Submission No 2

Review of the Defence Annual Report 2010 - 2011

Name: Mr Peter Goon

Organisation: Air Power Australia

"CHECKING THE DATA & THE FACTS; ....THEN TESTING THE EVIDENCE"

a.k.a.

TRUTH DERIVED FROM DATA & FACTS

VS

A TOTAL INDIFFERENCE TO WHAT IS REAL

AIR POWER AUSTRALIA
DATA SUBMISSION NO 1
TO
JSCFADT DEFENCE ANNUAL REPORT (2010/2011) REVIEW:
HEARING INTO THE JOINT STRIKE FIGHTER (JSF) PROGRAM
Dated 07 February 2012

PROLOGUE

Air Power Australia (APA) recently received a complete set of the end of calendar year Selective Acquisition Reports (SAR) to the US Congress on the JSF Program of Record, covering the period from 1996 to 2010.

All of these reports (not just the end of calendar year annuals), including the single Classified Section on the JSF Program's performance against the Low Observables Requirements (LORs), would have been available, on a real time basis over the past 12 years, to the New Air Combat Capability (NACC) Project Office. These would have been in addition to other official US Government reports (e.g. the annual Defence budget papers, GAO & CRS Reports), and reports from the JSF PEO, DOT&E and the various reviews of the JSF Program on which APA has relied in the performance of the various Independent Verification and Validation (IV&V) studies and analyses it has done on the JSF Program.

Receipt of the JSF SAR documents and the official JSF Program information made publicly available since has enabled APA to:

1. **Perform longitudinal performance assessments of the Cost, Schedule, Capability/Performance, Engineering Design, Project Management and overall health as well as viability of the JSF Program of Record in keeping with the Defence Instructions (DIs) and associated capability and risk management guidelines that existed at the time of the April 2002 MINSUB from the Defence Committee recommending, (1), Australia join the SDD Phase of the JSF Program and, (2), termination of the then-in-place Defence Capability Development Evaluation Processes.**

2. **Compare the results of these works with the advice provided to officials in the Defence Portfolio, successive Defence Ministers, Governments, and Parliaments as well as to the Australian people, over the same period, by Defence officials, the JSF Program and its principal contractor, Lockheed Martin, and the US Government, as well as the advice provided by Independent Domain Experts, including Air Power Australia.**

A summary of the results of these works forms the body of this submission, the purpose of which includes:

a. **Providing the Committee with some of the background as to why, as the data and the facts on its Costs, Schedules, Capability/Performance, Engineering Design, Project Management and overall health as well as Techno/Strategic viability show, the JSF is already a failed project; and,**

b. **Demonstrating the JSF poses the biggest threat to the defence and security of Australia to emerge in over five decades, if not ever.**

This Submission is in two (2) parts. Part 1 provides standalone graphical summaries of the results of the performance assessments, along with key observations on the source data and further questions to aid in testing the evidence provided. Common threads emerged in the latter and these have been included in each of the standalone graphical summaries so as not to weaken or lessen their importance and the impact they warrant.

Part 2 provides summary extracts of the source data; namely, the annual SAR documents as provided to the US Congress.

In preface and *a priori*, many important conclusions are able to be derived from the results of these performance assessments as well as the comparison of these results which are based on real data and facts with the advice received and provided from other quarters.

However, during the Peer Review of this submission, a poignant observation was made that bears repeating and the prominence that comes from by being part of the introduction to this submission, especially so, since it confirms the JSF epitomises materialisation of the risks that Dwight D Eisenhower warned his fellow Americans about in his last speech as the holder of the Office of the 34th POTUS:

> **"My all time favorite though, in the collage of standalone data packages in Part 1, is the first graphic on the various costing statements/estimates, the trends and, of course, the number of significant breaches that occurred well before the last Nunn-McCurdy.**
>
> **It's my favorite because, in cahoots with the SAR summary extracts in Part 2, it demonstrates:**
>
> 1. **The Congressional SAR reporting system did its job and provided the requisite data and facts to decision makers and those responsible; but,**
> 2. **These data were ignored by most people at all levels of governance; while,**
> 3. **These same people at all levels of governance were busy wrapping themselves around the axle of belief in the various piles of (as you call it) "*a total indifference to what is real*"; because,**
> 4. **These loads of (as I & everyone else calls it) *BULLSHIT* just happened to suit the agendas of those principally, if not solely, focused on corporate greed and its more evil sibling, political avarice.**
>
> **This is all yet another fine example of those in supposed public service deceiving themselves; then their employers – the government and their fellow citizens; and then, even worse, other governments around the Western world.**
>
> **The other fine examples of this, of course, are GFC MkI and, now, GFC MkII."**

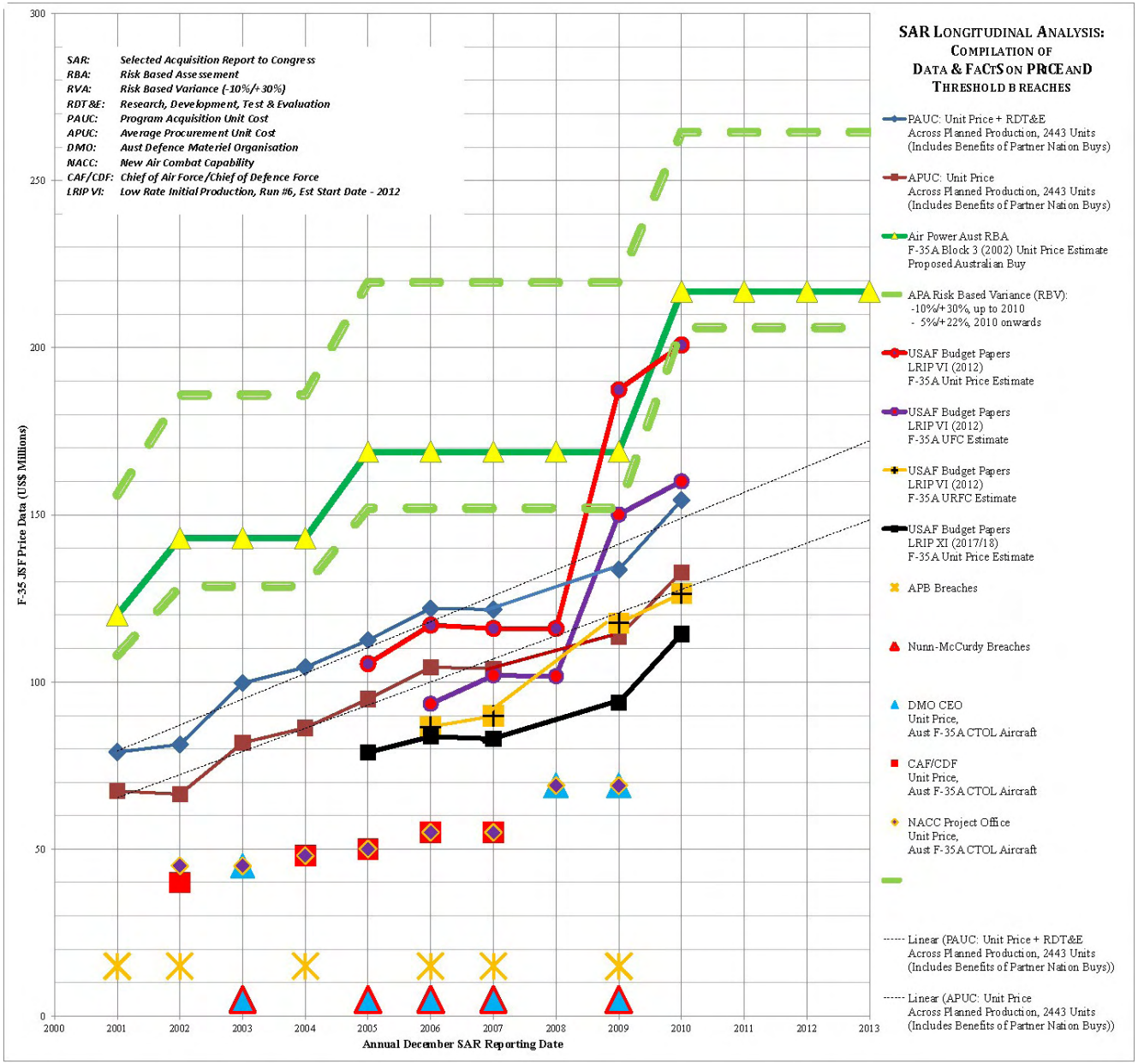
Just in case some may perceive the inclusion of such direct, plain-speaking language as somehow obscene or offensive, its use and its context apropos the JSF Program and how many have been misled by it and the marketing strategy that underpins it, have their roots in the following:

I In the monograph entitled, "*On Bullshit!*", Emeritus Professor in Philosophy at Princeton University, Prof Harry G Frankfurt, sets about explaining and defining what most people have experienced and, as a result, have some appreciation of, but few if any, truly understand. Prof Frankfurt defines it as "*a total indifference to what is real*" and a far bigger threat to society and human endeavour than lying. (*More.....*)

II In addition to the national heritage based traits of "*mateship*", "*a fair go*", "*strength in diversity*" and "*punching above our weight on the International stage*", Australians are also well noted and, as such, highly regarded for a number of other national characteristics; including:

1. **Saying things the way they are – i.e. "*plain speaking*" as many of our Nation's leaders have done and, no doubt, will do so in the future;**
2. **An innate ability to think and act critically as well as laterally – i.e. "*innovation and thinking outside the box*"; and,**
3. **A rabid intolerance of bullshit, as well as the artisans of this now far too commonplace artifice.**

PART I



GRAPHICAL OVERVIEW OF SUMMARIES

(Compared with advice to Defence Portfolio senior officials, successive Defence Ministers, Governments/Oppositions, and Australian Parliaments)

"There are many costs but only one price; being the total amount paid at the time you buy what is needed to meet the requirement."

