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(Defence Subcommittee)

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JOINT COMMITTEE ON FOREIGN AFFAIRS, DEFENCE AND TRADE

Defence Subcommittee

Monday, 2 August 2004

Members: Senator Ferguson *(Chair)*, Mr Brereton *(Deputy Chair)*, Senators Bolkus, Cook, Eggleston, Chris Evans, Harradine, Hutchins, Johnston, Sandy Macdonald, Marshall, Payne and Stott Despoja and Mr Baird, Mr Baldwin, Mr Beazley, Mr Bevis, Mr Byrne, Mr Edwards, Mr Laurie Ferguson, Mrs Gash, Mr Hawker, Mr Jull, Mr Lindsay, Mrs Moylan, Mr Nairn, Mr Price, Mr Prosser, Mr Scott, Mr Snowdon, Mr Somlyay and Mr Cameron Thompson

Subcommittee members: Mr Scott *(Chair)*, Mr Price *(Deputy Chair)* Senators Chris Evans, Ferguson *(ex officio)*, Hutchins, Johnston, Sandy Macdonald and Payne and Mr Baldwin, Mr Beazley, Mr Bevis, Mr Brereton, Mr Byrne, Mr Edwards, Mrs Gash, Mr Hawker, Mr Lindsay, Mr Nairn, Mr Snowdon, Mr Somlyay and Mr Cameron Thompson

Senators and members in attendance: Senators Ferguson, Johnston, Payne and Sandy Macdonald and Mr Bevis, Mr Byrne, Mr Price, Mr Scott and Mr Cameron Thompson

Terms of reference for the inquiry:

Pursuant to paragraph 1 (b) of its resolution of appointment, the Joint Standing Committee on Foreign Affairs, Defence and Trade is empowered to consider and report on the annual reports of government agencies, in accordance with a schedule presented by the Speaker of the House of Representatives.

The Speaker's schedule list annual report from agencies within the Defence and Foreign Affairs portfolios as being available for review by the Committee.

WITNESSES

Subcommittee met at 8.14 a.m.

BINSKIN, Air Commodore Mark, AM, Commander, Air Combat Group, Department of Defence

HARVEY, Air Commodore John, Director General, New Air Combat Capability, Department of Defence

HOUSTON, Air Marshal Allan Grant (Angus), AO, AFC, Chief of Air Force, Department of Defence

MONAGHAN, Air Vice Marshal John, AM, Head, Aerospace Systems Development, Department of Defence

CHAIR—I declare open this public hearing on the review of the Defence annual report 2002-03 by the Defence Subcommittee of the Joint Standing Committee on Foreign Affairs, Defence and Trade. The subcommittee will take evidence from the Department of Defence. Before introducing the witnesses, I refer members of the media who may be present at this hearing to the need to fairly and accurately report the proceedings of the committee. I now welcome representatives of the Department of Defence to today's hearing. Although the subcommittee does not require you to give evidence on oath, I should advise you that these hearings are legal proceedings of the parliament and therefore have the same standing as proceedings of the respective houses. Do you wish to make an opening statement?

Air Marshal Houston—I would like to say a few brief opening words because I know time is short and the committee would want to question us about the visit to Amberley and various other things that we have provided in recent times. A lot of what we exposed to you at Amberley was sensitive and classified and I would like to be assured that in our discussions this morning we do not venture into the classified part of the arena. If there is a need to pursue any of those issues, I would ask that we ask the people who are not cleared at the right level to leave the venue and we can go in camera.

My primary responsibility is to ensure that the Royal Australian Air Force has the capability to meet the requirements of the white paper for the defence of Australia. The government has made it very clear in Defence 2000 that air combat is the most important single capability for the defence of Australia. We are now working very hard on a transition plan to ensure that our air combat capability moves into the future in a very seamless way. We have been working on that for many months. We are discovering a lot of issues as we go, and we will finalise that plan by December this year. The plan will be presented to the Defence Capability Investment Committee in the department, and after it has been through there it will then be passed to government for final approval. A lot of what we are talking about here is work in progress, and I want to make that absolutely clear. That is all I really want to say. I welcome questions from the committee.

CHAIR—Thank you. I will open the hearing now to questions from the committee.

Mr PRICE—Air Marshal, I understand that you are going to see the return of the air traffic controllers in Townsville. When did you first become aware of that commitment, and when was that communicated to the Defence Subcommittee?

Air Marshal Houston—Specifically the air traffic controllers?

Mr PRICE—Your attendance at the welcome home.

Air Marshal Houston—The welcome home this afternoon is primarily for Operation Anode—the Solomon Islands. It is also wrapping up anybody who has been on operations who is based in Townsville. There are quite a few air traffic controllers in Townsville who have been deployed in Iraq. On the second point: when did I become aware of the initial deployment of the air traffic controllers—

Mr PRICE—No, when did you become aware that you would be required to go to that function and not be able to be here with the committee beyond 10. 30 a.m.? When was that communicated to the committee?

Air Marshal Houston—I have always wanted to go to that. As you know, I am the Chief of Air Force.

Mr PRICE—I am not saying you should not go.

Air Marshal Houston—My responsibility to my people comes first. I have always wanted to go to that. Essentially, I have worked hard to ensure that I could go to that. The Chief of Army and the Chief of Navy are both going to that, as are the Prime Minister, the Leader of the Opposition and the Minister for Defence, and it is only appropriate that the Air Force people should be represented in the same way.

Mr PRICE—But that is not the question I asked. I asked when you first became aware of the double booking—

Air Marshal Houston—That has been around for a little while, yes.

Mr PRICE—and when it was communicated to the Defence Subcommittee. That is all I have asked.

CHAIR—I can answer that question. It came through the minister's office to me, last Wednesday or Thursday.

Mr PRICE—Okay.

CHAIR—I think that is when I spoke to you, Roger, and said that the Chief of Air Force could be here, but for different hours than in the original communique to the committee members, and that we had to bring this hearing forward to run from 8.15 to 10.15 in order to accommodate the need for the chief to travel to Townsville today.

Mr PRICE—I would be assisted, Air Marshal, if you could help to unravel the paper trail on the decision to retire the F111s a little early. I think in earlier evidence we talked about the DSTO. So that I am absolutely clear, did the DSTO prepare no special papers in relation to the retirement of the F111?

Air Marshal Houston—First of all, I am getting advice from the DSTO on almost a constant basis on the F111. Indeed, right now I have advice from the DSTO on the wings and the need to do further work on the wings, given the uncertainties about their life in service—essentially, how long those wings can be used safely in service. So it is an ongoing process, but the whole issue of the F111 was discussed extensively during the defence capability review that was conducted last year. That process continued almost constantly throughout the whole of last year. Most of the discussions were held in the department, at various levels. My direct participation in that was in the Defence Capability Investment Committee, and we met very regularly from January last year until towards the end of the year, when government finally made decisions on the review that had been conducted. But I might add that most of the work was done at a much lower level in the department.

Mr PRICE—I apologise, but I just want to get an understanding of this. In terms of any recommendations that you made as Chief of Air Force or on the investment review or on the review—it was not called a white paper review, but whatever that was called—were there any special papers prepared by Air Force that informed the decision? First, were there any papers? I do not need the detail; I am just interested to know whether there were any papers. Was there a team dedicated to developing papers to inform your decision about the retirement?

Air Marshal Houston—You are taking me back a long way. I would like to take that on notice, because it was a very dynamic environment. It involved my staff constantly for over 12 months. Those people did nothing else but work on these sorts of issues for 12 months. The same was true of what was happening in Army, Navy and indeed in the capability systems area of Defence. We also had the full involvement of all the support people as well, including the DSTO. So I cannot say to you that, yes, there is one paper or there is this or there is that. All I can tell you is that it was a very dynamic process and I would be delighted to come back to you with an overview of what that process involved in terms of papers. There were many papers. There were lots of interactions. There was a lot of committee work, and it was a very long and drawn out process.

Mr PRICE—Thank you very much for that. I am very grateful. If you could in your answer to that question on notice indicate those papers and the timelines, I would be most grateful. I have some more questions but I think I should let some other people ask some.

Mr BEVIS—There are two areas that I have mentioned a number of times, both at these meetings and separately, that are of serious concern. One is the question of whether or not after 2010 we will have a reduced capability and whether that gives rise to a capability gap between us and others. As a subset of that, questions then arise as to the decision to retire the F111 early and about what replacement we might get and when that would become available.

I will take the bigger picture issue first, because that does seem to me to be quite critical, and then look at the decision to retire the F111s early. I do not know what the proper name for that graph is. I have heard various representations of it but you know the one I mean: the graph that shows our capacity to deliver weapons per mission at 1,000 nautical miles. The document which was provided to us on the morning of our last hearing shows a substantial decline in laser guided munitions capability at that point and a less substantial but nonetheless significant decline in stand-off weapons at 2010, which does not start to improve until 2014. Before I get into the

detail of that, can you just explain to me the cause of that decline and the cause of the increase that starts to occur in 2014?

Air Marshal Houston—The first thing I would say is that the strike capability between about 2011 through to 2014, as depicted on that graph, is higher than the strike capability we have right now. We can actually attack more targets and drop more weapons in that period than we can right now. Having said that, we have an increase in capability between 2006 and 2008, which is depicted on the graph. That really reflects the introduction of the tankers. The new tankers give us a ninefold increase in air-to-air refuelling capability. So what we are able to do is use the tankers to increase the number of aircraft that we can take out there if we have to. That is the reason for that increase. In terms of the decrease that you have identified, that is subject to the withdrawal of the F111.

