P O Box 317
Mallacoota VIC 3892

5 February 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,

THE PLANNED ACQUISITION OF THE F-35 JOINT STRIKE FIGHTER

This Submission addresses the following Terms of Reference:

- potential alternatives to the Joint Strike Fighter; and
- any other related matters.

I have marked this Submission 'Confidential' as it contains material that of published, could create public 'Alarm and Despondency'. Most Australians are not aware that we could be attacked at any time in a way that the Australian Defence Force (ADF) has no capability to defeat, let alone defend the Nation.

My last assignment on the Australian Department of Defence was to represent the 'Red Forces' in the Australian Illustrative Planning Scenarios (AIPS). These were a series of highly Classified scenarios designed to test the capabilities and preparedness of the ADF across a spectrum of crises requiring a military response.

The Scenario described in this Submission is an attack designed to decapitate the leadership of Australia. Supplementary attacks reduce the ability for civil and military authorities to recover and regain government.

The thesis is that a well prepared enemy will succeed if they observe three criteria in developing their attack plan:

a. **Capability:** weapons systems must have the survivability and lethality to produce the necessary effects;

b. **Commander's Intent:** the enemy leadership must have a clear understanding of the objective of an attack, its probability of success, and the inevitable consequences; and

c. **Initiative:** An enemy Commander can choose the time, place and manner of the attack, within the constraints of the enemy nation's military capabilities.

Recent history shows that the combination of Capability, Intent and Initiative is devastatingly effective; examples are:

- The German Blitzkrieg of Poland 1 September 1939;
- Japanese attack on Pearl Harbour 7 December 1941; and
- Destruction of the World Trade Centre towers 11 September 2001.

The Scenario presented is graphic and disturbing; however, it creates a compelling assessment of a potential risk to Australia's security and perhaps its sovereignty.

Responding to known threats is a difficult task, especially when budgets constrain Capability Development and Maintenance. One approach is 'Expected Value under Certainty', where:

Expected Value = Probability of the Event * Cost of Consequences

In this Attack on Australia's Leadership, the Probability of the attack might be assessed as low, but as the Cost of Consequences is very high, there is a correspondingly high Expected Value.

When ranked with other risks, addressing this risk with a Capability Development redirection to the Department of Defence may be warranted. This matter should be a subject for the Government's consideration when formulating its next Defence White Paper.

Yours sincerely,

Chris Mills, AM, MSc, BSc
Wing Commander 9Retd)

Transmitted by the Committee Upload Facility

AN ATTACK TO DECAPITATE THE LEADERSHIP OF AUSTRALIA

The Parliaments of Australia publish a Sitting Calendar and it is a simple matter to find when several Parliaments are sitting on the same day. For the Commonwealth, Queensland, New South Wales and Victoria 'concurrent' days in 2016 are 23 February, 11 October and 8 November.

In this scenario, an enemy simultaneous attack on these Parliaments is planned for 11:00 am, 8 November. A Land Attack Cruise Missile is the capability to be employed, these weapons are copies of the US Tomahawk with a range of about 1,000 miles. The 500 Kg warhead has an energetic thermobaric fill and added lethality is delivered by igniters of unburnt fuel. As the longest distance from launch to target is about 200 miles, there is substantial energy remaining in this unburnt fuel.

Launch platforms include air, submarine, naval surface ships, and perhaps more worrying, containerised versions (these exist in Australia's region). This seven minute video is chilling to watch:

Containerised Club-K LACM

The attacks will be launched from outside the Continental shelf so that the submarines can escape into the deep ocean. Some of the attacks will be from shipping containers; after the attack the empty containers are dumped overboard and the container ship proceeds as an innocent commercial vessel.

The attacks are timed and routed so they arrive simultaneously. Targets are: Parliaments of the Commonwealth, Queensland, New South Wales and Victoria (four missiles each), Police Headquarters (two missiles each), ADO Russel Buildings R1 and R 2 (two missiles each) and Headquarters, Joint Operations Command (four missiles, to be air burst over the Centre). After debate, Government House is spared. The salvo of thirty two missiles is well within the capability of the attacker.

At the appointed time, the submarines launch, the containers open and fire four missiles from each. After the attack, the submarines dive and escape; the container ship dumps the launchers and proceeds to its destination to unload the remainder of its containerised cargo.

