

16 February 2016

Senate 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,

## **LETTER OF TRANSMITTAL**

This letter of transmittal covers the Submission to your Inquiry which is entitled: “*What are People’s Motivational Imperatives and Agendas re Planned Acquisition of the F-35 Lightning II JSF and Related Matters?*”.

In this submission I show the stark and self-evident differences in motivations and agendas of the various parties engaged in the public debate on the F-35 JSF Enterprise, illustrated by some recent examples.

I have also provided the Committee with the means for ‘*sorting the wheat from the chaff*’ when reviewing the testimony of senior defence officials and other advocates of the F-35 JSF Enterprise. Have yet to name this methodology, so would welcome any suggestions/recommendations.

Finally, I can make myself available to appear before the Committee, if required, to bear witness to this Submission and answer any questions.

Yours Sincerely,

Peter Goon, BEng(Mech), FTE (USNTPS)  
T&E Professional  
Design Engineer  
CASA CAR 35 & 36 Authorised Person and,  
*inter alia*, a Victim of Defence Abuses (one of many)

Structure of Submission: 8 Pages (incl Letter of Transmittal) plus 9 Page Enclosure  
Filename: APAG1-HMG+Motivations+B-WordBingo\_16Feb16\_Final.pdf

## **WHAT ARE PEOPLE'S MOTIVATIONAL IMPERATIVES AND AGENDAS RE THE PLANNED ACQUISITION OF THE F-35 LIGHTNING II JSF AND RELATED MATTERS?**

The selection of the fighter aircraft and associated air combat capability systems under the Air 6000 New Air Combat Capability (NACC) Project is one of several major decisions that will determine the legacy we leave our kids and future generations of Australians.

The motivational imperatives and agendas of people involved with the JSF, both those who are advocates and those who hold countervailing positions should be of some importance to this Inquiry as they go to answering the question, "*Why is it so?*".

The following quotes are salient to the situation Australia finds itself in relation to the F-35 Lightning II JSF and are the fundamentally basic reason we recommend radical surgery of this planned acquisition.

***"People will not look forward to posterity, who never look backward to their ancestors."***

Edmund Burke, 'Reflections on the Revolution in France', 1790

***"Those who cannot remember the past are condemned to repeat it."***  
(a.k.a. "*Those who cannot learn from history are doomed to repeat it.*")

George Santayana, "The Life of Reason", 1906

Another is attributed to former Prime Minister, the Hon John Howard, though had been demonstrated time and time again in the development of the great nation known as Australia.... until now.

***"I believe...each generation of Australians is obliged to leave our country in better shape than they found it."***

Prime Minister John Howard, July 2004

This submission endeavours to demonstrate substantively why these observations by wise men are so salient and important to this Inquiry.

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During the course of recent discussions with an American colleague, I was asked whether Australia's senior defence officials appreciated the importance of fighter selection for the RAAF, and how a poor choice such as the F-35 could lead to catastrophic consequences if the region becomes further destabilised. My colleague asked if there was any understanding of how precarious the situation was for both US and Australian forces during the early years of World War 2, equipped with obsolete or uncompetitive fighter aircraft.

My response was that most of the generation who had first hand experience of that period were long gone, and within the current generation, there are very few who have had direct exposure to or have critically studied the experiences gained by that "great generation" in fighting for our freedom during the Second World War.

This, Senators, exposes the deeper question of motivations.

Often APA has been asked "*...what has motivated you to persist so long in arguing that Australia should procure a credible fighter aircraft?*"

The answer to that lies in direct exposure to the experiences of those who have been participants in past aerial wars, and suffered from the consequences of bureaucratic complacency, laziness, and negligence.

My uncle, the late Flight Lieutenant (later Squadron Leader) Roy Francis Goon of 85 SQN RAAF, flew the first air intercept against enemy aircraft by an Australian built Boomerang fighter from RAAF Learmonth on the Exmouth Peninsula in Western Australia, on the 20<sup>th</sup> of May 1943. Roy intercepted a formation of Japanese G4M Betty bombers flying a night bombing sortie against the US Navy submarine-refuelling tender moored at Potshot (now Exmouth).

