4 January 2016

Foreign Affairs, Defence and Trade Committee
Joint Strike Fighter Inquiry
Department of the Senate
PO Box 6100
Parliament House
Canberra ACT 2600

Dear Chairman and Committee Members,

AUSTRALIA'S TEST AND EVALUATION STRATEGY FOR THE F-35 JOINT STRIKE FIGHTER

1. I was the Director General for Test and Evaluation (T&E) from 7 December 2010 until 19 January 2015. I had occasion to review Australia's T&E strategy for the Joint Strike Fighter (JSF) aircraft during two annual reviews of the JSF Project's T&E Master Plan and also during Defence's submission to Government in late 2013 for approval to purchase all of Australia's JSF aircraft (Second Pass). I assessed several aspects of Australia's T&E strategy for the JSF as sub-optimal and I raised these concerns directly with the JSF Project Office, Air Force Headquarters and discussed them with the U.S. Directorate of Operational T&E (DOT&E).[1] Several of these concerns I lodged formally during first the Capability Gate Review Board's consideration of the Second Pass submission and then a few months later, through my superior, Vice Admiral Jones, at the Defence Capability Committee consideration. Of the more than 100 draft Government submissions I reviewed in this office, this was the most difficult for me, because it was my own service and on several T&E principles I had to oppose the strategy adopted by Defence through to the highest Defence Committee. I reiterate these concerns for this Senate Inquiry in case they can influence Defence, where I could not, to improve Australia's T&E strategy for the JSF over the next few years.

2. **Major Concern - MOTS.** My first and major concern with Australia's T&E strategy for JSF is that the strategy is based on the aircraft being military off-the-shelf (MOTS), and yet all of Australia's decisions, including full production approval by our Government, have so far been made while the aircraft is still under U.S. development. U.S. operational T&E of the JSF has repeatedly been delayed through this decade due to a failure to achieve the JSF T&E milestones set by U.S. Defense. This promissory MOTS approach by Australia was used repeatedly in two different ways to deflect any suggested changes to Australia's T&E strategy:

(1) **Defer.** The obvious first logic from this strategy is to not do any Australian commitment and T&E until the U.S. developmental T&E completes; that is, defer Government Second Pass until the JSF is really military off-the-shelf. This approach to delay Australia's commitment had worked for several years in the period 2009-2012, but by 2013 Australia's Air Force was increasingly concerned with the age of its current fighters and wanted to commit to full JSF production in time to enable the current fighter fleet to safely retire. The Australian Air Force saw the risk of the U.S. Defense failing on JSF as less likely and less significant than the likelihood of the current fighter fleet becoming unsafe or ineffective.

(2) **Try Harder - Help.** The second logic to try with the promissory MOTS approach is to work harder with the U.S. Defense on the developmental T&E, so that it concludes in time to meet Australia's aging fighter aircraft timelines (i.e., activate plan B to help achieve the capability). Initiatives to do more on the U.S. developmental T&E were deflected with the argument that such measures would undermine the value-for-money argument of the MOTS; that is, involve Australia in the vey non-recurring expense of development that it was seeking to avoid. When I pressed hard about what involvement Australia had in the developmental T&E, it was revealed that around 2008 to 2009, Australia had been offered participation in the memorandum of understanding (MOU) covering developmental T&E, including test aircraft, but that Australia had declined, leaving the U.S. and two other countries as the only official T&E partners. Australia apparently only signed a production and follow-on sustainment MOU. Hence, Australia's early aircraft are

[1] Dr Gilmore's deputy, Mr Duma

only for training and the few test officers being sent to U.S. JSF T&E are only to witness operational testing (when that begins).

