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# ***Australian defence industry – one last chance***



an address to the Institute at its 122<sup>nd</sup> Anniversary Dinner on 20 August 2010 by  
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*A quarter of a century ago, Australia had a defence industry of substantial intrinsic capability. This enabled us to design and build our own over-the-horizon radar system, the Collins submarines and the ANZAC frigates; and left us with a true defence capability-edge and a world-class engineering industry. Since then, these engineering capabilities have been allowed to decline. On current trends, within 10 years, our industry will be essentially a sustainment industry. It need not be this way. A new submarine construction programme could prove to be the circuit breaker that we urgently need.*

I am honoured to be invited to speak tonight to such a distinguished audience at this, the 122<sup>nd</sup> anniversary of the Royal United Services Institute of New South Wales. I have been asked to comment on the health of the Australian defence industry.

## **Recent History of the Defence Industry**

Let me start by looking back a little. In 1985, after 22½ years in the fleet air arm, the defence industry I joined was an amalgam of government factories, local major 'primes' (that is, major primary defence contractors – engineering enterprises such as AWA, EMI, Plessey and British Aerospace – an industry with a strong United Kingdom heritage) and a solid grouping of second- and third-tier companies supporting the primes. This was a local support industry of substantial intrinsic capability, including a very reasonable level of *ab-initio* design and development. There was also a substantial degree of local autonomy in the way businesses were run and how investments would be made. Also, 25 – 30 years ago, industry capability was backed by very substantial engineering and research-and-development support from within the various defence organisations supporting the three services.

Certainly, as a practising aeronautical engineer on Navy squadrons during the 1970s and early 1980s, I was conscious of a tremendous amount of organisational depth both from industry and from my own naval aircraft engineering support organisations – on the Naval air base at Nowra, at the Superintendent of Aircraft Maintenance and Repair in Sydney, from the Director of Aircraft Engineering Organisation in Canberra and from the Defence Science and Technology Organisation. In fact, I can recall grounding No. 817 Squadron for three months for main gearbox support frame cracking issues and getting lots of 'help' from lots of people. Seriously though, despite the times

being grim, I never once felt that I did not have all that was needed to fix what was a fundamental engineering problem with those aircraft. The rectification programme was a huge success.

## ***Strategic procurement decisions and construction programmes***

These industry and Department of Defence capabilities, however, provided not only a high level of support to the Services, but they also provided the government of the day the confidence to make bold, strategic procurement decisions such as to design, develop and build our own over-the-horizon radar system (JORN<sup>2</sup>) and to extensively modify existing designs and build Collins-class submarines and ANZAC ships. Thousands of local engineers and technicians, either directly or indirectly, contributed to the success of those programmes.

And despite the detractors who have focused on the well-publicised cost and schedule challenges of these programmes (some programmes more than others), I am of the view that these programmes were all successes. JORN is a brilliantly-effective strategic asset which has enjoyed close to 100 per cent availability since delivery. Collins, despite some in-service support issues, is undoubtedly the most capable conventional submarine in the world, and the ANZAC ship programme was extremely successful in its capability, schedule and cost outcomes.

In many cases, these programmes pushed the boundaries of technology and of complex system integration, and, while some did have problems in delivery and support, they produced great outcomes for this country. We ended up with a true capability edge and an industry with engineering capability equal to anything in the world. Regrettably, over the years, our media have seemed to take great delight in decrying

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<sup>2</sup>Jindalee Operational Radar Network



An over-the-horizon radar station part of the Jindalee Operational Radar Network  
[Photo: Department of Defence]

the efforts of the industry and the people who conceived and delivered these programmes. In doing so they have also weakened the very strategic edge we set out to secure.

And by the way, everywhere else in the world where similar programmes have been attempted, where technological boundaries have been pushed and where managers have learnt, or re-learnt, the mechanisms to address the challenges of large developmental programmes, similar problems have been encountered. Unfortunately, it is in the nature of these types of leading-edge technological programmes. To get the superior outcomes we often need, the path is not easy and is fraught with risk. Going down such paths requires courage.

But from my own experience, after enduring the worst of times trying to deliver JORN successfully – which we did – I can say that it was in fact, the best of times for growing and sustaining locally, world-class system engineering, system integration and complex software development skills which are at the heart of military systems today and which are the lifeblood of innovation. As we all know, Australians are the best of innovators if given the challenge. And the programmes to which I have referred, and other smaller ones like them during that period, made a huge contribution to

the calibre of engineering support capability which remains in industry today – albeit, I would contend, they exist to a much lesser degree.

### **Offsets**

Looking at another policy of the 1970s, 1980s and 1990s era designed to help sustain a healthy defence industry, offsets, it is pretty clear that this policy – at least in the way it was implemented – was not as effective in achieving its stated aims as its supporters expected. It is now commonly accepted that offsets added about a 10 per cent burden to the cost of our equipment. Also, it is probably valid to argue that, in general, an offsets programme designed just to create jobs (any jobs) in a country of full employment, is money poorly spent.

