



Submission No 6

Review of the Defence Annual Report 2006/2007

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CEO/DMO/OUT/2008/163

The Hon Arch Bevis, MP
Member for Brisbane
PO Box 6022
House of Representatives
Parliament House
Canberra ACT 2600

Dear Mr Bevis,

Response to queries on the Joint Strike Fighter Program

During the 10th July sitting of the Joint Standing Committee on Foreign Affairs, Defence and Trade, you raised a number of issues regarding the Joint Strike Fighter (JSF) Program. In particular, you requested that further details be provided regarding the 2008 US Government Accountability Office (GAO) Report into the Program. I have since consulted with the Australian New Air Combat Capability (NACC) Project Office, the US JSF Program Office (JPO) and Lockheed Martin and I am pleased to provide you with the following information.

Background

The 2008 GAO Report is the fourth annual GAO Report on the JSF Program. The GAO is tasked to annually assess the ability of the JSF Program to meet its cost, schedule and performance goals, assess plans and risks in development and test activities, evaluate cost-estimating methodology, and identify future challenges facing the Program.

A key point to note is that GAO reports are by necessity largely based on old information. The latest report was released in Mar 2008 but is based on the Dec 2006 Selected Acquisition Report (SAR) to the US Congress. The independent Defence estimates (CAIG, NAVAIR and DCMA) referred to in the report are similarly dated, having mostly been compiled in 2005-06 and in some cases based on 2004 SAR data.

The committee raised a number of issues. I will deal with the cost issues before addressing broader programmatic/schedule/capability issues.

What is the basis of the \$23B cost “Blow-out”?

The US\$23B increase referred to in the 2008 GAO Report is the difference between the estimates for the total US acquisition cost in the Dec 2006 SAR and the Dec 2005 SAR. A critical point to note in any examination of these Reports is that they are based on Then Year (TY) or ‘out-turn’ estimates; that is, they take into account projected inflation across the period being examined. TY costs are therefore considerably higher than costs against a Base Year (BY) estimate which is referenced to a specific year and indicate “real” cost changes. Normally a substantial increase in a TY estimate is the result of a substantial increase in the BY estimate.

The major TY increase between the Dec 2006 and Dec 2005 SAR, however, did not result in a major increase in the BY estimate. This is because much of the cost increase was associated with a significant extension to the period over which the US plans to buy its aircraft. This effect is not associated with an increase to forecasts of future inflation rates; rather, because aircraft are acquired over a longer period, inflation compounds over a longer period. Discounting inflation showed that the “real” cost increase incurred during this period was much more limited at US\$7.7B in 2002 BY prices or about 3.7%.

This “real” increase was anticipated by Defence and therefore allowed for in the cost estimates presented at NACC First Pass consideration in Nov 2006. As a result there was almost no adjustment needed to NACC First Pass estimates once the Dec 2006 SAR was formally released.

GAO claims the JPO cost estimates are not reliable – what is the Department’s position?

Any concern regarding the quality of JSF cost estimates is of concern to Defence. And as the Minister for Defence has stressed, the Government will not make an acquisition decision on the JSF until it is confident about costs and schedule.

Prior to the GAO’s recommendation for an independent cost estimate, the JSF Project Executive Officer had initiated an independent review of cost estimates in Jan 2008 in preparation for the US President’s FY2010 budget. Defence welcomes the independent review which requires reconciliation of the JPO estimate with estimates generated by US Government stakeholders by around October this year. This is to be a joint exercise involving the JPO, the CAIG (Cost Analysis Improvement Group - an independent review body in OSD) and the costing agencies from both the US Navy and US Air Force. The results of this review will inform the NACC Second Pass consideration in 2009.

As noted below, Defence does not just rely on US cost estimates for the JSF.

What is Australia doing to assure itself of JSF costs?

The JSF Project Office (JPO), supported by other US agencies - including the manufacturer Lockheed Martin - has access to extensive historical data and costing models derived from aircraft design experience that Australia does not have. The JPO also has increasing access to ‘actual’ JSF production cost data to add to the historical ‘parametric’ data.

