by the life of the program and so on that 12 will give a consistent industry base. There are two parts to the industry base that are quite challenging. One is the design and engineering base; one is the production base. We are working at the moment in the shipbuilding quadrilateral forum, where ourselves, the US, the UK and Canada are sharing information—mostly generic structural information. One of the clear

problems around the world is the submarine designer base—that is in the whole world. In any program you get quite a surge in demand for design and engineering work in the early part and then a tapering off. So, for example, in the Anzac program the design capability surged early and then all but diminished because sustainment does not require the same amount. One of the important things is to understand the balance between the internal capability you are going to have in design and what you are going to call in from allies or associated countries. You peak at that amount but keep a residual core that is highly competent and allowed to take you through that. Having, say, three flights of four—and we have not done the proper analysis—you can see can probably give you that sustaining design base that allows you to move forward, keep your technology current, deal with obsolescence and so on. You would not fundamentally change the basics of the submarine but make enhancements to it and so on. That has all been under consideration. We are funding various studies. We are looking at engaging international partners. We have dealt with international designers, and we are still dealing with them. We are bringing all those pieces together.

CHAIR—Mr Gumley commented earlier that perhaps two or three years behind the curve is a good place to be unless there is a reason to be at the front of it. I know that is a view that a number of members of this committee and this parliament have been attracted to. So perhaps that has some value in that project as well. There being no other questions, I thank you, gentlemen, for your attendance today. It is appreciated by the committee. There were one or two matters on which questions were taken on notice. If you can get that information back to the secretariat, we will be in a position to finalise our report, which we will all be keen to do sooner rather than later. Thank you again.

Subcommittee adjourned at 10.25 am