Mr BEVIS—And the increase around 2014?

Air Marshal Houston—The increase in 2014 relates to when we expect the Joint Strike Fighter to start delivering operational capability.

Mr BEVIS—Can I follow up on a couple of those things. Your opening comment referred to around 2011 being better than 2004. I have to say, 'So what?' Is there anyone planning to have a capability in seven or eight years less than they have now? I would expect that in 2011 our capability will be better than it is in 2004. That does not seem to me to address the principal headline issue that I raised. Indeed, can you inform us if there are any other countries with which we train and exercise or indeed any other countries generally in our region whose planning involves a reduction in their capacity to perform these sorts of missions around 2010 for a period of three, four or five years?

Air Marshal Houston—First of all, we need to get straight what we are talking about. You are taking about capacity; I am talking about capability.

Mr BEVIS—I am talking about the capability set out in your evidence to this committee. I am not creating the evidence; it is your evidence to this committee. It is a measurement you gave this committee as, I assume, an important measurement of capability that we should take into account.

Air Marshal Houston—Let me just say, though, that we are talking about capability here. We are talking about sending young Australians off to war under the conditions set out in the white paper. If you have a close look at the white paper you will see that it says that we should expect to attack militarily significant targets that are defended by credible levels of air defence. I am telling you that it does not matter how many platforms we have. I am interested in delivering to the government a lethal and survivable strike capability. As the Chief of Air Force, I have to send young people out there. I am accountable to you, to the parliament, to the government and to my own people in making sure that I do not send young Australians off in an aircraft that might be vulnerable in those circumstances. That is why I say it is important to talk about capability. The capability we will be fielding post the withdrawal of the F111 will be a more survivable and more lethal capability than we have right now, given the strategic developments we see in our region. Government has asked me to come up with the strike capability that is capable against

credible levels of air defence. With the fielding of new capabilities in the region, I have to have the right capability to do that.

Mr BEVIS—I do not dispute any of that and I think you would be hard-pressed to find people who would want to. My point, though, still remains. Bearing in mind that this is not in a vacuum, the capability that you chose to provide to this committee by way of evidence—that is, this paper that you provided to us on the morning of our last public hearing—followed some six months of requests from the committee to obtain answers to a range of issues, which to this day I do not think have been properly addressed. But, in an effort to respond to those things, this graph was put before the committee, I assume in part to address the concerns and questions the committee had been raising for some six months. That is what I am basing my questions on. If you are saying that that was the wrong evidence to put before the committee at our last hearing and there is other evidence that we should have been taking into consideration to determine the factors you have just described, that should be put before the committee now. But, in the absence of that further evidence, I go back to the evidence that you gave us at our last hearing on this matter, which is that table.

I again ask: are there any countries with which we exercise who, in respect of the matters on that chart, are intending to reduce their capability at 2010 for a period of three or four years? I cannot think of any. There are two things here. One is our capability; the other is comparative capability. The question I am asking goes to the question of comparative capability. In respect of this aspect of our capability, we are, on your own evidence, reducing our capability. My question is: what is the situation with other countries with whom we would exercise or want to compare ourselves? Is anyone else doing this?

Air Marshal Houston—The strike capability that we have here—what we have put on paper—is weapons per mission at 1,000 nautical miles. That is just one small component of a strike capability.

Mr BEVIS—I accept that, and that is the only part I am asking—

Air Marshal Houston—I am telling you that the strike capability that we will have post F111 will be better than what we have got now, it will be more lethal than what we have got now and, importantly, it will be more survivable than what we have got right now.

Mr BEVIS—I understand that we will be more certain of delivering that capability on that chart after 2010 because of the upgrades, early warning and other things. I understand that we increase our survivability in undertaking those tasks. That is accepted. The question I asked still stands, notwithstanding the fact that those other upgrades are occurring so that we have increased confidence of being able to undertake the mission successfully and without loss. Obviously there are other countries that are planning to do the same thing—that is, make their aircraft more survivable and so on. That is a given. But, putting those variables aside, is there anyone who, given those changes, is also planning to reduce their capability, as we are, in delivering ordnance at 1,000 nautical miles?

Air Marshal Houston—I think it is a hypothetical question. Who else has a strike force in this region that delivers stuff at 1,000 nautical miles?

Mr BEVIS—I do not think there is anything hypothetical about it at all. We would know or have some good feel for what the capabilities of the countries we exercise with and compare ourselves with are likely to be in five, six or seven years time, as they do with us. There is not much that is hypothetical about that. But it does not appear that we are going to progress an answer on that.

Air Marshal Houston—I can come back to you, but, essentially, there are very few nations in the world that have the capability that we have.

Mr BEVIS—And some of those are the countries I was just talking about—that is, the people we exercise with. They were the people I was asking the question about. Can I put on the record—

Air Marshal Houston—Do you mean the United States?

Mr BEVIS—and correct me if I am wrong—

Air Marshal Houston—I will give you an example—

Mr BEVIS—those countries that are not planning to do this.

Air Marshal Houston—The United Kingdom last week announced that they were going to change their force structure. They are getting rid of legacy platforms. They are getting rid of their Jaguar, which is a strike aircraft. They are also getting rid of a Tornado squadron because they want to release funds to move into a network enabled future where they are going to develop a system of systems just like we want to do. If you have a close look at the United Kingdom, they are doing very similar things to what we are doing. In order to release the funding to achieve the balance that they need to develop this system of systems for the future, they are retiring the Jaguar early, which directly reduces their strike capability as well, in the same way that we are making the adjustment in Australia.

Mr BEVIS—Thank you for that—I had not seen that. Can you tell me when they are retiring the Jaguar and when it was originally planned to retire it?

Air Marshal Houston—I think it was planned to retire it in about 2009. They are retiring it in 2007. I had the British Chief of Air Force over here a short time ago. He talked to me about it and said it was absolutely essential that he develop a network enabled air force for the future and that he was going to sacrifice legacy platforms to do it. The announcement last week actually puts that into effect.

CHAIR—Are there any further questions?

Mr BEVIS—I have plenty of them.

Senator FERGUSON—Chair, can I say that, because of the view expressed previously to you by members of the opposition that there was not enough time, we are prepared to cede our time so that they can have as much questioning as possible unless some issue arises where we

think we need to intervene. Other than that, we are quite happy for them to ask their questions in the time period allotted.

Air Marshal Houston—Can I suggest that if at any stage we want to go in camera—although I cannot talk about everything as openly as I would like sometimes because of considerations of the national interest and national security—I would be quite happy to do that.

CHAIR—Thank you. I think the committee appreciated the briefing we had at Amberley, which really did help a lot of us in relation to understanding the strategy.

Mr BEVIS—Concerning the original maroon-coloured graph which represents the stand-off weapons, there was in the 2000 white paper—although it is now not proposed to go ahead; it has been cancelled—a further upgrade of F111 capability that would have fitted the F111 with stand-off weapons. Is it possible to tell the committee what the graph might have looked like if in fact that capability upgrade had continued? Indeed, is it possible to produce a graph of what it would look like if the 2000 white paper proposals had actually gone ahead—that is, if the F111 upgrade or the further upgrade of weapons had been proceeded with and if the F111 retire date had not been brought forward?

Air Marshal Houston—Of course we can do that. You give us the boundaries that you are suggesting in terms of the funding that would be provided and so on and we can give you the sort of capability we would have. Of course we can do that. But I would prefer to take it on notice and come back to you.

Mr BEVIS—Sure. There are actually a number of things I wanted to ask about the F111, but some of them were from our discussions up at Amberley and it may be that towards the end we may want to deal with some of those in camera.

Air Marshal Houston—Yes.

Mr BEVIS—In answer to my earlier question you said that 2014 on this graph was when you thought the Joint Strike Fighter capability would start to be seen in effect. On that time line, when does that presuppose delivery?

Air Cdre Harvey—The current target and our preferred delivery date of the JSF is 2012. It has been published as that all the way through. It is clear from all the press reporting that there is pressure on that date. We still think that is possible but we are working towards what the optimum time to take the JSF is. One of the things we would look towards is training. Because we do initial training in the US, we would train to the highest extent we could so that as soon as the aircraft were in-country effectively they would have an operational capability. As the graph shows, the question is: when does that start? The draw-down of the F18 and the introduction of the JSF and when the JSF overtakes the draw-down is the question. The graph shows about a 2014 date. It is all tied to when the actual aircraft arrives in-country and how quickly we ramp it up to IOC. Let us say that we are still targeting 2012 but we are not sure yet whether that is our optimum preferred delivery date.

Mr BEVIS—Just so I can get this clear, does that mean we get the aircraft here in 2012 but we do not see an improvement in capability until 2014 or does that graph tell me that we would

like them in 2012 but, for the purposes of this graph at least, the assumption is that the aircraft get here in 2014?

Air Cdre Harvey—We have a fairly conservative approach to say we allow for a probable net increase in performance in about 2014 as performance increases over and above the F18 one.

Mr PRICE—So you are saying then on the same basis that if it arrived in 2014 you would get that benefit in 2016?

Air Cdre Harvey—I am not saying that. This is one scenario which is reasonably conservative. It depends on the training and the introduction approach—how much we do in the US as opposed to what time we allow in-country to work it up with things like AEWC.