But not all offsets were bad. Here I note my own experience when, as the General Electric general manager in Australia, we placed LM 2500 enclosures work into what is now Thales's Bendigo factory – an \$11 million offset obligation on a very challenging product (it had to meet aircraft standards). The business took nearly 18 months to get it right, but it did and it resulted in the business becoming the sole source supplier for General Electric worldwide for the next 20 years, with over \$300 million of subsequent orders. This continuity of business over many years and the ability to rapidly come down the learning curve was a great outcome. From very early days, offsets were not the reason more enclosures were ordered. The reason General Electric kept buying was that the business had developed world-class schedule, cost and quality outcomes.

So, I believe the offset policy did create pockets of important expertise in industry which remain today and have added to the capability and capacity to support today's Australian Defence Force. But did this, in an overall sense, represent value for money? Again, probably not in the way it was implemented.

### **Defence Industry Today**

Today, the international defence industry in the West is dominated by nine major primes, five of them American. That cataclysmic event in the early 1990s, the end of the cold war, caused 48 United States companies to consolidate into five. My own company, Lockheed Martin, is now an amalgam of 14 major companies from the 1980s. Some of those companies, such as RCA (the originator of Australia's AWA), had 100-year-old heritages. But the market reality of steadily declining defence budgets in the United States and Europe mugged the industry.

This consolidation has had a profound effect on the local industry make-up. At the prime level, only one company, ASC (formerly Australian Submarine Corporation), is locally owned. Only one company is from the United Kingdom, two are from Europe and three are American. But one characteristic of this is that the Australian defence industry is now strongly

controlled from offshore, with the consequence that investment in the local industry by these primes is subject to competition for that investment in the world market.

Further, the primes these days have to find partners in order to develop new product. Defence platforms are now so expensive to develop, programmes so few and far between, budgets so tightly administered and tolerance for failure so small, that risk-sharing partners are absolutely essential. The Joint Strike Fighter (JSF) is the prime example of these realities.

As a result of the need to spread risk, the primes now team, or subcontract, for over 70 per cent of their work. Coupled with mechanisms such as free-trade agreements and government-to-government technology transfer initiatives, in theory this should provide great opportunity for industries such as our own. But in reality it is only great if you are a first- or second-tier company with world-class capabilities, as these are the companies that will be the beneficiaries of much of the flow-down of work. Often, governments provide grants, loans and other benefits to their local first- and second-tier companies in order for them to secure this work. Free 'leg-ups' are common. But for the small and medium-sized enterprises, it is very tough trying to deal directly with the primes without help, and trying to break into, and secure a meaningful role in, these new-start international programmes is tough. Breaking into existing supply chains is even tougher, as the barriers to entry are already in place.

But, on a positive note, Australia has never been a better place for the primes to invest in as:

- it is politically stable;
- it is economically sound and with good economic management;
- the Australian public believes in a strong defence force and security agencies, and support for them is largely bipartisan;
- it has first-world, corruption-free acquisition systems;
- the 2009 Defence White Paper<sup>3</sup> and recapitalisation under the Defence Capability Plan promise a lot; and
- the Australian workforce is innovative, very capable and values opportunities to advance skills.

So this is why we have a strong local presence of six of the international primes – LM, Boeing, Raytheon, Thales, EADS/AA and BAES – and this is good for local industry if each of these primes (actually second-tier companies in the international sense) flows down the normal 35 – 45 per cent of work to the third-tier industry base.

But what is not good is the prospect that much of the work done locally will continue to decline in its 'quality'; that is, there will be a continued decline in design and



An ANZAC-class frigate  
[Photo: Department of Defence]

development, high-level system engineering, system integration and real-time complex software development – the skills we valued so much in delivering JORN. The air-warfare destroyer (AWD) programme is helping to address some of this, but, in essence, AWD is an off-the-shelf programme.

International market forces, benign neglect of successive recent governments and the overwhelming quest for minimum risk outcomes, are moving local industry content inexorably towards the mundane and the low value-add. On current trends, within 10 years, our industry will be essentially a supplier of spare parts, maintenance, and some low-level systems integration work. We are, in general, becoming a sustainment industry, and probably a very healthy one at that. But, as a consequence, we are an industry that will increasingly find it difficult to attract the best and brightest from our schools and universities. Also, what is not good about the current environment is the spasmodic nature of workflow out of Defence. Continuity of work is the absolute key for retention of industry skills.

As it currently stands, and despite the theoretically robust business prospects stemming from the current Defence Capability Plan, the flow of work is stalling, if not stalled, in some areas. It is almost a return to the 'bad old days' of the early 2000s when a three-year drought on procurement was imposed and many great engineers in the defence and aerospace business went off to write screen-plays or design caravans for 'grey nomads'.