While the estimates provided by JPO form a strong central pillar of the Australian program estimates, they are not the Australian estimates. For the Australian estimates the DMO has conducted its own studies of historical aircraft cost increases during design and production phases and also looked at sensitivity analysis of known aircraft production cost drivers. This information assists in our NACC project cost and schedule analysis and helps determine what adjustment we make to JPO estimates and the level of contingency that is added. To these aircraft costs are added estimates for spares, support equipment, test and training equipment, weapons, facilities etc to compile the full acquisition cost.

But acquisition costs typically represent only about one-third of project through-life costs. Support, training and upgrade costs represent the other two-thirds of through-life costs. Australian estimates use JPO estimates which are based on experience with more mature platforms and have tailored these JPO estimates to account for unique Australian operational and support requirements. That said, there is still considerable uncertainty about some aspects of post acquisition costs, which DMO is working steadily to identify.

In addition, as you are aware, I have been working closely with the US DoD and other JSF Partner countries to develop an improved JSF acquisition model. The current acquisition model involves single year purchases in the early years of the Program and those early aircraft cost considerably more than aircraft in later years. There is, therefore, an incentive for Partners to delay their acquisition to avoid the high cost of early aircraft. The aim of the improved acquisition model – generally referred to as the ‘Consortium Buy’ or ‘Level Pricing’ – is to pursue a multi-year buy much earlier in the Program to improve stability in terms of acquisition numbers, improve supply chain efficiency, and add increased confidence to JSF acquisition cost estimates.

GAO claims that the program is midway through the development program but has spent two thirds of the budget.

This is to be expected as funding is always front-loaded in development programs.

The majority of JSF development work is now complete. The remaining effort is largely involved with completing the software development and conducting test activities. For over 12 months Lockheed Martin and the other key companies involved in design work have been reducing their design workforce – this is a necessary activity to ensure cost efficiency. In contrast, the level of work involved in production activities is now increasing.

Additional funding will, however, be required to complete the development program. The above comments from the GAO Report addressed the worst case scenario, the other external agencies, DCMA and CAIG, forecast development cost increases of approximately US\$5B.

Earlier this year as part of the JPO cost review cycle, the existence of a substantial program development under-fund was identified comprised as follows:

- US\$1.2B for LM to complete SDD (without cutting capabilities).
- US\$300M for P&W to complete F135 engine development.
- US\$1.4B to complete F136 development (as mandated by Congress).
- US\$700M for 12 month extension of operational flight test program.

Previous increases to the development cost of JSF have been absorbed by the US. On this occasion however it is likely that international partners will be asked to contribute to the shortfall. In Australia’s case a contribution in the order of US\$50m is anticipated but this would of course need to be the subject of a Cabinet consideration. While not an insignificant amount, in the context of our investment in JSF this remains a modest increase (about 1%).

How much is the JSF?

As I discussed at the hearing on 10 July, there can be many estimates for JSF costs based on:

- the source of the estimate;
 - the price basis (USD, AUD, Now Year, Then Year, Base Year etc);
 - the aircraft variant (Conventional Take-Off and Landing (CTOL), Short Take-Off and Vertical Landing (STOVL), and Carrier Variant (CV));
 - cost scope (aircraft only, aircraft and associated support systems, total project cost – inclusive or exclusive of development costs etc);
 - exactly who does the estimating and the assumptions used;
- and each may be rendered from a US or Australian project perspective.

To avoid potential confusion associated with these various perspectives we generally refer to the cost of the aircraft itself – the Unit Recurring Flyaway (URF) cost - as it is the primary cost driver for the program and the most easily tracked from year to year.

The JPO and LM independently assess the URF cost but Australian estimates are based on the more conservative JPO figures. As for all manufacturing processes, the cost of producing aircraft reduces over time as the manufacturer gains experience in the production process and the supply chain becomes more efficient. The current JPO estimate for the average URF of all Conventional Take-off and Landing (CTOL) variants over 30 years of the build program is approximately A\$65m each in 2008 price and exchange.