Mr PRICE—What sort of saving could you extract on that 24 months delay if you did more training in the US?

Air Marshal Houston—When we introduced the F111, the crews had previously been trained in the United States. When those aircraft arrived back in Australia, the crews were virtually operationally capable very shortly thereafter.

Mr BEVIS—I actually had a different interpretation of Air Commodore Harvey's answer to what I think Roger's was, so to be clear in my mind I will ask the question again. Does this graph presuppose that the first batch of aircraft—I do not know what we are taking as the first batch; the squadron or whatever it is—arrives for our use in 2012 or 2014?

Air Marshal Houston—It is a conservative estimate. That is when we would expect—

Mr BEVIS—Which 'that'? That is my question—2014 or 2012?

Air Marshal Houston—It is based on a 2013 introduction to service. That is the conservative basis upon which the graph is constructed.

Mr BEVIS—So there is about a year's work-up after acceptance of the aircraft before you would anticipate being able to say there is any improvement?

Air Marshal Houston—No, we have taken a conservative approach to the introduction of the aircraft. We would imagine 12 months from the time the aircraft are delivered to fielding them as having operational capability.

Mr BEVIS—Yes, okay. Now I understand the answer. The ASPI document, *Reviewing the Defence Capability Plan 2004-14*, touches upon this in part. It says there are:

... the widely held expectations that the F/A-18s replacement, the F-35, will be at least a couple of years late.

In the same paragraph it says:

The year of decision for the third phase has slipped from 2012-13 to 2014-17, while the in-service delivery date seems to have slipped from 2017-18 to 2018-20.

Can you comment on that? That is on page 9 of the ASPI document, entitled *Reviewing the Defence Capability Plan 2004-2014*.

Air Cdre Harvey—I think what they are talking about is that the Air 6000 new air combat capability project is a three-phased approach. There was always phase A, B and C. We are now aligning the decision times with when we expect aircraft to come in. There is a finite ramp-up rate of aircraft, and A, B and C align an appropriate decision time with when you expect aircraft to come in. There is no change in the delivery expectation; it is just aligning the decision point with the expected ramp-up rate of aircraft, starting at 2012.

Mr BEVIS—So that I can make sure that I understand the language, does that mean that the increased capability is now anticipated to be—from the ASPI document at least—about two years later than originally thought?

Air Cdre Harvey—I think as the Chief of Air said, the expectation is that we still plan on having aircraft as at 2012. As a conservative measure in those graphs, we said, 'Okay, allow for about 2013 and allow for a bit of ramp-up time for the capability,' but it is still consistent with the original plan to start in 2012 and for there to be a continual flow of aircraft.

Mr BEVIS—None of us have crystal balls, but there seem to be some serious concerns amongst various commentators associated with JSF or generally in the industry. I was also taken by the views of the US Congressional Budget Office on this issue. In their 2003 budget report they noted:

The F-35 Joint Strike Fighter program is one of the military's most ambitious aircraft development programs.

And they said that the 'development could prove very challenging'. Given our knowledge of past leading edge technologies, I cannot think of too many—in fact, I cannot think of any—that have actually come to fruition on time. Given that the US military have quite a few pretty ambitious undertakings, if the Congressional Budget Office ranks the F35 as 'one of the military's most ambitious programs', what level of realistic confidence should we have that timelines are going to be met 10 years from now?

Air Marshal Houston—I think there are risks in any program, and the risks have to be managed. But one of the things about the Joint Strike Fighter that is perhaps different from some other programs is that they have actually flown two technological demonstrators. They flew very well and it was a very successful demonstrator program—the X-35. In addition, Lockheed Martin have already developed the F22, and a lot of the technologies that are fielded in the F35 come directly from the F22. In other words, Lockheed Martin will leverage off the F22 program in developing the F35 program.

At the end of the day, there are risks and they have to be managed. We have a project office in the United States. We are part of the systems demonstration and development phase of the program. We are very much in touch with what is happening. We have 30 scientists working on the program. At this point we have not made a decision to acquire the JSF. That decision, as we have discussed previously, comes later—probably in 2006. In the meantime, we are learning everything we can, which I think is the best protection against the risks that are involved with the

program. That is all I will say on the matter at this stage. John, do you want to add anything else?

Air Cdre Harvey—All I would say is that if were not an ambitious project we probably would not be joining in it—an aircraft to take us out to 2030 and beyond. The key point is that we are partners in the development. We do have people on the ground working with the project. We have very good inside knowledge so that we can make the decision at the appropriate time.

Mr PRICE—General Cosgrove said, I think in evidence back in December 2003, that if necessary we could always extend the life of the F111. What would be the circumstances that would underpin such a decision, or in reality are we just going to put all our eggs in the FA18 and P3 Orion basket?

Air Marshal Houston—What he was referring to was the fact that we will not retire the F111 until such time as all the prerequisites come in—in other words, until we have the Hornet fully upgraded, most particularly with the Link 16 and EW self-protection; the follow-on stand-off weapon fielded on the Hornet; the air-to-air refuelling tankers delivered and capable, and airborne early warning and control introduced and capable. We will not retire the F111 until all of those conditions are satisfied. Our hedging strategy against the risks involved with one of those items not coming in by, say, 2010, would be to extend the F111 out for two years to 2012. That is what we had established.

I might add that as we go through our transition planning and given our experience with other transitions—the notion of operating all of our current capability, plus introducing a very capable and complex new aircraft to service—we do not have the resources to do that without actually taking resources from within the air combat force. Our preference would be to retire the F111 so that we can free up the resources to introduce the F35.

Mr PRICE—Could you refresh my memory and tell me when all these upgrades that you mentioned are scheduled to be completed?

Air Marshal Houston—The AEWC arrives here with the first two aircraft in 2006. I think we are probably looking at an operational capability around 2007. The tankers are due in 2007. We are going into contract at the moment.

Mr PRICE—So it will be 2008?

Air Marshal Houston—We are looking at an operational capability in about 2008. The follow-on stand-off weapon will be completed in about 2009-10, and the other items in the Hornet upgrade should be completed by about 2008-09.

Mr PRICE—Once all those things are completed the F111 will then be retired?

Air Marshal Houston—Yes, we will start withdrawing the F111Cs from service.

Mr BEVIS—There are a number of things about the F111 I want to get to, but before I go down that path I would like to go back to the earlier comment—the question about leading edge technology and the associated risks. There are clearly benefits in acquiring leading edge

technology in any field and there are obviously known risks in that as well. It may well be a very good thing to do—I am not arguing it is not—but given that there will usually, if not always, be some greater risks in acquiring leading edge technology, can I go back to my earlier question and the comment I made about the commentary of many people, including in the US Congress's own budgetary review process, that we are looking at a very high-tech piece of kit which, even by American military acquisition standards, is one of their more challenging ones.

How sensible is it for us to plan on the currently published dates being achievable given our past knowledge of acquiring these sorts of leading edge technologies, both for us and what we observe of other countries acquiring similar technologies? It sounds a bit rhetorical, and maybe it is, but it just seems to me inescapable that by its very nature the prospect of all the things falling into place as they are meant to over the next 10 years on a program which the Americans acknowledge is one of their most challenging must surely be slim. The prospect of every piece falling into place as it should do on time has to be the least likely scenario.

Air Marshal Houston—All I would say is: yes, I agree with you. There is risk to be managed but the Americans need this capability as much as we do. They have the same problem that we have, which is managing a very large fleet of old aeroplanes, and they need the new capability as soon as they can get it. As I think I have mentioned in previous evidence, they have air combat aircraft that they are parking because they are running out of fatigue life. So, in essence, the size of their fleet will continue to decline until such time as the joint strike fighter is fielded and introduced to service.

Mr BEVIS—I am not 100 per cent sure of this but somewhere buried in the back of my mind I have the thought that, as they have got their line of production, the version that they are intending to produce first for their own domestic consumption is the STOVL version.

Air Marshal Houston—I think that has changed, and I would ask John Harvey to brief you in detail on that.

Air Cdre Harvey—The order of production has always been the CTOL group of conventional take-off and landing first, then the STOVL second and then the carrier variant third. When they had the weight issues there was a proposal to change that order to have the STOVL first because it is most demanding. They have gone against that. They said no. They are pressing ahead and building the CTOL version now, as we speak, and they are doing the weight reduction work on the STOVL. I would just add that it is a big challenging project but the issues they face so far have not been real technology challenges; it is packing so much in a relatively small platform. The technologies on the aircraft are pretty much proven. What we will see in the longer term is that the software will be the challenge—not surprisingly. What they are doing about that though, in taking lessons from the past, is this spiral development approach so that USAF will actually be operating block 1 software aircraft as early as 2009 and will step through in blocks with the capability. There are things happening to address the challenges from the past. Even the discipline now of delaying the critical design review to get all these weight things sorted out does show a discipline they have learnt from the past.

Mr PRICE—When was the FA18 introduced into service?

Air Marshal Houston—The first ones arrived in Australia after flying across the Pacific in May 1985.

Mr PRICE—So is that coming up to 20 years in service next year?

Air Marshal Houston—Yes.

Mr PRICE—Is there an ageing program for the FA18?

Air Marshal Houston—The FA18 is ageing—most of our fleet would be defined as an ageing fleet. We manage those ageing fleets very carefully, including the FA18, with the assistance—

Mr PRICE—I accept that. But is there a formal program similar to the F111 program?

