POLICY ANALYSIS ASPI

ASPI
AUSTRALIAN STRATEGIC POLICY INSTITUTE

Issues for the Australian air combat review

by Andrew Davies

14

11 January 2008

The new government has announced that it will conduct a review of Australia's future air combat capability. Given the huge sums required to acquire the aircraft, weapons and systems that constitute a modern air capability, it is important that the review be rigorous and systematic. One of the immediate drivers of the review will be the $12–15 billion decision on acquisition of the F-35 Joint Strike Fighter (JSF), which is currently scheduled to occur late in 2008. This ASPI *Policy Analysis* looks at the key issues that the review should address before multi-billion dollar decisions are made.

Two possible approaches

Broadly speaking, the government has two options. It could continue down the path established by the previous government with possible variations in numbers and timing, or it could decide to take a different approach, regarding any liabilities accrued from past decisions as sunk costs.

At the end of 2007 the government made several public comments about the future air combat force, apparently accepting that the JSF and Super Hornet would both be part of Australia's air capability mix. If that were to be the case, then the review of future air combat capability would become a 'numbers study'—how many Super Hornets and JSFs will be in the force past 2020 (with the number of both ranging between zero and one hundred) and how will the force be managed pending maturity of the JSF. Any other option involving the acquisition of another type will very quickly prove to be unaffordable when through life costs are considered. Every new aircraft type has a new set of fixed costs, for simulators, facilities, logistics chains etc.

More recently, there have been reports that the government will go back to the proverbial 'blank sheet of paper'. Given that a new Defence White Paper has been promised for later this year, this could be an opportunity to develop the force mix that is best matched with the government's high-level strategic goals and budgetary constraints.

Strategic questions

Before deciding upon either approach, the government will want to determine its strategic goals, against which force structuring decisions will be weighed. Much of the public debate on air combat in the last few years has focused on the relative capabilities of different aircraft types. Of course, that should be part of the process of deciding on the future force structure, but it leaves out some critical earlier steps. Before worrying about flight performance or radar parameters it is important to have a clear idea of exactly what the RAAF is expected to be able to do, and in what circumstances.

The set of potential air combat contingencies covers a very wide range. At the lower end, the RAAF might be called upon to neutralise the threat from a handful of aircraft operated by a regional air force without the assistance of an Airborne Warning and Control System (AWACS) or air-to-air refuelling. At the upper end, operations against a major regional power in the next

decade could be opposed by hundreds of capable aircraft backed by AWACS and an integrated air defence system. Between those extremes is a range of scenarios with different levels of capability required for success. And the picture is a dynamic one—acquisition of advanced technologies and systems by regional nations will lead to increasing challenges over time.

The force structure currently in train for the RAAF from 2010 until the JSF is available later in the decade—Hornets and Super Hornets operating in conjunction with Wedgetail AWACS and air-to-air refuellers—is more than capable of meeting the lower end scenarios. It is not, by itself, capable of missions at the upper end of the spectrum. Somewhere in between is the 'break even point' where the RAAF's capability is matched by a potential adversary. Exactly where that point is requires detailed knowledge of both RAAF and adversary capabilities, including electronic warfare and countermeasure performance. Even then there will be uncertainties.

The government needs to decide which scenarios it regards as credible and, importantly, how much it wants to spend on the capability required to prosecute them. For example, does the RAAF really need to be able to operate independently against the air forces of major regional powers, or would such operations always occur in a coalition context? Are deep penetration strike operations against well-defended targets required to meet strategic goals? What level of sophistication of attacking forces can be assumed for defensive air operations?

The answer to those questions, which are really part of the Defence White Paper to be developed in 2008, will provide the guidance against which RAAF capability will be developed. Ideally, the White Paper, which will detail the government's strategic outlook, would be used to determine the ADF's future combat capability. However, the development of a White Paper is a lengthy process and it is unlikely to be delivered before late 2008. If the White Paper post-dates the others, it is not clear how alignment of resources and strategic priorities can be guaranteed. However, as we will see below, there are other timeframes that favour an earlier determination of the direction of the air combat capability.

In practice, any decisions on the air combat capability will amount to an early statement of strategic intent. The 2000 White Paper was unequivocal about the air combat capability. It stated that Australia should

'… maintain the air combat capability at a level at least comparable qualitatively to any in the region, and with a sufficient margin of superiority to provide an acceptable likelihood of success in combat'.