Roy Goon prior to that, in 1935, flew the Boeing P-26A Peashooter fighter with the pre-cursor to Chennault's AVG ('Flying Tigers') in China against the Japanese, and was credited with three kills. After the war, Roy flew as a Test Pilot for many years for the Commonwealth.

I learned from Roy, first hand, of the consequences of poor choices in fighter aircraft, and how desperate Australia's situation was during the early 1940's, when over a decade of complacency resulted in the RAAF going to war with completely unsuitable fighter aircraft, and little understanding of how to fight a then modern air war and not be defeated.

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I also learned from Roy the fundamentals and the purpose of what I, as a Maintenance then Airworthiness Project then Design then Flight Test Engineer and always an advocate for Australian Industry came to know as "[\*The Fighter Pilot's Holy Grail\*](#)".

### **Fighter Pilot's Holy Grail**

***Having the wherewithal to engage, disengage and re-engage, at will, throughout the whole air combat continuum, and being able to overwhelm opponents, whether airborne or surface based, while staying outside their kill envelopes or evading whatever is thrown at you.***

I asked my colleague, Dr Kopp, for his perspective and he has kindly agreed to share his observations with the Committee:

*"Both of my parents, and my grandparents, survived the Allied Combined Bomber Offensive against Germany. I grew up on first hand recollections of skies full of American B-17 and B-24 bombers, FlaK barrages, shot down bombers tumbling out of the sky, firestorms across city suburbs, and American P-38, P-47, and P-51 fighters thundering over Munich just above the city rooftops, hunting for German FlaK batteries. My late father, as a teenager, sat on the fence of Munich Riems airfield watching LtGen Dolfo Galland fly his final sortie in a jet Me-262A-1a fighter, and he would describe, vividly, how the American P-47 fighter came over the fence at treetop level and strafed Galland's jet to pieces."*

*"Working as a military analyst for over three decades, I have had many long discussions with veterans and survivors of past aerial conflicts. First person observations of this kind provide much deeper and often far more accurate insights than any history textbooks can provide. Participants and eyewitnesses include friends in Europe who watched the stratospheric column of smoke and ash over Dresden in 1945, a semi-retired engineer in Tokyo, who witnessed from a rooftop Gen Curtis LeMay's B-29 bombers burning down most of Tokyo, and a late neighbour, who rescued famous German "Stuka pilot" Colonel Hans-Ulrich Rudel from his shot up aircraft in late 1944."*

*"Others include American P-38 and P-51 fighter escort pilots, who protected Allied bombers over Germany in WW2, an RAAF fighter pilot*

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*who flew P-40s against more agile Japanese Zeroes, and two RAAF veterans who flew Meteor fighters in Korea, when our aircraft were outclassed by Soviet built MiG-15 fighters flown by North Korean, Chinese, Russian and Ukrainian pilots. I have had long discussions with a number of veterans of the Vietnam air war, including a now deceased US Navy F-4B pilot, who as a young 1<sup>st</sup> Lt flew in the May 1972 Linebacker I air battles, that he described to me in terms of a “sky full of white missile trails” as dozens of US and North Vietnamese fighters fought pitched aerial battles. Two veteran Israeli fighter pilots shared their experiences, one describing the intensive air battles of the Yom Kippur war in 1973.”*

*“What have I learned from these veterans and survivors of aerial wars, spanning 75 years? The first lesson is that being on the losing side of an air war results often in real and horrific consequences, not well described in history books. The second lesson is that there has been a recurring pattern of Western nations going to war with unsuitable aircraft, a recurring pattern of high performing aircraft defeating lower performing aircraft, a recurring pattern of bureaucratic complacency between conflicts, and a recurring pattern of deterrence failing when bureaucracies choose to wilfully underestimate potential opponents.”*

Senators, Australia has not fought any aerial combat against a competent *'peer competitor'* since the Korean War, 65 years ago, and there is no remaining institutional memory of what actually matters in our Defence establishment, or of what the consequences of failures in this game actually are. Dropping bombs on failed states like Saddam's Iraq or low tech cultists like ISIS is very different to fighting against modern peer competitors, operating high performance aircraft and air defences.