Air Marshal Houston—Yes, there is. I will get John Monaghan to give you a run on that.

Air Vice Marshal Monaghan—Regarding ageing aircraft programs, it is a normal policy of our system that on introduction to service, at acquisition, every aircraft has an aircraft structural integrity management program and an engine system integrity management program generated. Of course, we join in with the home nation in the future obsolescence management of the aircraft as well. So I think it is true to say that every aircraft on entry to service has such a program.

Early in the life of the F18 it was discovered that Australia's usage of the aircraft was substantially more severe than the home country, US Navy. In response to that, as part of the structural integrity management program, we embarked upon the joint program with the Canadian services called the international follow-on structural test program. That program has been running, as I say, from the earliest days of the aircraft life and is now providing us with the substantial data which underpins both the Canadian and our own structural upgrade modification programs that you currently see.

Mr PRICE—So the ageing program only looks at the structure of aircraft.

Air Vice Marshal Monaghan—No, as I said, I think you could say that we divide the aircraft into essentially three blocks. The big cost drivers are, first, the structure in terms of age: it is proven that that is what kills people, that is what makes holes in the ground as a general sense. The engine is a major cost driver in aeroplanes, so that is managed under a specific program. Then there is an obsolescence program which includes system architecture such as wiring et cetera, which is covered by the kinds of things you see with our constant upgrade of aircraft, which looks after system obsolescence as one of its sidelights as well.

Mr PRICE—I do not want to delay the hearing but I would be most grateful if you would take on notice giving me a bit more detail. I would be interested in the comparison between the program for the F111 and the FA18. As I understand it, our earlier discussions were about prudently proposing that we would not get it into service until 2014, and I think Mr Bevis's questions go to the point that in fact that gap could be even greater. Given your comments about the F111 and the ageing of that aircraft, what are the challenges that you see with the FA18

having the No. 1 role until such time as the joint strike fighter comes into service and the possibility that we could be required to keep them going until 2016 or 2018?

Air Marshal Houston—We have a hedging strategy against the late delivery of the joint strike fighter. That is the plan that we have to replace the centre barrels—that is, the centre fuselage—of the F18. There is a program under way in Canada already where the Canadian FA18s are having their centre barrels replaced. That is principally the way we would manage the risk associated with the late arrival of the joint strike fighter. At the moment we plan to do 15 centre barrel replacements. We are going to do that as part of the Hornet upgrade program. Depending on how the Joint Strike Fighter program goes, we can do up to 43 if we have to. We have got money identified to do those 43 centre barrels if we need to. John, would you like to say any more?

Air Vice Marshal Monaghan—That is pretty much the arrangement. Obviously the centre barrel is only a part of the structural upgrade program. There is a substantial increase in life available from a raft of minor modifications which are part of the program. If you look at what we call HUG phase 3.2, yes, it includes 43 centre barrels but it also includes on the rest of the fleet other life extension modifications that improve their life.

Mr PRICE—If you can humour me, I think in evidence back in June the comment was made that ageing aircraft provide surprises. If we were to keep the FA18 going until 2015, which does not seem to me to be an unreasonable expectation—and it could even be longer—the aircraft will be 30 years old. What sorts of surprises do you anticipate at that stage?

Air Marshal Houston—An aircraft 30 years old will surprise you, yes. We have seen that with the F111, which is now into its fourth decade.

Air Vice Marshal Monaghan—First of all, in making the comparison—I am sure you are doing that with the F111—in my original evidence I gave some evidence about the design features of the F111 and the materials and processes chosen for the aircraft that substantially increase the risk that we face with the aircraft. In the visit to Amberley, I think you would have been exposed to some of those design features. Secondly, the F111 that we own has a vintage of 1968, not 1985—and that is a substantial difference in comparing the two aircraft. Thirdly, from the day that the aircraft was brought into service there was the international follow-on structural test program, which Australia invested itself in—with the Canadians—to have a substantially better understanding early in the life of the aircraft about exactly what we had to do. Finally, we are part of a very large international fleet of F18 aircraft, and that provides a very good basis to manage risk horizons across a very much larger fleet with people who have deeper pockets than us to address them.

Air Marshal Houston—We are also not looking to be the leader—

Senator FERGUSON—If you could anticipate a surprise, I presume it is no longer a surprise.

Mr PRICE—Yes, indeed. In terms of the chart Mr Bevis was talking about, if we were to continue with the upgrade of the F111 that is now not proceeding, how would that impact on that chart?

Air Marshal Houston—I think we are going to come back to you on notice about that, if you would not mind. That would be the best way to answer that question, I think.

Mr BEVIS—It is this chart in the briefing paper with that variation.

Mr PRICE—Right, I missed that.

Mr BEVIS—If I could go back to the JSF. The other thing about requiring leading edge technology, to which I am not opposed, is not just the time line but the cost. That may also affect what we can do downstream depending on what happens with cost. At this stage, we have not made a decision to buy, but in anticipation that a decision is made to get the JSF, I noticed an article earlier this year referred to a $7½ billion increase in the costs associated with the research program. This was reported in *Defense Ne*ws of 12 January this year. The article stated:

Spending $7.5 billion more than planned to develop the F-35 ... will prevent costlier problems, Pentagon and Lockheed Martin officials said.

I love that piece of spin: it costs another $7½ billion and they say it is a saving. What is our current planning in respect of not just addressing issues associated with time lines but cost variations, given that we may well get a developmental aircraft?

Air Cdre Harvey—There are two issues there. One is the cost in the US of the system development demonstration phase. There was an increase in the cost of that. That is going through Congress at the moment, and that was the increase that you mentioned. The proposal to fund that is from the US government transferring money from their acquisition phase into the development phase. It has no impact on us, which is good for us. That is one of the advantages of being, effectively, a one per cent player in such a huge project. In terms of the cost of the aircraft itself, the JSF was very much at the bottom of the costs provided by contenders in the original Air 6000 project, which of itself was good. The current price is still below our broad budgeted figure for the aircraft. On current estimates, we still believe we could afford up to 100 aircraft within the budget for the project. We manage that on an ongoing basis that is somewhat sensitive to the actual time of acquisition. Aircraft tend to get cheaper the further down the production curve you go. In general terms, the JSF is a relatively low-cost aircraft. That is the way it was designed, and that is one of the attractions of the aircraft.

Mr BEVIS—Do we have an operational concept document for the JSF?

Air Cdre Harvey—Yes, we do.

Mr BEVIS—Which version are we at?

Air Cdre Harvey—We are at version 0.7 this year of our operational concept document. We do not have the final version to submit to committees yet, but we will give the first draft of that to the Defence Capability Committee at the end of this year, and that is still a year before any major decision is due.

Mr BEVIS—Regarding the other concern which I raised way back in December—and it is a bit a case of the horse and the cart and which is going first here—given that we do not seem to

have too many other options, to what extent is that being written to suit the inevitable conclusion?

Air Cdre Harvey—Sorry, the question was: do we have an OCD for the JSF?

Mr BEVIS—Yes.

Air Cdre Harvey—Yes, we do. It draws on generic requirements for ADF, such as strike capacity, air superiority requirements et cetera, and how the JSF suits that. A lot of that is generic and would be applicable to any other contender, but, as I said, the current expectation is that JSF will do it, and this is part of the analysis to prove that it can do it.

Mr BEVIS—Does that operational concept document include a broader assessment of our likely needs in the years we are looking at the aircraft being in service?

Air Cdre Harvey—It certainly does. It focuses on about the 2015 threat environment but it looks beyond that as well. The other point to note is that the JSF is not fixed either. It is based on a two-year block upgrade program, so that will change throughout its life as well.

Mr BEVIS—Is it platform specific?

Air Cdre Harvey—As I said before, a lot of the parts are generic. How does the JSF fit in that? As I said, it is part of the network: JSF plus tankers plus AEWC plus weapons, air warfare destroyer and all those sorts of things.

Mr BEVIS—Can I pick up a couple of points Roger has raised along the way about the F111 and the surprises of ageing aircraft. I think in earlier evidence, certainly more

generally, it has been mentioned there were three examples of this that give rise to a change in posture as to when we think we should keep the F111s in service until. They were the explosion in the fuel tank, wing problems—and what was the third one?

Mr PRICE—The sealant.

Mr BEVIS—That is right. Let us go through those one at a time, starting with the wing crack. I must say it was useful going up to Amberley and having a look at some of that stuff. It was only a couple of years ago, in June 2002, at the Senate hearings where that issue came up that the advice given to the Senate was:

> The prognosis is that we will be able to remediate the wing problem very easily and relatively cheaply. ... I am very content with where we sit right now with the F111.

That was in June 2002. What changed so significantly after that date?

Air Marshal Houston—I think that was my evidence. As I recall, I was under great pressure about the fact that we did not have any capability at the time, because of the failure of the wing. I might add that we did not field an F111 capability for a long time because of the problems not only with the wing but also with the fuel tank detonation that followed six months later. Going to

that evidence, I said that we would remediate the capability very quickly and very effectively. We did that. We bought 26 wing sets from the boneyard in the States, AMARC. We brought them home. We came up with a plan. We put in them in to Boeing, Boeing serviced the wings and then we fitted them one by one to the F111s. As you know from your visit to Amberley, we now have a completely remediated F111 capability. F111 can now do what the government requires it to do, which is a very pleasing result. So there is no contradiction there.

