



COMMONWEALTH OF AUSTRALIA

Official Committee Hansard

**HOUSE OF  
REPRESENTATIVES**

STANDING COMMITTEE ON INDUSTRY, SCIENCE  
AND RESOURCES

**Reference: Effects on research and development of certain public  
policy reforms**

THURSDAY, 13 MAY 1999

CANBERRA

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**HOUSE OF REPRESENTATIVES**  
**STANDING COMMITTEE ON INDUSTRY, SCIENCE AND RESOURCES**  
**Thursday, 13 May 1999**

**Members:** Mr Prosser (*Chair*), Mr Baird, Mr Hatton, Mr Lawler, Mr Lloyd, Mr Morris, Mr Nairn, Ms Roxon, Dr Washer and Mr Zahra

**Members in attendance:** Mr Hatton, Mr Lawler, Mr Morris, Mr Nairn, Mr Prosser, Ms Roxon, Dr Washer and Mr Zahra

**Terms of reference for the inquiry:**

Inquire into and report on the effect of public policy changes, over the last ten years, in the areas of corporatisation, privatisation, outsourcing and competition policy reform on the matters listed below:

the amount of R&D being carried out in Australia;

the nature of the R&D being undertaken (that is, basic or applied);

the relevance of the R&D to the commercial needs of industry;

the level of investment in research infrastructure and equipment;

the scientific and technological skills base and the demand for scientists, technologists and engineers; and

the education and training opportunities for future research staff.

**WITNESSES**

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**Committee met at 11.32 a.m.**

**BRABIN-SMITH, Dr Richard, Chief Defence Scientist, Department of Defence**

**CHAIR**—Richard, thank you for attending. I now invite you to address the committee.

**Dr Brabin-Smith**—In more recent times Minister Moore wrote to you, Mr Chairman, on 13 April, enclosing a submission from Defence, updated from the version which we submitted through Minister Bishop in late 1997. At more or less the same time, the committee secretariat, Mr McMahon, wrote to Minister Scott enclosing the discussion paper and drawing the minister's attention to some observations that your committee had made on Defence research matters. Minister Moore responded to this and I gave to Mr McMahon this morning a copy of the minister's response. That brings us up to date there.

My starting point is summed up by the phrase 'Defence is different'. I speak as someone who has been in Defence for 25 years or so, a large part of that time in senior positions. It is not that we do not follow government policy. Clearly we do, but Defence and security policies have a logic all of their own. Defence and security policies are the lodestar that drives us forward. Let me give you some examples, if you like, from my more recent experience.

I was a member of the Space Council before that was dissolved. I found myself, as the Defence representative, having a different view on space matters from virtually everybody else. I am the Defence representative on the Coordination Committee on Science and Technology. Again, the Defence perspective on the world is different from the scientific perspectives of most other people on that committee. There are one or two other examples. That drove the structure of both our original submission and the revised submission. This is expressed, or at least alluded to, at paragraph 3 of the current submission. When the minister received Mr McMahon's letter enclosing the discussion paper I took the view that, rather than provide, perhaps, endless further forms of written evidence, the best approach would be to offer myself to give evidence to the committee, and that brings me here today.

**CHAIR**—Thank you very much for that. In opening, I would like to put this to you. You have said that defence is different. But remembering that this is the industry committee and an inquiry into R&D, couldn't it be argued that defence also has a unique opportunity to look at and drive R&D in a different area that could well be in the nation's interest in an industry sense as much as in a defence sense?

**Dr Brabin-Smith**—This is a complex area. I think it is fair to say that defence policy for industry is still evolving, reflecting changes in technology and changes in industry structure. For the indefinite future, perhaps in the future more so than in the past, Australia is going to be a major importer of defence equipment either literally in the way that our new C-130J aircraft will have been built overseas, or more figuratively, where we import someone's design and build something here like the Anzac ships.