The GLONASS – GPS guided missiles streak towards their targets at low altitude, avoiding radar detection. The incoming track has been selected to give the greatest probability of penetrating the target buildings. Just before the target is reached, the missiles pop-up, then dive in a penetrating attack.

The missiles complete their precision attack, and on penetrating the target buildings, thermobaric warheads explode with great force. Those present not killed by the blast and fragmentation are incinerated by the residual fuel. Damage extends throughout the buildings. Only the Joint Operations Command Centre is hardened against this type of attack, but it too is extensively damaged by the blast pressure of the simultaneous airburst of thermobaric warheads. Many inside the Centre are gravely injured.

News of the attack spreads quickly. None of the media centres is touched, and video of the Houses of Parliament in ruins and burning, quickly fill all media channels. The Prime Minister, Leader of the Opposition and State Premiers have all been killed, as have several Police Chiefs. The Governor General attempts to calm the Nation, but what can he say about the clear evidence of a very effective attack. People are frightened and some panic, blocking roads as they flee the cities. Nobody knows if or when a second attack will be made. Thirty two missiles are known to be a small part of the attacker's arsenal, and news reports advise that the attacker's Inter-Continental Ballistic Missiles cover all of Australia.

THE AUSTRALIAN DEFENCE FORCE THREAT RESPONSE

That Land Attack Cruise Missiles exist, and the several modes of delivery including weaponised containers, is known by the ADF. However, the ADF is not structured to protect Australia from this type of attack.

The Royal Australian Air Force (RAAF) has prime responsibility for Control of Australia's Airspace, but its Force Structure is more suited to a modern version of The Battle of Britain than a defence against a Land Attack Cruise Missile or an Inter-Continental Ballistic Missile attack.

The issue is that the enemy played the Initiative card, and with the wrong Capabilities and being denied Preparedness for such attacks, the RAAF is simply 'caught on the ground', unable to respond.

Even if the RAAF had full notice of an impending attack, the response would be expensive and ineffective. The RAAF flies continuous Combat Air Patrols during times of large National events such as the Olympics and Commonwealth Games to protect against the possibility of a high-jacked airliner being flown into a packed sports stadium. In this scenario, the missile-count attacking Canberra alone is fourteen, the targets are separated geographically, and the low altitude of the missiles makes them difficult targets. 'Classic' and Super Hornets can carry and deliver the AIM-120C-6 missile optimised for cruise missile engagements, but the RAAF does not have this missile type in its inventory. A Wedgetail Airborne Warning and Control aircraft and several Hornets would be required to orbit Canberra to provide continuous coverage; a very expensive operation when the date and time of an attack is unknown – it could come in days, months or years. Continuous coverage of other capital cities would be beyond the RAAF's capabilities. Protection of Canberra, leaving other cities to their fate, would present a sensitive political problem to all Governments, Federal and State.

There is a solution to this type of threat which has been developed in the past decade. This capability is called 'Anti-Access / Area Denial' (A2/AD). Russia has been developing A2/AD systems for decades, in the last few years it has developed 'five-minute shoot and scoot' capabilities that make its A2/AD capability both effective and survivable. Russian air operations in Syria include deployment of the very capable S-400 A2/AD system which can engage targets over Israel and Turkey and RAAF operations over Syria. China has purchased some of Russia's A2/AD systems and had generated very capable A2/AD system of its own. Both countries export their A2/AD systems.

Israel, tormented by Katyusha rockets, has responded with the 'Iron Dome' project, initially deployed on 27 March 2011. Since then, it has engaged over 1,200 rockets (October 2014). The system is being extended to protect against threats including ballistic missiles.

https://en.wikipedia.org/wiki/Iron_Dome

The advantage of A2/AD systems is that they operate continuously using electricity (often from the grid) to power search radars. Missiles are only fired to engage incoming cruise missiles, so the ordnance cost is low.

Operating A2/AD systems is ideal for a mix of Permanent and Reserve ADF personnel. In the past, the RAAF maintained a flying Squadron to protect each city. Today, these Units are Expeditionary Support Squadrons. Should the Government decide that the threat (Expected Value) requires the protection provided by an A2/AD capability, then the 'City' series Squadrons could be assigned this role.

Energetic conventional weapons such as thermobaric warheads are a threat to Australia's deployed forces. Russia makes a series of precision guided bombs; three KAB-1500s with thermobaric warheads airburst over a dug-in Regiment would incinerate all below the attack. Deploying an A2/AD dome over deployed Army Operations with elements drawn from the City Squadrons would protect against this type of devastating attack.