I guess the real issue is the future. We took the best wings from the boneyard. We thought we were getting pretty good wings. We are learning more about those wings now, as Air Vice Marshal Monaghan said the last time we met with you. We now have some real concerns about the way those wings were treated in the past—the way they were flown and the regime they were operated in—and we have to do more work to fully understand how long those wings may be useful to us. I will let Air Vice Marshal Monaghan continue on that in a moment. Do you want me to continue with the fuel tank detonation now?

Mr BEVIS—No, I will come back to that later.

Air Marshal Houston—We will go to the wings issue now and I will get Air Vice Marshal Monaghan to brief you on that.

Air Vice Marshal Monaghan—My view on the question you have asked is much as has just been said in that remediation was about putting the aeroplane back ahead. A longer-term strategic question is asked: could this happen again? The answer is, yes, it could—in a cold proof load test we could discover structure in the fuselage that have problems that are age related that we had not anticipated, and the chief, in seeking advice from DGTA, DSTO and me, responds to that. In terms of the current state of the wings, I think last time I said that you were delving into the entrails of a problem that is currently under management.

Of recent times, fractographic analysis, which is simply the analysis of the cracked faces they found in the failed wing—they have studied some 60-odd cracks that existed in the wing at the time we went into the accelerated test—has undermined the confidence of the DSTO scientists, who give their advice in the usage spectrum that was applied in the test in comparison with the usage spectrum that the F111 C wing had experienced in service. That is causing them to now require a great deal of additional work to be undertaken to gather confidence to stick with the current 5,900-hour interim life of the wing and to validate that life. Certainly, it has brought into question whether they might be able to extend that life. As I say, other than saying that their confidence of late has reduced, I am not predicting any dire outcome of that investigation. There is a lot of work to be done to validate the inputs to the analysis. As part of that, for instance, an F111 F wing test will begin very shortly to get us a better view of the large number of the D and F wings that are now the basis of the operation of the fleet.

Mr BEVIS—I am just trying to rationalise the advice we are getting now and more recently with the advice that was given not that long ago. I referred to one quote out of the 2002 hearing but there were other statements made that gave a sense that this and other issues were in hand. I will read a couple of sentences from the transcript:

If we had everything going according to Hoyle, we would fly about 3,600 hours a year. Last year, we flew 2,757 hours; this year, we will fly almost the same: about 2,700 hours. The outlook for next year is about 3,200 hours at this stage, which is getting back towards the 3,600 hours that we would want to fly for the foreseeable future.

Again, this is a picture of issues being managed and things improving. Elsewhere, and I think it was at the same hearing in response to a question from Senator Evans, Air Marshal Houston said in part:

I suppose that the long and the short of it is that we can meet all our preparedness requirements at the moment with a credible capability.

Senator Evans then said:

Do you have confidence that you can continue to get the F111 to meet that level of requirements through to 2012 or 2015, the possible date of the introduction of the JSF?

Air Marshal Houston replied:

I am confident that we can, given sufficient funding.

I am still trying to reconcile that advice, which I have to say is consistent with a long list of advice that this and similar committees have received for some years, with concerns about the things you are now raising. They are not new. Indeed, at different times they have been raised by Labor and Liberal members of these committees and on each occasion reassurances of the kind I have just quoted have been consistently given. In the last year or so, there has been a dramatic change in that and I am having some difficulty reconciling the cause of that changed advice.

Air Marshal Houston—Simply put, the advice that Senator Evans got was the best advice that was available at the time. Yes, we have 'remediated' the capability, and I think we have done a great job there. I have been absolutely delighted with the capability we have been able to field in the last 12 months, and I would like that to continue right up until the aircraft retires. However, as you have just been advised by AVM Monaghan, the confidence of DSTO in the wings that we got out of the boneyard is not as good as it was way back then. We have done a lot of work to determine the usage of those wings and the operational environment they worked in, and it was probably more severe than we had anticipated.

Incidentally, we took the 26 best wing sets out of the boneyard. The wings that remain there are not as good as the wings we have now. As AVM Monaghan said last time, we are dealing with airworthiness in action. We need to go away and do the analysis on these wings from the boneyard and, in the fullness of time, come back to you with definitive advice. The advice you were given back in 2002 was on the basis of the information that was available at the time, which was a reasonable outlook into the future. My biggest concern as the Chief of Air Force and as the ADF airworthiness authority is about the wings into the future. It is something we will have to analyse and manage very carefully. Where it all ends depends on the outcome of the fatigue testing and the analysis that DSTO will have to conduct over the next 18 months or so.

Mr PRICE—I think you have answered the question I wanted to ask. You are anticipating that the DSTO analysis will take 18 months?

Air Marshal Houston—I would anticipate having definitive advice for government on the outlook for the wings by about the end of next year. Bear in mind that we have to conduct a full fatigue test on the F-model wing.

Mr BEVIS—The year 2002, from the evidence I referred to, was the low point of the last decade—by 'low point' I mean our capacity to have aircraft available and flying—and our rate of effort in that year was the worst it had been for more than a decade, from 1992 onwards. So at the time we had our biggest problems, and the formal advice that Air Force gives the parliament is what I have just referred to. It seems to me that Air Force and industry are much better now at handling and maintaining aircraft, and the F111 in particular, than they have ever been.

Mr PRICE—And DSTO.

Mr BEVIS—And DSTO, as Roger points out. It seems to me that there have been a lot of lessons learned and things are being done better and in a smarter manner. It would seem that the evidence supports that. I am still bewildered as to how, at the low point of our rate of effort, formal advice can tell us things are in hand and are okay but, after we go through that absolute low point we then get a reversal of advice, which says: 'What we thought in 2002 is actually not the case in 2003. There are apparently some other problems we have not factored in.' If I am wrong on that, please correct me. I am not trying to verbal anybody here; I am just trying to get into simple English language an understanding of the evidence.

Air Marshal Houston—Okay.

Mr BEVIS—The reason I said that is that Air Vice Marshal Monaghan is perhaps not thinking that my phraseology is correct. I am happy to be corrected; I just want to be clear about where we are on this. After 2002, when we were getting this advice, Air Force seemed to be saying, 'There are some other factors that caused a reconsideration of our planned use of the F111, how long we can have it and how good it is for meeting our needs,' and so on. But the evidence is that after 2002 the rate of effort increased significantly. Air Force were able to use the aircraft as they wanted to. The number of flying hours had increased quite dramatically.

Air Marshal Houston—I will just go through what happened. On 12 February 2002, we had a wing break in fatigue testing. It broke at 1,450 hours. It was expected to go to 40,000 hours. We reviewed the situation and very quickly, within about a week, we restored some of the fleet to flying. They were the aircraft with wings that had sufficient fatigue life in them. We put a number of restrictions—G-limit, fuel and weight restrictions and so on—on the aircraft with those wings. We got the capability up and flying again. I think the Senate testimony you refer to was back in May of 2002. That was before the fuel tank detonation.

Mr BEVIS—On 3 June.

Air Marshal Houston—The fuel tank detonation came later in that month, and the prognosis was based on the best information available at the time. At that stage we had acquired the 26 best wing sets in the AMARC. They were being pushed through the servicing bay at Boeing. They were gradually put back onto the F111s. Those wings are back on. We have completely remediated the capability now. We are back to where we should be. You mentioned a couple of

figures in terms of the rate of effort through that period—around 2,500, which was before the wing breakage, by the way. After the wing breakage, we flew 2,700 hours.

In terms of the rate of effort we flew that year, after the wing breakage we maintained a credible capability with the aircraft. We did that very carefully through a number of initiatives that we took at the time—I do not want to go into the detail of that; I would be delighted to in camera—and we maintained a credible capability through that period. What has changed since then? We have had 12 months of wonderful experience with the F111. Everything is going the way I would want it to go. You saw it yourself.

Mr BEVIS—I think you are doing a good job.

Air Marshal Houston—What has changed is the assessments from the Defence Science and Technology Organisation in terms of the history of those wings. When we got the wings we did not have the complete history of all of them. We are now learning more about those wings, and fundamentally that is what has changed. That is why we do not have the same certainty that perhaps we had some time ago. We are uncertain about those wings into the future, and we need more work to be done by DSTO to confirm the condition of the wings into the future.

I might add that of the other wings that are available—from the information I have—I am advised that there is not a huge stock of spare wings in the desert. In fact, we are talking about a very limited number of wings being available in the desert. That is why I have concerns: there is nowhere else to go. We have all the best wing sets in the ADF at the moment, and I have concerns about those wings into the future and I need DSTO advice to determine how far into the future we can go.

CHAIR—I would just like to note that we have been joined in the public gallery by participants of the interparliamentary study program from some 13 countries. Welcome to our public hearing of the Defence Subcommittee of the Joint Parliamentary Committee on Foreign Affairs, Defence and Trade.

Air Marshal Houston—Can I just ask John Monaghan to add to that. He has more details.

Air Vice Marshal Monaghan—Correct. As a matter of fact we had intended to test the wings out to 40,000 hours and at that point do some fractographic analysis, and the failure occurred at 13,500 hours.

Mr BEVIS—That may answer what was going to be my next question. I would be interested to know when we got the history profile of those wings, because in June 2002—again, in those hearings—the Senate was advised:

We were able to find some really good wings in the United States. We already had four sets of wings in the store, and we have since received another seven sets. We expect to get a delivery of every other set, one every fortnight, until we get 26 wing sets.

That is from the transcript.

