



Submission No 32

Inquiry into Australian Defence Force Regional Air Superiority

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Inquiry into Australian Defence Force Regional Air Superiority

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Terms of Reference:

- a. the ability of the Australian Defence Force to maintain air superiority in our region to 2020, given current planning; and
- b. any measures required to ensure air superiority in our region to 2020.



Summary of Main Points

1. Australia will shortly face in our region similar numbers, force structure and technologies in air power that the USSR developed to defeat NATO in Europe at the height of the cold war.
2. Consequently the capability needs of the RAAF are fundamentally different from those envisioned in the *White Paper*.
3. The JSF is suited to the strategic environment envisioned in the *White Paper*. It will not deliver the capabilities required in the new strategic environment.
4. The JSF project has proceeded without meaningful consideration of alternatives, and without an analysis of capability need.
5. This represents a failure of due diligence on the part of DoD.
6. The lack of capabilities provided by the JSF cannot be remedied by planned investment in networking. Accordingly the whole vision of DoD is proceeding on the basis of untested assumptions and excessive faith in unproved technologies.
7. A number of options exist that can meet the RAAF's capability needs and deliver regional air superiority through 2020. These options need to be examined as a 'due diligence' requirement of DoD. Given the prejudices and sensitivities around different options, studies conducted should be peer reviewed, include non DoD players, and be presented to Parliament.
8. DoD has effectively captured the policy agenda from Government. If left unchecked this will result in a failure of decision making that locks in future Australian Governments to 2030-40. Billions of dollars will be expended on the purchase of an unsuitable aircraft, Australia will lose its deterrent strike capability, and regional air superiority will be lost.

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Term of Reference A: the ability of the Australian Defence Force to maintain air superiority in our region to 2020, given current planning

Introduction

In any Government procurement, whether it is for staples or fighter aircraft, a process is needed to ensure that what you are buying will do what you need it to do in order to achieve what you want to achieve. This requires a clear statement of goals (what are we trying to achieve), then identification of outputs/capabilities that are required to achieve those goals. Options are then weighed against financial and other constraints, risks are identified and risk management strategies put in place. Such an approach allows options to be compared and proposals evaluated; and helps ensure the outcome is the best that can be achieved. A similar approach was to have been followed in the AIR6000 process. Instead the Government suspended the AIR6000 process thereby sidestepping any proper analysis or comparison of options for replacing the RAAF's FA/18 fighter aircraft and curtailing any Australian aviation industry input into defence or procurement planning. Instead a political decision was made to purchase the JSF which at that point had not even flown. The decision was justified on the basis that the JSF was a 'good buy' cost effective fifth generation fighter that was highly capable. Put bluntly, that is not a valid reason to buy anything. DoD needed to complete the AIR6000 process, identify RAAF requirements in light of regional developments, and determine the best option within the available financial envelope and within an appropriate time frame. The failure of the Government and DoD to follow a proper evaluation process before committing billions of dollars and Australia's future security through to 2030-40 has led to this Inquiry.

Following is an analysis drawn from the author's own searches of the open source literature that applies standard government procurement principles to the terms of reference. I attempt to identify the goals the RAAF may be expected to achieve which in short amount to regional air superiority past 2020. I then examine the capabilities needed to achieve those goals, and compare those capabilities to the present plan to retire the F111 early, and procure the Joint Strike Fighter (JSF).

If 'region' is defined narrowly to encompass only Indonesia and Papua New Guinea then the strategic balance tips more in Australia's favour. For the purposes of this discussion the 'region' is taken to be South East Asia taking in India and China. That is an appropriate definition since Russian built strategic bombers can now reach Australia from south east China, and tanker supported Sukhoi fighters can reach Australia from Malaysia. India is developing a powerful navy and will likely develop a strategic bomber force to counter China.

Strategic Challenges for the RAAF

Analysis of regional military capabilities and of Australia's strategic environment has been wholly lacking in submissions by DoD to this Inquiry and is not available from any DoD web site, nor could DoD refer me to any source when I inquired. The only reference I could locate was the most recent *White Paper* that assumed a benign strategic environment where the primary role of the RAAF would be troop support in regional peace keeping and coalition operations. The JSF is designed for this role and

may be assumed to perform extremely well in that niche. Unfortunately the assumptions implicit in the *White Paper* are now obsolete.