### **Strategic reform programme**

I should also make a comment on another current market factor – the Strategic Reform Programme<sup>4</sup>

<sup>3</sup>Australian Government, Department of Defence (2009). *Defending Australia in the Asia Pacific Century: Force 2030 – Defence White Paper 2009* (Commonwealth of Australia: Canberra) 140 pp.

<sup>4</sup>The Defence White Paper 2009 (see footnote 3) mandates a strategic reform programme as a key element of the reform of Defence management under which Defence is required to find budget savings of \$20 billion over 10 years to be re-invested in new Defence equipment and weaponry.

(SRP). Is it good, bad or ugly? From my viewpoint there is nothing wrong with a good dose of cost-take-out. It is basically healthy. I am sure many in this audience have participated in, or caused to be implemented, or even devised such schemes. They always start as a 'bold new plan to release underemployed resources for reinvestment in the greater good'. But somewhere in the implementation, these bold initiatives always seem to get subverted. And right now, the main subversion of the SRP is the failure to implement the Defence Capability Plan, which governs Defence's major capital equipment procurement projects.

Industry will support the SRP if there is new opportunity to employ spare resources – like a new programme just around the corner. Without that assurance, drawbridges will be raised. You cannot have a successful SRP with a stalled Defence Capability Plan. So, the SRP started off well, probably is not yet bad, but it is getting ugly.

### ***Defence industry policy***

On the big question – is the new defence industry policy recently issued by the Government good? Well, yes ... in parts. But it is also lacking in others. The good is that it really does set out to give Australia's small and medium-sized enterprises (SMEs) every chance to engage with the prime contractors in an offshore-controlled defence market. The new funding and assistance programmes for SMEs, through training and specialist business improvement mechanisms, should be a great help. I strongly commend the 'skilling Australia's defence industry' and other skills enhancement programmes (albeit there needs to be confidence that these high-level skills can be used). I also endorse the defence industry innovation centre initiative. In addition, the global supply chain programme in the policy is, in theory, a good one. All these initiatives are designed to bring SMEs to the point where they can compete on the world stage. Also good is the move to ensure United States foreign military sales<sup>5</sup> cases have a local industry-involvement objective. Finally, providing incentives for prime contractor investment in Australia through the introduction of more commercial approaches to contracting should pay dividends.

On the downside for SMEs, the new defence policy has made it very clear, repeating it many times throughout the document, that offsets are dead – which places Australia at the vanguard of the 'ban-offsets' movement. Most other countries, many of them first-world, still see offsets as a primary industry-support tool, which can make life very difficult for our SMEs in particular, who are desperately looking for a level playing-field out there on the world market. Unfortunately, in the offsets game, too often the squeaky wheel gets the grease.

The industry policy also validates the move towards more military-off-the-shelf and commercial-off-the-shelf procurement solutions – you will have noted that the federal treasurer recently gave resounding support for Defence adopting a more robust 'off-the-shelf' policy – lower risk for sure than developing new capability, but it has capability-edge implications for the services (that is, will we be buying more 'mature' equipment lacking a capability edge – the 'near enough is good enough' philosophy).

And back to my main theme – too many off-the-self projects will lead to an inevitable dumbing down of our industry. The lack of involvement in the front-end design, development and fielding of these equipments will see these skills atrophy and possibly disappear.

But it need not go down this path. The priority industry capability<sup>6</sup> and strategic industry capability investments, which have been outlined in the new defence industry policy, are meant to address this fundamental issue. Indeed, a series of industry policies for the past 15 years have recognised this key issue and proposed solutions, but then we failed to implement them. And today's policy? Again, great theory, but such an investment programme into local industry (because that is what it would be) requires a strong champion at the political level, one who is prepared to argue a return to premiums to protect our base capabilities, which of course clashes with the forces in successive recent governments that would let the market decide the outcomes. Again Treasury advice to this new government is very much along these lines. In reality, if we were serious about priority industry capabilities, we would be already doing everything we could to prevent the unwinding of our electronic warfare and underwater acoustics capabilities, which are atrophying at an alarming rate. We must match deeds to words.

And to be purposefully alarmist, it will be only when we find ourselves in a situation of critical operational need, when our allies and their support industries are focused on their own priorities and we find ourselves unable to respond effectively, that we will see the consequences of the decline of our core industry capabilities. We therefore urgently need to arrest this decline. We need a circuit breaker.

