

10 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

Please find attached my submission to this Inquiry.

Terms-of-Reference matters covered by this submission include:

1. the future air defence needs that the aircraft is intended to fulfill;
2. the cost and benefits of the program to Australia, including industrial costs and benefits received and forecast;
3. changes in the acquisition timeline;
4. the performance of the aircraft in testing;
5. potential alternatives to the Joint Strike Fighter; and
6. the problem with Australia's Super Hornets.

Note: no classified information was used in the preparation of this document.

I am available to appear before the Committee and answer any questions the members may have.

Kind regards,

Eric Palmer
New South Wales

Submission for the Inquiry into the planned acquisition of the F-35 Lightning II (Joint Strike Fighter)

By Eric Palmer, New South Wales

Caveat emptor

(Let the buyer beware)

Executive Summary

Australia engaged in the F-35 Joint Strike Fighter project without following established federal government risk assessment process. The history of this flawed involvement exceeds other troubled Australian defence projects by dollar value and risk to our national security.

The F-35 program has been declared “procurement malpractice” by U.S. government officials. The business plan has been declared “unexecuteable” by U.S. government audit agencies. To date, the U.S. taxpayer has handed over \$110 billion dollars in sunk cost for over 150 F-35 aircraft that have significant faults.

Development and testing of the program show massive problems. There is no quick fix. Large compromises (performance, reliability, combat capability, safety, manufacturing and sustainment) are built into the design. Development and management for the software in the following three areas are in trouble: software onboard the aircraft; maintenance and logistics support system software; and “VSim”, the software that validates F-35s alleged combat capability.

The F-35 is likely to be shot down in combat against existing and emerging threats.

Statements presented in regard to F-35 program status to Australian elected officials are often inaccurate, overly optimistic and have more to do with the language of marketing talking-points from the aircraft maker and U.S. government wishful thinking, than hard, independent, analysis.

To date, no accurate figure of the billions of dollars in industry benefit Australia is supposed to receive from this program has been published or presented to our elected officials. The same applies to Australian industry exposure to risk.

Conclusion:

The wasted resources invested into the F-35 program are a threat to Australia’s national security. Information on Australian industry benefit presented to our elected officials used to justify F-35 procurement is not credible. Stating that there will be thousands of F-35s made is not realistic. The original F-35 business plan is obsolete. No amount of wishful thinking will graft value (combat lethality, sound design, industry benefit) into this program. It isn’t just the cost of this program (and the mistake to invest billions in the Super Hornet as both are linked). It will be the billions more needed to fix this mess when the F-35 program officially fails. No, U.S. or European fighter aircraft in production today, are capable of facing emerging threats.

Recommendation:

It will be less painful for Australia to stop commitment in the F-35 program and start a new F-18 replacement requirement from scratch. Using of course, existing government risk process. This is the first step, before claiming x or y existing aircraft are a solution. Canada, when faced with the issue of F-35 program honesty in what was briefed to its elected officials, took a similar path, in order to go forward with their F-18 replacement plan. No acquisition should go forward without proper industry offsets written into the agreement. Various investigations authorized by our elected officials will have to be launched to learn from the bad decision that is the F-35. Create an office in Parliament (outside of Defence influence) to produce an actionable plan for the replacement of RAAF F-18 aircraft.

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Introduction

Australia's involvement in the troubled Joint Strike Fighter project (also known as the [F-35](#)) spans an era where:

1. the MU-90 torpedo was sold to our elected officials that it was an "off-the-shelf" product when in fact it was in early development with significant problems to follow ([--PDF, Pg.29--](#));
2. the E-7 Wedgetail aircraft was started with hundreds of risks ignored giving the RAAF a much-delayed product with 90 percent of its envisioned capability (to date, no specific {public} mention of the missing 10 percent);
3. the Sea Sprite helicopter project continued for years with the end result of no capability and up to \$1.5B spent;
4. the troubled Air Warfare Destroyer project was given a weak first and second pass approval; initially sold to the public as a \$5-6B project (now marching toward \$10B for 3 ships) and will be fielded with obsolete-to-the-threat air defence systems;
5. our top military officials briefed our elected officials that F-35 delays can be managed by refurbishment of the F-111 and older "classic" F-18s; not long after, the then defence minister gets the authority to buy 24 obsolete-to-emerging threats, Super Hornets with no critical analysis performed;
6. procurement of EA-18G electronic warfare aircraft which have jamming systems that the U.S. Navy stated were obsolete to emerging threats back in 2004 and earlier;
7. the government went ahead with the acquisition plan for the MRH-90 helicopter when defence recommended the U.S. Blackhawk family of aircraft; note to-date, the MRH-90 has a long running history of significant project management problems;
8. mismanagement of the Collins-class submarine sustainment program (only recently seeing robust progress);
9. mismanagement of existing amphibious ship capability where useful ships were left to fall into disrepair. A temporary stop-gap solution was bought from the U.K. (now HMAS Choules). The initial team for that purchase stated the ship was good to go. It arrived and needed millions (and months' time) of repairs to defects.
10. on a class-curve scoring against the above, notable success with the ANZAC frigate program.

The above list is not all-inclusive. Items 1-9 could have been avoided by performing risk-analysis methods in possession of the Australian government.

Further reading: [Australia's Failing Defence Structure and Management Methodology, Air Power Australia Analysis 2011-04](#), 28th December 2011 , Air Commodore Ted Bushell AM (Retd)

The future air defence needs that the aircraft is intended to fulfill

The F-35 is based on a Joint Strike Fighter (JSF) Joint Operational Requirement Document (JORD) – [PDF file 1998 US DOD briefing](#)–, composed in the 1990’s and signed off on at the beginning of the last decade.

The requirement assumed aircraft performance capability wanted by the U.S. services would be traded off to meet affordability assumptions. Want the aircraft to go faster? It will cost you. Want it to carry more weapons? It will cost you. Want it to have more range? It will cost you. “You” being the war-fighter customer. Compromise to meet a cost target; not a performance target.

“When George Muellner gave his first speech after taking command of the joint advanced strike technology program, he drew a line through the “advanced” and changed it to “affordable.”
[-Uncle Sam Buys an Airplane, The Atlantic, June 2002.-](#)

The requirement also assumed that post-Cold War threats would consist mostly of second and third-rate air arms using ex-Soviet-export (lower) specification air defence variants of their fighter aircraft and surface-to-air missile systems. In the 1990’s, beating ex-East German (export variant) MiG-29s in NATO exercises was considered the gold-standard of air combat practice. If any other threats came along, the Joint Strike Fighter concept (now F-35) would be backed up by hundreds of F-22s.