What I and my colleague Dr Kopp find most disturbing is that lessons from even relatively recent conflicts, such as the late Cold War, and post Cold War campaigns such as Desert Storm in 1991, and Serbia in 1999, are clearly not well understood in our Defence organisation.

The short but intensive air war over Eastern Ukraine, in mid-2014, has elicited no meaningful comment from our Defence organisation in the defence debate in Australia, despite a good number of quite modern Ukrainian aircraft being shot down by modern Russian Surface to Air Missile batteries. The causal factors are clear, and the consequences equally so, that is, the loss of that nation's territory to an aggressive neighbour. This is clear for all to see.

The impact of Russia deploying into Syria state-of-the-art Su-35S FLANKER fighters, and S-400 missile batteries, has elicited no meaningful comments in this country.

This absence of meaningful contributions from senior defence officials in any semblance of debate of issues and problems within the self evident "*One Australia Defence*" is appalling.

Far too often have I heard the mantra from senior defence officials that "China is an American problem". When do China (and Russia) and their global exports of weapons cease to be an "American problem"?

More so the comments/statements made by senior defence officials to fill the vacuum created by such absences. Even more so, the propagation of these by a conflicted media and trade press whose *advertorials* and *infomercials* about the JSF reflect more on advertising revenues and budgets than critical debate and the pursuit of the truth, let alone the national interest.

The following are recent examples of such behaviours, along with some contestability points, provided in line with the '*First Principles Review*'.

### **Example A**

<http://www.australiandefence.com.au/news/an-update-on-australian-f-35s>

*"The Australian Joint Strike Fighter (JSF) program has been structured to enable the **issues raised** in the annual Director Operational Test & Evaluation (DOTE) report to be resolved before IOC is declared in 2020," a Defence spokesperson said.*

### *Independent Contestability*

What, specifically, are the issues? How has the Australian program been structured so and when was this done?

How does the program resolve the issues that have been raised which are now real issues and real problems, rather than risks?

What is the probability for success in resolving each of these issues and are there any additional risks arising from such '*resolutions*'?

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### **Example B**

<http://www.australiandefence.com.au/news/risks-understood-and-manageable-as-f-35-faces-intense-scrutiny>

*"Risks understood and manageable" as F-35 faces intense scrutiny*

#### *Independent Contestability*

The “*scrutiny*” has its origins in the 2015 DOT&E annual report which has reported real issues and real problems that emerged and were discovered in that reporting year.

If truly “*understood and manageable*”, then why were risks previously identified, assessed at High to Extreme Levels of Risk and advised to senior defence officials then allowed to materialise, resulting in the real issues and problems reported in the 2015 DOT&E annual report, as well as those real issues and real problems reported in the previous years annual DOT&E reports?

The above are just some of the more recent in over a decade and a half of such contributions from senior officials in charge of the Canberra based agencies of the ADO – the same officials entrusted with the defence and security of Australia.

Not only are the media, trade journals, Defence Media Releases, its Website and the internet itself replete with such comments and statements but so too is the official Australian Public Record – the Parliamentary Hansard.

To easily identify each of the myriad of examples of these behaviours resident in the various sources as well as the quite expensive resources funded by the tax payer cited above, I recommend viewing them through the prism provided at Enclosure 1.