While Russell Offices cite security grounds as the reason that growth in regional capabilities cannot be discussed, there is a wealth of open source literature available that is easily understood by non-experts such as this author.

Australia now finds itself in the midst of a major regional arms race as China, India, and the nations of South East Asia are rapidly acquiring fourth generation evolved Sukhoi tactical fighters with supporting packages including Airborne Early Warning and Control aircraft (AEW&Cs)¹, aerial tankers, beyond visual range missiles, sophisticated anti shipping missiles, anti AEW&C cruise missiles, and cruise missiles for use against ground targets. Affordable networking technology is also widely available in the region and the Sukhoi is designed for data-linking. China is acquiring a sizeable force of strategic bombers that have the capacity to overfly much of Western and Northern Australia and launch batteries of cruise missiles. China is also acquiring sophisticated anti aircraft tactical missiles. This is a clear vote of confidence in late generation Russian surface to air (SAM) systems that are available in the region and that proved deadly to NATO aircraft in Yugoslavia in the 1990's. Both China and India plan to manufacture missiles and aircraft under license, or based on Russian designs. Overtime these countries may become even cheaper suppliers of high tech weapon systems to our region than Russia presently is. The strategic implications of this are obvious. Australia will by 2020 face a similar number and force mix of aircraft in this region that was designed credibly to defeat NATO in Western Europe. Indonesia is pressing ahead with attempts to build up a credible force of 40-50 Sukhoi aircraft that can cover the air sea gap and overfly northern Australia. These aircraft would easily destroy all RAN surface vessels that lacked robust air cover (vulnerability of shipping is discussed further below).

Australia cannot assume that the RAAF will be operating at all times under a protective umbrella of US tactical fighters. As you are no doubt aware the US military is suffering strategic overstretch stemming from the war on terror, the occupation of Iraq, the need to counter both a resurgent China, and North Korea, the need for modernisation, and significant budgetary pressures. Further the US was notable by its absence during the Timor intervention. Australia's best contribution to the alliance and its own security is to maintain its own capacity to project force in the region.

These developments are taking place and will continue to take place past 2020 in the context of enormous population and environmental pressures, attempts by the Islamic world to develop a nuclear counter balance to the USA and its deputies, the growth of Islamo-fascist movements that are politically well connected, relative economic decline of the USA, and strong growth in anti American and anti western sentiment across our region. This is the strategic environment with now faces the ADF and specifically the RAAF.

Statement of Goals

The appropriate goals for the RAAF are to ensure the security of Australian territory from hostile military action, to protect Australian shipping within our exclusive

¹ The Wedgetail is Australia's chosen AEW&C platform.

economic zone, to protect naval vessels and support expeditionary forces within our immediate region, and to protect expeditionary forces from aerial assault. A further goal is to maintain a credible strike capability within our immediate neighbourhood as a deterrent against aggression.

Capabilities Needed to Achieve Goals

In order to achieve these goals the RAAF will need the capacity to deny airspace to opposing forces over our near region. In the context of the growing military capabilities noted above the RAAF needs the capacity to detect, engage and destroy enemy tactical fighter and bomber aircraft, surface ships, cruise missiles, and military infrastructure within our near region. These capabilities are examined below.

RAAF Capabilities - Interception

Given the distances involved, if the RAAF is to provide air cover for naval assets and expeditionary forces, or intercept incoming aircraft and cruise missiles, the RAAF's combat aircraft must have the following characteristics:

1. endurance over target (ability to loiter for long periods);
2. extended range;
3. ability to cover great distances extremely fast;
4. ability to gain height quickly;
5. capacity to carry a large payload of weapons; and
6. powerful tracking radar.

This criteria naturally suggests large twin engine tactical fighters in the class of the F15, F111, the Sukhoi, or the F/22A. Supercruise would be highly advantageous as it allows interceptors to head off incoming aircraft, allows the RAAF to 'run down and shoot down' aircraft that have penetrated Australian airspace, and because supercruise allows ingress and egress at speeds that other opposing aircraft cannot match. Stealth, while advantageous, is not essential since no opposing weapons system is likely to employ it. The only country in the world that fields truly stealth aircraft is the USA.