Air defence threats have advanced beyond those predictions; there aren’t that many F-22s; the F-22 is no longer in production; the F-35 isn’t just a little F-22; the F-35 has significant flaws built into its design. [The F-35 is an obsolete concept](#) that will be [unable to achieve regional air superiority for Australia’s national defence goals](#). The F-35 is also a poor strike aircraft concept and will be unable to perform close air support to the quality level of current RAAF aircraft.

In a recent flying evaluation, the F-35 was easily defeated by an F-16. This was in a region of the combat envelop where stealth and long range weapons are irrelevant. Independent simulations and parametric comparisons—conducted for years—expected this result. These same studies show that the long range weapons the F-35 intends to deploy have a low probability of kill against threats that can defend themselves with proper on-board self-protection systems combined with high performance. Threats that the F-35 is likely to face, can defeat it.

When the requirement for the F-22 was crafted back in the 1980s, red-force analysts declared that stealth for stealth’s sake was not good enough against future threats. The F-22 would have to have a huge aircraft performance advantage. For example: to reduce or eliminate no escape zones of enemy missiles by a simple high speed turn at high altitude. [F-35 performance is worse than many aircraft before it](#).

Conclusion:

The F-35 is unsuitable for Australia’s national security needs.

Recommendation:

Start with a clean sheet of paper to develop a new threat analysis and forward thinking replacement for the RAAF’s F-18 fighter aircraft.

The cost and benefits of the program to Australia, including industrial costs and benefits received and forecast

To-date, Australia has secured almost \$500M in F-35 business. 13 years on, this has not caught up to the taxpayer money invested. There is no credible combat or financial proof of program worth.

What was Australia told when signing up for the program in **2002**?

"Winning just 1 per cent of the project's work would be worth \$4 billion to Australian industry, said Industry Minister Ian Macfarlane. But there are no guarantees of additional Australian involvement."

-The Age, \$12b for Australia's fighter jets of the future, Mark Forbes, 28 June 2002-

2003: *"The project has been billed as a winner for Australian industry with potential earnings of up to \$US4 billion (\$A7.14 billion)".*

-The Age, Melbourne firm wins US jet fighter contract, 24 June 2003-

2007: *"The Australian aerospace industry stands to reap about \$9 billion from its involvement in the F-35 Joint Strike Fighter program over the next three decades, according to the plane's US developer, Lockheed Martin."*

-\$9bn bonanza in F-35 deal, 23 March 2007, The Australian-

2010: *"Over the 20 year production life of the JSF, the Australian share of work is currently projected to be somewhere between \$11.5 and \$12 billion, with further opportunities to follow"*

-Bob Price, Lockheed Martin's F-35 Programme Manager, APDR, 15 April 2010-

2011: *"The trouble-plagued F-35 Joint Strike Fighter project has claimed its first Australian scalp with a 65-year-old company forced into liquidation this month."*

-JSF delays ground Aust parts maker, The Canberra Times, 21 September 2011-

2013: *"According to Lockheed Martin, this economic value expected to grow to \$5-6 billion as production ramps up over the next three decades, with another \$3 billion on top for maintenance and support parts."*

-Electronics News, F-35 Joint Strike Fighter: Flying high, Isaac Leung, 5 March 2013-

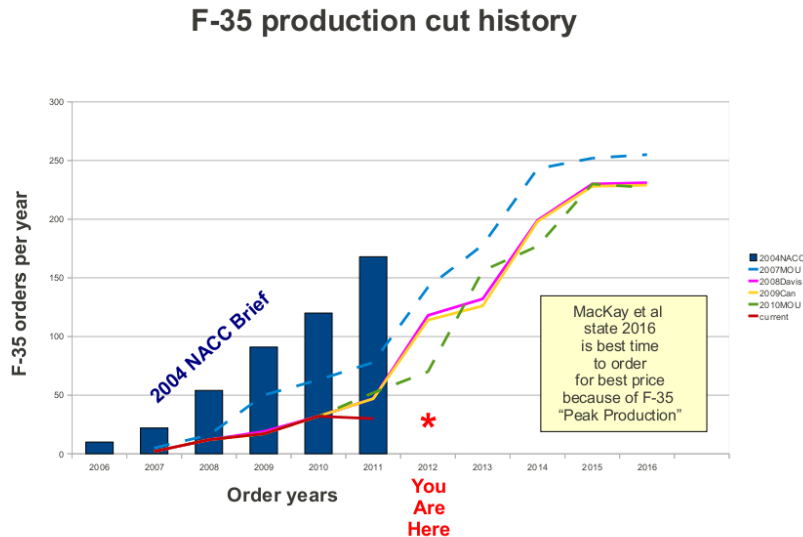
How about 2015?

"Australian industry is well placed to capitalise on the Government's investment in the program, winning US\$432 million in contracts to date," AVM Deeble says. "Australian industry stands to win in excess of \$1.5 billion in JSF-related production and support work over the life of the JSF program."

-DMO Bulletin, First Australian-made vertical tails installed on F-35, Issue 1, 2015 -

History: in the 1980's, Australia ordered 75 F-18 Hornets. 2 were built in the U.S. The remainder were assembled at Avalon Airport. The engines were built in Melbourne.

This is a history of F-35 production hopes and dreams up to **2012**. Notice that this is real, lost money to our valued Australian companies like Quickstep. Quickstep and others had the chance to reap benefit of over 160 F-35s to be ordered in 2011 alone. Where are the over 200 orders for both 2015 and 2016?



Note: "NACC": Australian government's New Air Combat Capability team. Those responsible for briefing government officials on F-35 program progress and risk. The MacKay reference is in regard to what Canada was told. The F-35 program in Canada currently has an uncertain future because of the government not being told all of the facts. Today, production rates have not improved anywhere near the original plans briefed to our elected officials when they agreed to hand money over for this project.

One early Joint Strike Fighter program manager stated the "business plan" assumed aircraft costs don't "flatten out" until 1600 are built. Also, that the program was only affordable if thousands of aircraft were made.

Source: Eric Hehs, Rear Admiral Craig Steidle JSF Program Manager, Code One Magazine, April 1997, Interview with Rear Admiral Craig Steidle the then director of the Joint Strike Fighter Program.

This assumed that there were no significant development problems.

Conclusion:

Information on Australian industry benefit presented to our elected officials used to justify F-35 procurement is not credible.

Recommendation:

Our elected officials should request an independent audit of F-35 program risks to Australian industry in regard to individual company health, potential job loss, and predicted benefits. Investigate F-35 communications provided by government and the entrenched defence bureaucracy to the Australian business community so as to evaluate ethical quality.

Changes in the acquisition timeline

Along with the previous part on industry, the following are some of the affects to the acquisition timeline. Where published timelines show great optimism and little heed to established risk analysis facing the on-going development of the aircraft.

Until late in 2003, the F-35 program's system design and development state known as "SDD" phase was scheduled to run until around 2008, at which time full rate production was scheduled to begin, with a projected initial operational capability around 2010. Subsequent schedule changes have added time and cost to the program.