Finally and more importantly, these beg honest and truthful answers to the *more than Thirty Six (36) Billion Dollar* questions, which include the following:

1. *What is the motivational imperative and agenda behind the provision of such comments and statements, firstly of the senior officials who have made and continue to make them (a.k.a. responsible and, thus, accountable for them) and, secondly, of those who propagate and perpetuate them, such as the media, trade journals and purportedly independent, though both Government and Industry funded, organisations such as The Williams Foundation and ASPI?*
2. *Why are the voices of those who have demonstrated they know and understand these things being ignored and drowned out by those who, by their words and actions, apparently don't and why is this being done with such disdain, prejudice and malice?*
3. *How do senior officials rationalise and justify those attitudes and behaviours observed within the JSF Enterprise that are so clearly incompatible with the heritage based characteristics that make Australians and Australia great as well as the spirit if not the intent embodied in Australian Law, such as Australian Consumer Law (ACL) and the chapter on 'Good administration of government' in the Federal Criminal Code of 1995, as amended?*
4. *Why are senior defence officials insisting on proceeding with the acquisition of the F-35A JSF when:*
  - a. *The F-35A is **not** an Air Superiority nor a 5<sup>th</sup> Generation fighter?*
  - b. *The JORD<sup>1</sup> is based on reference threats from an era past?*
  - c. *Many of the contracted requirements in the JSF Contract Specification (JCS) are based upon the Threshold Level Requirements of the JORD with the F-35A failing to meet quite a number of these "**bare minimum acceptable**" levels?*
  - d. *There is at least one solution that meets the overarching need for Australia to maintain and sustain regional air superiority which is far more cost effective from an acquisition and life cycle costs perspective; that offers far greater economic benefit for Australia; and would cost in the order of \$15 Billion **less** than current plans of senior defence officials out to 2024.*

Enclosure:

1. A methodology for 'sorting the wheat from the chaff'.

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<sup>1</sup> JORD – Joint Operational Requirements Document of the JSF Program



Enclosure 1 of Submission

By Peter Goon, Private Citizen  
To SFADT Inquiry into the JSF  
Dated - 16 February 2016

## **APA NOTAM** *(Notice to Airmen)*

### **JSF ALTERNATE REALITIES: ...AND FROM WHENCE THEY COME**

# **A METHODOLOGY FOR ‘SORTING THE WHEAT FROM THE CHAFF’**

Methodology:

1. Review the material through the prism of the enclosed NOTAM and identify any of the material that fits the definitions of ‘*a total or partial indifference to what is real*’ a.k.a. bullshit, then dismiss.
2. Identify and categorise any logical fallacies; perceptions based on rumour, innuendo or unsubstantiated claims; and, conjecture based speculation, then dismiss.
3. Identify any hearsay based claims/evidence then dismiss.
4. Compare the results of the review with the data and the facts, then test the evidence.

AIR POWER AUSTRALIA										
NOTAM										
Australia's Independent Defence Think Tank										
F/FB-22	SUKHOI	PLA AIR PWR	F-III	F-35 JSF	F/A-18	AAR/AIRLIFT	DEW / EMP	WEAPONS	ETHICS	MEDIA/NEWS
PACRIM WEPS	RUS WEPS	SAMS/IADS	MSLS/BMD	STRATEGY	HISTORICAL	ISR / NCW	INFOWAR/EW	TECHNOLOGY	LINKS	MEMBERS
TECH REPORT INDEX				AIR POWER AUSTRALIA ANALYSES				APH SUBMISSIONS		

# JSF Alternate Realities: ...and from whence they come

*Air Power Australia - Australia's Independent Defence Think Tank*

## Air Power Australia NOTAM

13th February, 2009  
Updated July, 2010

**Peter Goon, BEng (Mech), FTE (USNTPS),  
Head of Test and Evaluation, Air Power Australia**

### Contacts:

Peter Goon

Carlo Kopp

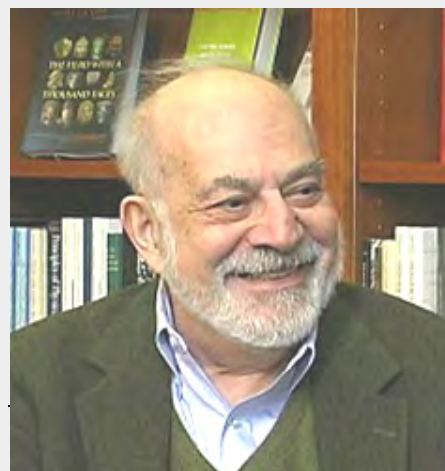
The following is a citation from the Wikipedia entry on Emeritus Professor Harry G Frankfurt at Princeton University:.....