CEO DMO, Dr Stephen Gumley, AO – 2007/08

Key Observations on the Data & Facts:

Defence advice on unit price always much less than USAF LRIP XI price estimates.

Far less than APUC (Est) across whole program.

Even less than official URFC (Est) for LRIP XI.

Breaches prior to 2009 not reported by Defence.

Some Questions for Testing the Evidence:

Have senior officials of the Defence Portfolio been misled by Lockheed Martin marketing?

In turn, have they misled themselves, successive Parliaments and the Australian people?

Is such marketing really THANA marketing?

How/Why have APA assessments been so accurate?

Why have APA advisories been ignored by all levels of governance of the JSF Program?

Data Sources: US DoD SAR Reports to US Congress, GAO, CRS, Air Power Australia, PGAA

UNCLASSIFIED

Exhibit P-40, Budget Item Justification — Date: February 2006

Appropriation (Treasury) Code/CC/BA/BSA/Item Control Number: **Aircraft Procurement, Air Force, Budget Activity 01, Combat Aircraft, Item No. 01**

P-1 Line Item Nomenclature: **Joint Strike Fighter Squadrons**

Program Element for Code B Items: N/A — Other Related Program Elements: 0604800F

	ID Code	Prior Years	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Comp	Total
Proc Qty	A				5	8	15	20	31	TBD	TBD
Cost ($ M)					869.704	1139.921	1775.000	2046.514	2779.028	TBD	TBD
Advance Proc Cost ($ M)				118.405	145.310	164.142	195.429	331.672	579.035	TBD	TBD
Weapon System Cost ($ M)		0.000	0.000	118.405	1015.014	1304.063	1970.429	2378.186	3358.063	TBD	TBD
Initial Spares ($ M)				0.000	98.084	102.232	186.308	190.313	273.210	TBD	TBD
Total Proc Cost ($ M)		0.000	0.000	118.405	1113.098	1406.295	2156.737	2568.499	3631.273	TBD	TBD
Flyaway Unit Cost ($ M)				0.000	176.250	140.115	104.498	92.466	86.735	TBD	TBD
Wpn Sys Unit Cost ($ M)				0.000	222.544	175.787	143.782	128.425	117.138	TBD	TBD

Description

The Joint Strike Fighter program will develop and field a family of aircraft that meets the needs of the USN, USAF, and USMC, and allies, with optimum commonality among the variants to minimize life cycle costs. Service Acquisition Executive (SAE) authority alternates between the Department of the Navy and the Department of the Air Force and currently resides with the Air Force. The production cost and quantities are interdependent due to one manufacturer for the program. The USN procurement begins in FY08; advance procurement begins in FY07.

Note the disparity...

FY08 BUDGET PROPOSAL
February 2007

FY	QTY	WSUC (US$ M)
07	2	285.740
08	6	236.951
09	8	224.574
10	12	194.556
11	24	138.137
12	42	108.464
13	48	100.969

Australian Department of Defence Advice on Cost of Joint Strike Fighter

Senate Estimates Hearing, Canberra - Wednesday 01 November 2006: Hansard Pages 50 and 93

Senator MARK BISHOP—I see. Air Commodore, are you saying that, on the 2002 figure of $47 million, at today's date we could anticipate two further increases of five per cent plus 10 per cent, or one further increase of 10 per cent?

Air Cdre Harvey—The Australian **price** has always been in the order of 10 per cent. Based on our expected acquisition schedule, we expect it to be approximately 10 per cent higher than the overall fleet average. Our current estimate is in the order of approximately **$US55 million** average for our aircraft, depending on exactly when we buy them and at what acquisition rate, taking into account those increases.

Air Chief Marshal Houston—Before you finalise the proceedings, Mr Chairman, could I get Air Commodore Harvey to read something into the Hansard?

Air Cdre Harvey—In response to Senator Bishop's earlier question, we went through some of the machinations of how the JSF price was calculated. The key point I wanted to make was that there has been **no change in our estimated price** since the last time we addressed the committee. The dollar estimate I gave was in current 2006 US dollars. So, to clarify it for the record, there has been no change in that **estimated price.**

P-1 Shopping List Item No. 01 — **Budget Item Justification Exhibit P-40, page 1 of 7**

UNCLASSIFIED PAGE 1 - 1

"In matters of defence and national security, the Government relies upon the advice of the CDF."

PMs & DMs of successive Aust Govts, 2000 to Present

Key Observations on the Data & Facts:

Exhibit P-40 shows WSUC equates to PUC i.e.: $3,631.273M for 31 CTOL aircraft = $117.138M.

US commitments to buy started falling circa 2007.

US APUC started to rise markedly circa 2007, on.

Aust. price '**US$55 million**' has 10% contingency.

Even if in CY06$s, still less than half of true PUC.

As expected, figures in US Budget Papers align with those in various reports to the US Congress.

No evidence of then Air Commodore John Harvey or CDF or any Defence Portfolio officials knew of any of these data in the US Budget Papers.
In fact, the data shows they didn't know.

Some Questions for Testing the Evidence:

Where did the Aust. Price figure come from?

Who is responsible/accountable for this figure?

Did responsible/accountable persons know about these data?

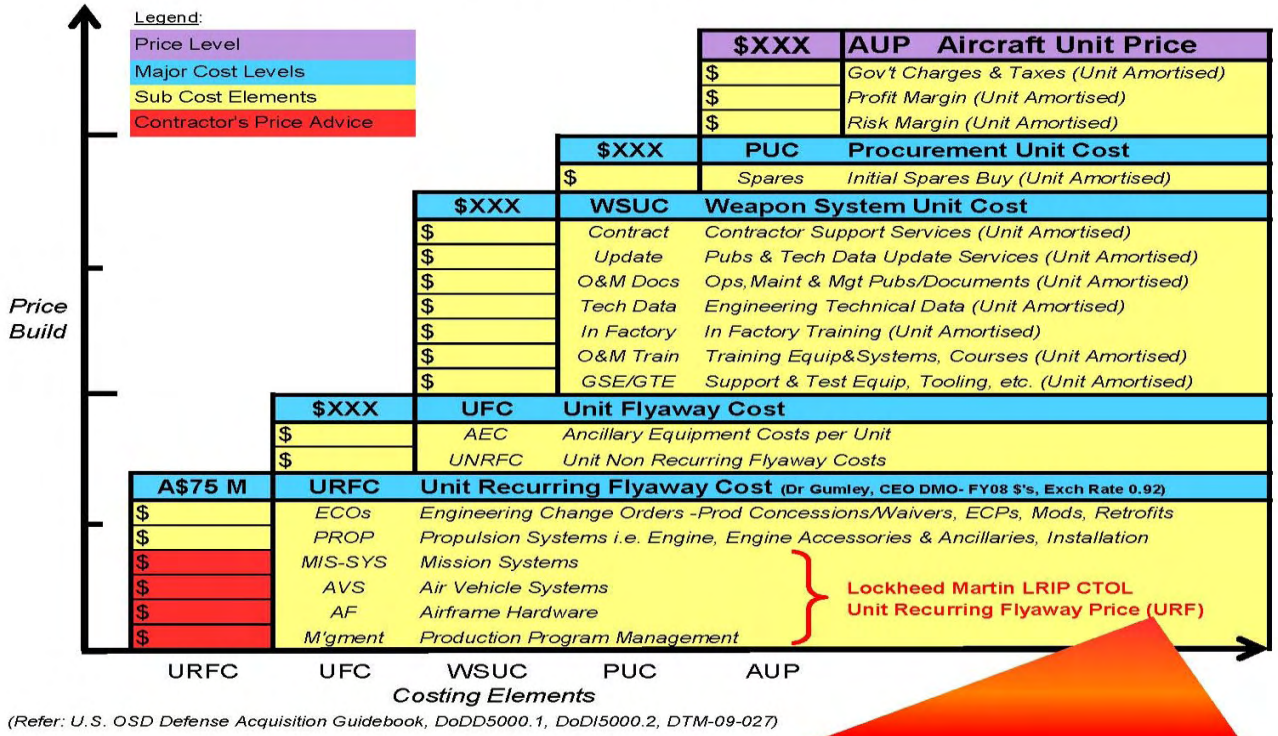
If they did, then why the disparity?

If they didn't, then why didn't they know?

Why didn't they seek advice from APA who did know and had advised, accordingly, as this graphic summary demonstrates?