Air Marshal Houston—We went to the desert. We sent Air Force people to the desert and we looked at every set of wings in the desert. We took the 26 best sets. We had assumed at that stage that the fatigue history of those wings was fairly benign—quite reasonable. But what we are discovering now we have done a lot more work is that the history of those wings was not as we had been led to believe.

Mr BEVIS—They did not sell us a pup, did they?

Air Marshal Houston—The point is that the US Air Force withdrew the F111 from service because it was the most expensive capability that they operated at the time. I read a RAND report the other day that indicates that. I talked to my counterpart about that when he was out here recently. I said, 'Why did you withdraw the F111 from service?' He said, 'Angus, it was costing us too much and we needed the money to invest in new capabilities like the F22 and the F15.'

Air Vice Marshal Monaghan—Can I please add to that. No, they did not sell us a pup. The aeroplanes were in the desert, as I said previously. We still only have a handful of pairs of F111C wings in service. We are still undertaking the necessary scientific and engineering investigations to see whether or not the life of those wings that have above 5,900 hours use can be extended at all. If we had not taken a logistic solution to this aeroplane we still would not have remediated the wings. In remediating the wings—and this is not an unusual process that we go through, even for new aircraft buys—the DGTA provided an interim safe life for the wings that were brought in, based upon the analysis that we had at the time. Our major contractor, AeroStructures Australia, and DSTO and DGTA staff have been working ever since then to gather a better understanding of the wings that we have and of the life that remains in them. That is still available to us. We are in this committee investigating a process in train. It is still possible that DSTO and the engineers will solve the problem and come up with a management strategy that will allow us to take on these wings. The risk is we have not done it yet and of late the information that we have gathered has reduced rather than increased our confidence, but it is still a work in progress and it can be reported on to you every few months—and the story will evolve over every few months of work that we do.

Mr BEVIS—I was going to move from the wings to another issue.

Mr PRICE—Fuel tanks?

Mr BEVIS—Let us look at the issue that we went through in some detail in Amberley—the explosion of the fuel tank. If you want to talk about this in camera, stop me anywhere in the process and we will deal with it then.

Air Marshal Houston—We will be delighted to talk about that one.

Mr BEVIS—Okay. Do you want to go ahead and do that?

Air Marshal Houston—Yes, I would love to. First of all, there has been some commentary out there which has been completely wrong and completely misleading. We had a failure in the fuel tank there which was a classic ageing aircraft problem. I now ask AVM Monaghan to take you through the detail of that so you will understand we were not negligent. Indeed, we did

everything we could after the TWA 747 accident to ensure that we did not have those same conditions in our F111s. This was a failure completely different from that one. This failed from the inside out and could not have been picked up by normal maintenance processes. I will ask John Monaghan to go through it in some detail.

Air Vice Marshal Monaghan—The people who visited Amberley had the opportunity to see a complete loom which was the one that failed, and the chief engineer had in his hands at the time a cross-section of loom which gave a view of how it was constructed. As for the reason that I say this is a classic ageing aircraft problem, I guess I could say that the kinds of problems that caused explosions in passenger aircraft were ageing aircraft problems too. The question that arises is: having had an international experience of that type where an aircraft and lives had been lost, did the RAAF and the ADF airworthiness authority respond appropriately? The answer is very simply yes. We monitor worldwide airworthiness circulars and advice. Having monitored those airworthiness circulars and advice, DGTA directed that every aircraft in the ADF fleet be examined for loom problems in accordance with the lessons that had been learned from those civilian accidents.

The kind of construction that we were concerned about was looms running through conduit inside tanks, the conduit being to protect the looms. By running through the tanks over a period of time, the looms had worn and shorted to the conduit, causing sparks in the tank. If an explosive mixture forms in the tank, then of course that can lead to an explosion. The F111 looms were examined in accordance with that advice, just as those of all other aircraft were. The looms were quite a different design. As you saw, they were encased in a silicon rubber which ensured that the wires could not be damaged by rubbing against the conduit that they were carried in. They were assessed—in my view, professionally assessed—as not representing a risk in the way that had been suggested.

It turns out, however, that the design of this loom and the way in which it was manufactured, 40-odd years ago, led to a slow deterioration of the loom over time due to its maintenance practices—removing and installing pumps and the like—which led to the failure and shorting of the wires between each other after a considerable period in service—in fact, this being the first time it has happened and with the broader F111 fleet, some 500 aircraft, having been retired from service before this particular problem manifested. I can assure you, given the work we did on X-raying all our looms to put them back into service, that those same problems existed within the broader, very large fleet that the USAF had. They simply did not keep their aeroplanes in long enough for that problem to manifest. It manifested with us and we have taken all appropriate action since then to make sure that it will not happen again.

Mr BEVIS—Hindsight is a fantastic capability that we should all have and use regularly but none of us has that benefit, and I am not being critical at all. I think there was a judgment that was made. Everything is about risk assessment and there was an assessment made. At the time it may well have been a very reasonable and proper decision to take. I am not critical of whoever it was who made that judgment. I suppose in one sense, though, I do wonder about it being an unforeseen event, in that it was a known risk and a risk assessment was made. That is somewhat different to an unforeseen event that you have with ageing aircraft—

Mr PRICE—Or surprises.

Mr BEVIS—Or surprises, yes. This was a potentially known surprise, to go back to some earlier linguistics.

Air Marshal Houston—No, this was a surprise. This was a classic ageing aircraft problem, Mr Bevis; it really was.

Mr BEVIS—It was a surprise to the extent that no-one thought it would happen, because, if we had, we obviously would have done something about it. But it was a known potential risk against which an assessment was made—an assessment that could be fair and reasonable. I am not going into that; I am happy to accept that it was a fair and reasonable assessment to make. I am simply drawing the distinction between something that just crops up which was never anticipated, never assessed, as opposed to a risk which is assessed.

Air Vice Marshal Monaghan—You are characterising this as if the problem that we assessed it for subsequently arose. That is not so. The problem that we assessed it for did not arise; a different problem in the same loom arose. I would say that the best engineering effort that we had assessed that loom and said we did not have that problem, and a completely different problem arose. That constitutes a surprise—at least in the layman's language that I was using. We did not expect to have a problem in those looms for the life of the aeroplane. It turned out that we did.

Mr BEVIS—I just want to get this clear again: the known issue that was looked at was a fraying from the outside in?

Air Vice Marshal Monaghan—Yes, by rubbing against the conduit, because the things are not secured within the conduit but in silicon.

Mr BEVIS—I thought the problem that was known was fraying on the inside, and that the reason the risk was seen differently was that, unlike the commercial aircraft, the internal wiring in our military aircraft had that silicon rubber casing between the various internal wires and the external casing.

Air Vice Marshal Monaghan—No, that is not the case. Yes, we are worried about inside the conduit, but the conduit abrasion damage that we are talking about for the civilian fleet is on the outside of the wiring. That was the kind of issue we were working with. The detailed issue that we faced with the F111 fault was that, due to the design, at manufacture there was damage done to the wires on assembly. The wires were then encased in rubber and then—over a good 5,000-odd hours of operation and however many times the pumps were taken in and out—the movement of the loom resulted in the baring of the wires and the short circuit.

Mr PRICE—Why do you characterise it as an ageing problem if the problem arose in manufacturing? Again, with hindsight and experience, you can track it back down, but in your own words it is a manufacturing error.

Air Vice Marshal Monaghan—Ageing aeroplane problems come in a variety of forms, but they are characterised by an unanticipated consequence of either the design or manufacture that manifests itself later in life. You could say, we could say and in fact the DSTO was saying that in some respects the failures we are having in the F111C wings is due to what they call 'build

quality', which is simply the amount of quality control applied to that set of wings at the time that they were manufactured. Now, later in their life—obviously, early in their life it is not going to manifest as anything—cracks are arising from holes that were perhaps poorly drilled or fasteners that were not installed in the way in which they should have been under 100 per cent good quality control. Other things that can arise over the life are design deficiencies which had not been anticipated. The fact is that the problem, in either build quality or design, was there from the day that the aeroplane was built; it is just that we did not know it, and it manifests itself much later in life as an ageing aeroplane problem. Aeroplanes that are extended discover more of these design and manufacturing deficiencies over their time. In the case of this wiring problem, in my view, we are seeing a classic ageing aircraft problem—as are the cracks in the lower wing, by the way.

Mr BEVIS—I understood that this issue—the question of the wiring and potential threats—had been raised at a chief engineers conference prior to the incident occurring. Is that not so?

Air Vice Marshal Monaghan—As I said, the DGTA had issued a directive across all fleets in the ADF to assess them for the known issue, and all aircraft therefore were assessed by all the chief engineers for all fleets. So, yes, it was discussed.

Mr PRICE—DGTA—what is that?

Air Marshal Houston—Director-General Technical Airworthiness.

Air Vice Marshal Monaghan—Essentially, it is our airworthiness authority within the Defence Force.

Mr BEVIS—But you are saying that the issue that was raised by Boeing engineering staff in those forums was different to the incident that subsequently occurred.

Air Marshal Houston—It is a completely different problem.

Air Vice Marshal Monaghan—I would say with absolute confidence that nothing Boeing said would have presupposed that they knew that this problem was going to occur.

Mr BEVIS—Not that it was going to occur, but that there was a risk that should be assessed.

Air Vice Marshal Monaghan—And it was.