**On Bullshit** is an essay by [philosopher Harry Frankfurt](#). Originally published in the journal [Raritan](#) in 1986, the essay was republished as a separate volume in 2005 and became a nonfiction bestseller, spending twenty-seven weeks on the [New York Times Best Seller list](#).<sup>[1]</sup>

In the essay, Frankfurt sketches a theory of [bullshit](#), defining the concept and analyzing its applications. In particular, Frankfurt distinguishes bullshitting from [lying](#); while the liar deliberately makes false claims, the bullshitter is simply uninterested in the [truth](#). Bullshitters aim primarily to impress and persuade their audiences. While liars need to know the truth, the better to conceal it, the bullshitter, interested solely in advancing his own

agenda, has no use for the truth. Following from this, Frankfurt claims that "bullshit is a greater enemy of the truth than lies are."

This work laid the foundation for Frankfurt's 2006 follow-up book, [On Truth](#).



Where have we all seen what is described here so incisively?

In essence, 'the B-word' is a total (or partial) indifference to the truth and the underpinning data and facts, with 'partial indifference' being the source of the too-often-times observed fallacious argument into which a fine thread of truth has been woven.

Basically, at the very core of 'the B-word' is an indifference to how things really are; that is, an indifference to reality which, appropriately, should be viewed as 'understanding the perceptions plus a full knowledge of the facts'; rather than its half baked sibling.

It is what legal practitioners less steeped in the nobler ethics and standards of their profession, such as honesty and integrity, mean when they say, "Tell me what you want and I will construct the argument. I am a lawyer and can argue anything!"

Independent, detailed analyses of the Joint Strike Fighter (JSF) Program have raised very serious concerns. The total lack of substantive responses to resulting questions put to the various proponents of the Joint Strike Fighter around the world have led to these queries (examples of which are attached) being distilled down to the following very simple questions.

Is the behaviour defined by Professor Frankfurt, and the attitudes/agendas that drive it, at the root of why the JSF Program has achieved such traction in the marketplace? This while the JSF commodity product is so disconnected from reality that repealing some Laws of Physics and Laws of Commerce, as well as Common Sense, would be the only way the jet could possibly meet many of its proponents' claims?

Could this be the reason why standard risk assessments show there is quite a high probability this program will go down in history as the biggest aerospace and techno-strategic defence acquisition [FUBAR](#), ever?

## JOINT STRIKE FIGHTER – INHERENT LIMITATIONS

**THE JOINT STRIKE FIGHTER DESIGN HAS  
NUMEROUS OPTIMISATIONS AIMED AT COST  
REDUCTION AND BEST PERFORMANCE IN ITS  
CORE BATTLEFIELD INTERDICTION ROLE**

**AFT SECTOR STEALTH  
BAND LIMITED BY  
NOZZLE DESIGN**

**SINGLE ENGINE RISKS FOR  
OVERWATER OPERATIONS**

**BEAM SECTOR STEALTH  
LIMITED BY LOWER  
FUSELAGE  
SHAPING**

**ENGINE THRUST  
GROWTH MASSFLOW  
LIMITED BY INLETS**

**RADAR POWER  
LIMITED BY  
COOLING  
CAPACITY**

**RADAR APERTURE  
LIMITED BY NOSE GEOMETRY**

**INLET STEALTH  
GEOMETRY  
X-BAND OPTIMISED**

**WING PLANFORM OPTIMISED  
FOR SUBSONIC CRUISE AND  
TRANSONIC MANOEUVRE**

**OPERATIONAL CONSEQUENCES:  
A – UNCOMPETITIVE IN AIR COMBAT ROLES  
B – UNCOMPETITIVE IN DEEP STRIKE ROLES**

**THESE DESIGN LIMITATIONS CANNOT BE CHANGED BY UPGRADES**

Could the highly developed marketing strategies and new age management doctrines such as the Pentagon's much vaunted but mathematically unsupportable concept of [CAIV](#) (Cost As an Independent Variable) and its logic flawed implementation within the JSF Program actually have been a way of generating the alternate realities and comfortable fictions that are the tools of trade of 'the B-word' artisans?