Data Sources: US DoD SAR Reports to US Congress, GAO, CRS, Air Power Australia, PGAA

PRICE BUILD DIAGRAM FOR JSF F-35A CTOL AIRCRAFT

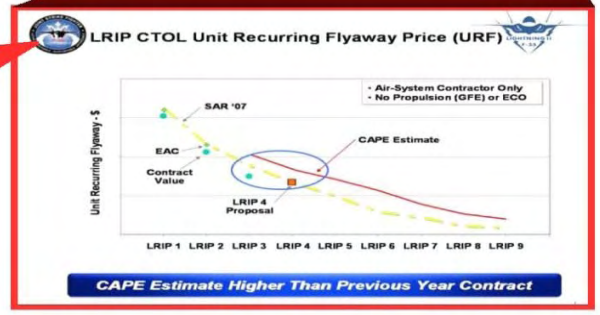


(Refer: U.S. OSD Defense Acquisition Guidebook, DoDD5000.1, DoDI5000.2, DTM-09-027)

"We would not want to be seen to be misleading anyone about the numbers we quote. In previous testimony we talked about the five or six different levels of price. When we just now quoted these figures we were talking about the cheapest possible price, which is the recurring fly-away price for a CTOL aircraft. Other people will talk about the average procurement cost, which includes the amortised R&D in engineering, and that is significantly higher."

CEO of the DMO, Testimony before the JSCFADT, 30 March 2010

Average Procurement Unit Cost does not include RDT&E!



". . .a total indifference to what is real!"

"I get down on my hands and knees every morning and thank God for Dr Steve Gumley."

Defence Minister, the Hon Dr Nelson, 2007

Key Observations on the Data & Facts:

Unit price figures provided to the Aust Parliament and the Aust people only a small component of the overall unit price.

'**Component Pricing**' (a.k.a. 'Deceptive Component Pricing') is unacceptable if not illegal in most Western nations, including Australia. (Refer submissions to ACCC et al)

Circa 2007, the term '**unit recurring flyaway cost**' (URFC) was changed into, **URF Price** which, specifically, did not include costs for items such as the engine or Engineering Change Orders (ECO).

Data demonstrates CEO DMO and other Defence Portfolio officials were, at best, confused by if not unaware of what these costing terms mean.

Some Questions for Testing the Evidence:

Why did CEO DMO adopt the term "recurring fly-away price" and claim APUC includes RDT&E costs?

How did Defence/DMO officials fail to see LM data did not include costs for items like engines & ECOs?

Why were the data and advisories, such as this graphic summary along with the supporting information, from the independent experts at Air Power Australia ignored?

Data Sources: US DoD SAR Reports to US Congress, GAO, CRS, Air Power Australia, PGAA

COMPARISON BETWEEN US GAO DATA (MARCH 2011) & RESULTS OF APA ANALYSES (CIRCA 2006/07) AS ADVISED TO SENIOR DEFENCE PORTFOLIO OFFICIALS

Addendum to GAO-11-450T: Appendix I - Changes in Reported JSF Program Cost, Quantities, and Deliveries

	Oct 2001 (SDD start)	Dec 2002 (Reduced Navy Buy)	Dec 2003 (2004 replan)	Mar 2007 (approved baseline)	Apr 2010 (initial program restructure)	Jun 2010 (Nunn-McCurdy)	APA Estimates in 2006/07 for Metrics in 2012
Expected quantities							
Development quantities	14	14	14	15	14	14	27
Procurement quantities (U.S. only)	2,852	2,443	2,443	2,443	2,443	2,443	2,430
Total quantities	**2,866**	**2,457**	**2,457**	**2,458**	**2,457**	**2,457**	**2,457**
Cost estimates (then-year dollars in billions)							
Development	$34.4	$34.4	$44.8	$44.8	$50.2	$51.8	$59.4
Procurement	$196.6	$165.1	$199.8	$231.7	$277.5	$325.1	$329.5
Military construction	$2.0	$0.2	$0.2	$2.0	$0.6	$5.6	Not Included
Total program acquisition	**$233.0**	**$199.7**	**$244.8**	**$278.5**	**$328.3**	**$382.5**	$388.9 RBV -10%/+30%
Air Power Australia 2006/07 Estimates of Additional RDT&E (SDD) Funding (Other Sources)							
SBIR/STTR, DARPA, individual Services RDT&E & other program budgets:				$2.6	$2.6	$2.6	$2.6
B/F PSFD funding:				$7.5	$7.5	$7.5	$7.5
Optimistic estimates:				$1.2	$1.2	$1.2	$1.2
Total JSF Program Funding*	$233.0	$199.7	$244.8	$289.8	$339.6	$393.8	$400.2 RBV -10%/+30%
*Does not include US DoD/Govt overheads/indirect costs or those of International Partner Nations and their Industrial Bases @ WAG Estimate = US$21 Bn							
Unit cost estimates (then-year dollars in millions)							
Program acquisition	$81		$100	$113	$134	$156	$163 to $212
Average procurement	$69		$82	$95	$114	$133	$136 to $176
Estimated delivery and production dates							
First operational aircraft delivery	2008	2008	2009	2010	2010	2010	2017 (Block 3)
Initial operational capability	2010-2012	2010-2012	2012-2013	2012-2015	2012-2016	TBD	2020 (Block 3)
Full-rate production	2012	2012	2013	2013	2016	2016	2019 (Block 3)

Source: GAO Analysis, US DoD Data and Air Power Australia Risk Based Cost/Price Estimation Model Vers2006_07
RBV = Risk Based Variance
Block 3 refers to aircraft configuration and associated capabilities as defined in 2002/03 as the Block 3 Capability Configuration, with fully certificated weapons

JSF COSTING HISTORY

Cost Metric	*Lockheed Martin Marketing Claims: December 2001 to December 2003*	*Air Power Australia (APA) Cost Modelling Version 2006/07*	*US Govt Cost Figures as at December 2010*
F-35A JSF Unit Price	**US$ 37 Million "..about $ 40 Million per aircraft"** Block 3 Configuration as defined in 2002/03, Refer JSF Briefing, Canberra, Aust – 20 Aug 02 www.defence.gov.au/media/2002/210802.doc	**US$ 168.8 Million** Risk Based Variance: -10%/+30% for Block 3 Configuration as defined in 2002/03. Estimate of Average Unit Price across FY2012_14 Buy	**US$ 140.6 Million** Block 1 Configuration, FY2014 Buy, Refer Exhibit P-40, POTUS Budget Proposal, FY2012
JSF Acquisition Program Budget (APB)	**US$ 199.7 Billion** Adjusted for 409 less JSF's for the US Navy. Refer Dec 01 & Dec 02 Selected Acquisition Reports (SARs)	**US$ 388.9 Billion** Risk Based Variance: -10%/+30% for Block 3 Configuration as defined in 2002/03 and in TY$s	**US$ 379.2 Billion** US$ 382.4 Billion in June 2010 (post Nunn-McCurdy Breach)
F-35A JSF O&S Costs relative to F-16C O&S Costs	**"...the cost of maintaining the JSF will be 50% less than Legacy airplanes."** LM Rep statement at JSF Briefing, Canberra, Aust – 20Aug02 www.defence.gov.au/media/2002/210802.doc	**1.5 times the O&S Costs of F-16C/D** **(1.6 to 1.7 times the O&S Costs of F-16C)**	**1.5 times the O&S Costs of F-16C** Refer Page 53 of JSF SAR to US Congress dated 31 Dec 10
JSF Program Total Operating Cost Budget	**US$ 130.1 Bn** BY$s (2002) **US$ 332.0 Bn** TY$s Adjusted for 409 fewer JSF's for the US Navy	**US$ 472.7 Bn** BY$s (2002) **US$ 1,187.7 Bn** TY$s Risk Based Variance: -8%/+22%	**US$ 443.0 Bn** BY$s (2002) **US$ 1,093.9 Bn** TY$s Based on total buy of 2,443 JSF aircraft as per Page 53 of JSF SAR to US Congress dated 31 Dec 10

Data Sources: LM FWD, US Govt, GAO, ADO, Air Power Australia

"Good management is all about checking the data and facts . . .then testing the evidence."
CEO DMO, Dr S Gumley, AO circa 2004

Key Observations on the Data & Facts:

Data shows JSF Program to be an "*Outlier*" of unprecedented disproportions, with growths in cost & schedule by far the largest ever seen.

Such traits and trends were obvious in 2005 at occurrence of second Nunn-McCurdy Breach.

Increases in cost & schedule in parallel with '*dumbing down*' of Block 3 capabilities to "Threshold" levels with others slipped to right.

Some Questions for Testing the Evidence:

When did Defence Portfolio officials first detect these traits and trends?

Were there any Risk Management Plans put in place at the time?

What were these plans?

Why did such plans not include advice to the Parliament?

If there were such plans, why did they fail?

Why were the data and advisories provided by Air Power Australia, including this graphic summary with explanatory supporting and quite detailed information, ignored?

EVEN UNDER NEW JSF PEO/JPO MANAGEMENT, BEHAVIOURS & ATTITUDES OF PAST CONTINUE...