In February 2003, as part of a U.S. 2004 budget briefing, the Navy planned to reduce their F-35 purchases by 409 aircraft.

2003- Lockheed Martin announced that that "quick-mate joints", appliances that made F-35 assembly efficient, were removed from the production line procedure. This would add time to the production cycle. Tom Burbage, Lockheed Martin's director of the Joint Strike Fighter Program stated: "That was the trade-off we had to make to get the weight down". This shed 1000 pounds from the design.

2004- Lockheed Martin. Told the main "customer", the U.S. government representative and coordinator for F-35 worldwide customers known as the Joint Strike Fighter Program Office that either some design compromises would have to be agreed upon to allow the aircraft to fly or the STOVL variant may fail. The customer agreed. Weight in the design was removed. Design changes affected all variants of the aircraft.

"The jets were to arrive in 2012, two years after the Government retires its current premier long-range strike aircraft, the F-111. However, their US manufacturer, Lockheed Martin, said yesterday that they were 18 months behind, which means they will be delivered in 2013, at the earliest. A spokesman for the jet's program manager at Lockheed, Tom Burbage, said: "We are looking at the conventional take-off and landing F-35 being about 18 months late at this stage"

-Tom Allard, Defence hole appears as new fighter lags behind, Sydney Morning Herald, 17 November 2004-

In March of 2005 the U.S. Government Accounting Office (GAO) reported that the original business case for the F-35 was, **"unexecutable."**

"As easy as it was to assemble this model, the real thing back in Fort Worth also is going together with similar ease. It's compelling evidence that the digital thread connecting our design directly to our manufacturing processes is performing as advertised to keep this program affordable."

-Tom Burbage, Lockheed Martin manager for the F-35, while standing with a 1/10th scale model of the F-35 at the Paris Air show, 2005.-

In 2006, due to cost rise in the F-35 program, the United States Air Force (USAF)—the biggest customer for the F-35--extends its full-rate production F-35 buy plan to end in 2035-2037 instead of 2028. This is a real cut from 110 F-35s purchased by the USAF per year (when full-rate production starts) down to 80 per year. The fidelity of this plan is in question as no one can predict what senior government decision makers will buy in such a distant future.

Also in 2006:

"The Deputy Chief of the RAAF states that there is unlikely to be a need for an interim solution (buying a stop-gap aircraft if there are delays to the F-35 arriving in Australia)."

"Yet the Aerospace Adviser to the Minister recently acknowledged that a fully combat-capable JSF will not be available until around 2018."

"How is it that we can apparently commit to a JSF purchase when the acquisition risk management procedures for guaranteeing the integrity of the decision were arbitrarily deleted by departmental senior management in 2002?"

"The fundamental point must be that no matter how many JSFs are procured, if the aircraft cannot guarantee control of the regional battlespace, then what utility does it have for the ADF?"

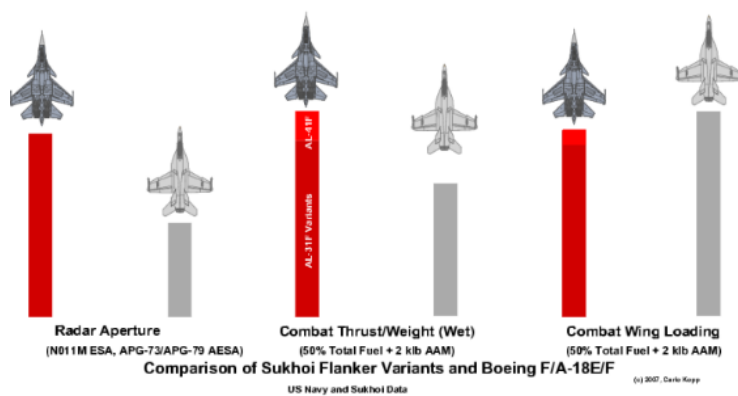
-AVM Criss, Does Groupthink Power Australia's JSF?", 1 November 2006.-

Late 2006: the then Australian Defence Minister asks for (and gets) approval to purchase 24 Boeing Super Hornets as a perceived stop-gap against the F-35 being late. [There was no credible analysis to back up this decision.](#) See also: [How Australia was manipulated into buying the Super Hornet.](#)

"The move is an apparent about-face for the government, which has repeatedly said there would be no need for a stop-gap to fill the hole between the phase-out of the RAAF's fleet of aging F/A-18 Hornets and F-111s and the introduction of the JSF."

"The deputy chief of the air force, Air Vice Marshal John Blackburn, all but ruled out the need for a stop-gap jet in October. 'We are confident that, with the program as it is currently progressing, we shouldn't need an interim solution'."

-Defence spending a mess, says Rudd, The Age, 15 December 2006-



2007:

"As one of nine international Partners in the JSF Program, Australia is keenly monitoring ALIS' implementation. A sophisticated data management system, added to JSF's inherent reliability, will be key to the cost effective operation and support of the future JSF fleet," said Air Vice Marshal John Harvey, Program Manager of Australia's New Air Combat Capability (NACC) project."

-ADM, Military Logistics: JSF's ALIS goes live, 1 Jun 2007-

Today, in 2016, ALIS--the core system for F-35 logistics and maintenance sustainment--is in grave trouble. Did the [NACC office](#) provide our elected officials (who control the purse) the ability to make informed decisions based on solid F-35 risk management? If not, why not?

What did Lockheed Martin's F-35 manager have to say at the time in regard to producing aircraft in large numbers before they are adequately tested: a process warned by government analysis as being too risky?

"I do not agree it adds extra risk," Mr. Burbage said of Lockheed's approach, speaking at the news conference. "We are doing it the right way, and what the G.A.O. says will do just the opposite."

-Leslie Wayne, Painting a Rosy Picture of a Costly Fighter Jet, New York Times, 22 June 2007-

"Total JSF program acquisition costs (through 2027) have increased by \$31.6 billion and now DOD will pay 12 percent more per aircraft than expected in 2004. The program has also experienced delays in several key events, including the start of the flight test program, delivery of the first production representative development aircraft, and testing of critical missions systems.... Despite these delays, the program still plans to complete development in 2013, compressing the amount of time available for flight testing and development activities".

-US Government Accountability Office; March 15, 2007 Ref: GAO-07-370-

"The Super Hornet order is an interim measure until the Joint Strike Fighter arrives in 2013".

- Defence Minister Brendan Nelson, Minister's plane speaking, The Age, 20 March 2007-

2007 Lockheed Martin briefing to Israeli journalists in regard to the F-35 program. Claims that it is the same acquisition price as an F-16 and 20 percent less to operate and sustain (O&S) or cost of ownership. These claims have showed up in briefings to other customers. To date, it has been proven to be untrue.