Air Marshal Houston—Could we have the allegation from Boeing on the table—

Mr BEVIS—I understood that the potential for failure in the pipe, in the tubing, that occurred—in the pump loom—

Mr PRICE—But there had been an assessment made by RAAF—

Mr BEVIS—And that it was rated as a low risk, which is not unreasonable. We are not arguing about that.

Air Marshal Houston—I would like to take this on notice because what you are suggesting is that Boeing said to you that we had not completed a process, or something like that.

Mr BEVIS—Not at all. If I am wrong, I am very happy to be corrected, but my understanding was that, because of known problems with these looms in other applications, concerns were expressed. I thought that at the chief engineers' conference—I may be wrong about this—that was an issue that the RAAF should look at in the context of these looms being used within the F111. I thought that was looked at and that a risk assessment was made, quite reasonably. No-one is critical of the judgment that was made at that time because, as I understand it, there are differences in the specifications that we were using and that others were using.

The problem that was referred to subsequently was a factor in the fuel tank explosion. That was, I guess, the supposition on which my earlier questions were asked. I must say, I am a little confused because I understood from the previous exchange of questions that the known problem was of a different kind altogether to that which occurred in the F111. That then prompted—if we can get the sequence right, I do not want any misunderstanding—my further question, which was that the issue that had been raised by some of the Boeing engineers, including at the chief engineers' conference, was regarding factors that were relevant to the subsequent F111 incident. If there are two different potential flaws in the looming and I am talking at cross-purposes, then I would like to know. The whole point of that, I must say, is simply to arrive at a conclusion as to whether this is one of those unexpected incidents that occur because you have an old frame or whether it is something against which a risk assessment is made. With the best of intention, and without any criticism of the way that is done, you end up not always being 100 per cent right.

Air Vice Marshal Monaghan—First of all, I think I need to take on notice the issue of whether or not Boeing had somehow anticipated the kind of problem that we had. I find that to be highly unlikely. The fact that looms in general and risks from looms in general were being talked about, as I said, would be absolutely normal. Worldwide, all airworthiness authorities were assessing their aircraft. So I will have to take that on notice and get advice from DGTA about whether or not that was the case. In terms of it being a surprise, however, we are really getting down to semantics now, the purpose of which I do not know. But in terms of whether it was going to be a surprise, having assessed it, and having decided that the risk was infinitesimally low because that would be our test, then when it did occur, I call it a surprise. It was a surprise that, because we had not anticipated it, took the aircraft out of serious operation for over a year while we recovered.

Air Marshal Houston—I just add that I am the ADF Airworthiness Authority. I am accountable for what you just said, so we will go and investigate that. But, from where I sit right now, I am almost 100 per cent confident that you are talking about chalk and cheese—not the same incident. Sure, we had an investigation into chafing problems from the outside, but this issue of failure from the inside, to my knowledge, as the ADF Airworthiness Authority, has never been raised at my level.

Mr BEVIS—I would be very happy to be set straight on that.

Air Marshal Houston—I just add that I take that accountability very seriously. We had two people in that aircraft and, when the detonation occurred, obviously they were put at risk. The

aircraft was at risk and, more importantly, the people were at risk. I take that accountability very seriously.

Mr BEVIS—I make it clear for the record that I am not being critical of the decision that was taken in assessing the loom.

Mr PRICE—If there was a decision.

Mr BEVIS—There was a decision about the loom, but whether it was about fraying, from the outside in or the inside out or whatever, on the face of it the decision was taken by people with the best intent and with the best skill about that. I am not being critical of that at all. I am trying to put in place things that happened. We were told that one of the reasons the F111 advice is different today from what it was in 2002 is that there are these unknown, unexpected ageing aircraft issues that arise, and this is one of the examples. I am simply trying to get clear whether this example falls into that category or whether it falls into the category of a known potential risk, against which assessment is made. Notwithstanding the best efforts of that assessment, you sometimes end up not being 100 per cent right.

Air Marshal Houston—It is my very strong view that the detonation was the result of a classic ageing aircraft problem. I would like John Monaghan to finish.

Air Vice Marshal Monaghan—I will put it in the context of any future problems arising. I think that on a daily basis assessments and judgments are made about what we call 'technical airworthiness advice', coming from all fleets all around the world. We see whether it has some relevance to our fleet so that we can proactively maintain the safety of the fleet. If tomorrow one of those judgments proves to be wrong and a failure occurs it will, like the last one, be a surprise to us and it would result in exactly the kinds of outcomes that we have talked about previously—an intense engineering effort to discover why and to go and fix it.

Senator FERGUSON—We have to finish at 10.15 a.m. I thought Mr Bevis said he might have some questions to ask in camera.

Mr BEVIS—I am happy to keep going on.

Senator FERGUSON—In public?

Mr BEVIS—Yes. I will leave the judgment up to Angus, if the chief wants to go in camera.

Air Marshal Houston—It is up to you. The way we are going is fine. If we get into very deep capability issues, we have to be conscious of that.

Mr BEVIS—I understand that.

Mr PRICE—I have been a little confused by some of the answers that Air Vice Marshal Monaghan has made. Were there two separate assessments? If an assessment is made or triggered, does DGTA initiate it and then receive it or do they just request it? How does it work?

Air Vice Marshal Monaghan—I doubt there were two assessments. There would have been one assessment. There are two ways in which it works. One way is that the SPO themselves and now Boeing, on behalf of the SPO, receive advice technical airworthiness advice specific to their fleet and they respond to that as a routine activity. A professional engineer assesses it, decides whether it is relevant and, if there is something to be done, they do it. There is a second level of activity that goes on, which is run by DGTA staff, which looks worldwide and across all fleets and therefore takes up issues that might have relevance across fleets and asks that they be assessed by the various SPOs. In this case we had an issue that was relevant across all fleets worldwide. DGTA took the lead to direct that work be done by the SPOs and that an assessment be done, and that would have been one assessment. That assessment would have been documented and signed off by the chief engineer and is available for review.

Air Marshal Houston—We are going back to the Director-General Technical Airworthiness at the moment and hopefully I will have an answer for you on this issue of the fuel tank detonation before we close at 10.15 a.m.

Mr BEVIS—Is there an identified fix for the fuel tank detonation issue—the loom?

Air Vice Marshal Monaghan—There have been three options looked at. The current state of play is that we have X-rayed looms that were taken from the desert, looms that we had. Based on the X-rays, they have been cleared for additional service and we are operating on that set of looms. We have two further options. One is to have a brand new design using a more modern technology; the second is to go back and have the current design remanufactured to get new looms without the manufacturing faults that manifested in this case. That decision is still being negotiated with the DGTA—so the DGTA has taken control of that decision. Boeing is providing input about how much it would cost and how long it would take, and the risk assessments are being made about continued use of the current looms.

Air Marshal Houston—Director-General Technical Airworthiness, Air Commodore Noel Schmidt, works directly to me.

Mr BEVIS—Do you have any idea when that decision about the option will be made?

Air Vice Marshal Monaghan—It will be made within six months, but I am sure we can get a more accurate answer for you.

Mr PRICE—What savings are gained by withdrawing the F111s from the years 2010 to 2014? Would you like to take that on notice?

Air Marshal Houston—We had some information about that in the paper that we tabled last time.

Mr PRICE—Did you? I apologise.

Air Marshal Houston—I would be delighted to come back to you on notice.

Mr PRICE—That is the amount you will save by withdrawing them; have you done any work on what the cost would be to maintain them?

Air Marshal Houston—Yes, we have.

Mr PRICE—Has that been provided as well?

Air Marshal Houston—That has been provided on page 5 of the paper that we presented to you.

Mr BEVIS—While Mr Price is reading that I would like to move to the fuel tank sealant issue, which I now understand to be a lifelong issue with the aircraft. That does not make it any easier to deal with, I know. That issue is definitely not a surprise. Boeing informed us that they have done one prototype with a new material which they had just had certified at a lower toxicity rate than the previously used sealants. The occupational health and safety considerations as well as the operational considerations are clearly part of the headache with that. What is the situation with the assessment of the new method of sealant?

Air Vice Marshal Monaghan—I know from my regular updates that the trial is just about complete and that the requirements in terms of personal protective clothing and the like are just about known. So the engineering assessment of the success of the trial is to be completed and, I imagine, if it were successful it would go into operation—and some very good work would have come to fruition.

Mr BEVIS—I imagine that would be one headache everyone would be glad to have behind them.

Air Vice Marshal Monaghan—We are a long way from knowing that as a long-term solution this is going to eliminate the problem. Obviously we have invested an amount of effort in the trial and the work because we expect it to be better but it is yet to be borne out how it will go in the long term. It may be that we have to redo this a number of times.

Mr BEVIS—I have a question about having the F111 until 2010 and having the capacity to have an F111 beyond 2010 if circumstances between now and then make that desirable. With the removal from service between now and then of the F111G and reduction in other facilities, I understand that Defence is looking at an across-the-board saving for the F111 in this financial year and subsequent years. Can you give us advice on that?

Air Marshal Houston—I will start off by saying that my requirement is to maintain the same operational capability that we have now right through until the aircraft retires in 2010. I cannot go into the detail of that—we have briefed you in camera on what that capability is—but that is the intention. The maintenance of the C-models is absolutely imperative because they are the aircraft that give us that capability. In terms of how we run it through, we are going to propose a couple of enhancements to the aircraft. One of those will be night vision goggles. We will give it a night vision goggle capability. That is necessary for night operations not just for operational reasons but also for safety reasons. We will also be fielding the AGM 142 with an operational capability very shortly.