F-35 JSF O&S Cost Estimates SAR Comparison: Dec10 vs Dec 09

A. Why are dual seat F-16D costs compared with single seat F-35A?

F-35 December 31, 2010 SAR

Operating and Support Cost

Assumptions and Ground Rules

The Department's Cost Analysis and Program Evaluation (CAPE) office is in the process of updating the Operating and Support (O&S) cost estimate for the Milestone B review, currently scheduled for May 2011. The F-35 family of highly common aircraft variants will replace or augment four current aircraft: F-16, A-10, F/A-18C/D, and AV-8B. The F-35 O&S estimate is based on F-18C, F-16C, and AV-8B history, when F-35 specific data is not available. F-35 O&S costs shown in comparison with the antecedent system reflect cost-per-flying-hour for the F-35 Conventional Takeoff and Landing (CTOL) variant only. The CTOL variant will make up the majority of the F-35 aircraft DoD buy, 1,763 of the 2,443 total. The O&S differences between F-35 CTOL and F-16 are representative of the comparisons across legacy fleets.

F-16 does not report certain cost elements such as Support Equipment Replacement, Modifications, and Indirect costs in their Operational Cost per Flying Hour. These costs have been removed from the F-35A cost per flight hour to better align with the antecedent program. F-35 varies from other legacy platforms that we fully fund the cost of supporting the training centers, training devices at the operational sites, and Autonomic Logistics Information System (ALIS) with program funds.

F-35 CTOL costs reflect 24-aircraft squadrons operating at 300 flying hours per aircraft per year. The F-16 costs have been developed in a joint effort with the F-35 Program Office and the Air Force Cost Analysis Agency. F-35 "Cost per Flying Hour" includes various cost categories that are not included in the F-16 estimate. Total O&S Cost ($ in Millions) below reflects total O&S costs for all three U.S. variants based on an estimated 8,000 hour service life and predicted attrition and usage rates, and are not a simple extrapolation of CTOL costs shown in the upper table. A comparable number for antecedent systems is not available.

Costs BY2002 $K

Cost Element	F-35 Cost per Flying Hour ($)	F-16C/D Cost per Flying Hour ($)
Unit-Level Manpower	4.605	5.534
Unit Operations	2.219	2.171
Maintenance	7.627	3.778
Sustaining Support	1.820	0.431
Continuing System Improvements	0.154	0.217
Indirect Support	--	1.335
Other	--	--
Total Unitized Cost (Base Year 2002 $)	16.425	13.466

Total O&S Costs $M	F-35	F-16C/D
Base Year	420322.2	--
Then Year	1005342.0	--

B. Where/what are the fuel & consumables cost estimates?

F-35 December 31, 2009 SAR

Operating and Support Cost

Assumptions and Ground Rules

The F-35 family of highly common aircraft variants will replace or augment four current aircraft: F-16, A-10, F/A-18C/D, and AV-8B.

Where JSF specific data is not yet available, the F-35 O&S estimate is based on F-18C, F-16C, and AV-8B history.

The cost per Flying Hour ($ in Thousands) comparison shown below reflects the F-35 Conventional Takeoff and Landing (CTOL) variant only. The CTOL variant will comprise the majority of the F-35 aircraft DoD buy, i.e., 1,763 of the 2,443 total quantity. The O&S differences between F-35 CTOL and F-16 are representative of the comparisons across legacy fleets. Since F-16 does not report certain cost elements (e.g., Support Equipment Replacement, Modifications, and Indirect costs), these are excluded from the below F-35A cost per flight estimate hour to better align with the antecedent program. The below F-35A estimate does include the cost of supporting the training centers, training devices at the operational sites, and Autonomic Logistics Information System (ALIS); legacy programs do not include these cost categories. F-35 CTOL costs reflect 24-aircraft squadrons operating at 300 flying hours per aircraft per year. The F-16 costs have been developed in a joint effort with the F-35 Program Office and the Air Force Cost Analysis Agency.

The total O&S Cost ($ in Millions) shown below reflects total O&S costs, to include all categories, for all three US variants based on an estimated 8,000 hour service life and predicted attrition and usage rates, and are not a simple extrapolation of CTOL costs shown in the upper table. A comparable number for antecedent systems is not available.

Costs BY2002 $K

Cost Element	JSF Cost per Flying Hour ($)	F-16C/D Cost per Flying Hour ($)
Mission Pay & Allowance	4.672	5.249
Unit Level Consumption	7.880	6.369
Intermediate Maintenance	0.000	0.000
Depot Maintenance	0.762	0.980
Contractor Support	0.389	0.130
Sustaining Support	1.487	0.463
Indirect	--	--
Other	--	--
Total Unitized Cost (Base Year 2002 $)	15.190	13.191

Total O&S Costs $M	JSF	F-16C/D
Base Year	370844.1	--
Then Year	915761.4	--

1. Why use dual place F-16D crew costs to compare with single seat F-35A?
2. Are these F-35 Program supported costs unitised into the as reported F-35A Cost per Flying Hour estimate?
3. Why the change from 'Mission Pay & Allowances' to more generic term?
4. Since significant costs for JSF, why aren't Modifications (e.g. Upgrades, etc.) reported?
5. Why are costs included for "Indirect Support" under the F-16C/D Cost per Flying Hour when "F-16 does not report ....Indirect costs in their Operational Cost per Flying Hour"?
6. Why does the 2009 SAR specifically state "below F-35A estimate does include" these costs when the 2010 SAR simply claims such costs are funded by the JSF Program?

AIRCRAFT ARE NOT DEVELOPED, PROCURED NOR PAID FOR WITH PERCENTAGE POINTS

100% Overrun Equates to ~**US$200 Billion**

That's over 600,000 Man Years of Professional Engineering Effort, including Support Overhead + Infrastructure Costs

JSF PROGRAM SELECTED ACQUISITION REPORTS (SARS) TO THE US CONGRESS: APB SUMMARY

The table presents the history of some quite amazing accounting which appears to still be a work in progress. Both the BY & TY Current Estimates over the period tell a very sorry tale when held up against the many claims made over the same period and the independent risk based estimates of IV&V experts.

	BY2002 $Millions				TY $Millions			
SAR/ Source	SAR Baseline Plan Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Plan Estimate	Current APB Development Objective	Current Estimate	Notes
Dec 2001	21,265.3	32,300.0	35,600.0	177,530.6	24,800.0	34,400.0	226,458.3	1
Dec 2002	177,100.0	177,100.0	N/A	**161,543.9**	233,000.0	233,000.0	**199,736.4**	2
Dec 2003	177,100.0	193,100.0	N/A	191,632.9	233,000.0	246,700.0	244,834.3	3
Dec 2004	177,100.0	193,100.0	N/A	192,519.0	233,000.0	246,700.0	256,617.6	
Dec 2005	177,100.0	193,100.0	N/A	201,729.6	233,000.0	246,700.0	276,458.9	
Dec 2006	177,100.0	212,580.8	N/A	209,401.6	233,000.0	278,535.5	299,824.1	4
Dec 2007	177,100.0	212,580.8	N/A	210,014.5	233,000.0	278,535.5	298,842.8	5
Dec 2008	No SAR							
Dec 2009	177,100.0	212,580.8	N/A	238,598.6	233,000.0	278,535.5	328,252.9	
Jun 2010	177,100.0	212,580.8	N/A	238,598.6	233,000.0	278,535.5	328,252.9	
Nunn-McCurdy 01 Jun 2010				275,886.8			382,426.1	6, 7
Dec 2010	177,100.0	N/A	N/A	**270,599.7**	233,000.0	N/A	**379,392.8**	
				168%			**190%**	

Notes:

1. Includes 409 additional JSF aircraft for the US Navy.
2. Does not include the 409 Navy JSF aircraft removed from the program under the direction of the Hon Gordon England.
3. JSF SAR Dec 03 refers to an Approved acquisition program baseline (APB) dated March 17, **2004**
4. JSF SAR Dec 06 refers to an Approved acquisition program baseline (APB) dated March 30, **2007**
5. Dec 07: F-35 procurement cost reflects DoD cost only, but assumes the quantity benefits of 730 International Partner aircraft in accordance with the signed Production Sustainment and Follow-on Development Memorandum of Understanding.
6. Nunn-McCurdy JSF Re-Certification Letter dated 01 June 2010, signed by the Hon Ashton Carter
7. These figures are "*at a confidence level of approximately 50%*".

"Cost is a consequence, not a cause. It is neither an "independent variable" nor a measure that is not open to abuse."

Principal Analyst and Head of T&E, APA

In 2001, the JSF Program of Record had US$34.4 Billion allocated for the 'Development' (SDD) Phase and US$196.6 Billion for the 'Procurement' Phase (not including MILCON).

By end of 2002, the US buy had been reduced by 409 units resulting in US$34.4 Billion for SDD and US$165.1 Billion for Procurement (US buys only; but having '*economy of scale*' benefits from the planned partner nation buys).

Today, these figures look more like US$64.4 Billion for SDD and over US$340.6 Billion for Procurement, the latter being a conservative number.

All these figures are in TY Dollars, using conservative economic factors (i.e. for inflation and exchange rates).