The F111 satisfies all six criteria making it an excellent anti naval and ground support asset. However the F111 but would not attempt a 'dog fight' with a small fighter aircraft and so would not be ideal in the role of protecting forces offshore from opposing tactical fighters. Neither the FA/18 nor the JSF fit these criteria and are not designed to fulfil an interceptor role that is better suited to tactical fighters like the F15 or the Sukhoi. While the JSF carries a large weapon load for a small aircraft it lacks the speed, range, and endurance with weapon load to perform the required tasks and counter the threats identified above. This may be ameliorated to some extent by investment in a greater number of aircraft and tankers however this has not been budgeted for in the present proposal to purchase the JSF. Such an investment if made, would be an affective acknowledgement that the aircraft is unsuited to its role.

RAAF Capabilities - Strike

To ensure ongoing air superiority strike aircraft are required to fulfil the following roles:

1. destruction of opposing SAM systems;
2. destruction of opposing runways and airports; and

3. destruction of supporting military infrastructure.

This is the designated role of the F111 which is still the most capable conventional aircraft in that role in the world. The primary tactic in this role is to fly below opposing radars until very late, release a battery of weapons, and exit at speed before opposing aircraft can be scrambled or vectored to intercept. The JSF is not designed for flying below radar, and cannot match the range or weapon load of the F111. To suggest otherwise is to dissemble. Although front end stealth gives it some advantage against SAMs the JSF is not designed as a strike aircraft lacking the range and speed to perform well in the role.

The importance of strike cannot be overstated. Even a relatively small air force such as that intended by Indonesia could pose a serious threat to Australian RAN and merchant vessels, harass our northern border, and launch cruise missiles against industrial assets on the north west shelf. The robust strike capability provided by the F111 acts as a deterrent to aggression and provides a strong negotiating tool to back diplomacy. It is likely that this capability persuaded Indonesia not to expand the conflict during the intervention in East Timor. This is important when Indonesian infantry outnumber Australian infantry roughly 15:1 and elements of the Indonesian military maintain strong links to militant Islamists throughout the region.

RAAF Capabilities – Dog Fight

Some recent thinking suggests that airborne early warning radar and long range air to air missiles will remove the requirement for close quarter combat and relegate all engagements to beyond visual range (BVR). The last time this theory was popular was during the Vietnam war when the USAF pitted (then) long range missiles against inferior Russian built planes. The tactic proved a disappointment and the north Vietnamese air force took a heavy toll of USAF planes using close quarter 'dog fight' tactics little changed since WWII. RAAF FA/18 pilots have successfully adopted similar tactics against the USAF during exercises. While BVR combat is increasingly important, it will not be the exclusive form of engagement.

Any future RAAF platform must be capable in a 'dog fight' with Sukhoi tactical fighters. These aircraft are equipped with thrust vectoring and are the most manoeuvrable planes in existence (with the possible exception of the F/22A). The available evidence suggests that in a 'dog fight' situation the Sukhoi would have a decisive advantage against the JSF in manoeuvrability and rate of climb. Once engaged a JSF could not retreat since the Sukhoi has the speed, radar, missiles, and fuel loading to run down and shoot down the JSF. No amount of JSF stealth and networking will change the raw capabilities of the two platforms in a one on one engagement.

JSF v Sukhoi

The backbone of neighbouring air forces will be the Sukhoi. No comparison appears to have been done by DoD of the relative capabilities of the Sukhoi against any other aircraft. This represents an extraordinary dereliction of duty, especially so when there is a wealth of information readily available from the manufacturers of the aircraft. India has flown the Sukhoi against the USAF F15 in exercises and won. The capabilities of the aircraft are hardly secret or difficult to discern, yet the only analysis I could find comparing the two aircraft was in documents by Air Power Australia, and by attempting a comparison from the literature myself.

It is evident that the Sukhoi is superior or equal to the JSF in every cardinal parameter including range, radar, endurance, rate of climb, speed, and manoeuvre. The JSF has an advantage in stealth but is not a 'stealth fighter' and may be vulnerable to long-range passive seeking Russian air-to-air missiles. According to *Air Power Australia* these deficiencies are inherent in the design and cannot be remedied by later systems growth. The degree to which the JSF is truly 'stealthy' has been the subject of expert testimony. It appears likely that the Sukhoi with a more powerful radar could 'see' a JSF first from all but the most direct angles.

Significantly the only aircraft Australia possesses that has the range, endurance, payload, and radar to match the Sukhoi is the F111. The only aircraft in the world that is demonstrably superior to the Sukhoi is the F/22A Raptor which is specifically designed to hunt down and destroy advanced Sukhoi tactical fighters.