2008:

"Lockheed Martin countered that "the F-35 program is on schedule" and the Pentagon program manager, USAF Maj. Gen. Charles Davis, asserted (THIS IN 2008): "We do not agree with that estimate, there is no basis for that estimate, and we do not support it."

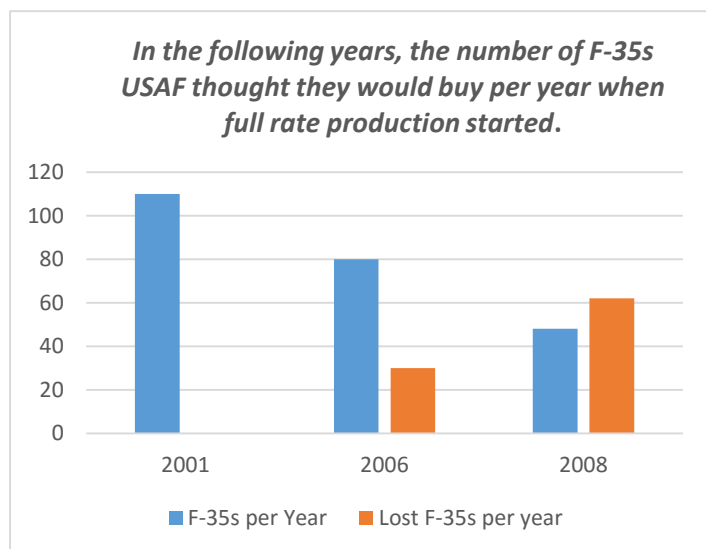
Three years of drift went by before it was officially accepted that the GAO's fears had been conservative."

-Bill Sweetman, Opinion: No Time for Inaccuracy on JSF Costs-Wobbly numbers warp F-35 debate, Aviation Week. 20 January 2014-

"...I would be surprised if the JSF cost us any more than A\$75 million ... in 2008 dollars at an exchange rate of 0.92"

-JSCFADT Dr. Steve Gumley, CEO DMO, July 2008-

Continuing in 2008. The United States Plans and Programs office (the people that tell the leadership how to make ends meet in a budget) stated that due to F-35 cost, the service could only afford to buy 48 F-35s per year when full rate production started in 2014. Note, to date, full rate production for the F-35 still has not happened.



Customers that signed up for the F-35 program early-on assumed that it would be affordable because of U.S. commitment to big orders. Decline in commitment per year by the USAF: 2001 plan (110), 2006 plan (80), 2008 plan (48). In February 2016, the U.S. Air Force has announced it may only be able to afford 43 F-35s per month when full rate production starts. A cut from the 2001 plan of 61 percent.

"It's about \$37 million for the CTOL aircraft, which is the air force variant."

- Colonel Dwyer Dennis, U.S. JSF Program Office brief to Australian journalists, 2002-

"It will be affordable because already there are 3,000 aircraft on the order books."

-27 June 2002, Air Marshal Houston, Defence press announcement, Australia joins the F-35 program-

2009:

One of the many value-added claims that were sold to our elected officials was that there would be two different makers of the jet-engine for the F-35. Variations of the following slide showed up in briefings to Canada in 2009 even while efforts were being made (which turned out to be successful) in killing the second engine-vendor: the F136 jet engine made by General Electric and Rolls-Royce.

JSF ENGINE INTERCHANGEABILITY

- **Physically and Functionally Interchangeable**
- **Any Aircraft Able to Use Any Engine**
- **Common JSF Autonomic Logistics System Interfaces**



In 2006, the U.S. F-35 program officials stated that developing the alternate jet engine was too costly. The real story was that this idea to kill the alternate F-35 jet engine was hatched when other parts of the program were blowing out in cost.

Industry believed (including Australia) that there was money on the table to build components for the F-35 alternate engine. In the end, like many other things involved with “selling” this program to our elected officials so that they hand over the money, the alternate engine “value” was done away with once there was heavy commitment to the program.

"The cancellation of that engine was one of the reasons given for the company's collapse."

Development problems with the prime F-35 engine known as the F135 [have had a difficult history](#). And now that the alternate engine is officially gone, options are very limited on jet engine price and reliability for the F-35. Claiming that the current F-35 engine is similar to the F-22 engine is true, but in an insignificant way given the challenges of the F-35 engine which has significant design changes to support the short-take-off and vertical landing (STOVL) variant of the aircraft. If the STOVL joint requirement for the F-35 did not exist, these challenges would be less.

History: Australia had 116 Mirage III aircraft, many [were written off due to engine failure](#).

2010:

The F-35 suffers its second Nunn-McCurdy Breach. This happens when a U.S. defense program goes significantly over cost. The U.S. Congress has to be notified and decide if the program continues or gets cancelled.

"Total estimated acquisition costs have increased \$46 billion and development extended 2 ½ years, compared to the program baseline approved in 2007."

-JOINT STRIKE FIGHTER Significant Challenges Remain as DOD Restructures Program (PDF), U.S. Government Accountability Office (GAO), 11 March 2010.-

U.S. Defense Secretary Gates is briefed that the operations and support costs for the F-35 will be "re-budgeted at 1.5 times the aircraft it replaces."

-New fighter faces new delay, cost hike, Sydney Morning Herald, 5 November 2010-

"Australia would pay even more for a second-rate aircraft. And that's for an airplane that's unflyable."

-Winslow Wheeler, director of the Strauss Military Reform Project at the Center for Defense Information-

Also at the time, the following, makes one ask the question, "Why are serving Defence Ministers being misled?" Both by omission and presentation of false information?"

From the same Sydney Morning Herald article:

"Defence Minister Stephen Smith said he had been advised by the department that the delivery of the 14 JSFs Australia committed to purchasing would not be affected by any delay."

"To date, we have had no information or advice from the United States to cause us to believe that that is anything other than on track," he told reporters on Friday."

New April 2010 plan: what's wrong with this picture? Look at the unsupportable assumptions on production buys all while in a time of significant faults in the aircraft design. Total authorized purchase up to 2016 if any of this was true? Over 970 aircraft. Procurement plan via wishful thinking. Buyer beware. No one wants to buy a product that is defective. By 2018, Australia would purchase 72 F-35s? Based on what risk assessment?

Table A-1
Participants' Estimated JSF Air Vehicle Procurement Quantities
(Projected FY of Production Contract Definitization (approximately two years prior to delivery))

Participant	CY07	CY08	CY09	CY10	CY11	CY12	CY13	CY14	CY15	CY16	CY17	CY18
Australia	0	0	0	0	0	2	4	8	15	15	15	13
Canada	0	0	0	0	0	0	0	16	16	16	16	16
Denmark	0	0	0	0	0	0	0	8	8	8	8	8
Italy	0	0	0	0	0	4	12	12	12	13	13	13
Netherlands	0	0	1	1	0	2	4	9	10	10	10	10
Norway	0	0	0	0	0	0	0	8	12	12	12	4
Turkey	0	0	0	0	0	0	6	6	12	12	12	12
United Kingdom	0	0	2	1	0	0	7	0	9	11	3	6
United States	2	12	14	30	52	62	123	110	136	130	130	130
TOTALS	2	12	17	32	52	70	156	177	230	227	219	212

Sidebar: Australian Government Risk Assessment. Consider what you have read so far. Please take a moment to see this excerpt from established Australian Government risk assessment documents. Consider this also as you finish reading this submission.