Therefore, the increases to date, since the end of 2002 with re-baselining of the program of record at the lower number of production units, have been:

SDD:	+US$ 30.0 Billion
Procurement:	+US$175.5 Billion
APB Total:	+US$205.5 Billion

In the economic climate of the past decade or so, a charge out rate per unit man hour of US$200 would buy high quality Professional Engineering man hours, including the costs for direct & indirect overheads (e.g. management, corporate, etc.) and infrastructure. In other words, this figure of US$200/mnhr represents the fully burdened man hour rate for the provision under contract of high quality Professional Engineering resources.

As a first order parametric comparison, applying the quite reasonable assumption that many if not most of the costs other than those for human resources (e.g. material costs) were covered under the original Program of Record estimates, converting only these cost overrun figures into the allocation of Professional Engineering resources results in the following:

Program Phase	TY$Cost.Overrun(2012)	Equiv.ManYears
SDD:	+US$ 30.0 Billion	89,280 Man Years
Procurement:	+US$175.5 Billion	522,320 Man Years
APB Total:	+US$205.5 Billion	611,600 Man Years

The data in the SARs back this up as a first order approach for gaining an objective understanding both of the situation and any inherent issues/problems.

From these figures and the application of some other parametric relationships, a number of conclusions can be derived.

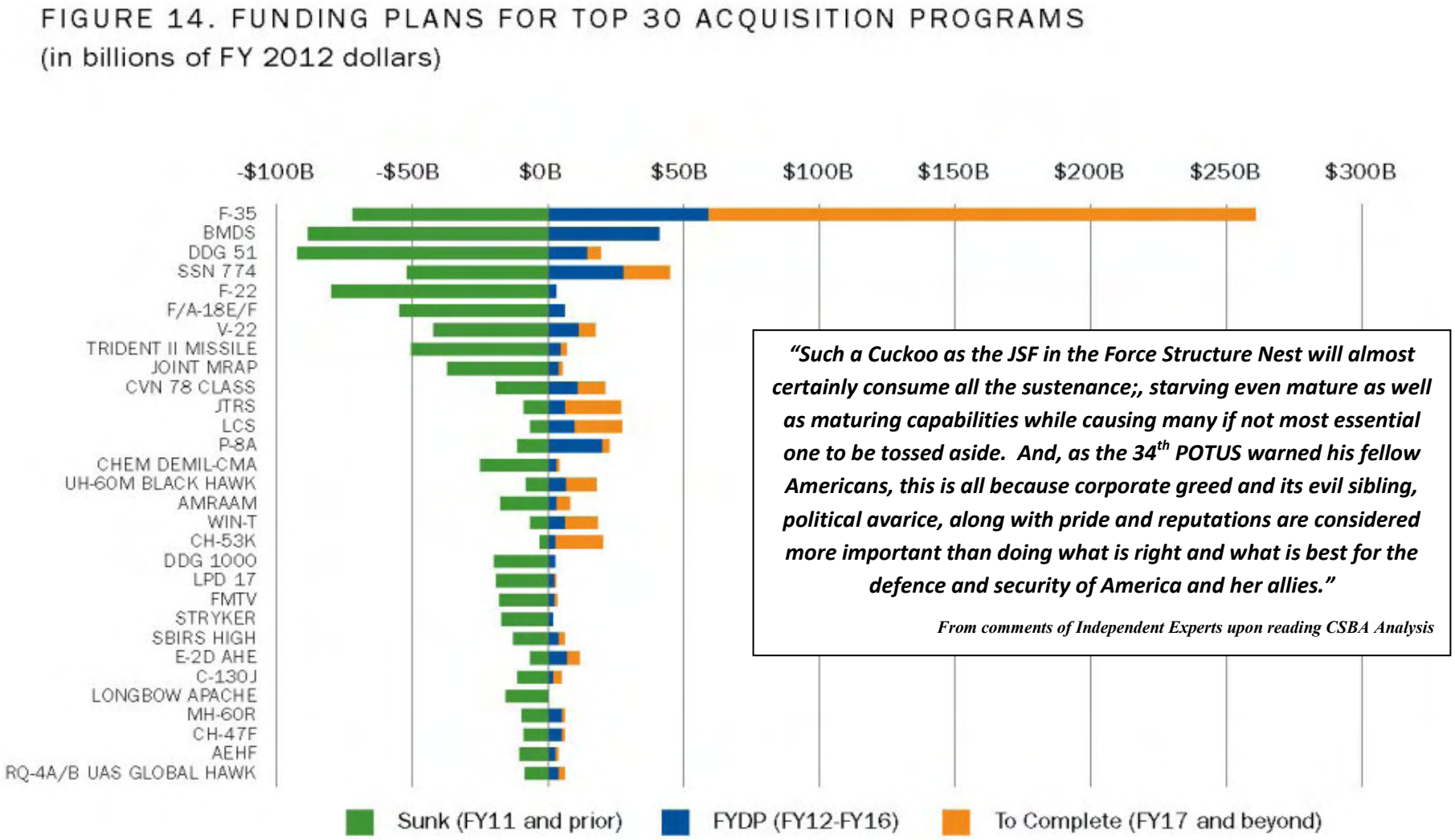
For instance, the current overrun in SDD would, in a program with, say, one thousand Engineers allocated to it along with integrity in management and diligence in the expenditure of resources, mean the schedule overrun would be around 90 years.

Clearly, this is not the case. Therefore, the first question to ask would be where all the funds that have been allocated to this overrun are actually going?

One of the advantages of this analytical approach is it puts expenditures in terms of the cause; namely, the allocation of resources, and thus removes the influences of economic factors like inflation and exchange rate which are often used to confabulate and confuse, particularly those whose expertise lies elsewhere as well as those "*who don't know what they don't know*".

This is an example of the standard Engineering approach to multi-variate problem solving; namely, holding certain variables constant or removing their influence entirely to enable the predictive analysis and derivation of results based on those variables that have causal influences and are, thus, important.

Cuckoo in the Force Structure Nests of America and Her Allies
Who Layed the Egg?



"Such a Cuckoo as the JSF in the Force Structure Nest will almost certainly consume all the sustenance;, starving even mature as well as maturing capabilities while causing many if not most essential one to be tossed aside. And, as the 34th POTUS warned his fellow Americans, this is all because corporate greed and its evil sibling, political avarice, along with pride and reputations are considered more important than doing what is right and what is best for the defence and security of America and her allies."

From comments of Independent Experts upon reading CSBA Analysis

Figure 14 from CSBA FY2012 Defense Budget Analysis, Todd Harrison et al

JSF PROGRAM: RISK ASSESSMENT SUMMARY TABLE

Joint Strike Fighter (JSF) Mantra KPP	Identified Risk (What if?)	Probability of Risk Arising	Outcome if Risk Arises	Assessed Level of Risk	Comments Issue 7.2 16 July 2010
JSF: "A Truly Fifth (5th) Generation Fighter"	JSF Turns Out Not to be a Fifth Generation Fighter	P = 1.0 REALITY	NUMEROUS & SEVERE INCLUDING: OVERMATCHED & UNCOMPETITIVE SEC ANTI-TRUST ASIC/ACCC TPA LIABILITIES	EXTREME LEVEL OF RISK MATERIALISED REAL ISSUE/ PROBLEM	See: Mr Secretary - Why Does the Pentagon Say the JSF is a 5th Generation Fighter . . Really?
Affordable	JSF is Not Affordable in Numbers Needed	P = 1.0 REALITY	>95% Increase in JSF Program Budget > 90% Increase in Unit Costs (PAUC & APUC)	EXTREME LEVEL OF RISK MATERIALISED REAL ISSUE/ PROBLEM	Already Massively Exceed the SEVERE Consequence Ratings of DMO and Defence Guidelines for **CATASTROPHIC** events: **>10% cost increase/ >12 months delay** See: F-35 JSF Program: When is "Affordability" Not?
Survivable	JSF is Not Survivable Against Reference Threats	ALMOST CERTAIN P = >0.9 (1)	SEVERE Loss of Air Superiority	EXTREME LEVEL OF RISK	For Reference Threats, see relevant papers and analyses via the linked buttons below. Loss of access to and control of Air/Sea/Land Gap
Lethal	JSF is Less Lethal than Reference Threats	ALMOST CERTAIN P = >0.9 (1)	SEVERE Loss of Air Superiority	EXTREME LEVEL OF RISK	For Reference Threats, see relevant papers and analyses via the linked buttons below. Loss of access to and control of Air/Sea/Land Gap
Supportable JSF O&S Costs to be < 90% of F-16C	High Costs for JSF O&S > F-16C Big Dependence on Foreign Companies	P = 1.0 REALITY	Unit O&S Costs now > 1.2 Times F-16C/D >175% Increase in Total O&S Budget Estimate	EXTREME LEVEL OF RISK MATERIALISED REAL ISSUE/ PROBLEM	Origins of Issue/Problem lie in: (1) Reliance on overly optimistic estimates from Contractor/US Govt; (2) Failure to understand cost structures; and, (3) DMO adopted TSPR (Total System Performance Responsibility) contracting models earlier this decade.