The DoD hope to make the JSF superior to the Sukhoi by networking AEW&C aircraft thus ensuring that they can 'see' opposing aircraft first and settle all engagements with long range missiles in the BVR category. This makes the JSF entirely dependent on AEW&C support if it is to survive at all. If AEW&C support were insufficient because of counter jamming, or destruction by anti AEW&C cruise missiles, or destruction by saboteurs, the JSF would not be survivable against the much cheaper Sukhoi. This is troubling because it requires an early warning/surveillance system so capable that opposing aircraft will never get within visual range. This requires a system that not only works perfectly all the time, but that cannot be significantly compromised or destroyed. Such things do not exist in the real world.

No other air force plans to operate the JSF as a tactical fighter or as their sole combat aircraft. The UK intends the JSF to operate under the cover of the Eurofighter Typhoon, and the USA intends the JSF to operate under the cover of the FA/22A, and the F15. This clearly demonstrates the limited design parameters of the aircraft.

Capability Synergies – RAAF and Air Warfare Destroyers

The ADF is investing three billion dollars in air warfare destroyers to provide "theatre air defence" to naval and expeditionary forces. The notion of "theatre defence" is part of the DoD vision for a fully networked force that will reduce the need for JSF to provide tactical air cover. Unfortunately the notion that three destroyers will protect an expeditionary force from attack by Sukhoi tactical fighters is laughable and replaces hard analysis with wishful thinking. Aegis destroyers are meant to be operated under the protective umbrella of carrier based tactical fighters like the F15 and the Super hornet. In this battle grouping they provide a valuable back up to the aircraft and formidable anti shipping capabilities. On their own in the ocean they are exposed to the uncomfortable fact that curvature of the earth prevents any radar from detecting a low flying object further away than approximately 25 nautical miles. In the absence of air cover they are critically exposed to low flying Sukhoi or other aircraft carrying dedicated anti ship missiles. A dozen Sukhoi simultaneously firing 24 cruise missiles at one vessel from 25nm is a scenario an Aegis destroyer would be unlikely to survive. The last time a similar scenario was tested was during the Falklands conflict when single Mirage fighter jets came in low to fire single exocet missiles at British expeditionary ships. The Royal Navy only survived because the Argentines ran out of missiles. While anti missile defences have improved since I note that a USN guided missile frigate in the same class as that operated by the RAN

was destroyed by an exocet fired from an Iraqi Mirage during the last gulf war. The frigate's modern radar guided gattling gun did not save it from a legacy missile fired by a legacy aircraft. Late generation Russian missiles such as the Yakhont are specifically designed to defeat the Aegis system and it has not been demonstrated that Aegis equipped vessels are survivable against them. In the present environment it is unlikely that any surface vessel is capable of tactical air defence against low flying aircraft equipped with modern anti shipping missiles. Consequently any shipping that is threatened by aircraft will require effective air cover. The JSF would struggle to provide this without considerable tanker support.²

RAAF Capabilities – Sustained Air Cover

It follows from this discussion that ship born expeditionary forces will require robust and sustained air cover for the duration of operations where another power threatens the use of modern aircraft equipped with anti shipping missiles. Aircraft will therefore need the capacity to 'loiter' for long periods in a patrol/holding pattern over a given area. This requires large fuel loads and extended range and for that reason is best suited to large twin engine tactical fighters like the F15E or the F/22A. While the JSF has much greater range than the FA/18 it is not well suited to the role and would require fuel tanker support. A sustained operation would likely put considerable pressure on the RAAF. This has not been an issue to date as the deterrent strike capacity of the F111 and Indonesia's lack of a tactical fighter have meant that up to now Australian expeditionary forces have had little to fear from the air.

RAAF Capabilities – C3I

The need for a networked system comprising AEW&C aircraft, ground and naval based radar, JORN, and the radars of combat and patrol aircraft is not disputed. What is disputed is that such a system can replace the need for aircraft that fulfil the above criteria, or that such a system could be made sufficiently robust as to be relied upon exclusively for our national security.