That (ambiguously worded) aim would be achieved by maintaining forces

'… large enough to provide a high level of confidence that we could defeat any credible air attack on Australia or in our approaches, and capable enough to provide options to deploy an air-combat capability to support a regional coalition'.

Assuming that the priority accorded in the 2000 White Paper is maintained, the review must establish a solution that will ensure qualitative superiority while being affordable enough to meet the second quantitative requirement.

Super Hornets and JSF

The centrepiece of the current plan is the JSF, a multi-role stealthy type with advanced sensor and networking capability. But the JSF is not an operational capability today. One test aircraft has flown and has demonstrated few of the capabilities required for operational effectiveness. While proponents of the program are confident of success, further slippages remain likely (the sole test aircraft was grounded for six months in 2007 while a systems problem was rectified) and more problems may emerge. But, given the importance of the JSF to US forces—the USAF is planning to acquire over 1,700 to replace several aging types—it remains likely that the program will progress to maturity.

The questions for Australia are exactly when that will occur, and how much the aircraft will cost. The earlier we buy, the greater the costs and the lower the initial capability will be. The

originally planned 2012 initial operating capability for JSF in the RAAF has slipped a couple of years already.

If the JSF timetable slips further, there will be a problem in maintaining a viable number of frontline aircraft. The upgrade program for the 'classic' Hornet fleet will keep them flying in reasonable numbers, albeit with reducing comparative capability, until around 2018. If the JSF has matured into a suitable front-line aircraft by then, transition will be manageable. If not, Australia could be in the market for more 'bridging capability'.

In terms of cost, the Australian Government has already paid several hundred million dollars for participation in the JSF program. As a sunk cost, it is irrelevant to future decisions. But, as a result of program participation, Australian industry has been able to win JSF work. Withdrawal from the program in future would result in those opportunities being lost.

Currently, the 'second pass' decision on the JSF for Australia is scheduled for the second half of 2008. However, there appears to be no external driver of this timeline, and there would be little downside of deferring that decision until later. An incidental benefit would be the additional schedule, cost and performance data that would be available from the JSF program.

Noting the JSF schedule and cost uncertainties outlined above, the Super Hornet acquisition was announced as a bridging capability to allow the RAAF some breathing space. Under that scenario, the Super Hornet could either serve for a relatively short time before giving way to the JSF, or remain in the force structure after the acquisition of the JSF.

The Australian Government has entered into a contract through the US Foreign Military Sales (FMS) process for the Super Hornets and their associated systems and weapons. It has been suggested in some quarters that the Super Hornet contract be terminated. If that were to occur, under FMS regulations, the Australian Government would be responsible for all costs accrued to the date of termination and may also face a termination liability.[1] The accrued cost of the Super Hornet acquisition will increase with time. As a result, the cost of proceeding or not with the Super Hornet acquisition—and the impact of the timing of any decision—must be factored into any cost-benefit decision making.

Balanced against a decision to terminate the contract is the observation that the Super Hornet undeniably provides an improvement on the current Hornet fleet and therefore provides a boost in capability at little project risk. It is a mature design that is readily available to Australia and the RAAF has indicated that it also has advantages in terms of transitioning pilots from the Hornets. The concerns of many critics of the Super Hornet centre on its capability relative to other aircraft being acquired around the region. As a matter of priority, the review should examine hard data on relative performance—much of which is not public—and decide whether the Super Hornet is a viable bridging capability that will allow time to develop a long-term solution.

In summary, the 'stick to current plans' approach boils down to managing the fleet until a mature JSF is available. Longer term, the question would be whether the JSF completely replaces all other types—one of the strong selling points of the program back in 2002—or whether the Super Hornet is retained as part of the force mix. If the review assumed the Super Hornet and JSF acquisitions as given, the outcome would be a new transition plan with contingency plans in the event of JSF program problems.

The blank sheet approach

If the government decides to start from scratch, then a combination of 'top-down' and 'bottom-up' analysis should give the best outcome. The former would start with the strategic aims and force structure determinants derived during the Defence White Paper process. The bottom-up part of the review would gather information from the world market on aircraft capabilities, costs of acquisition and operations and, where appropriate, program risks. Ideally, the full range of credible options would be included. According to public statements, Defence has conducted a watching brief since (at least) 2002, when the decision was taken by the former government to curtail the analytic effort and buy into the Joint Strike Fighter program. That should mean that a good baseline set of data and suitable analytic tools are available for the review.