APA NOTAMS | SUKHOI | SAMS/IADS | REGION | WEAPONS | AIR POWER AUSTRALIA ANALYSES

(1) **Assessment of capabilities of the Russian T-50 PAK-FA; Upgrade of assessment of the Sukhoi Su-35S capabilities, particularly CLO and EWSP/ECM systems; and Upgrade of assessment of the S-300V/PMU1/PMU2, S-400 Triumf SAM systems has resulted in status upgrade.**

Legend for Assessed Level of Risk (in keeping with AS/NZS4360:2004 and ISO31000):

E	Extreme level of risk (Immediate action required by Oversight, Executive and Directing Governance levels, i.e. do not proceed with activity until this level of risk is reduced)
H	High level of risk (Executive Management attention required with Directing Governance level oversight)
M	Moderate level of risk (Able to be delegated to Implementation Management Level with ongoing Executive Management oversight)
L	Low level of risk (Able to be managed through routine procedures)
P = 1.0	Risk **MATERIALISED**; Consequences have or are happening, Failure to Manage Risk

Page 1 of 4

eMail Response from DMO CEO:

From: Gumley, Steve DR (Steve.Gumley@defence.gov.au)
Sent: Friday, November 20, 2009 8:04 AM
To: Peter Goon (the.firm@internode.on.net)
Subject: RE: JSF Program: Assessment of Top Level Programmatic Risks [sec=unclassified]

Mr Goon

The difficulty that I have with your analysis is that I don't agree with your risk assessment.

Specifically I am advising you that ***you are wrong.***

No arguments with the risk methodology, but that is only as good as the data with which it is populated.

****

Key Observations on the Data & Facts:

By 2009, if not before, three of the five Extreme Level Risks had already materialised.

Emergence of Reference Threats predicted back in 2000/02 have ensured the other two Extreme Level Risks have also materialised into real issues/problems.

Some Questions for Testing the Evidence:

Who has, at all times, been seeking "*what is right and what is best*" and, thus, provided data & advice that history has proven to be correct?

Why did Dr Steve Gumley ignore this advice, declaring its author (the messenger) to be wrong?

Why have those who have been shown to be wrong been the persons listened to by all levels of governance of the JSF Program while those who have been shown to be right all along have been ignored?

RISK ASSESSMENT IAW DMO RISK MANAGEMENT GUIDELINES: JSF PROGRAM

The following Australian Defence/DMO Risk Management Guidelines define the metrics for '*Severe*' (a.k.a. '*Catastrophic*') consequence ratings for each of the six nominated risk categories. Appended to this table is an assessment, at the upper programmatic level, of the JSF Program's performance, so far, measured against these consequence ratings.

Assessment of Consequence Ratings against Risk Categories						
Consequence	**Risk Categories**					
	Safety	**Performance**	**Supportability**	**Reputation**	**Schedule**	**Cost**
Severe (Catastrophic) ***Major*** *AS/NZS/ISO 31000:2009 (formerly AS/NZS 4360:2004) Risk Management Standard*	*Would cause loss of life.* *Would cause serious casualties resulting in the long-term physical impairment of personnel.*	*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 unsupportable under normal peacetime operations due to deficiencies in one or more fundamental inputs to capability. There are no known workarounds.*	*Defence attracts adverse media attention or a commission or inquiry is launched*	*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%.*
Assessment JSF Program Performance Against These Consequence Ratings						
JSF Program Marketing Claims 2002	"The JSF will be the safest, most affordable, survivable, lethal and supportable fighter, ever built."	"The JSF is a truly Fifth Generation fighter aircraft". "The four pillars of the JSF Program are: Affordability, Survivability, Lethality, and, Supportability" "The CV variant is outward to 700-plus nautical miles, the Air Force I think about 590, oh almost 700 as well, I'm sorry. So very significant range." - *Colonel Dwyer Dennis, US JSF Joint Program Office, Aug 2002*	"So that allows us to project that the O& S costs for this airplane will be 50 per cent less than the legacy airplanes, such as the F-16." – *David Scott, Lockheed Martin, Aug 2002*	"America and all the other nations would not be buying the JSF if it wasn't the best aircraft". AVM Ray Conroy, August 2001 to 2004 CAF Angus Houston, 2002 - 2010 Senator A. Ferguson, 2006 AVM John Harvey, 2001 - 2011	"You'll see first flight, which is 48 months into the program, so it's a little, about three years away right now. And then we have IOC - for the US Marine Corps in 2010, Air Force in 2011 and the Navy in 2012."- *Colonel Dwyer Dennis, US JSF Joint Program Office, Aug 2002* JSF SDD Phase finishes in 2010, after completion of Configuration Block 3 DT&E and IOT&E.	"Affordability is the cornerstone of the JSF Program" "The *F-35A* JSF will cost around 40 million dollars per aircraft."- *CAF Angus Houston, June 2002*
Present Day Situation/Metrics ***Five of the Six Categories of Risk have materialised – No longer 'Risks' but real Issues and real problems*** ***Sixth category of risk materialising will result in somebody making the ultimate sacrifice for the JSF Program.***	NAVAIR Assessment identified HIGH levels of risk in doing Pilot Training prior to completion of testing & certification of JSF Air Systems. Aero & Structural issues impeding envelope expansion. Non-compliance issues with handling qualities impeding envelope expansion. (MIL-F-8785) "JSF not on track to meet Operational Effectiveness and Operational Suitability Requirements." DOT&E, Jan 2011	See: Mr Secretary - Why Does the Pentagon Say the JSF is a 5th Generation Fighter , Really? and Summary of Upper Level Programmatic Risk Assessment – F-35 JSF Program: Assessment of Top Level Programmatic Risks	Current estimates put the F-35A JSF O&S costs at around 1.5 times the unit O&S costs of F-16C/D fleet, though likely more. To think a much larger aircraft, with over twice the fuel load, ~10 times the systems – many untested, with the maintenance needs of LO/VLO technologies; a big, heavy, hot and fuel hungry engine; and, around 1,000 times the software burden would have lower O&S costs than the F-16C defies belief, let alone common sense.	SWAT JET Mk I & II Multiple Nunn-McCurdy & APB Breaches TBR - Technical Baseline Review Standard Engineering & Management measures show JSF Program is a 'failed project'. "Sham 'Air Combat Review' was political ploy."- *Wikileaks Cables* 'Qui Tam' – False Claims Actions pending.	Current estimate has JSF SDD Phase around 8 years behind schedule. USAF IOC now expected in 2018, though most likely later.	JSF Program Budget blowout from Oct 2001 to Oct 2011 against approved program baseline (APB) for the production of 2,443 units, including economy of scale benefits from partner nation buys: **>US$200 Bn**
How Much the JSF Program Exceeds Severe (Catastrophic) Consequence Rating	**Various/ Multiple** Yet to materialise but even a 'Likely' probability of arising results in Extreme Levels of Risk	**Multiple** F-35A & C JSF will not be competitive. F-35B STOVL JSF not tactically or strategically viable	**1.9 to 3.0 times** 'Affordable Support' was defined as 80% of legacy, therefore JSF is not affordably supportable - QED	**Multiple** Avoidance versus Management of Reputation Risk has been the cornerstone of the JSF Program	**7 times** Less than 50% confidence level that this won't increase further CAPE Assessment 2010	**9 times** With less than 50% confidence level that this won't increase further CAPE Assessment 2010

Table 5: Severe Consequence Ratings for Each Identified Risk Category
(Page 8 of DMO Liability Risk Assessment Guidelines)
http://www.defence.gov.au/dmo/gc/Contracting/lrmp/LRA_Template.doc

"Risk Management: builds resilience into all aspects of work by managing risks that might prevent achievement of objectives while also providing flexibility to respond to unexpected threats and exploit opportunities. Good risk management enables a continuous improvement cycle.
Page 113 of Vol 2, DAR 2010/11

Key Observations on the Data & Facts:

Risk Analysis & Assessments done in accordance with DMO/Defence Risk Management Guidelines.

Though there have been inquiries & reviews, none have checked the data and the facts or have tested the evidence.

Reputation Risk and the mismanagement of same has dominated the whole JSF Program Risk Continuum.

"Catastrophic" is an understatement when describing JSF Program Risks and their effects on the JSF designs.

All identified/assessed Risks across all Risk Categories have materialised, far exceeding limits by many multiples.

Data shows total lack of any good Risk Management here.