The assumption that an air force comprised entirely of JSF with AEW&C will sustain an asymmetric advantage over its regional rivals over the next 30 - 40 years is just that – assumption, because no credible analysis appears to have been done. DoD propose to gamble a significant portion of GDP, the opportunity costs that represents, and the future security of our nation for the next 30 – 40 years on that assumption. I believe the assumption is unsustainable for the following reasons:

1. Australia has insufficient AEW&C aircraft to fully realise the investment in networking. Present funding parameters appear vague. Concrete proposals for additional numbers of AEW&C aircraft and tankers have not been a feature of the JSF proposal;
2. Presently, lack of tanker support and possibly lack of adequate aviation fuel storage would severely limit the ability of JSF aircraft to remain airborne long enough to provide adequate surveillance or extended air cover;

² In practical terms the Aegis destroyer will not do anything that our existing class of much cheaper upgraded ANZAC frigates cannot already do if provided with adequate support from the air. The Aegis is really an icon purchase for the RAN rather than a real force multiplier. An alternative investment of three billion dollars in aircraft and additional frigates and transports vessels would be far more useful. This is something the Committee might also turn its attention to.

3. Networks are vulnerable to jamming and other counter measures including late generation AEW&C seeking cruise missiles;
4. The ADF has good electronic surveillance equipment but is not equipped for electronic counter warfare;
5. Planned ADF acquisitions allow too few 'nodes' in the 'network' making the network vulnerable should significant losses occur from any confrontation;
6. This will be exacerbated if cost blow outs in the JSF project translate into purchase of fewer aircraft;
7. Russian Sukhoi fighters are equipped for data-links and Russian networking technology is cheaply available throughout the region;
8. While the capacity of computer processing will continue to grow, there are hard limits to the growth of networking imposed by the need for large power sources and receivers to transmit large amounts of data over long distances via radio waves; and
9. The implicit assumption that Asian nations are incapable of network centric warfare or adequate pilot training is reminiscent of British racial assumptions of Japanese inferiority prior to the fall of Singapore.

Further, having a 'picture' of the battle is not a substitute for having platforms that can engage and destroy the enemy. Re the third dot point I note that the USAF experienced considerable difficulties in offensive air to ground operations over Iraq caused by relatively unsophisticated jamming equipment, fake targets, and numerous widely dispersed decoy radars. These tactics were copied from Yugoslavia where they effectively kept the Serbian army intact during the NATO air offensive. US commanders expressed frustration and disbelief that some of their most sophisticated arsenal was deflected by plywood models and a little creative thinking. This is a salutary reminder to Australia not to be overly enamoured of high tech unproven weapon systems over known capabilities.

RAAF Capabilities – Support in Depth

The capacity of a nation to sustain its military is a function of its economic strength, industrial base and technological sophistication. Australia will face a major financial and demographic crunch around 2020. Unless there is an aggressive change of policy much of our industry will have moved off shore and our industrial and skills base will be greatly reduced. The military dictatorship in China will have largely closed the technology and skills gap with the West while suppressing wages and domestic freedoms. This will provide it with an unbeatable competitive advantage in the world economy and challenge our remaining industrial exports. A generation will retire, health costs will become a serious burden for all Australian governments, there will be a general labour shortage, and a narrowing economic base will expose the economy severely to fluctuations in commodity markets. In this environment Australia will struggle to sustain its existing military and will be unlikely to make any expensive changes to defence procurement. This will be exacerbated by the retirement age of our submarines and frigates. Therefore decisions made now on the future of the RAAF will have to be lived with through 2030-40 and any capability gaps left by the JSF procurement over the next 5-10 years will not be filled after 2020. In this context Australia can ill afford vagueness about goals, capabilities and costs. Mistakes made now will be permanent for all intents and purposes.

Managing Risk

A risk management strategy is a normal part of any government procurement. The more politically risky, technically complex, and costly the procurement the greater becomes the need for appropriate risk management. The JSF is politically risky in that it is already controversial, and news of capability gaps, cost blowouts and slippage in delivery deadlines would be bad news for the government of the day. It is one of the most complex aircraft projects ever undertaken with inherent risks in technology development. It will consume a significant portion of Australia's GDP and is the biggest defence acquisition since the Collins submarines. The JSF is also unusually risky since both the cost and design parameters are fluid depending on the demands of the project partners. None of the other project partners have the strategic requirements that Australia has. Consequently any changes to the design parameters are unlikely to be in Australia's favour. This is something over which DoD has no control. If compromise between the partners results in design parameters that are unsuitable (as I contend they are), Australia then has only two options, being to accept a sub-optimal design or bail out of the program altogether.