The figure I often quote is that in Australia we do one per cent of the world's defence R&D. Some of my interlocutors comment that that is probably high estimation. It could well be, but it means that 99 per cent is done elsewhere. Our challenge in Australia is to get

leverage off that other 99 per cent. It doesn't matter whether we do half a per cent here or two per cent here. A huge number is still done elsewhere. I think it is fair to say that we are still coming to terms in some respects with what this means for our policies, for what we want industry to do. I am not sure whether sporting images or metaphors for defence are terribly useful. Coming off second-best in a military conflict is not what you want to achieve. There is no room, therefore, for second-best defence equipment.

**CHAIR**—One could well and truly say that there is no prize for second in this game.

**Dr Brabin-Smith**—Indeed. Modern defence equipment is extraordinarily complex, and has been very expensive to develop, I suppose throughout history, but certainly in modern times, both in the industrial age and in the post-industrial age. The world is littered with examples of cases where countries have attempted to develop new defence equipment and haven't got it right, have produced something which is not good enough and which has been extremely expensive.

I had omitted to say that a lot of the defence industry in Australia is foreign owned. We are talking about basically the branch offices of foreign owned multinationals. That is, I think, somewhat different from arguably how we saw ourselves, say, 20 years ago where, if my memory serves, we had some ideals or objectives of having a significant Australian owned defence industry. Those days have gone. We can argue whether we should regret their passing. But the fact of the matter is that, for a variety of reasons, the defence industry in Australia has the characteristics that I just mentioned—largely foreign owned, big multinational companies. There is very little indigenous Australian defence industry for us to interact with, certainly not the big players.

ADI, I suppose, is a company I should mention in passing. The future of that will be decided next year. I cannot remember the details, but I think, no matter who wins the tendering for it, there will be a large, potentially dominating, foreign ownership. In Defence, we actually take advantage of this by running competitions between the major players of the potential suppliers of the kinds of equipment that we need. So it is a not a straightforward environment in which to work out what kind of research, design and development would be most appropriate for our needs.

A large part of the uncertainty is caused by the rate at which many of the underpinning technologies are moving. Technology has always changed. What we are seeing at the present time is an unprecedented rate of change in electronics based technologies, many of which underpin tomorrow's war fighting. I am basically talking about electronics here, electronics as very broadly conceived, and I am giving you a former physicist's view of what electronics is, including computing, software development, and so on.

**CHAIR**—Thanks for that. Has any other committee member got any questions?

**Mr NAIRN**—Which CRCs are Defence involved in at the moment?

**Dr Brabin-Smith**—Several, and I have a list of them here: Advanced Composite Structures, which is the one collocated with my laboratory at the Aeronautical and Maritime Research Laboratory at Fishermens Bend in Melbourne; the Australian Maritime Engineering

CRC, which was not successful in the bid for continuation of funding; and Distributed Systems Technology, Polymers, Robust and Adaptive Systems, which has not received continued funding, and Sensor Signal and Information Processing. We are in the middle of seeking to join the Australian Photonics CRC. We are now a core member of the Materials Welding and Joining CRC. Originally, we were only an affiliate; now we are a fully paid up member, with effect from 1 July 1999. In addition, we have a non-core association with Satellite Systems.

**Mr ALLAN MORRIS**—Mr Chairman, I would like to ask a series of questions which I might put on notice because I do not think the information might be readily at the witness's fingertips. The questions I ask I seek some response to. Firstly, to do with budgets, could you advise us how much your budget is and how it is divided up in terms of administration and research? How much of the budget is in fact on pure research and how much is actually controlled by projects of Defence? In other words, how much is at your discretion or your organisation's discretion and how much is actually channelled into a particular project and project tied? How much do you earn in royalties from your intellectual property and your commercial involvement, and how much commercial income do you have from those? Did we capitalise on things like acoustic tiles, weapons systems? Have we been able to achieve any revenues from research and development in those areas?

I would be interested, in particular, in some feedback on your research response to the submarine project. I mentioned acoustic tiles and I also mentioned weapons systems, but there are other aspects of the submarine project where research seemed to be quite challenging. Second, as a corollary of that, what is happening with the next line of submarines? What are the lessons learned and what research has been done on the next model or, if you like, the next generation of submarines?