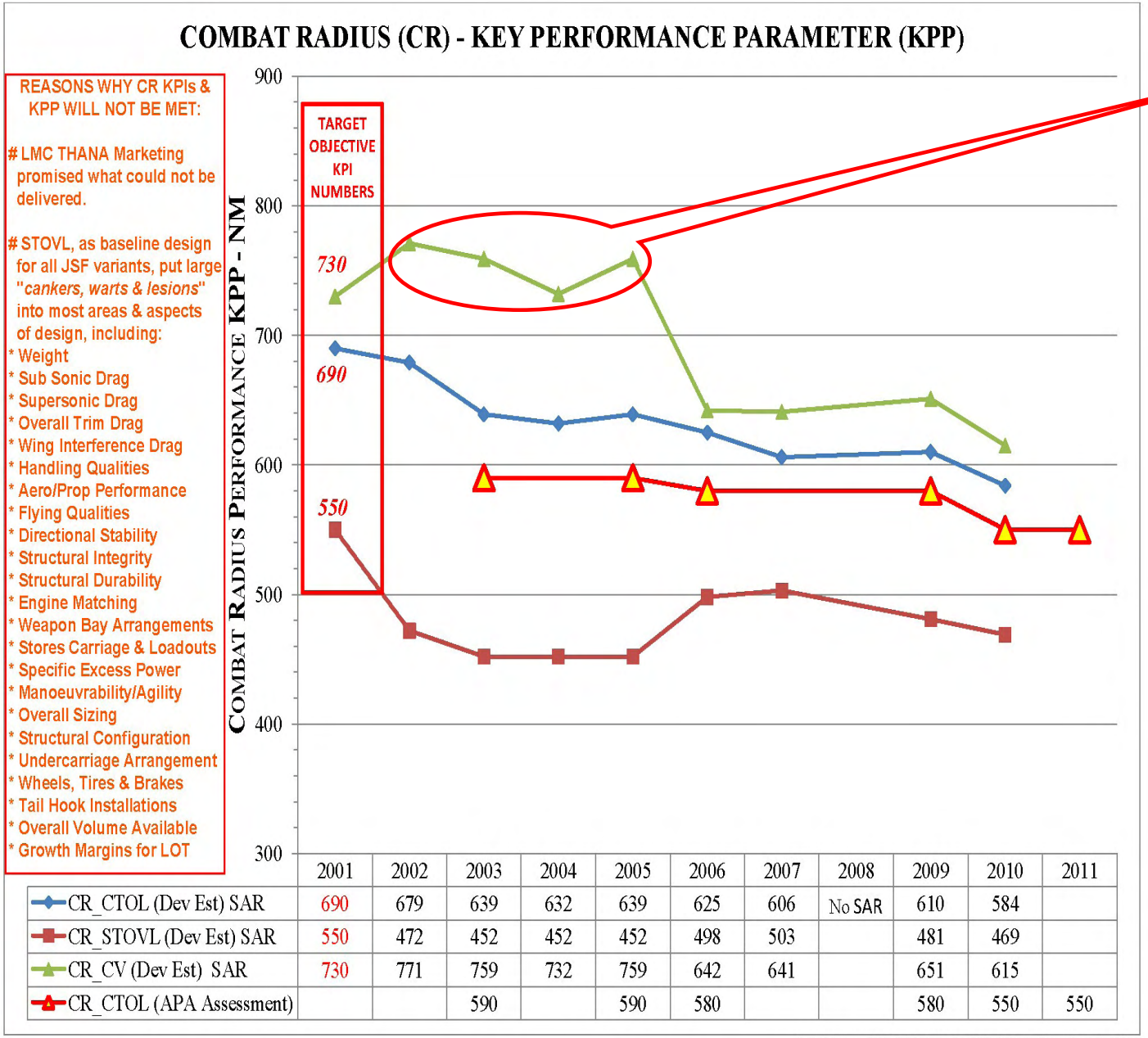
Some Questions for Testing the Evidence:

Has the Ministerially directed SCRAM Risk Assessment looked at all six (6) Risk Categories?

If not, why not?

What competencies/skills were allocated to SCRAM and what are the demonstrated track records of such resources?

Why were the data and advisories in relation to JSF Program Risks as provided by Air Power Australia (such as this graphic summary and its supporting information) ignored?



Data Sources: US DoD SAR Reports, GAO, CRS, Air Power Australia, PGAA

EXAMPLE OF THANA MARKETING

"The CV variant is outward to 700-plus nautical miles, the Air Force I think about 590,. . . . oh almost 700 as well, I'm sorry. So very significant range." -

Colonel Dwyer Dennis, US JSF JPO, Aug 2002
Also: -
AVM Ray Conroy, JSF Program Chief Negotiator
ACDRE John Harvey, NACC PO, 2002 - 2003

Key Observations on the Data & Facts:

COMBAT RADIUS (CR) marketed at **Target Objective Specification Level** in formative years of 2001 to 2004, and 2005 on back of CV, while actual performance was degrading.

But, CR Key Performance Parameter (KPP) was set at *minimum acceptable* **Threshold Level**.

COMBAT RADIUS (CR) KPP for CTOL F-35A JSF not achieved and Standard Risk Assessment shows will almost certainly not be met.

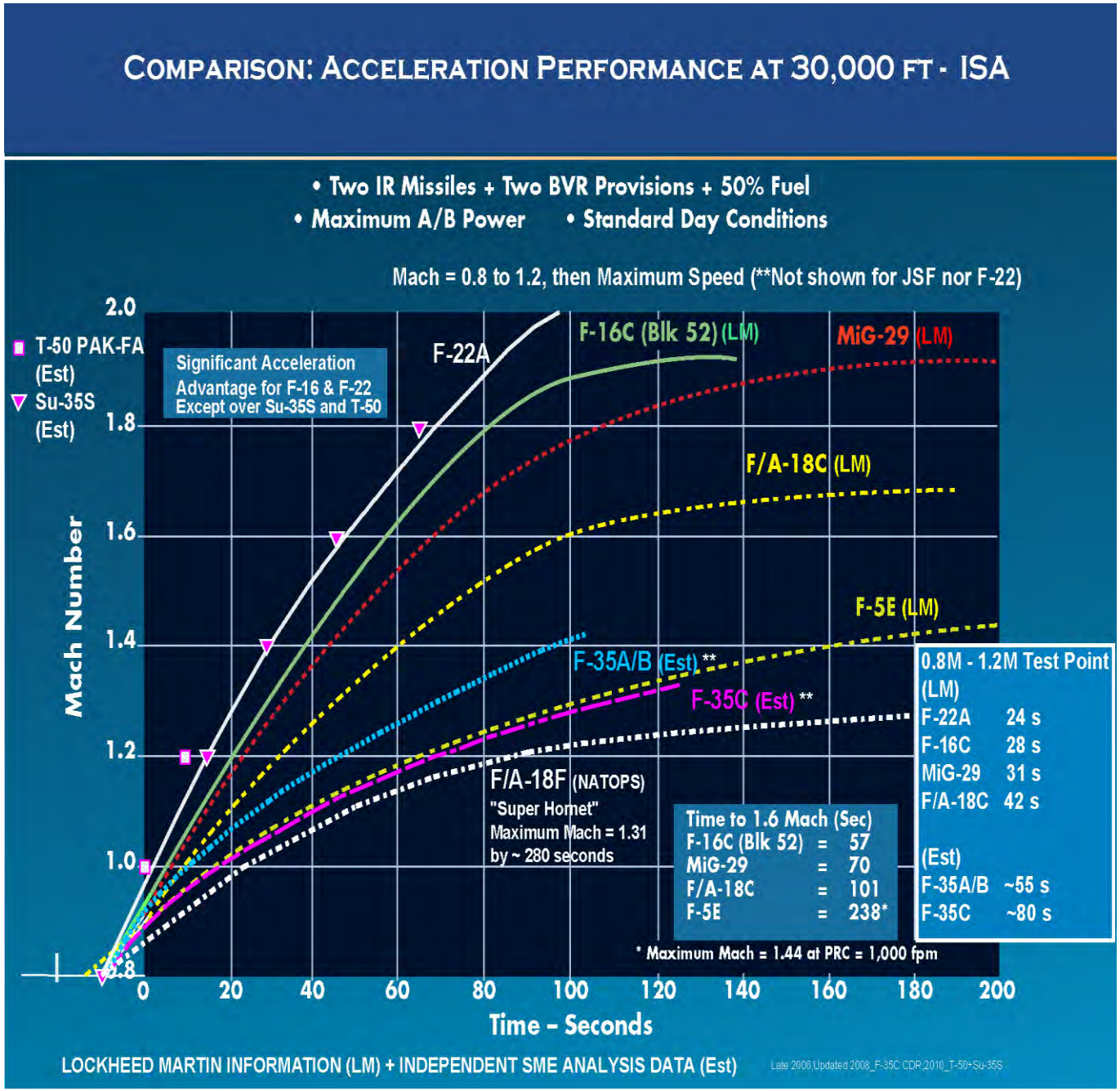
Some Questions for Testing the Evidence:

Why were successive Defence Ministers, Govts., Parliaments and the Australian People told other than the truth?

Where is Defences' analysis of this KPP and what does it show?

Why were the data and advisories provided by Air Power Australia in relation to JSF capabilities ignored?

Data Sources: US DoD SAR Reports to US Congress, GAO, CRS, Air Power Australia, PGAA



"The JSF will have comparable fighter performance to the aircraft it is intended to replace - F-16C and the F/A-18C."

Statement on JSF Fighter Performance, LM, 2001 to Present
JSF PEO, 2001 & since
Aust. NACC Project Office, 2001 & since
Aust. CDF. CAF, 2001 & since

Key Observations on the Data & Facts:

Level Flight Acceleration is a key metric of Fighter Performance.

"*Comparable*" appears to include "*when the aircraft to be replaced are laden down with external tanks to provide a comparable fuel load*".

F-22A Raptor is now the standard which Reference Threats such as the Sukhoi Su-35S, T-50 PAK-FA and, now, the Chengdu J-20 aim to match or better.

Some Questions for Testing the Evidence:

Why commit to aircraft that only have performance comparable, if not less, than those to be replaced?

Moreso when these legacy aircraft are in the '***transit configuration***', laden down with external fuel tanks?