Australia is also uniquely exposed to slippage in deliver times due to the rapid ageing of our FA/18 fleet and the high cost for limited return of centre barrel refurbishments. That said, it would be in Australia's interests to be one of the last recipients of the JSF since first production run models of any complex technology are likely to have problems. This is something we have just learned from our purchase of the Tiger attack helicopter.

In light of the above, a minimal requirement of risk management would be to undertake a detailed and open analysis of alternative options should the JSF project fail to deliver the capabilities needed within the required cost envelope within a reasonable time.

Key Observations

1. The JSF project has not proceeded on the basis of a proper assessment of threats, goals or capabilities that would be standard in any government procurement.
2. If DoD go ahead with plans to retire the F111 and the FA/18 and replace them with only the JSF the RAAF will lose the strike capacity that exists in the F111. That capacity is unique to that platform and cannot be replaced by the JSF. Without the strike capability provided by the F111, the RAAF will lack an effective deterrent against offensive air action.
3. The RAAF will continue to lack a credible answer to incursions by strategic bombers and cruise missiles. Given the vulnerability of our industrial plant on the north west shelf, this is a serious issue.
4. The capacity of the JSF to provide air cover to naval assets and expeditionary forces will be limited by the availability of aerial refuelling aircraft, reserves of aviation fuel, and absolute numbers of JSF. Depending on the eventual true cost of the aircraft, purchase numbers of JSF and supporting assets may be

insufficient for sustained operations in a hostile environment. The RAAF will likely be severely stretched in any future engagement or peace keeping operation unless the USA decides to lend an aircraft carrier or the USAF base tactical fighters in northern Australia and are willing to use them in the near region at our request.

5. Given the inherent limitations of surface vessels against aircraft, Australia's planned air warfare destroyers will have no impact on the above and will instead require air support in any offensive operations.
6. The JSF is inferior to the Sukhoi and would almost certainly lose any one-on-one engagement. If the JSF is to ensure air superiority over tactical Sukhoi fighters it will be entirely dependent on AEW&C support and BVR engagement. Given developments in the region and Australia's fiscal limitations, it is very unlikely that Australia will have an asymmetric advantage in networking and electronic warfare through 2020.
7. Prudent risk management would see a detailed analysis and comparison of alternative options to the JSF as a matter of course.

Conclusion

Australia needs a force mix that is capable of fulfilling the interception, strike, close air to air combat, and sustained air cover roles, against late generation tactical Sukhoi fighters, strategic bombers, and late generation SAMs. Measured against this requirement present defence planning will not enable the RAAF to guarantee regional air superiority through 2020.

Term of Reference B: any measures required to ensure air superiority in our region to 2020.

The JSF cannot credibly provide a force mix that is capable of fulfilling the interception, strike, sustained air cover, and close air to air combat roles against late generation tactical Sukhoi fighters, strategic bombers, and late generation SAMs. Australia must therefore consider options for a force mix that will deliver the needed capabilities.

Maintain the F111

No aircraft in the world presently has the strike capability of the F111. Existing strike aircraft either have stealth but no comparable weapon load, or a heavy weapon load by little capacity to evade detection, or some low flight capability (e.g. the RAF tornado) but limited range. The F111 has both range, speed, weapon load, and ability to avoid detection by low flying. It was designed to penetrate deep into Soviet airspace and destroy key military infrastructure by flying very low to the ground over long distances carrying heavy weapon loadings and exiting at speed. Australia now faces an evolving force mix of Russian origin weapons that closely resembles the force the F111 was designed to defeat. The distances dictated by Australia's geography make the range and weapon load of the F111 unbeatable in its role.

Further, Australia has a strong industry base to maintain and evolve the F111, has experienced pilots, ground crew, trainers and mechanics, and perhaps understands the aircraft better than any other country. There are over 100 F111 aircraft in storage in the USA that can be purchased outright or used for parts by the RAAF. Australian aviation industry has put together proposals to maintain and evolve the F111 to 2040 by accessing parts and domestically manufacturing some components. This would help build Australia's domestic base and provide the country with a unique and supportable strike asset. If this option is technically feasible it should be pursued. DoD has essentially dismissed the F111 as an old legacy aircraft that is about to fall apart. That is sharply at variance with expert testimony. Regardless of any other purchasing decisions, DoD in concert with RAAF technicians and civilian contractors should undertake a detailed study of the potential to maintain and enhance the F111. Given the sensitivities and prejudices that surround the F111, that study should be peer reviewed and presented to Parliament. Possible DoD concerns about 'commercial in confidence' or publicly releasing technical details should not be allowed to stymie an objective appraisal. If the F111 is as capable as its proponents argue exposing those details can only add to its deterrent effect. If it is not feasible to maintain and evolve the F111 then Australia can avoid an unnecessary debate.