3. Two other projects and a Senate Inquiry shaped this major concern of mine with the JSF T&E strategy.

(1) **Air-to-Air Refuelling.** The Air-to-Air Refuelling Tanker project in the late 2000's had waited too long before providing critical team-based T&E assistance to the contractor to finalise developmental deficiencies. The delay in providing Australian T&E assistance was to give a chance for contractual leverages to take effect and yet the main recipient of realising risk was the Air Force operating without the necessary tanker aircraft: punitive contracting only works if you can forego the capability. If the JSF aircraft is really the only option (as many well-qualified Air Force officers believe), then at some point Australia needs to be prepared to assist the U.S. developmental T&E. Australia's Second Pass commitment to all production aircraft before the aircraft has finished testing suggests we have already reached the risk trade-off point where Australia committing a developmental test team ought to have already occurred. When pressed to commit an Australian test team to assist, arguments offered against this were: (1) that it was too late because operational T&E is imminent, (2) that it would require an amended MOU negotiation, (3) that it would not make any difference, and (4) that we get the test reports anyway. There has already been two years since this decision without the U.S. achieving operational T&E, so there was, and remains, time. The MOU re-negotiations would surely be welcome by the countries doing it alone, given the consistent delays. According to DOT&E annual reports to the U.S. Congress, developmental test assets (aircraft & qualified test staff) are the critical reason for delays and they have transferred some U.S. operational test staff to the task of finishing the developmental T&E. In such a climate, Australia could contribute its two aircraft and a developmental test team to assist and be assured of making at least a difference proportional to it production share. The argument that we get the T&E reports anyway was a lazy almost *'technical intelligence perspective'* which, at its worst, suggested that the project staff were too far removed from any accountability for collective international progress on JSF and from the Australian Air Force urgency of the aging Australian fighter fleet, or at its best, it reflected that the project staff were un-empowered.

(2) **P-8 Aircraft.** The other influential project to shape my concerns about Australia's JSF T&E strategy was the P-8 Maritime Patrol Aircraft. This major aircraft acquisition came to the Defence committees and Australian Government for its Second Pass approval just three months prior to the JSF Second Pass submissions. For the P-8 Aircraft, Australia had been a co-developer of the aircraft during developmental T&E with an embedded test team who delivered an initial operational test report just prior to the request for Australia's production commitment. This meant that the U.S. decision to commit (their Milestone C) was aligned with Australia's decision to commit (our Second Pass). This exemplary P-8 aircraft T&E strategy stands in stark contrast to what Australia has pursued with the JSF.

(3) **Senate Inquiry into Defence Procurement.** The final influence on me in raising my major JSF concern was the Senate Inquiry into Defence Procurement (September 2012). I testified on 13 June of that year and I was tasked with implementing major policy changes for T&E from the Inquiry. A particular finding of that 2012 Senate Inquiry was Defence being gullible to the illusionary promise of MOTS acquisitions, especially when informed only by the developing company (see Chapter 12 & especially Recommendation 25 concerning preview T&E).[2] The Australian approach to JSF T&E fits all of the worst aspects of the MOTS projects reviewed in

[2] The terms gullible and illusionary promise are my plain terms. The stated reliance on the developing company is my appreciation of the cause for what the Inquiry states in great lengths in their Chapter 12. Another recent excellent example of this Defence acquisition problem is covered in the 2014-2015 ANAO Report No 52 into Project Land 121 Phase 3B, 'Medium and Heavy Vehicle Fleet Replacement'.

Chapter 2 of that Inquiry from the 2000-2010 period, such as leaving any official Australian T&E until too late (circa 2019 for JSF), project over-optimism and so on.

4. **Major Concern – Joint Enablers.** The JSF aircraft derives much of its superiority through its situational awareness, derived first by its on-board sensor-fusion and second by its advanced linkages to higher command, control, communications, intelligence, surveillance and reconnaissance. Therefore, if Australia is to derive that benefit, it must ensure the sensor-fusion reflects the latest intelligence for Australia's threats and that the critical higher command linkages are applied effectively and seamlessly throughout Australia's region of interest (25% of the Earth's surface). Threat programming of the sensor-fusion is a body of classified work that is being undertaken. The enablers for the linkages were foreseen in the network-centric warfare initiatives of General Hurley, when he was Chief of Capability Development Group, and were in the 2009 Defence Capability Plan. Examples include the Joint Projects for Tactical Data links and for Satellite Communications. Unfortunately, these joint projects have suffered badly in their progression, first from heavy Defence funding cuts in the Gillard Government (2012-13) and second by over-cautionary decision-making awaiting force-structure reviews in the Abbott Government (2014-15). Not surprisingly in a shrinking Defence budget and cautionary decision-making climate, the priority of each Service has been for the platforms and not the joint enablers. Unfortunately delays in progressing a robust tactical data link capability with capacity for 24/7 all-year and for a full range of users at a time have gone on for so many years, they would now be a risk to where and when JSF OT&E could occur. Coupled with delays in these joint projects, has been project management difficulties with satellite communications projects within the former Electronic Systems Division of the Defence Material Organisation concerning anchoring stations in West and East and mobile satellite terminals. No overarching test program yet exists for either the sensor-fusion threat programming or for key network centric operations.