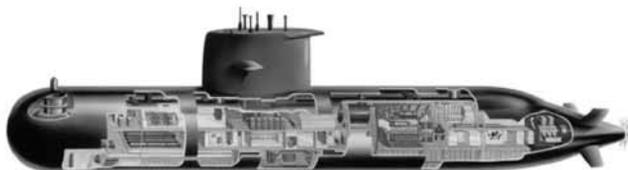
### ***Submarines***

This brings me to submarines. There are those for and those against the new submarine programme as it has been outlined in the current White Paper. It seems we still wrestle with what we want to do with submarines. Arguments across the divide of opinion are publicly raging. (To this simple engineer, we should

<sup>5</sup>Foreign military sales (FMS) incentives are used by the United States to increase its sales of defence equipment.

<sup>6</sup>Priority industry capabilities (PICs) are defined by the White Paper (p. 128) as those industry capabilities which would confer an essential strategic capability advantage by being resident within Australia, and which, if not available, would significantly undermine defence self-reliance and ADF operational capability. The Government is prepared to intervene in the market to ensure that PICs remain healthy and available.

either retain the very real capability edge provided by Collins and a future Australia-unique solution, or do nothing at all. This is one decision I see as binary). However, from an entirely parochial local industry view, if there is one programme with the scale, breadth of technology, manufacturing and management challenge to provide the circuit breaker and reinvigorate the defence industry in Australia, it is the new submarine programme.



A Collins-class submarine  
[Photo: Department of Defence]

I agree with Greg Combet's statement in 2009 that, if implemented to meet the White Paper requirement as first envisaged – that is, a highly-modified off-the-shelf or bespoke Australian design – the sheer scale and complexity of this programme would demand a 'whole-of-nation' approach. Such an approach would build upon the industry achievements of Collins, and would aggregate many other capabilities that currently exist in industry to create a new maritime industry equal to the best in the world. In this industry, we would see the growth and long-term retention of a skills-base in management, engineering, manufacturing, research-and-development, and sustainment. We would see beneficial transfer of technology from overseas on a substantial scale as we invite the involvement of partners in governments and in industry. Primes would invest heavily to be part of this new local industry. Flow-down to the second- and third-tier industries would rejuvenate those linkages and we would likewise see renewed local investment in research-and-development in critical submarine technologies unique to our own circumstances. Many priority and strategic industry capabilities would be addressed in a very substantial way.

Secondary and tertiary education courses would need to be constructed to ensure the regular flow of appropriately skilled engineers and tradespeople. I strongly believe the initiative would redress the growing inability to attract the best and brightest from our schools and universities into engineering and science and then on to careers in defence industry. To support the long-term nature of the undertaking, even our immigration and tax policies would need to be addressed to ensure access to the domain expertise which resides elsewhere but may be required to be resident in Australia at appropriate times.

I would add that in going down this route, we would vastly improve the ability to sustain these new strategic assets – something we are clearly finding difficult to do today. It seems that the skills and capabilities needed to design and build Collins have, for whatever reasons, not translated well down the years into an ability to provide an effective sustainment programme. I will defer to those with more insight than I do on the support programme who believe that, more than anything, Collins is suffering from chronic underfunding, simple scale issues, the loss of key people over the years, and the subsequent decline in core capabilities.

What I do believe is that fixing the Collins issues and updating Collins's capabilities has to be an essential building block for any national endeavour in this industry. Regarding it as 'just another project' is a recipe for failure. Indeed, treating the new submarine initiative as 'just another defence programme' will almost certainly condemn it to failure. It needs to be a bipartisan national endeavour.

## Conclusion

In supporting the creation of a new submarine industry, I recognise I probably sit with those who are currently seen as out of touch with reality. As I mentioned, there are many who view the hollowing out of our defence industry capability as natural evolution in an increasingly globalised defence market. However, with 26 years on the industry side of the fence, and years of Jindalee over-the-horizon radar system and other successes under my belt, I have seen what we can do in this country when we are allowed to try.

**The Author:** Paul Johnson was an engineering officer in the Royal Australian Navy from 1963 until 1985, holding numerous aeronautical engineering positions and becoming Deputy Director of Naval Aircraft Engineering. He was appointed a member in the Military Division of the Order of the British Empire in 1980 for services to naval aircraft engineering. In 1985, he joined General Electric (GE) as the Australian manager of business development for the GE Aerospace Group and, in 1990, he was assigned to Singapore as the regional director for business development. In 1994, Paul became regional president of the newly-formed GE Aerospace/Martin Marietta company and remained in this position following the merger of Lockheed with Martin Marietta in 1995. While in Singapore, he established, with Tenix, the joint venture company RLM, based in Melbourne. In 1998, Paul moved back to Australia as chief executive officer of RLM Systems and, in 2003, following RLM's successful delivery of the Jindalee Operational Radar Network, Paul became managing-director of Lockheed Martin Australia. For the past four years, Paul has been the chairman of the Australian Industry Group's Defence Council National Executive, the peak body representing primes, second-tier companies and small-to-medium enterprises. [Photo of Mr Johnson: Paul Johnson]