Consider the FA/22A

Judged against the RAAF's capability requirements the FA/22A is clearly the pre-eminent aircraft for Australia. It is specifically designed to hunt down and shoot down Sukhoi fighters. The combination of extended range, super cruise, all aspect stealth, radar power, and data linking make it perfect for Australia's requirements, and demonstrably superior to the JSF and to the Sukhoi in the tactical fighter, strike, and interceptor roles. Australia is particularly fortunate in being one of only two countries to which the FA/22A can be sold. The F/22A was initially rejected by DoD because it

did not carry a bomb load comparable to the JSF and so was seen as occupying a narrow niche in the air dominance role. Since then the aircraft has evolved into the FA/22A that is a multi role aircraft capable of ground support and carrying a credible bomb load. It does not appear that DoD have monitored developments in the FA/22A program since DoD still dismiss the aircraft out of hand. This is unfortunate and represents a failure of due diligence.

The F/22A was also rejected as being too expensive since it was roughly three times the anticipated price of the JSF. That view is disingenuous. As with any government purchase, the issue is not a one to one comparison of platform cost, but a comparison of overall capability to cost. Initially DoD indicated a purchase of 100 JSF. A smaller number of FA/22A, or a combination of FA/22A and F111 might deliver greater capability at comparable prices. Or to put in the colloquial – we could get a bigger bang for the buck with fewer but more capable and more expensive aircraft. DoD failed to do this analysis – indeed, how could they since they never completed a proper analysis of capability need in the first place. Now the fly away cost of the JSF with supporting training and maintenance packages is increasing and the true price difference between the aircraft appears to have narrowed. It is imperative that an analysis is undertaken of the capability the FA/22A could deliver Australia for the roughly same expenditure that is earmarked for the JSF. Given the prejudices and sensitivities around the JSF that study should be peer reviewed and presented to Parliament.

Tactical Fighter Options

If the FA/22A cannot be purchased in sufficient numbers to provide the required capabilities Australia should then consider other tactical fighter options. With the exception of the Sukhoi itself, the only other aircraft that comes close to fulfilling requirements is the latest version of the USAF F15, the F15K. These are also flown by South Korea and Israel. While the F15 is inferior to the FA/22A it is the only aircraft apart from the Sukhoi that has the range, speed, weapon load, and radar that Australia needs. The F15 was recently defeated by Indian Sukhois in exercises suggesting that Australia will need a numerical advantage together with more supporting assets. As an evolved legacy fighter the F15K is likely to cost significantly less than the JSF and will carry significantly less project risk. This may translate into capacity for a larger buy or into cost savings that can be used to bolster tanker and AEW&C support.

Close Ground Support

The JSF will work well in the ground support role since that is what it is designed for. In addition to their other capabilities the F111, FA/22A, and the F15E/K are multi-role aircraft designed to support ground forces through precision bombing, area bombing, and surveillance of ground targets. Should the army require even closer dedicated support from 'on call' ground attack aircraft there are far cheaper alternatives to the JSF. The UK, Australia and Indonesia all operate Hawker joint trainer/ground attack aircraft. These are designed to provide close support to infantry, have been extensively used in the counter insurgency role by Indonesia, and are already operated by Australia. Bolstering our complement of Hawker ground attack aircraft would provide the army with close air support at a fraction of the cost per aircraft of the JSF. This would help expand the niche currently intended for the Tiger attack helicopter. Globally numerous types of ground attack aircraft exist that can

provide a relatively cheap compliment to the top tier tactical aircraft discussed above. I note that Malaysia has invested heavily in both jet and prop ground attack aircraft to operate under cover of its tactical Sukhoi fighters.

Tipping Points – who runs the agenda

It is a requirement of due diligence that DoD consider the F111, FA/22A, and the F15K, and compare these options with the JSF. Failure to do so leaves decision makers without the ability to critique the JSF project as there are no meaningful comparisons. Since in theory Australia has not committed to the JSF there will be decision points in the JSF project around cost, capability, and delivery schedules that will be tipping points demanding a decision on whether or not to press ahead with the JSF or adopt alternatives. Without an analysis of alternatives it becomes difficult for Government to know when the tipping points are or to make decisions about them. This enables DoD to effectively control Government, run the agenda, and close off discussion of alternative options. DoD will then disavow responsibility for failure of the JSF to deliver since 'it was a decision of the Government'. This is a not uncommon tactic of government monopoly enterprises that wish to capture government policy. It represents a classic failure of decision making and a return to the 1950's 'leave it to the experts' view of government.