5. **Lesser Concern – Early De-Risk T&E Opportunities.** The Australian JSF T&E strategy was shaped by the promissory MOTS approach to avoid any T&E until Australia conducts its own operational T&E (circa 2019). Further, for an unknown reason, the 14 early aircraft were purchased for aircrew training and not destined (permitted) to do T&E. My T&E reviews of the risks in the JSF introduction clearly showed that interfaces with other Australian aircraft would be key, such as the interface between Australia's developed Airborne Early Warning and Control (AEW&C) aircraft and its Air-to-Air Refuelling aircraft. There was, and remains, opportunity to do some early developmental T&E checks and indeed operational checks on these key interfaces well before Australia commences operational T&E in Australia. Suggestions to do these checks early were met with a kind of timidity and caution suggesting that there was no overarching operational and technical risk management within the Australian JSF office, no contingency funding, and a 'passenger mentality' with respect to the U.S. 'driver'.

6. **Lesser Concern – Project Office. The** JSF project office of 2010-2014 was largely defensive and passive rather than risk-focused and pro-active. The project was denied any real part in the aircraft's development other than to monitor U.S. events and to continuously re-plan deferred Australian operations. Furthermore, the main supplier was always the U.S. Department of Defense, which unfortunately has to command a degree of deference and relationship management fundamentally softer than that which would be undertaken for a large multinational supplier, especially if you are only an invited witness to testing or test metrics and you chose not to be a contributor. If Australia is to remain in the JSF program, it needs a serious role in wherever the international program is at, by an accountable project that is given a chance to be more than a promotional bystander.

7. **What to do now.** If Australia persists with the JSF acquisition, I recommend the Senate Inquiry place the following recommendations concerning Australia's JSF T&E:

(1) Australia to immediately commence negotiations to join the developmental T&E of the JSF regardless of how long that development is estimated to continue. (Put simply - get in or get out!)

(2) Australia to make available whatever JSF aircraft assets it has and a sizable and proportionate developmental test team[3] to the U.S. to assist in completing the development. (Put simply – help yourself by helping the T&E.)
(3) Australia to test its key JSF-interfacing aircraft with the JSF aircraft as part of Australia's new developmental test program, so as to be informed early of any operational or technical risks. (Put simply – stop being naive that just because something should work it will work and get after early opportunity testing.)
(4) Australia to independently review,[4] with U.S. technical and operational assistance from the affected U.S. commands, Australia's joint enablers for JSF and its supporting aircraft (i.e., AEW&C & MRTT) to operate throughout the region and at sustained operational tempo, and to report:
    a. any deficiencies in coverage, capacity or timeliness from necessary joint projects, and
    b. what individual and collective joint-force test milestones should be established to ensure the readiness of such joint enablers for JSF aircraft operations.

8. **Testimony.** I hope this recollection of the JSF T&E strategies and my concerns has been useful. I wish the Committee and indeed the JSF project every success in its efforts. I would gladly testify to any of what I have raised or simply to answer what questions you might have.

Yours Sincerely,

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[3] Sizable and proportionate developmental test team means that the Australian Air Force offered test personnel should be proportionally similar to the USAF when adjusted for the difference in the number of production aircraft. That is, the current ratio of the number of USAF test personnel in the JSF developmental T&E program compared to the number of USAF production aircraft should be matched by Australia's ratio of offered test personnel compared to Australia's number of production aircraft.

[4] Independent means the review is independently staffed from the current Australian capability development staffs and acquisitions project offices, but takes input from these essential sources. U.S. commands like Pacific Command, are affected by Australia's ability to create joint enablers through the region (such as satellite anchoring stations) and are years ahead in trying to create such infrastructure across such large areas.