The government must satisfy itself that the analysis is based on a neutral set of assumptions. It is possible to formulate mission scenarios and adversary capabilities that produce specific outcomes. As a simple example, including only missions that require short transit times from bases or tanker aircraft will not allow range to play a significant role in distinguishing between types.

With the best will in the world, it is often difficult for those who have been involved in past decisions to step back and start afresh. For that reason—and to provide a measure of protection against the inevitable furious lobbying that will follow the release of any report—the review should be headed up by a well-credentialed independent analyst with experience in the aerospace industry.

The analysis must look at potential aircraft acquisitions in the context of their future operating environment. It should test the capabilities of these aircraft against the full spectrum of regional fighter and air defence capabilities currently in service or expected in the post-2015 timeframe.

The analysis must also look beyond the fast jet combat aircraft and consider the numbers of supporting assets such as aerial refuelling tankers and Wedgetail airborne early warning and control (AEW&C) aircraft required for the fighters to perform key tasks effectively. The cost-benefit analysis should take a 'whole of capability' approach. For the same reason, operating costs over the aircraft's lifetime must be included.

The world market currently offers a range of aircraft capabilities at prices that range from expensive to very expensive. All of these are multi-role aircraft to some degree, though performance of the types will differ in various roles. Some types that might come under consideration are (in no particular order):

Boeing F-15 E/K/SG Eagle
F/A-18 E/F/G Super Hornet
Dassault Rafale
Eurofighter Typhoon
Lockheed F-22 Raptor
Lockheed F-35 Joint Strike Fighter
SAAB Gripen

The F-22 Raptor is something of a special case in this list. The US has not released the Raptor for export to date. The block on export is reviewed periodically by Congress. The Australian Government should determine definitively, through a formal request, whether an export to Australia would be considered and, if so, at what cost. Then the Raptor can be included or excluded in cost-benefit analyses.

There will be costs associated with a 'blank sheet' review. Information gathering is time-consuming and can be expensive. Nonetheless, if the review finds that a significant change of direction is required, the funds saved by avoiding acquisition errors will dwarf any review costs.

Conclusions

There are tensions between the timeframes for the air combat review, the development of a Defence White Paper and the decision points for the JSF acquisition and Super Hornet FMS deal. The government may wish to wait until it has fully developed its strategic thinking, but additional costs will accrue if it decides to change direction later on.

A 'blank sheet' approach that makes no assumptions about the types to be operated makes sense, but will consume time and resources.

Assuming that the new White Paper will assign a similar priority to air combat capability as the 2000 version, the review must establish a solution that provides Australia with qualitative air combat superiority but is affordable enough to field in numbers that can meet credible operational requirements.

Given the public interest and debate surrounding air combat decisions, the review should be headed up by a well-credentialed independent analyst with extensive experience in the

aerospace industry. As many of the underlying assumptions as possible should be made available to the public.

If the review leads to a change of direction, costs for terminating the Super Hornet contract will grow with time. The review should examine the performance of the Super Hornet against credible regional threats as a matter of priority.

Other types will take longer to acquire. Any decision to terminate the Super Hornet contract will need to be accompanied by a plan to manage the air combat capability in the period 2010–2015.

There seems to be no real impediment to deferring a decision on Australia's acquisition of the JSF beyond 2008. As well as giving the review time to determine a long-term solution, additional schedule, cost and performance data from the JSF program will be available at a later date.

Endnote

1. It is difficult to quantify the amount that would accrue. A publicly-released brief on FMS financial management includes an example where the termination liability in the early days of a purchase is approximately 10% of the total cost. Applied to the Super Hornet purchase, that is broadly consistent with the 'several hundred million dollars' being cited in press reports.

About the Author

Dr Andrew Davies

Dr Andrew Davies is ASPI's Operations and Capability Program Director.

About Policy Analysis

Generally written by ASPI experts, **POLICY ANALYSIS** is provided online to give readers timely, insightful opinion pieces on current strategic issues, with clear policy recommendations when appropriate. They reflect the personal views of the author and do not in any way express or reflect the views of the Australian Government or represent the formal position of ASPI on any particular issue.

ASPI
Tel + 61 2 6270 5100
Fax + 61 2 6273 9566
Email enquiries@aspi.org.au
Web www.aspi.org.au