So we are going to maintain the capability; we are not running down the capability. I will get John Monaghan to have a word with you in a moment. If you want to keep it going to 2020, there is a certain amount of money that you have to invest right now. If you are going to keep it

going to 2010, you can invest less money. I guess this is what we are talking about. I assume that is what the question is about.

Mr BEVIS—You pose those two questions, but the third question relates to maintaining an option through until some time closer to 2010 and extending that 2010 deadline out.

Air Marshal Houston—I think the critical element is the engine support. I will get John Monaghan to speak in broad terms about that and anything else he cares to inform you of.

Air Vice Marshal Monaghan—We have previously provided you with some financial figures about some additional investment we would need for 2015 or for 2010. Those amounts of investment are about continuing to learn more about the aeroplane, worrying about the ageing aircraft issues and making ourselves more proactive in managing any issues that we discover. I say that nothing has happened to date to reduce funding or to take other pre-emptive action that is compromising our ability to meet a government directive to continue with the aeroplane—if that is what it would be. The decisions that have been taken within Defence are happening in December this year with an Air Force proposal about how we should go forward.

There has been reference made in previous evidence to funding reductions, which is quite wrong and quite misleading. As part of the sole operator program for the aircraft, one of the things that was put forward by the then support command, now DMO, was that a very sensible thing to do would be to invest more money now in buying life type spares and other kinds of assets so that we could have a lower cost of ownership into the future. When that business case was put to the CFO, the CFO said, 'Fine; we'll stump up the additional $196-odd million now for you to pay back in the later years of the program because you'll have already spent the money,' which is a reasonable response to that business case. As it turns out, those paybacks are now due and that has been part of our programming for the 10-year Defence plan for some time. It turns out, however, that those reductions are having an impact on our ability to support the aeroplane because it is proving to be more expensive than we had anticipated, but no decisions have been taken that are about making savings other than the ones I have just described.

Mr BEVIS—To get to the core of it, is there an intention this financial year to reduce F111 funding by 15 per cent or some figure like that?

Air Vice Marshal Monaghan—There is a small reduction this year—certainly nothing like 15 per cent—which is the beginning of the paying back of the $196 million investment that was approved as the sole operator program in the latter part of the 1990s. That is the money we have used to buy and warehouse the excess defence articles that we have taken out of the USAF stock.

Mr BEVIS—Is there intended to be a 15 per cent reduction in maintenance for the aircraft?

Air Vice Marshal Monaghan—Decisions have been taken. For instance, one decision taken was to close down one of the deeper maintenance lines that is being run by Boeing. It was three lines, it then went up to four under the contract and it is now being brought back to three. The reason for that has nothing to do with withdrawing the capability from service; it is because we have enough hours in the bank to continue to manage the capability with only three deeper maintenance lines running.

Mr BEVIS—So what is the answer to my 15 per cent question?

Air Vice Marshal Monaghan—Other than the reduction I have just told you about, which relates to a pre-planned repayment of an investment that was provided to the capability, there have been no other funding reductions—

Mr BEVIS—But over what period will that $196 million out of the F111 program be paid back?

Air Vice Marshal Monaghan—It was going to be paid back starting next year and then in subsequent years.

Mr BEVIS—So no-one associated with the F111 program, either in uniform or in civilian life, would have been asked to provide an estimate of what would be done with 15 per cent less funding?

Air Vice Marshal Monaghan—Whether they might have been asked? Absolutely they might have been asked, but no action has been taken.

Mr BEVIS—Illuminate me about that.

Air Vice Marshal Monaghan—I cannot, because I did not ask it. You ask me to guarantee that no-one has asked the question, and 'what if' questions are asked all the time. I have not asked it and there has been no action taken.

Air Marshal Houston—I have not either.

Mr BEVIS—If someone was to go to our major partners in the F111 program and talk about a 15 per cent cut, I thought you might have known.

Air Marshal Houston—I am not aware of it.

Air Vice Marshal Monaghan—We are talking with Boeing about the contract price, as we do regularly, and about the amount of guidance that we now have available to support the weapons system. Boeing are being asked: if we do not get supplemental money—this will come out of a December decision—out of Defence, what will that mean for the capability? The facts are now that the capability is costing more to generate the hours than was anticipated when the budgets were struck. That is, in my view, a proper question to be asking and we are doing so.

Mr BEVIS—That is fine. I think that is the answer I was first after. If we all maintain and are confident that 2010 is absolutely the date we want to get rid of it, we can plan neatly and know what we will do to scale down. If however, as we have been told on a number of occasions, circumstances change between now and then and we want to extend that date out or maintain that capability a bit beyond, that is a totally different equation; that requires you to factor in different capabilities. It seems to me in this endeavour, as in many, a critical mass of skills and resources are required below which you no longer have those options. Am I right in that assumption and has there been any assessment of where that critical-mass line is?

Air Marshal Houston—We are looking at all aspects of taking the capability to 2010 and maintaining the hedging strategy to take it out to 2012; we are considering all of that as part of the transition plan. Certainly there are critical elements that we need to consider because essentially, if you say you are going to withdraw an aircraft in 2010, it does not mean you turn everything off in 2010; you start turning things off beforehand. So as part of the transition plan that we put to government we will be looking at when, if required, we turn particular things off.

Mr PRICE—I will ask you to take a question on notice about the broad cost of ownership of the F111. You have provided the figure for up to 2010, and then it goes 2015-20. Is there an additional cost or column that can be put in 2010-15?

Air Marshal Houston—No. In this particular paper that we gave you, no. But we have responded to a question from Mr Beazley where he specifically asked the question about 2010, 2012, 2015 withdrawal dates. In terms of the 2012 response we came back, I think, and said that the cost of delaying the withdrawal of the F111 from 2010 until 2012 is estimated at approximately $200 million, assuming that current F111 systems can be retained in service for an additional two years without significant expenditure. This cost does not include allowance for unexpected ageing aircraft problems.

Mr PRICE—So if that is for two years is it reasonable to assume that it is $400 million with the same caveats for four years?

Air Marshal Houston—No. The estimated minimum cost of delaying the withdrawal of the F111—and this was in answer to his 2015 question—from 2010 until 2015 at a viable level of capability is between $1,000 million and $1.5 billion. However the F111 cannot be upgraded to operate unescorted against all the threats expected to be present in the region by 2015. The reason for that cost is the upgrades that we would have to do to maintain it as a credible capability through to 2015.

Mr BYRNE—In terms of your hedging strategy, have you ever had any conversations or any discussions relating to the leasing of craft other than F111s?

Air Marshal Houston—Yes, we have. We have had discussions with one company where we looked at the possibilities of an interim aircraft to cover the period from perhaps the withdrawal the F111. In fact the proposal from the company was to withdraw the F111 and some FA18s and cover the period with an interim capability. The cost involved with that was prohibitive and would have detracted from our long-term plans for air combat.

Mr BYRNE—So if there were a significant delay in the delivery of the joint strike fighter, would that issue be revisited?

Air Marshal Houston—We think our strategy is very viable. Obviously if there were a complete disaster with the joint strike fighter we would review our plans. We would review all options.

Mr BYRNE—If, for example, you identified some more recent difficulties with the wings of the F111 and in the process of this testing it was determined that it might shorten the life of the craft, would the issue of leasing then be revisited?

Air Marshal Houston—I hope those sorts of circumstances do not arise because it would be a disaster for the Royal Australian Air Force. But if they were to arise we would have to look at every option to cover for the capability.

Mr BYRNE—You may not be able to answer this publicly: are you able to name the craft that you are examining as a potential replacement?

Air Marshal Houston—I cannot say any more than what I have said. I would be delighted in just two minutes to explain to you what we have explored but—

Mr BEVIS—If we find ourselves in a situation where we need to have the F111s operating beyond 2010, notwithstanding all the things we have been talking about that are good, bad and indifferent about the craft, I take it that the critical thing that determines that is dollars.

Air Marshal Houston—The further you go out, the more the dollars, yes. If you wanted to keep the F111 going, as we have indicated in answering Mr Beazley's question, say, to 2015, we would have to find $1 billion to $1.5 billion to keep it going through to that time. I would like to know more about the wings. We are hopeful that we can go forward but confidence about the wings has changed and I would obviously like to have more knowledge of that before I was held to say that there are no problems with going through to 2015. We need to examine those issues in detail.

In conclusion, we are trying to develop a balanced expeditionary networked Air Force for the future. We also have a huge legacy fleet in the Air Force which is ageing. Almost with the exception of the C130Js, the Hawk, our whole fleet is ageing. That presents significant challenges for me and my colleagues on the Defence Capability Investment Committee. So we have to manage all the risks associated with that and we have to work in a climate where there are major pressures into the future in terms of the resources that are likely to be available. My job and the job of my DCIC colleagues is to provide the most capable ADF, the most capable Air Force, that we can within the resources that are available. With 1.9 per cent of GDP going to defence funding there are always going to be hard decisions to be made in investment and indeed in the way we run the fleet right across the three services. I hope we have been able to give you good answers to your various questions.

CHAIR—Thank you very much. I thank you for your attendance here today. If you have been asked to provide additional material, would you please forward that to secretary.

Resolved (on motion by **Senator Sandy Macdonald**):

That this committee authorises publication of the proof transcript of the evidence given before it at public hearing this day.

Subcommittee adjourned at 10.18 a.m.