Would it be possible the [Goldilocks Pricing Strategy](#) with its apples versus lemons comparison with the F-22A Raptor and the creation of a [Prisoner's Dilemma](#) as a follow on to the JSF Program's early capture of the political leaderships within the partner nations be additional means for reinforcing the easy going perceptions of these alternate realities?

Independent costing and risks analyses based on data compiled well before the Global Financial Crisis (GFC) and its much larger, more rapacious offspring, the World Economic Crisis (WEC), strongly support answers in the affirmative to all such questions.

Will the WEC now be used to explain away cost increases and delays in schedule which were already inherent in the program or even to justify more outlandish calls for additional funding and even more time to complete? Surely not, for a quite alarming and frightening reason.

If the new US Administration is coerced by such behaviour, as 'the B-word' is designed to do, and ends up endorsing the JSF Program in its present form with its current and ongoing agendas like [white anting](#) all competition, including the F-22A Raptor, this program will likely make the WEC, itself another product of 'the B-word', look like a mere stumble <sup>[1]</sup>.

The WEC has brought into focus the serious consequences of sovereign financial risks materialising whereas 'the B-word' that is the JSF Program will put at risk the very sovereignty of all the participant Nations, especially the US of A.

However, the big difference with the WEC is that the resulting damages and effects will be very long term but limited to only one half of the globe; the now most practiced proliferators of 'the B-word' itself - namely, the Western world.

If this is the legacy left to our children, they will damn us all, not just those responsible, into and beyond our graves.

*The current Y-generation will be doomed to become the "Why?" generation when, in a decade or three, they enquire as to why the great and mighty Western democracies were made to stumble then collapse from within, like most of history's fallen empires, and, in this case, how it transpired that truth and integrity equated to "Samson's hair".*

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## Endnotes:

[1] The term '*likely*' is used since the consequences or outcomes are still in the future - though the final driving decisions are nigh. However, standard risk assessment, in accordance with Australian Standard AS/NZS 4360:2004 under the international standard guidance of ISO31000, puts the consequences if this risk materialises as CATASTROPHIC and the probability of this risk arising as ALMOST CERTAIN, leading to an overall priority assessment of this risk as EXTREME. Even if the probability of this risk arising were to be down rated 2 levels to MODERATE (one level below LIKELY), the priority assessment of this risk would still be EXTREME.

## ANNEX - EXAMPLES OF SOME OF THE QUESTIONS PUT TO THE JSF COMMUNITY IN THE INTERESTS OF A STRONG DEBATE

For the convenience of all and to establish a common frame of reference, these questions are listed under each of the four elements of the JSF Program mantra, being "Affordability", "Lethality", "Survivability" and "Supportability".

These are some of the questions put to the JSF Program leadership, following their recent call for the need for 'a strong debate on the merits'.

### **AFFORDABILITY**

#### Background:

Independent analyses on JSF affordability have been done. A summary of earlier analyses (circa 2002-06) may be found [here](#). The attached file ([PDF-A/USMC DoN 2008.pdf](#)) provides a summary of costs for the DoN JSF for the projected FYDP (pre-WEC).



Australia terminated evaluations under the Air6000 New Air Combat Capability Project and entered the JSF SDD Program back in 2002. The Chief of the Air Force advised the unit price for the JSF aircraft was going to be "...about forty million dollars".

Current Australian Defence and JSF Program Office Plans have initial procurements of Block 3 F-35A JSF aircraft in the 2012-2014 period.

The results of risk based analyses of JSF costing data from the pre-World Economic Crisis (WEC) era have been provided to Defence. These show the JSF unit price would likely be around US\$168 million (-10%/+30% variance range) in the 2012-14 timeframe.

Using the same methods of analysis, the price estimated for the F-22A Raptor is around US\$136 million.