Table 5 - Assessment of Consequence Ratings against Categories					
Consequence	Safety	Performance	Supportability	Schedule	Cost
Severe	Would cause loss of life.	Would cause the supplies to be functionally unfit for their intended purpose (i.e. unable to perform core missions or essential tasks).	Would cause the supplies to be unsupported under normal peacetime operations due to deficiencies in one or more fundamental inputs to capability. There are no known	Would cause the specified in-service date to be missed by more than 12 months. Would cause the date for full operational capability to be missed by two or more years.	Would cause the total actual contract costs, taking into account liabilities incurred by the Commonwealth, to exceed currently approved cost provisions by > 10%.

Table 5 - Assessment of Consequence Ratings against Categories					
Consequence	Safety	Performance	Supportability	Schedule	Cost
			workarounds.		
Major	Would cause serious casualties resulting in the long-term physical impairment of personnel.	Would cause the supplies to be only partly functionally fit for purpose (i.e. degraded ability to perform some core missions or essential tasks or unable to perform non-core missions or tasks, and there are no known workarounds).	Would cause the supplies to be unsupported in low-tempo operations or for short periods of time due to a deficiency in a fundamental input to capability. There are no known workarounds.	Would cause the specified in-service date to be missed by 6 – 12 months. Would cause the date for full operational capability to be missed by between one and two years.	Would cause the total actual contract costs, taking into account liabilities incurred by the Commonwealth, to exceed currently approved cost provisions by 5-10%.

Source: [DMO Office of Special Council](#).(PDF)

Question: Using established government risk tools, how much exposure to Severe and Major risks are there for the Australian people with the F-35 program?

Note that this 2009 document in regard to F-35 risk to Australia still holds today:

[“F-35 JSF Program: Assessment of Top Level Programmatic Risks”](#)

-Dr. Carlo Kopp, SMAIAA, MIEEE, PEng Air Power Australia, 19 November 2009-

2011:

"Lockheed Martin executive vice-president Tom Burbage said there was absolutely no reason Australia would not have combat-ready JSFs by late 2018 - as scheduled."

-Canberra Times, New RAAF strike fighters on schedule: Lockheed, 13 December 2011-

Untrue. As part of the plan, Australia was to have F-35s by 2012. Or was it 2010? Years before...

"But Air Marshall Houston says any delay in the delivery of the JSF in 2010, can be covered by existing aircraft. Air Marshall Houston told the conference, the deadline for changing over to the JSF can be pushed out to 2012, using the upgraded F-18 Hornets."

-Air Force chief backs JSF, ABC-The World Today, 14 March 2005-

"After more than 9 years in development and 4 in production, the JSF program has not fully demonstrated that the aircraft design is stable, manufacturing processes are mature, and the system is reliable."

-U.S. Government Accounting Office Annual Report on the F-35 Joint Strike Fighter, 2011-

2012:

"We believe over the purchase time of your 75 airplanes, that cost will average out somewhere around \$US70 million (\$A67 million)," he told reporters in Canberra."

-Tom Burbage, Lockheed Martin F-35 Manager, The Australian, 22 March 2012.-

2013:

"Let's make no mistake about it. This program still has risks, technical risks, it has cost issues, it has problems we'll have to fix in the future." (U.S. Department of Defense F-35 program manager).

-ABC, Pentagon general issues warning on JSF blow-outs, 19 February 2013-

2014:

For those of us that have observed the F-35 program since its inception, presenting inaccurate statements our elected officials appears to be sport. The year 2014 is only one example.

"Some of these exchanges, notably with Air Marshal Brown and DMO chief executive Warren King, are remarkable because of the arrogance and impatience displayed by these officials in responding to legitimate questions by an elected lawmaker during a formal parliamentary hearing. "

-Australian Senate Hearings Reveal Government's F-35 Misrepresentations, Defence Aerospace, 4 June 2014-

On the meme of "putting money aside for Defence procurement", in this case, the F-35:

"Senator Johnston said: "We have been putting money away . . . and it's been there, it's been building up and it's in the budget."

*But Stephen Bartos, a former deputy head of the Finance Department and now executive director of Acil Allen Consulting, said that while money was included in recent budgets' forward estimates – the coming four years – it had not in any sense been put aside in past years. "Money doesn't get put aside . . . It's not been put in the bank for a rainy day," he said. **That's not the way the budget works."***

-Running costs double JSF price tag to \$24b, Sydney Morning Herald-23 April 2014-

2015 and Today:

[Not much has improved](#). There are [still more development delays to the program](#). The aircraft isn't reliable. It is likely to get shot down against emerging threats, and demonstrates a cost per flying hour of over \$57,000 USD; (source: U.S. Air Force).

What has the U.S. taxpayer invested in the F-35 program to-date (Sunk cost)?

\$110 Billion.

U.S. Fiscal Year Budgets:

Up to 2013*: \$83.3B

2014: \$7.538B

2015: \$8.572B

2016: \$11.012B

*Source, U.S. Congressional Research Service (CRS)

Conclusion:

More inaccurate statements to our elected officials: presented both by Australians and Americans. Certainly, proper risk analysis was non-existent.

Stating that there will be thousands of F-35s made is not credible. The original F-35 business plan is dead. No amount of wishful thinking will graft affordability (or combat lethality) to this program.

Much of the cost rise is due to significant problems in the aircraft design. It isn't just the cost of this program (and the mistake to invest billions in the Super Hornet as both are linked). It will be the billions more needed to fix this mess when the F-35 program officially fails. The public—in a time of federal budget trouble--could very well run out of tolerance and agree to pay for a RAAF that mirrors the capability of the New Zealand Air Force.

Recommendation:

An independent review will have to be performed outside of the Defence New Air Combat Capability Office and outside of "Independent" think tanks that receive defense money and sponsorship from industry. The purpose of this review is to collect interviews of various government officials, (present and retired) to find out why they made statements on F-35 progress that have turned out to be wildly inaccurate. This will be used to teach current and future decision makers about institutionalized groupthink, normalization of deviance behavior (the truth must be somewhere in between), a behavior that killed two space shuttle crews in the U.S.

The performance of the aircraft in testing

“As a single type replacement for Australia’s F/A-18A and F-111 any shortfalls in JSF performance would be catastrophic.”