In a similar vein on Jindalee, the technology, the research there is really quite far reaching and I am curious as to how much your organisation is involved in that and how much we are capitalising on that. I am also interested in what progress we are making on command and control systems, which is probably one of the most active areas of defence research in some ways.

Also, some years ago we did a lot of work on powdered metals. I am curious where that is up to and whether or not you have established any commercial liaisons with that because the work at the time, from recollection, when I was looking at it closely, was quite advanced in world terms. Similarly with plasma technology. That was not necessarily original work but it was work we were fairly active on in terms of hard-wearing surfaces, I think in conjunction with the Americans and some others. Similarly with a couple of projects that we had—for example, NULKA—how is the research on that? We were working with the Americans on that, from recollection. Are we still, and how is it going? That is the rocket.

Also there is the question of intellectual property to do with the submarine weapon system originally with Rockwell and now with Boeing and the work that was being done on that. I heard a story that we gave away intellectual property through Defence some years ago and that we are now trying to get it back or trying to reassert control of it. At the time of the submarine project, the intellectual property on the weapon system with Rockwell was really quite serious and a lot of effort went into it. I understand—it may just be gossip or

rumour—that a lot of that was given away because it was too complicated at first to maintain. So I would be curious as to how that went.

Dr Brabin-Smith, could you take those things on notice. Hansard will give them to you eventually. I will be really interested in considered responses. I have not necessarily covered the whole field but they are the ones that I personally am aware of.

**Dr Brabin-Smith**—I will take them on notice, but if you are happy I will speak to them to the extent that I can across the table.

**Mr ALLAN MORRIS**—Okay. I wanted to open them generally, and if you respond to some of those first I will be happy.

**Dr Brabin-Smith**—I think there are some useful points here that I can cover in a general sense and then we can check the details later. The budget for this next financial year is expected to be \$235.9 million. That is an accruals estimate. You may well smile, Mr Morris.

**Mr ALLAN MORRIS**—Whatever that means. I am still learning what it means. My colleagues might know better than I do.

**Dr Brabin-Smith**—I have no further comment to make. In real dollar terms, it is a bit less than that, but I do not have the precise figure. I am reasonably proud of the ratio of science to administration. I will give you those figures on notice.

We have conducted a reasonably robust campaign of efficiency drives over the years that I have been in the hot seat and we have transferred some administrative resources to other defence groups in the context of the Defence Reform Program, that is to say, the implementation of the Defence Efficiency Review. But I will give you those figures on notice.

In terms of pure research, I am not sure that I would actually use the term pure research as such, but to answer the spirit of your question: approximately 90 per cent of our work is done as a consequence of detailed negotiations between DSTO and our various customer groups. The customer groups are the Navy, the Army, the Air Force and what we call the policy and command areas, which is largely the headquarters, but it also includes the intelligence function.

We have a variety of what we call research and development priority committees, or research and development requirement committees, one each for Navy, Army, Air Force, one for the intelligence community and one for the part of policy and command which is not intelligence. That takes about 90 per cent of our resources.

Then we have, in practice, a bit under 10 per cent which we call defence science and technology, which is not pure research in the way that universities do it. It is more strategic research in the sense that we think that we see some particular ideas that have worthwhile potential for future application to defence, but which is beyond the immediate planning parameters of the major customer groups.

I should also add that we also call this enabling research, but that is slightly confusing because some of our customer base also funds enabling research, that is to say, research that does not have a specifically tangible short-term outcome—something which is looking significantly into the future.

You asked about revenue. The figure I have in mind is about \$1 million annually. It fluctuates. This has been the subject of some debate over the years. I recall, indeed, when I first became a CDS in early 1993 that there was an idea in circulation that DSTO should be in the revenue creating business, but I took the view—and this view was eventually accepted, without any difficulty, elsewhere in Defence and by the government—that the vast majority of our interaction with industry is intended either to help industry or in some sense to work with industry so that it can then support the rest of Defence. That is, by far and away, the majority of our interaction.