However, that figure is just a starting point for the development of Australian estimates. While much needs to occur in the complex world of the nine Partner International JSF collaborative program before we will see binding offers, it is my expectation that we will eventually see aircraft prices in the region of the A\$75m (2008 price and exchange) figure I stated at the hearing. The future exchange rate will be a key driver of Australian costs.

But even contracted prices require contingency allowances for the possibility of unforeseen changes and economic variations and this figure would be no different. That figure of course only relates to the aircraft, to it must be added billions of dollars of support and training equipment, spares, support equipment, weapons, facilities etc.

Will the mid-course replan intention to reduce the number of test aircraft increase risk?

During 2007 the US JSF Program Office (JPO) implemented a Mid Course Risk Reduction Plan to replenish management reserves. Replenishment was achieved through the removal of two developmental test aircraft, thereby reducing the developmental test assets from 21 to 19. This action was flagged as a concern by the GAO.

The JPO continually reviews the JSF test program to ensure all necessary testing is done in the most cost effective way. This process has resulted in the elimination of several test flights from those planned in the initial flight test program and the transfer of some flights to the 737-based Cooperative Avionics Test Bed (CATB). The JPO believes that the combination of the 19 JSF test aircraft, the CATB and extensive integration laboratories provides the most cost effective means to complete flight test with acceptable risk. In comparison with earlier test programs the JSF is still very well resourced. For example the 1990's F-22 Program had only 9 test aircraft.

Significant challenges still remain, however. In early 2008 the JPO recognised the reworked flight test program would require additional time. Accordingly, a one year flight test extension has been incorporated into the program resulting in Block 3 Initial Operational Test and Evaluation (IOT&E) now planned for completion in 2014.

What is Defence's assessment of the overall programmatic risk to capability delivery?

As a large, software-intensive project with very high capability goals the JSF Program faces inherent risks to delivering the capability Australia needs. That said, Defence has confidence that the JSF can be delivered to meet ADF capability needs. The reasons why Defence has such confidence are based on a number of factors:

- Apart from an approximate 18-month development phase extension to address excessive weight in the STOVL variant, the Program has continued to make good progress.

- The JSF Program has incorporated extensive lessons learnt from the F-22 Program, with many key people on the US JSF Program having come directly from the F-22 Program. (The JSF is already showing a much higher level of maturity than the F-22 did at the same stage of the development program).
- The JSF is being delivered incrementally in a 'spiral development' approach which incrementally delivers capability. Australia's first aircraft will be the full capable Block 3 aircraft. The US Marine Corps will declare operational capability with earlier Block 2 aircraft.
- At First Pass the proposed first delivery date for Australia's JSF was deferred from 2012 to 2013 to mitigate potential schedule risks.
- Australia's Initial Operational Capability is planned to occur two years after the US Air Force.
- All JSF sensors and countermeasures systems have already flown and performed well on surrogate aircraft.
- All nine JSF Partners signed the JSF Production, Sustainment and Follow-on Development MoU in late 2006, a strong sign of confidence after four years of detailed analysis.

In addition to the above, the acquisition of 24 Super Hornet aircraft provides mitigation against schedule risks associated with delivering JSF capability.

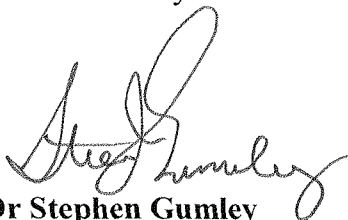
As for cost, the Minister for Defence has made it clear the Government will not make an acquisition decision until it has a high level of confidence in JSF cost, capability and schedule.

Conclusion

It is to be expected that a Program as large and complex as the JSF will face extensive scrutiny. Review by external agencies such as the GAO are to be expected and are welcomed. As the above explanations show, however, their conclusions must be put in context. As a partner in the JSF Program, Defence has detailed knowledge of progress on the Program and is able to advise Government of issues as they arise and take necessary mitigation actions.

It is also important to stress that Australia has not yet committed to acquire the JSF and continues to conduct detailed analysis to support Government in a potential acquisition decision at Second Pass in 2009.

Yours sincerely



Dr Stephen Gumley
Chief Executive Office

25 July 2008

Distribution:

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Parliamentary Secretary (Defence Procurement)
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