-Kopp, Cobb, Evolving Force: Enhancing the Defence Capability Plan, 4 October 2003-

Risks identified early in the F-35 program appear to have come true. Even before the program started, the U.S. General Accounting Office (GAO), warned that the idea of “concurrency”—where you produce aircraft in large numbers and test them in parallel, was risky.

The idea that program officials depended on modeling and simulation to back up a majority of the design assumptions has not panned out. Further, the aircraft was never prototyped. The Lockheed Martin X-35 and Boeing X-32 aircraft which competed for the Joint Strike Fighter contract were only technology demonstrators.

Besides defects in other areas, software management problems may break the program.

Flight testing of aircraft (those who also write the manuals on basic flight of the aircraft) with an incomplete design has shown massive problems. Operational testing, (those who also write the manuals on how to use it as a weapon of war), has been thin also. The motto of these efforts appear to be: *“anything is possible if you are willing to lower your expectations”*.

For 12 years, Lockheed Martin's F-35 front-man, Tom Burbage, spared no superlatives when describing the aircraft to customers. It was all to sell an aircraft. When he retired in 2013, he made public what many of us who follow the program knew: the jet has weight problems.

When designing a combat jet, the effects of making large mistakes in weight assumptions result in reduced performance and airframe life. The F-35 is such an aircraft.

“Lockheed, during the early years of the programme between 2004 and 2005, was working on the conventional take-off F-35A variant first because the company did not have the engineering resources to work on all three versions of the jet simultaneously, Burbage says. But company and government parametric engineering models began to show that the weight of the F-35B short take-off vertical landing (STOVL) version of the aircraft was getting too high.

*“Somewhere along the way, we made an error in our parametric weight models,” Burbage says “Turned out we were predicting the things that we knew about pretty well, the structural parts were pretty close, the small detail parts were pretty close. **What wasn't predicted well by the model was stealth and internal weapons bays because the airplane that had those capabilities weren't part of the database.**”*

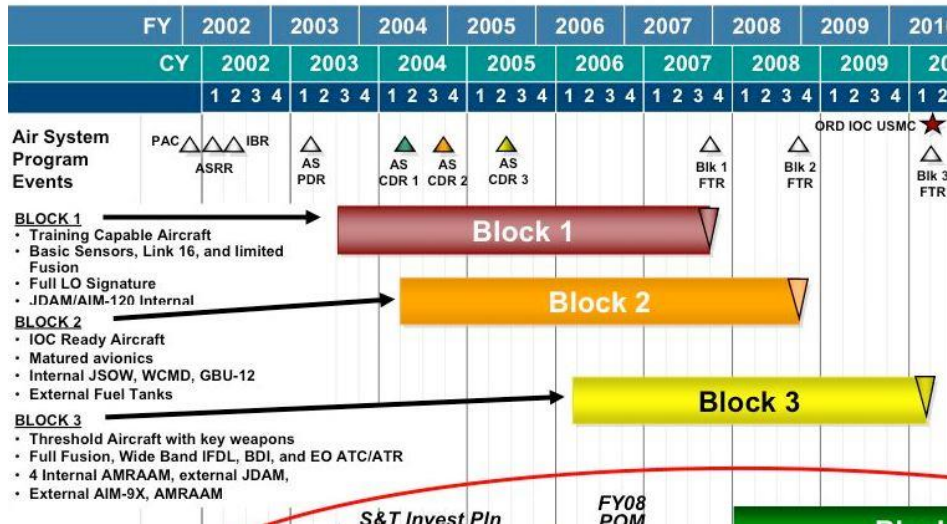
It may interest some that when the [Boeing X-32](#) was competing with the later winner of the JSF competition, the Lockheed Martin X-35 (now today's F-35), that the X-32 had too much weight in the design. The only way it could do a vertical landing was taking off parts of the aircraft.

And more. The X-32 [had weapons bays](#). Or as a Lockheed test pilot once stated: weapons bays add weight to any aircraft design. The X-35 which won the competition, **had no weapons bays**. The X-35 was given a free pass on this claiming that risk-reduction of weapons bays had been shown already with the F-22. Yet, the two weapons bays configurations are wildly different between today's F-35 and F-22. A big reason, is because of that STOVL requirement which compromises all F-35 variants.

The thin weight margins with today's production aircraft, will always be a concern.

At the start of the F-35 program, officials sold it to a U.S. Congress that computer simulations in the design process would remove the need for excessive flight testing. Flight testing was only there to verify what they already knew. This all changed once problems came up that went against those assumptions.

What Australia's New Air Combat Capability (NACC) office briefed in 2004.



(source: NACC briefing at an event called the Defence Teaming Centre in Adelaide, 17 March 2004)

Today, because of massive mismanagement of the F-35 program, none of those F-35 "Block" capabilities and arrival times are true.

Because of significant development problems, here is what those hoped for block capabilities are just a few years ago in 2013. Watered down and weak.

Block Plan: Capabilities / Transition Plan

	LRIP 1	LRIP 2	LRIP 3	LRIP 4	LRIP 5	LRIP 6	LRIP 7	LRIP 8 +
	Fleet Release							
	1A	1B	2A	2B / 3I	3C (3F)			
Mission Capabilities	Ready for Training Basic Nav/Comm/Sensor	Initial Training Multi-Level Security	Enhanced Training Basic Mission System Initial MADL, Link 1	Initial Warfighting Basic CAS/Interdiction Initial A/A	Full Warfighting / Export Multi-ship Fusion, ORD Compliant			
Altitude	40k	40k	40k	40K	50k			
Airspeed	450 / 400 / --	550 / 450 / --	550 / 450 / 450	700 / 550 / 550	700 / 630 / 700			
Mach	0.9 / .8 / --	0.9 / 0.9 / --	0.9 / 0.9 / 0.9	1.6 / 1.2 / 1.2	1.6			
ADA	18	18	18	50	50			
G	5.0 / 4.5 / --	5.5 / 4.5 / --	5.5 / 4.5 / 4.5	7 / 5.5 / 7.5	9 / 7 / 7.5			
Weapons	No Weapons	No Weapons	No Weapons	2 AIM-120-C5/7 (A/E) 2 JDAM (GBU-31) (A) 2 JDAM GBU-32 (B) 2 GBU-12 Internal (A) * Carriage/Employment Envelope Limited	Full SDD Weapons			

NOTE: Block 2B and 3C Fleet Release timing under development (SDD Replan)

Includes Proposed "Accelerated" Block 2B Weapons (AF & CF)

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

"They will have the bugs worked out long before that. Our test program runs until about 2014 but the last two years of that is primarily qualifying different weapons for the airplane."

-Tom Burbage, Lockheed Martin F-35 program manager, visiting Canberra, June 2010-

As the U.S. Department of Defense Test Office has discovered, when F-35 systems didn't work, the program testing enjoyed rigged results on test ranges to push the ball down the field.