Further, our focus is very much on giving scientific advice. This was an important restatement of our objective again in my early days as CDS. I should say that I was not a member of DSTO before taking on this job, so I came in with an outsider's perspective—I came from elsewhere in Defence.

Science and warfare have gone hand in hand for centuries—probably thousands of years—and that is even more true today. Therefore, seeing defence science from the outside, you ask yourself a question along the following lines: how do I get the advice that I need on how best to apply science and technology to our national defence needs, noting that this advice has to have three primary characteristics. First, you have got to get the science right. There is no point in getting second-rate science. So we emphasise the professionalism of the science.

Secondly, it has to be impartial. There has to be no sense that the advice you are getting has been laundered towards a particular company's products. Thirdly, it has to be informed—that is to say, it has to be focused on the application. It is not doing science in a university. It is not doing abstract science. This is science focused on the battlefield, basically. In other words, the scientists doing the work have to be thoroughly acquainted with the Defence Force and the defence application. Those are the three principal characteristics of the advice that, from the outside, you would want DSTO to produce.

Note that I have not mentioned research and development. The nature of science is that you have to conduct scientific investigations to make sure that you have got the science right. Because of the way we find ourselves in Australia, where we import most of our defence technology one way or another, we do not do much of the more 'classic' research and development. The areas where we do research which then leads to product development tend to be in special niche areas.

The niche areas tend to have the following characteristics. First, where our needs are just so different that no-one else produces anything that would be sufficiently good for our purposes. How are we different? For example, take, perhaps, a simple case of camouflage nets. The vegetation in the north is different from anywhere else in the world; therefore we have to have our own camouflage net designs.



To take a somewhat more far-reaching example, the ionosphere in the north of Australia is equatorial and therefore quite different from the ionosphere in more temperate latitudes. That affects high frequency propagation and therefore affects things like high frequency radar, like Jindalee, and high frequency communications.

When it comes to anti-submarine warfare and pro-submarine warfare, we have an extensive interest in warm, shallow waters. That is in quite significant contrast, until relatively recently, with the focus of NATO nations, for example, on colder waters and deep ocean basins, and in the cold war context. That is the first example.

The second example is where there are security considerations, where something is so sensitive that not even our closest allies will share it with us or, alternatively, where it is so sensitive to our point of view that we will not want to share it with someone else. Finally, yes, there are occasions when we come up with such a good idea that it does not strictly meet any of the preceding criteria that I have given you, but we think we have a world-beater on our hands. NULKA, perhaps, could be seen in this category. Everyone has some kind of need to protect warships against modern anti-ship missiles. We came up with this particular idea which other nations have taken an interest in.

All of that is by way of my saying to you that we are not heavily into 'gismology'. The number of devices that we develop is quite small and, when we do it, it is for a special purpose. Sometimes the nature of the purpose is such that the market outside Australia is not going to be extensive, because something has been designed specifically for our purposes or it is sensitive in some sense.

Acoustic tiles you mentioned specifically, Mr Morris. That is a good example of where we could not get access to the technology of even our closest friends and allies, which are the code words for the United States and the United Kingdom. Seen through their eyes, that was quite reasonable because, after all, they had nuclear armed submarines which they were not even remotely prepared to think about compromising the stealth characteristics of.

Further, we argued that our needs were different in terms of the sonars that we wanted to counter and, therefore, in the specific characteristics of the tiles—their composition, their design and so on. So we did all that. But you can see immediately: to whom would we in turn export this particular technology? There might be one or two close friends out there to whom we would, but it is a very complex set of judgments that you have to go through.

In terms of weapons systems, it would be rare these days for us to design a weapons system, for example a modern missile. They are extremely expensive to design and develop and very easy to get wrong. Our preferred approach, rather, is to use basically global competition, work out more or less what we need, issue a tender and see what that brings in. Given the way that weapons system designs are generally evolving, that is to say software programmable, for example, our interest these days is in making sure that we have access to an understanding of the missile, and have at least the potential for an agreement with the supplier whereby we would then collaborate for through-life upgrades.