This section should be concluded with a note of caution. There is no 100% assured protection of a volume of airspace. The Israeli Iron Dome has been very successful but has only destroyed about 85% of targets. There are capabilities (e.g. point protection Surface-to-Air Missiles) that deal with 'leakers' to improve the level of protection. Notwithstanding, if effective A2/AD systems are in place, there can be a 'deterrence' effect. A Commander contemplating an attack might assess that a protective A2/AD system might render the attack ineffective, with the result being a military and diplomatic embarrassment, and so decide against an attack.

AUSTRALIAN INDUSTRY DEVELOPMENT OF AN A2/AD CAPABILITY

Both Russia and China have very effective 'off- the-shelf' A2/AD systems with a breadth and depth of capability not yet found in Western military capabilities. This Submission assumes that it would not be diplomatically possible or advisable to source A2/AD systems from either of these countries. However, the capabilities of these systems can inform Australia on the design and deployment of effective A2/AD capabilities.

Counties that are confronted with a continuous existential threat from missile attack are most likely to develop effective and cost-effective A2/AD systems. Two examples are Israel with its Iron Dome, and Ukraine, now turning its advanced military weapons system design and manufacturing skills to produce its own A2/AD system. No doubt Ukraine will be well informed by drawing on its experience with providing components for Russian A2/AD systems, and its deployment, refurbishment and modernisation of its Russian sourced A2/AD systems.

Members of the Committee might be pleasantly surprised to know that Australia has a world-class radar designer and manufacturer at CEA Technologies in Fyshwick, ACT. This company could deliver deployable and fixed search and tracking radars.

Another opportunity is to repurpose the Air Warfare Destroyer (AWD) SPY 1 radars as City Protection search radars. The Spy 1 radar does not have sufficient fire control channels, making the AWD vulnerable to saturation attacks. Replacing SPY 1 with SPY 3 radars would substantially improve the survivability of the AWD.

Development of A2/AD systems required extensive testing including 'live-fire' exercises. Woomera is purpose designed for this task.

CONCLUSION

Weapons system capabilities, largely developed in the last decade by potential adversaries, have created 'capability gaps' in Australia's Defence Force structure. One giant gap is that Australia's cities are continuously vulnerable to attack from cruise and ballistic missiles. Deployed forces are also vulnerable to cruise missile attack, and devastating attacks from the air.

One of the new capabilities is defensive 'Anti-Access / Area Denial' (A2/AD) systems that operate at relatively low cost to provide continuous protection against surprise attacks. The current RAAF structure can only provide limited-effectiveness protection at great operational cost and only at one location.

A2/AD systems are available 'off the shelf' from Russian and Chinese sources. However, it may only be diplomatically achievable to develop systems with assistance from other sources, Israel and Ukraine being possibilities.

Funding the development and deployment of A2/AD requires a substantial capital cost. Recent sales of the highly effective Russian S-400 system indicates that the cost of an S-400 system capable of protecting a city is about $1 Billion:

http://thediplomat.com/2015/12/india-cleared-purchase-of-russian-s-400-missile-defense-system/

http://thediplomat.com/2015/11/china-to-receive-russias-s-400-missile-defense-systems-in-12-18-months/

The Defence White Paper might consider that the protection of the Australian people, especially in the principal capital cities, is a high priority. This is not a defence that can be achieved by deployment of the Joint Strike Fighter (nor the Hornet and Wedgetail fleets,) and a RAAF restructure could change it from its obsolete and ineffective 'Battle of Britain' posture to a modern A2/AD capability structure as a set of 'City Squadrons' staffed with a mix of Permanent and Reserve personnel. Elements of these City Squadrons could be deployed to protect our expeditionary forces.

The arithmetic is compelling. The JSF capability, which many argue is minimal because of the manifold design deficiencies of the platform, could be diminished or dispensed with altogether, and the $22.5 Billion capital budget cost ($300 million per aircraft * 75 = $22.5 Billion) be redirected to develop and deploy A2/AD capabilities. Protecting (say) seven cities would require a capital cost of about $7 billion, and the operating cost would be substantially lower than operating a JSF fleet.

The 'bottom line' is that a $7 Billion investment in A2/AD delivers a good level of protection to the bulk of Australia's population, a $22.5 Billion expenditure on the JSF delivers practically nothing.