Conclusion

In order to ensure air superiority in our region through 2020 there needs to be serious independent evaluation of the F111. In addition to this analysis there must also be detailed analysis of other tactical fighter options. In order of preference these options are purchase of the FA/22A or the F15E. A small additional investment in expanding the RAAF's Hawker fleet would give the army specialist close support.

Final Remarks

Arguments in support of the JSF resemble what project management methodology terms 'benefit trawling'. Benefit trawling occurs when a project is undertaken without a clear statement of what it will achieve or how it will achieve it. Without a clear rationale for the project, its proponents will trawl for incidental benefits to justify its continuation. Consequently DoD point to the many capabilities of the aircraft, the status we gain as a partner, benefits to Australian industry, and access to special technologies; all in a vacuum that steadfastly avoids any real analysis of whether or not the aircraft can meet Australia's capability needs. Benefit trawling is very dangerous because it easily becomes spin that obscures the likely real outcomes of the project.

Looking from the outside, the decision to participate in the JSF program without considering other options appears to reflect cold war assumptions that are not valid. If mistakes are to be avoided in the future these assumptions need to be made explicit and examined.

The first assumption is that developing Asian nations cannot afford high tech military systems that can credibly defeat American or European platforms. This assumption is reflected in the belief that Australia will enjoy an asymmetric advantage in networking as regional nations will not be capable of developing comparable capabilities. In reality the world is now awash with high tech weaponry from Russia

and other countries of the former USSR at very cheap prices. The arms industry is truly globalised and even moderately wealth nations such as Malaysia and Thailand can shop around from Belerus to Brazil to Israel for weapons that are taken very seriously by NATO. Increasingly middle power nations are deepening their own military industrial base and fielding an eclectic mix of global weaponry. The old cold war distinctions are over and poorer 'south' nations will increasingly be able to challenge developed 'north' nations.

The second assumption is that American military equipment is superior to equipment from countries of the former USSR. That assumption is evident in the view that the JSF must be superior to the Russian built Sukhoi and so no further analysis is needed. That belief is largely due to cold war propaganda and the marketing efforts of the US military industrial complex. Our neighbours do not share the same prejudices and are very capable of integrating diverse weapon systems and assessing their relative merits. Comparison suggests that former Soviet systems are often superior to western systems (for example of Komet-E missile, Yakhont, Moskit and Sunburn missiles, T90 tank, Flanker). Recent conflicts in Iraq and Yugoslavia in which western countries decisively defeated armies that used Soviet origin equipment do not provide a valid case study. Apart from allied forces possessing overwhelming firepower, the equipment used by the Iraqi and Serbian armies was 1970's vintage making it two to three generations older than allied equipment. Nevertheless NATO was effectively deterred from a ground war in Eastern Europe. The USA led coalition in Iraq was shocked at the strength of resistance and suppressed information about their losses. Russian intelligence suggest losses in combat of around 90 tanks and other armoured vehicles and a week of solid fighting to break the Iraqi lines in the south of the country.

The third assumption is that if things get difficult the USA will lend its most valuable military assets to help us out. Much has been written about the nature of the Australia/US alliance. Suffice to say that through 2020 the USA will no longer be the regional superpower. That role will be taken by China and the US military will be focussed in the pacific on China, Taiwan, North Korea, the Philippines and Japan. In other words, a long way from us. They are unlikely to be willing to lend their best military assets to local confrontations in the 'arc of instability' to Australia's north. In this environment Australia needs to maintain regional air superiority in its own right as both a defence, a deterrent, and a condition precedent of any ship borne expeditionary engagement.

Sources Consulted Include

www.boeing.com

<http://www.lockheedmartin.com/>

www.globalsecurity.com

www.airforce-technology.com

www.sukhoi.org

<http://www.softwar.net/rfed.html>

<http://warfare.ru/>

<http://www.deagel.com/>

www.jsf.mil

www.fas.org

www.ausairpower.net

www.raaf.gov.au

www.defence.gov.au