It gets a bit tricky to talk in an open forum about this. I frequently use the phrase 'we'. By 'we' I mean us, Defence. We need to understand the strengths and weaknesses of our

key weapons and sensors; there is a bit in parenthesis after that: and of those that might be used against us. Every weapon or sensor has its weaknesses as well as its strengths. Sometimes those weaknesses are not even remotely obvious. Maybe that is as far as I can take that particular point.

So our focus on weapons systems is to seek to collaborate with the original supplier of a radar or a missile for through-life upgrades. Given the way that technology is going, the need and the opportunity for such collaboration are going to be more important in the future. Let me give you a couple of examples here on the weapons side. There is a missile called the Evolved Sea Sparrow Missile, which we are acquiring for the Anzac ships. We are part of the NATO consortium that is developing this evolved and obviously more capable missile. That will give us some particular insights into the kinds of things we are interested in, and their strengths and weaknesses.

Another missile that the government recently decided we should buy is the ASRAAM air-to-air missile. I do not have the specific details at my fingertips but I am particularly confident that Australia will work closely with the United Kingdom in this case, and maybe France, on the through-life development of that missile.

Submarine support was your next question. Clearly, DSTO is involved in the introduction of the Collins class submarines. Just as we were involved in the through-life support of the Oberon class, I have no doubt whatsoever that we will be involved in the through-life support of the Collins class. It will be more demanding this time, because the RAN is the parent navy for the Collins class. They are unique to us, whereas the Oberons were in service, obviously, in the UK, in Canada and I think in Chile as well as in Australia. Perhaps I can skip over the next generation aspect and answer that question, to the extent that the government or ministers allow me to, in writing.

You asked about Jindalee. When you ask about cashing in on Jindalee, I guess the question arises again: to whom would we export it? That is quite difficult.

**CHAIR**—Or using it for commercial purposes and not just defence purposes.

**Dr Brabin-Smith**—Yes. My own view would be that skywave radar is unlikely to have too many commercial buyers. There might be greater interest overseas for defence purposes but export of the technology—

**Mr ALLAN MORRIS**—There was a technology within Jindalee to translate signals, bouncing signals off ionospheres, and so on, with the software and intellectual property developed in doing all that decoding and differentiating between waves and the vessel. I would have thought that kind of level of sophistication that we are perhaps even world leaders on at the moment—it is hard to tell—may have commercial applications outside the defence sphere. If so, are we doing it or is Marconi doing it? I guess that is the question. Are the people we are paying to do that then going to capitalise on it themselves or are we ensuring any capitalisation, if it is possible?

**Dr Brabin-Smith**—Let me draw a distinction between skywave high frequency radar and surface wave high frequency radar. In response to the first part of your question, Marconi is now getting out of the contract. I think the contract either has been or is being novated—

**Mr ALLAN MORRIS**—I have lost track, to be honest.

**Dr Brabin-Smith**—across to a joint venture between Lockheed-Martin and Tenix. This whole issue is extraordinarily messy. I suspect that the application of the technologies behind the signal processing to areas other than high frequency radar would be quite limited, frankly. The algorithms tend to be very specific to the challenge that you have in extracting that particular signal from that particular kind of noise, so I doubt that there is much generalist application.

There is, however, a related technology or a related approach to the use of high frequency radar called surface wave which basically relies on the fact that seawater—any water, but seawater, in particular—is conducting and therefore you can make high frequency radio waves curve around the earth's surface. That is a surface wave effect as opposed to skywave.

We have a collaboration with Telstra on a project which we call Iluka—a word meaning 'by the sea'. There have been some statements in the press on this. Telstra and DSTO had a demonstrator of this in Darwin some time within the last six to nine months. That might have commercial applications. It will not be the solution to every considerable maritime surveillance problem or coastal surveillance problem because you still have issues of small targets and a noisy background. I will not bore you with the details, but noise comes from all over the place when you are dealing with high frequency signals. So that perhaps is an example of where we are attempting to capitalise on intellectual property.