Development and testing of the program [show massive problems](#). Consistently. For years.

Aircraft design needs of the short-take-off and vertical landing version of the F-35 have compromised the aircraft carrier and conventional take-off and landing F-35 variants (this last one is what Australia wants to acquire). Allowing the short-take-off and vertical landing version of the aircraft to exist, has crippled the other two variants due to airframe girth, other aero-design needs, complexity and compromise. There is no quick fix. Whole portions of these compromises (performance, reliability, combat capability, safety, manufacturing and sustainment) are built into the design.

Development and management for the software onboard the F-35 has been substandard and caused significant delays. The software that runs the aircraft maintenance system (as well as aircraft maintenance assumptions) are equally troubled. The effort to stand up the computer simulation (VSim) which was supposed to verify the F-35s ability in combat scenarios has failed completely and another solution will have to be found.

Sources: the following are U.S. DOT&E test reports on the F-35 (PDF files):

[| 2010](#) | [| 2011](#) | [| 2012](#) | [| 2013](#) | [| 2014](#) | [| 2015](#) |

What is "DOT&E"?

[The Director, Operational Test & Evaluation \(DOT&E\)](#) is responsible to the U.S. Secretary of Defense. This office performs independent reviews on weapons systems and reports the results to the U.S. Secretary of Defense.

DOT&E's authority to operate is covered under, Title 10 U.S. Code, Section 139.

Conclusion:

Technical risks identified in the program [by independent experts](#) appears to have come true.

The idea that program officials depended on modeling and simulation to back up a majority of the design assumptions has not panned out. Further, the aircraft was never prototyped.

Besides defects in other flight science areas, software management problems will break the program. In fact, the aircraft maintenance system is broken. The combat simulation requirement has been stopped in its tracks for failure to setup the proper infrastructure.

Flight testing of the F-35 shows that the aircraft is weak, unreliable and unsustainable for combat.

Recommendation:

Create an office in Parliament with subject matter experts, that have the authority and responsibility to perform deep dives into our weapon system management and provide reports (unvarnished by those in the entrenched defence bureaucracy) to our elected officials. Our elected officials have not received accurate assessments of defence programs and this in turn makes them less able to be good stewards of billions of taxpayer money.

Potential alternatives to the Joint Strike Fighter

Final recommendations for our elected officials

Problem: Information given to our elected officials in regard to replacement of the F-18 and F-111 and how that pertains to a sensible replacement; how that pertains to the F-35; how that pertains to the F-22 and how that pertains to the Super Hornet have been wrong. We must take all of the talent invested in building the wrong aircraft (the F-35) and redirect that toward fielding the right aircraft.

Recommendations:

1. Create an office outside of the entrenched defence bureaucracy that reports directly to Parliament with the goal to provide a RAAF F-18 aircraft replacement plan.
2. Members of this office will be led by someone not in government that has experience and success, delivering large scale civil engineering projects. For example hospitals, mining, and other large facilities. These people know how to filter out flawed project management and risk assessment thinking.
3. For this office, it is recommended that members who will perform risk assessment and analysis are: 1.) Dr. Carlo Kopp 2.); Mr. Peter Goon 3.); Mr. Chris Mills, AM, RAAF (Retd.); 4.) Mr. Danny Nowlan; 5.) For other interaction: various portfolio representatives as our elected officials see fit; 6.) Liaison staff from the DSTO, ANAO and RAAF. Members of this office will operate with a legal indemnity in regard to the [Defence Trade Controls Act \(DTCA\)](#).
4. This effort will provide our elected officials with an independent, deep-dive analysis into replacing RAAF F-18s and produce an actionable long-range plan.
5. Any F-18 replacement should have the following home industry offsets (across all business not just defence) of: 90 percent (desirable); 80 percent (threshold).
6. The F-18 replacement aircraft might not be an F-22 as this aircraft is not in production and the supply chain for it is now dispersed. The idea of starting F-22 production has to take some serious evaluation with a feasibility study. This submission recommends another alternative: a new aircraft design that will copy as much as possible, F-22 key performance perimeters. The candidate aircraft will also have growth ability in the design to, as a follow-on, create an FB-22-like requirement (looked at by the U.S. Air Force years ago).
7. Nations involved in this, with Australia standing up the lead requirement (in some ways much like the Collins submarine replacement being its own unique requirement) will be: the U.S.; South Korea; Singapore; Canada: in various observer-status and industry partners as needed.
8. Lead major industry benefactors for the aircraft could be: Boeing, Lockheed Martin and Northrop-Grumman. For the aircraft engines: General Electric, Pratt and Whitney and Rolls-Royce.
9. The above industries are already looking into this concept as an F-22 replacement for the United States Air Force. They are also looking at a new, advanced, fleet fighter for the U.S. Navy for aircraft carrier operations. As of this writing, to support 9 active carrier air wings.
10. Established Australian Federal Government risk assessment processes will be used for this effort.

Any future errata or comments on this submission from the author may be viewed [here](#).

The Problem With Australia's Super Hornets

The following is what Australian elected officials **were never told** about the Super Hornet when asked authorize the purchase. Like the F-35, the Super Hornet meets no useful requirements for Australia's national security:

"If you think about all the planes that are available as being puppies in a litter, the Super Hornet is the runt."

-US aviation analyst James Stevenson-

"The Pentagon has conceded that the MiG-29 and Su-27 can out-accelerate and out-turn all variants of the F/A-18 in most operating regimes, and that the E/F in turn cannot stay up with the older C/D (F-18) through much of the envelope."

Navy data from early 1996 (published in a General Accounting Office report) showed that the new aircraft was expected to have a lower thrust-to-weight ratio than the late-production (Lot XIX) F/A-18C/D with the General Electric F404-GE-402 engine. Its maximum speed in a typical air-to-air configuration would be Mach 1.6, versus Mach 1.8 for the smaller aircraft. In the heart of the air-combat envelope, between 15,000 and 20,000 feet and at transonic speed, the Lot XIX aircraft would hold a specific excess power (Ps) of 300 ft/sec out to Mach 1.2, while its larger descendant could not hold the same Ps above Mach 1.0."

-Bill Sweetman, Super Hornet gathers speed, but critics keep pressure on, Interavia Business & Technology, March 1, 1999-

"The Navy and Boeing have intensified a propaganda campaign. Unfortunately, the campaign is likely to damage their credibility in the long term, because it focuses on a few basic statements which don't mean anything like as much as the casual reader is meant to think."

For example: "The airplane meets all its key performance parameters." This is true. In 1998 — as it became clear that the Super Hornet was slower, and less agile at transonic speeds than the C/D (older F-18)— the Navy issued an "administrative clarification" which declared that speed, acceleration and sustained turn rate were not, and had never been, Key Performance Parameters (KPP) for the Super Hornet. Apparently, some misguided people thought that those were important attributes for a fighter."