Recent [articles published by the IEEE](#) put the unit price figure for the F-22A Raptor at US\$137 million.

In summary, in 2014 on a per unit procurement cost basis, the Block 3 F-35A JSF would likely cost as much, if not more, than the F-22A Raptor would cost.

#### Opening Questions:

1. In US dollars, what was the pre-WEC estimate of the unit procurement cost (UPC) for the Block 3 Configuration F-35A JSF aircraft planned to be delivered in 2014?
2. Does this price estimate include any dollar amounts to cover any developmental or procurement or other risks?
3. If so, what are these risks and what amounts of money, in 2014 US dollars, have been allocated (in cost per aircraft terms, please) to cover each of these risks?

## ***LETHALITY***

#### Background:

Lethality is measure of how much physical damage a combat aircraft can inflict upon the enemy. It can be measured, in the tactical context, by the number and size of munitions carried, and in the strategic context by the same plus the range to which such weapons can be delivered and the resulting effectiveness.

With survivability dictating internal carriage, the JSF is constrained to a pair of weapon bays, each sized around a single MK.84 size bomb, and a single AMRAAM.

Since the start of the SDD, a progressive reduction in the range of weapon types intended to be integrated and cleared has been observed, with only a [small fraction of the initially stated weapon types now planned for SDD](#).

The world has moved on since the JSF was first specified, but somehow those defining capability requirements have failed to keep pace, if not gone backwards due to CAIV.

This is a new world where the aphorism 'the quick and the dead' applies.

#### Opening Questions:

1. Why has the range of weapon types intended under SDD been so dramatically scaled back?
2. Is not moving the certification of the remaining weapons out of the SDD Phase and into the Operational Phase what, in keeping with modern day Risk Management Standards such as AS/NZS4360:2004, should be called Extreme Risk?
3. The weapon bay configuration of the JSF with its canted carriage (about 5 degrees nose in to the centreline, I believe) and forward centroid location (both mass and aerodynamic) relative to the aircraft's CoG range, also presents significant risk to the carriage and clearance of weapons from these bays.
4. How is LM planning to mitigate all such risks to the clearance of weapons from these bays?
5. How does the JSF Program intend to accommodate internal carriage of more than two AAMs, and how many will the aircraft be able to ultimately carry internally and deliver?
6. Will each of the JSF weapon bays accommodate the carriage and delivery of 4 x SDB + an AAM and, if so, when will this be certificated?
7. What are the in flight opening/closing times for the weapon bay doors?

## ***SURVIVABILITY***

### Background:

Survivability is a measure of what fraction of a combat fleet remains alive in a given threat environment, flying repeated sorties over a sustained period of time.

The survivability paradigm for the JSF was defined around the ability to survive in a battlefield interdiction environment where the aircraft would be confronted by medium range and short range SAMs, and AAA systems, assuming that hostile fighters, long range SAMs and supporting radars will have been already destroyed by the F-22 fleet.

The JSF's stealth performance, reflected in shaping, was optimised around this model, with independent technical analyses showing that the aircraft will have viable stealth in the front sector, but much weaker stealth performance in the beam and aft sectors.

The evolving market for radars and surface to air missiles has, however, taken a different turn to that anticipated when the JSF program was launched.

Highly mobile long range SAMs, supported by high power-aperture radars, have been far more popular in the market than the short and medium range weapons which the JSF was defined to and built to defeat.

### Opening Questions:

1. What threat Surface to Air Missile systems and supporting radars was the JSF's stealth capability modelled against, and which was it not modelled against? For your convenience, a summary of the threat systems may be found here.
2. What threat combat aircraft types and supporting systems was JSF's stealth and aerodynamic capability modelled against, and which was it not modelled against? A range of the threat combat aircraft and supporting system may be found here.
3. Why did the JSF Program discard the flat lower centre fuselage design of the X-35, and replace it with the complex curvature design of the SDD F-35, given that even the basic RCS modelling shows this would adversely impact the stealthiness of the aircraft when illuminated from its side aspect?
4. Why does the JSF Program believe that opposing threat systems will not use all of their

**capabilities** to survive when confronted by the JSF in combat?

5. Where is the JSF escape system (pilot ejection system) in its certification program and when do you expect the system to be certificated?
6. What will be the envelope of the JSF pilot ejection system?
7. What will be the maximum speed at which the JSF canopy will be certificated for bird strikes?