What the market will be for this is not clear. But, at least in the shorter term, it is good enough that Telstra have a sufficient interest to be putting some of their own money into this as well as having a licence agreement with Defence.

In regard to command and control, in many ways this gets to the heart of the revolution in military affairs. The enormous advances in the way to conduct intelligence, surveillance and reconnaissance, to fuse, process, transmit and archive the data and to make time-series comparisons, and so on, are all potentially enormously powerful tools to help commanders command better.

But it is actually quite difficult, because one is at risk of going from a situation where the commander has too little information to a situation where the poor commander actually has too much and it overwhelms; so making command support systems which actually help and do not impede is a challenge. We are working on this extensively.

It is a fascinating area because one of the challenges is to work out how commanders command and what is going on in the commander's mind during complex military operations. Command is a bit like management. No two managers are alike; they all think differently. Commanders are also different and no two commanders command the same. Therefore, their demand for information is going to be different. Building human factors and

understanding of cognitive processes into the design of command support systems is one of the major challenges.

Powdered metals and plasma technology I will take on notice. You asked about NULKA: NULKA is going ahead very well. I cannot remember what is in the public domain and what is not in the public domain. We are continuing to work with the United States. I will answer that on notice as well. We are looking to the further development of NULKA.

On your question on intellectual property with specific reference to submarines and the tactical data handling system, I have no idea, I am afraid. I will take it on notice. I had not heard the rumour that we had given away significant intellectual property on the tactical data handling system. That is a new one on me, but I will see if we can come back to you on that.

**Mr ALLAN MORRIS**—As a general statement I thought I had heard that Defence had actually withdrawn its caveats on intellectual property ownership and was allowing the companies to do whatever they liked with it and currently it was trying to recapture it. It may not be yourselves; it may be Defence in general. One of the problems we have is that DSTO and Defence are not necessarily the same organisation at times.

**Dr Brabin-Smith**—I assure you that Defence is part of DSTO!

**Mr ALLAN MORRIS**—Yes, but they may have different views. Whether or not the ownership is yours or Defence's is some of the stuff I am not certain about.

**Dr Brabin-Smith**—I will look into that. The question will properly belong to the Defence Acquisition Organisation and I will get an answer out of them. I will clear it with Garry Jones.

**Mr ALLAN MORRIS**—I would love you to put a submission in and I am sorry you have not.

**Dr Brabin-Smith**—We did.

**Mr ALLAN MORRIS**—Firstly, I am pleased about that CRC thing. Have you covered that more extensively in your submission? I have not got to this—

**Dr Brabin-Smith**—We just mentioned that we are involved with the CRCs but I did not enumerate them.

**Mr ALLAN MORRIS**—Some years ago the government determined that the DSTO should become more commercially accessible and build strong relationships with the commercial world for that purpose. Obviously you have done that and I am pleased to hear that. You mention a partnership with Telstra which I am pleased to hear about—whether it be with Telstra or anybody else, to be honest. I can recall times when there was a company doing research on powdered metals—and so were you, and you would not talk to anybody else about it. There were real barriers there which I think obviously have been broken down to some degree. But I do hear that there is still a defence culture with DSTO and that there

is still, if not a physical barrier, some turf barrier on people wishing to collaborate and commercialise some research which may be commercialisable. These claims are often made unfairly, so do not take that too much to heart. I am curious as to how welcoming you are of people who may approach looking at commercialising a technology which may not have occurred to Defence as worth commercialising.

**Dr Brabin-Smith**—Let me make two preliminary comments. Firstly, I am quite proud of the way that I have turned around DSTO's approach to industry. The point I make is that we work with industry not against it.

Secondly—and a counterpoint in some sense—I would not claim that we are perfect but our interaction with industry, to my mind, is extensive. Fatima will correct me if I am wrong, but I think we have something like 18 different alliance agreements with industry. These are formal statements that we will seek to get closer to particular companies or groups of companies in specifically defined areas, and to have in place, for example, a non-disclosure agreement so that we can talk in confidence to each other. These have served well to facilitate interaction between DSTO and industry. Perhaps you are looking for me to say something else or to add further points.