-Bill Sweetman, Just How Super is the F/A-18E/F?, Interavia Business & Technology, April 1, 2000-

"Dr. Davies said the Super Hornet, used by the US Navy, was a poor choice. Even more alarming was that this a relatively old plane could become a long-term replacement if the F-35 program collapsed, he said."

"No one else has bought the Super Hornet," he said. "Israel, Singapore and South Korea, for example, all bought variants of the F-15 instead of the Super Hornet. There is no evidence at all that a rigorous evaluation has been done by the Department of Defence or that the Super Hornet is the best solution."

-Costs to soar as US Air Force cuts order, Sydney Morning Herald, February 8, 2007-

"Critically, the performance of the Super Hornet means that it cannot realistically be expected to defeat well-flown Flankers in combat."

-Dr. Andrew Davies is ASPI's Operations and Capability Program Director, 'The generation gap: Australia and the Super Hornet', 13 February 2007-

The Super Hornet is a Super Failure

By JAY A. STOUT
The Virginian-Pilot,
December 15, 1999

I am a fighter pilot. I love fighter aircraft. But even though my service --I am a Marine-- doesn't have a dog in the fight, it is difficult to watch the grotesquerie that is the procurement of the Navy's new strike-fighter, the F/A-18 E/F Super Hornet.

Billed as the Navy's strike-fighter of the future, the F/A-18 E/F is instead an expensive failure - a travesty of subterfuge and poor leadership. Intended to overcome any potential adversaries during the next 20 years, the aircraft is instead outperformed by a number of already operational aircraft - including the fighter it is scheduled to replace, the original F/A-18 Hornet.

The Super Hornet concept was spawned in 1992, in part, as a replacement for the 30 year-old A-6 Intruder medium bomber. Though it had provided yeoman service since the early 1960s, the A-6 was aging and on its way to retirement by the end of the Gulf War in 1991. The Navy earlier tried to develop a replacement during the 1980s - the A-12 - but bungled the project so badly that the whole mess was scrapped in 1991. The A-12 fiasco cost the taxpayers \$5 billion and cost the Navy what little reputation it had as a service that could wisely spend taxpayer dollars.

Nevertheless, the requirement for an A-6 replacement remains. Without an aircraft with a longer range and greater payload than the current F/A-18, the Navy lost much of its offensive punch. Consequently it turned to the original F/A-18 - a combat-proven performer, but a short-ranged light bomber when compared to the A-6. Still stinging from the A-12 debacle, the Navy tried to "put one over" on Congress by passing off a completely redesigned aircraft - the Super

Hornet - as simply a modification of the original Hornet.

The obfuscation worked. Many in Congress were fooled into believing that the new aircraft was just what the Navy told them it was - a modified Hornet. In fact, the new airplane is much larger - built that way to carry more fuel and bombs - is much different aerodynamically, has new engines and engine intakes and a completely reworked internal structure. In short, the Super Hornet and the original Hornet are two completely different aircraft despite their similar appearance.

Though the deception worked, the new aircraft - the Super Hornet - does not. Because it was never prototyped - at the Navy's insistence - its faults were not evident until production aircraft rolled out of the factory. Among the problems the aircraft experienced was the publicized phenomenon of "wing drop" - a spurious, uncommanded roll, which occurred in the heart of the aircraft's performance envelope. After a great deal of negative press, the Super Hornet team devised a "band-aid" fix that mitigated the problem at the expense of performance tradeoffs in other regimes of flight. Regardless, the redesigned wing is a mish-mash of aerodynamic compromises which does nothing well. And the Super Hornet's wing drop problem is minor compared to other shortfalls. First, the aircraft is slow -- slower than most fighters fielded since the early 1960s. In that one of the most oft-uttered maxims of the fighter pilot fraternity is that "Speed is Life", this deficiency is alarming.

But the Super Hornet's wheezing performance against the speed clock isn't its only flaw. If speed is indeed life, then maneuverability is the reason that life is worth living for the fighter pilot. In a dog fight, superior maneuverability allows a pilot to bring his weapons to bear against the enemy. With its heavy, aerodynamically

compromised airframe, and inadequate engines, the Super Hornet won't win many dogfights. Indeed, it can be outmaneuvered by nearly every front-line fighter fielded today.

"But the Super Hornet isn't just a fighter", its proponents will counter, "it is a bomber as well". True, the new aircraft carries more bombs than the current F/A-18 - but not dramatically more, or dramatically further. The engineering can be studied, but the laws of physics don't change for anyone - certainly not the Navy. From the beginning, the aircraft was incapable of doing what the Navy wanted. And they knew it.

The Navy doesn't appear to be worried about the performance shortfalls of the Super Hornet. The aircraft is supposed to be so full of technological wizardry that the enemy will be overwhelmed by its superior weapons. That is the same argument that was used prior to the Vietnam War. This logic fell flat when our large, expensive fighters - the most sophisticated in the world - started falling to peasants flying simple aircraft designed during the Korean conflict.

Further drawing into question the Navy's position that flight performance is secondary to the technological sophistication of the aircraft, are the Air Forces' specifications for its new - albeit expensive - fighter, the F-22. The Air Force has ensured that the F-22 has top-notch flight performance, as well as a weapons suite second to none. It truly has no rivals in the foreseeable future.

The Super Hornet's shortcomings have been borne out anecdotally. There are numerous stories, but one episode sums it up nicely. Said one crew member who flew a standard Hornet alongside new Super Hornets: "We outran them, we out-flew them, and we ran

them out of gas. I was embarrassed for those pilots". These shortcomings are tacitly acknowledged around the fleet where the aircraft is referred to as the "Super-Slow Hornet".

What about the rank-and-file Navy fliers? What are they told when they question the Super Hornet's shortcomings? The standard reply is, "Climb aboard, sit down, and shut up. This is our fighter, and you're going to make it work". Can there be any wondering at the widespread disgust with the Navy's leadership and the hemorrhaging exodus of its fliers?

Unfortunately, much of the damage has been done. Billions of dollars have been spent on the Super Hornet that could have been spent on maintaining or upgrading the Navy's current fleet of aircraft. Instead, unacceptable numbers of aircraft are sidelined for want of money to buy spare parts. Paradoxically, much of what the Navy wanted in the Super Hornet could have been obtained, at a fraction of the cost, by upgrading the current aircraft - what the Navy said it was going to do at the beginning of this mess.

Our military's aircraft acquisition program cannot afford all the proposed acquisitions. Some hard decisions will have to be made. The Super Hornet decision, at a savings of billions of dollars, should be an easy one".

Lt. Col. Jay Stout, a USMC fighter pilot, combat veteran, and the author of "Hornets Over Kuwait"

(Note: while the article is about the Block I Super Hornet, Australia's Block II variant has the same, above mentioned, aircraft performance shortfalls.)