## ***SUPPORTABILITY***

### Background:

Over the past 30 years, there have been various attempts to reduce the life cycle costs of operating military aircraft. Options strongly supported by Industry have encouraged the transfer of risk and responsibilities to Industry. Such options have included Total System Performance Responsibility (TSPR) contracting models, Public Private Partnership (PPP) contracting models and various other outsourcing contract models.

With noted exceptions, the military customers' satisfaction with such arrangements and their outcomes has been less than optimal. One recurring series of complaint has been the consequential deskilling of the military while cost overall have not reduced and, from those of the pre-deskilling era, observations and concerns about increasing loss of control of assets leading to truly sovereign risks for the clients – loss of the most basic of sovereign controls of air combat assets – the aircraft's configuration.

The latest forms of addressing life cycle costs are the performance based agreement (PBA) models and such things as the Autonomic Logistics Model of the JSF Program – elements of both having been proposed to the P-3 Orion Maritime Patrol Aircraft community and, more recently, the C-130J Hercules Strategic Air Lift Aircraft community.

### Opening Questions:

1. What is the estimated total cost per flying hour, in USD/FH, for the Block 3 F-35A JSF in 2014 for a per aircraft flying rate of 350 hrs per annum and a fleet size of 100 aircraft performing all training missions and roles that achieves a level of preparedness able to fully utilise the full JSF capabilities, with repeatability?
2. What are the JSF capabilities, training sequences and rates of effort (ROEs) used to determine the answer to the preceding question?
3. Which organisation or organisations will have the ability and capabilities to control and change the technical configurations of the JSF and its airborne and ground based systems?
4. By all accounts, including using some of the tools you and I were trained in at USNTPS, the approach speed of the F-35A is inordinately high – reportedly 180 KCAS. Is this the case?
5. If so, what modelling/simulations have been done to determine the levels of risk and hazards such a high approach speed presents to the operations and support of the F-35A JSF?
6. What is the means of controlling the temperatures of the ElectroHydroStatic Actuators (EHSA) used to drive the F-35 JSF control surfaces and are these actuators rated for a continuous duty cycle at a loading above 100% of the JSF operational loading? If not, what is their duty cycle rating?

Finally and more generally, the results of analyses undertaken by a number of domain experts



around the world do not support the notion that the JSF will not be able to meet its original specification. What they do indicate is, due to the effects of management decisions under paradigms like Cost as An Independent Variable (CAIV); the transfer of risks from the SDD Phase to the Operational Phase; and, the extensive deskilling that has occurred in Departments and Ministries of Defence around the Western World, due to the end of the Cold War 'peace dividend', this specification will most likely not be met till around Block 6/7, circa 2020 or later.

However, where these independent analyses converge is full agreement that the original JSF JORD specification and the specification to which the aircraft has been designed and is being built are based on threat assessments from an era past. This combined with the constraining nature of the original air vehicle specification and the on going effects of expeditious management decisions made under CAIV, mean the overall capabilities of the JSF will have been surpassed by the middle of the next decade, if not earlier.

In summary, all the indicators point to a penultimate question -

Will the F-35 JSF be obsolete before its time?

If not, then why not, given where the JSF Program is in its schedule and overall life cycle compared with where the developing threats are in theirs?

That being said, there is much reason for a robust and strong debate. We look forward to your answers, along with the supporting data, information and knowledge, at your earliest, in the spirit of working with you to get the best we can for those who fly as our aim, and confidently demonstrating this thesis (or its antithesis) with hard data and facts as the paramount measures of effectiveness of a strong debate.

**Air Power Australia Website** - <http://www.ausairpower.net/>

**Air Power Australia Research and Analysis** - <http://www.ausairpower.net/research.html>