**Mr ALLAN MORRIS**—There has been a shift in government policy requiring Australian industry involvement as part of defence projects which was partly driving a collaboration between yourselves and some of the overseas companies. I hear, for example, with the Penguin project that the requirement for the Australian involvement was not persisted with as a requirement but rather was a kind of a suggestion or a request. Some Australian companies were saying that Defence is not as supportive of indigenous research and commercialisation as it used to be.

**Dr Brabin-Smith**—It is a vexed area.

**Mr ALLAN MORRIS**—You may, therefore, be affected by that kind of impression. Some companies that have put in work for some of these projects have found that the overseas company was not required to have a particular level of Australian content and therefore said, 'No, thank you very much.' That may well have influenced their attitude towards both yourself and Defence because there was not a requirement on the overseas company to actually have Australian participation.

**Dr Brabin-Smith**—I cannot speak specifically for Penguin. My recollection, however, is that the work with ADI was on either the propellant or the explosive—a particular warhead design, or the explosive part of the warhead. I see DSTO as a bit of a pathfinder in terms of interacting with industry. We actually conducted a survey recently to find out what industry thought of us.

**Mr ALLAN MORRIS**—I would be interested in getting a copy of that. We are subject to special pleadings and all kinds of things—as you would understand—so I guess the best thing is for us to talk to you like this and try to get your version. We ask you those hard questions or you will never know what is being said.

**Dr Brabin-Smith**—I will seek the minister's agreement to table or to send to you the summary of the DSTO industry attitude survey. The top two bullets of this say that DSTO sees itself as providing a significant interface between Defence and industry and that industry appreciates DSTO's efforts to improve interaction with industry. This survey was conducted by Roy Morgan so it was professionally done and done anonymously, as far as I am concerned, seeking the views of 20 defence industry companies.

There were some mixed messages here. Not everything came up roses. There was the usual theme that recurs time and time again: DSTO is part of Defence because its focus is on national security; industry is in the business to make a quid. It has its shareholders in mind. Making sure that the two disparate views on why they exist meld and do not clash can bring some difficulties.

I was reasonably pleased with the results of the survey. It is not perfect, but my own view is that we are seen as significant at least by the serious defence companies out there, which are the big ones, rather than some of the SMEs which, in many cases, are a bit fragile and at risk of going out of business. The big companies are supportive of what we are doing and appreciate it.

**Mr ALLAN MORRIS**—Mr Chairman, I have finished. I do not apologise because I think this is really such an important area and one that has done very well over a long time. I am a supporter of DSTO, so please do not misinterpret. I just want to make sure that we understand better. If you could in the following material expand upon the CRCs, I think we would all be fascinated by that. We are particularly interested in the CRCs because most appear to be working very well. We are learning as much as we can about them. If you have any comments on the CRCs, even if they are confidential, we would be happy to get any information that you think you would like to us to know. If you do not feel it is suitable for public disclosure, I would be happy about that as well. In other words, the more we can understand, the better and the more honestly we will appraise what is there.

**Dr Brabin-Smith**—Off the top of my head, I cannot think of anything that we would want to say off-the-record or in camera on the CRCs.

**Mr ALLAN MORRIS**—Or on other issues. What I am getting at is that, as we mentioned before, there have been some problems. If that was a constraint, I would not object to things being confidential, if that was comfortable for you. Thank you, Doctor. I appreciate your responses.

**Dr Brabin-Smith**—My pleasure. Thank you.

**CHAIR**—Are there any comments that other committee members may wish to make? Doctor, thank you very much for the forthright manner and the detail in which you have addressed the questions of the committee. I thank you for the time and effort you have given to the committee. I think that the information you have given us and the responses have been very helpful.

Resolved (on motion by **Mr Allan Morris**, seconded by **Mr Hatton**):

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

**Committee adjourned at 12.22 p.m.**