Even moreso when this quite mediocre performance specification is not being met?

Why commit to aircraft that fail to satisfy the need of the "***Fighter Pilots' Holy Grail***"?

Why were the data and advisories provided by Air Power Australia on aircraft capabilities so consistently ignored?

Data Sources: US DoD SAR Reports to US Congress, GAO, CRS, Air Power Australia, PGAA

F-111 AND JSF PROGRAMS OF RECORD:
COMPARISON OF SOME CARDINAL PROGRAMMATIC METRICS

(1) PY : Year of Program (Contract Award = Baseline Zero)

Cardinal Metric	F-111 Program	PY(1)	JSF Program	PY(1)
Dem/Val Contracts Award Date	No Dem/Val		1996 (16Nov96)	-5
Specification	SOR-183		JSF-JORD	
Issue Date	1960 (14Jun60)	-2	2000 (14Mar00)	-1.6
Contract Award Date	1962 24Nov62	0	2001(26Oct01)	0
Prime/Principal Contractor	GD/FWD		LMC/FWD	
Nos of Variants	3 (Initially)		3	
First Flight	1964 (21Dec64)	+2	2006 (15Dec06)	+5.1
No of RDT&E Flight Test Aircraft	18		14	
Delivery of First Production Aircraft	1967 (17Jul67)	+4.6	2010 (Est)	+9 (Est)
End of DT&E	-		2018 (Est) (Degraded 2002 Block 3)	+17 (Est)
End of IOT&E	-		2020 (Est) (Degraded 2002 Block 3)	+19 (Est)
IOC Declared	1967 (31Oct1967) @ Monthly Average of 56.7 FlyHrs/Acft	+4.9	2020 (Est) (Degraded 2002 Block 3)	+19 (Est)
First Operational Deployment	1968 (17Mar68)	+5.3	TBD	
Post IOC * Manufacturing Issues & Problems * Design Issues & Problems * Production Issues & Problems	4 years (1969 to 1973) delayed delivery to Aust. Sub-contractor build defects in D6ac steel primary structure. Innovative, acorn lease of F-4Es as interim.	+9.3	BACC (Super Hornets) already in buy – Cost: over $6Bn Compromise ^3 Design = Defects/Deficiencies, already being discovered. Build/Manufacturing Defects Almost Certain	+25+ (Est)
Contract Unit Price (No ECPs/ECOs)	US$5.95 M (Fixed Price)		UNKNOWN	
Australian Acquisition Budget Expenditure and Costs to Australia	AUD$310 M (Hansard, the Hon Jim Killen, 1980)		Planned: A$16 Bn Probable: A$22 Bn plus * BACC @ A$ 6.5 Bn * 20+ years PO Costs * 20 yrs Opportunity Costs * Loss of Air Superiority	

For Further Data and Information, see:

1. "From Controversy to Cutting Edge" by Mark Lax
2. F-111 Type Record, AAP 7214.001 (currently held in DMO Archives).

EXAMPLE OF THINKING & BELIEFS BASED ON "*A TOTAL INDIFFERENCE TO WHAT IS REAL*".

"There was a far worse program than the JSF – the F-111".

NACC Project Office, 2002 – 2011
Mr Mick Roche, USDM, 2000-2004
Dr Stephen Gumley AO, DMO CEO, 2006 - 2001

Key Observations on the Data & Facts:

Compared with the JSF Program, these data show:

- F-111 was an exemplar - a model program and JSF is an "Outlier" of greatest disproportion.
- F-111 just as, if not more complex than JSF.
- Defence was far more innovative and a much better risk manager on F-111 Program.
- MICC Risks the 34th POTUS warned his fellow Americans about have materialised, in spades.

Some Questions for Testing the Evidence:

What was the basis for the above statement by very senior Defence Portfolio officials?

Why wasn't a similarly cost effective strategem adopted to mitigate risks associated with JSF delays that were/are beyond Australia's control?

Why were the data and advisories provided by Air Power Australia totally ignored by all levels of governance of the NACC & BACC Programs?

Did the recent disposal by burying the F-111 cost more than the cost for long term storage?

PART 2

SUMMARY EXTRACTS FROM SOURCE DATA

SAR_Dec2001

Breaches: **APB Schedule and Performance Threshold Breaches.**

Performance: **Memo**

The "Planning Estimate (SAR)" column reflects the Milestone I (November 1996) APB, with Desired Operational Characteristics from the Services' Joint Initial Requirements Document (JIRD I) dated August 1995. The "Approved Program;DE" column reflects the Milestone B (October 2001) APB, with Key Performance Parameters (KPPs) from the Services' March 2000 Joint Operational Requirements document (ORD), revalidated by the JROC in October 2001. The "Current Estimate" column reflects KPP threshhold values pending completion of the Air System Requirements Review assessment and reconciliation.

Unit Cost:

SAR December 2001 - Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Plan Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.000	-2.331	0.000	-0.134	79.375	2.105	0.000	0.000	79.015	79.015

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Plan Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.000	-1.595	0.000	0.000	0.000	68.940	0.000	0.000	67.345	67.345

Note: "Current Estimate" for each Service initial operational capability (IOC) date:

USMC - Apr 2010
USAF - Jun 2011
USN - Apr 2012

SAR_Dec2002

Breaches: **APB Schedule and Performance Threshold Breaches**

Performance:

"Current Estimate" reflects government assessment of projected performance based on Lockheed Martin's pre-PDR (240-1.1 Rev A) configuration and the Pratt and Whitney PDR (A-14) engine deck using LM IOC weight empty targets.

For logistics characteristics, government assessment is based on Lockheed Martin's Milestone B (235-1.2) configuration. JSF is projected to meet or exceed all KPP threshold requirements; degradation of performance margins is anticipated in future configuration updates. Some non-KPP threshhold requirements will not be met.

Refinements to performance projections will continue as the design configuration matures during SDD.

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
STOVL Mission Performance	N/A	N/A	N/A	TBD	Execute 514 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 472nm
Combat Radius NM - CTOL Variant	N/A	N/A	N/A	TBD	**679**
Combat Radius NM - STOVL Variant	N/A	N/A	N/A	TBD	**472**
Combat Radius NM -CV Variant	N/A	N/A	N/A	TBD	**771**

Unit Cost:

SAR December 2002 - Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
81.298	-3.237	2.367	1.084	1.091	0.185	0.000	-1.495	-0.005	**81.293**

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
68.934	-3.118	1.129	1.074	0.000	-0.123	0.000	-1.504	-2.542	**66.392**

SAR_Dec2003

Breaches:

APB Breaches

Schedule 

Performance ☐

Cost RDT&E
Procurement
MILCON
Acq O&M

Unit Cost PAUC
APUC

Nunn-McCurdy Breaches

Current UCR Baseline

PAUC **Critical**
APUC **Significant**

Original UCR Baseline

PAUC None
APUC None

Explanation of Breaches

The F-35 JSF Program breached the Program Acquisition Unit Cost (PAUC) by 19.4% and Average Procurement Unit Cost (APUC) by 18.7%. The JSF PAUC and APUC increases were primarily due to: a revised estimate for completion of the General Electric (GE) F136 engine development, including additional components and tests to enhance interchangibility with the Pratt and Whitney F135 engine; SDD schedule extension for additional design maturation and known and unknown risks (including anti-tamper); procurement labor and overhead rate increases; procurement configuration update and refined support requirement definitions; a one-year production delay, revised LRIP buy profile, and associated increases due to changes in learning curve assumptions, labor rates, and supplier confidence cost assumptions; and the result of delaying the multi-year procurement from FY 2012 to 2014. Pursuant to Section 2433, Title 10, United States Code, the Secretary of the Navy notification to Congress is in process. Additional information regarding the increased cost is contained in Section 12 of this report. **The Under Secretary of Defense for Acquisition, Technology and Logistics (USD AT&L) approved a revised APB on March 17, 2004.**

Performance: SAR December 2003

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
STOVL Mission Performance	Execute 550 ft STO with 4 JDAM (2 external & 2 internal), 2 AIM -120 (internal), fuel to fly 550 nm	Execute 550 ft. STO with 4 JDAM (2 external & 2 internal), 2 AIM-120 (internal), fuel to fly 550nm	Execute 550 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm	TBD	Execute 550 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm
Combat Radius NM - CTOL Variant	690	690	590	TBD	**639**
Combat Radius NM - STOVL Variant	550	550	450	TBD	**452**
Combat Radius NM -CV Variant	730	730	600	TBD	**759**

Memo

Acronym and Abbreviation List:

ASD - Average Sortie Duration
CTOL - Conventional Takeoff and Landing
STOVL - Short Takeoff and Vertical Landing
CV - Aircraft Carrier
IER - Information Exchange Requirement
JDAM - Joint Direct Attack Munitions
NM - Nautical Miles
RCLW - Required Carrier Landing Weight
TBD - To be determined
Vpa - Maximum Approach Speed
WOD - Wind Over the Deck

The Current Estimate reflects the government assessment based on Lockheed Martin's planned 240-2.2 configuration and December 2003 Bottom-Up Weight #4 projections for Initial Operational Capability (IOC). IOC weight projections include anticipated weight savings, identified potential weight increases, and a 3% growth factor based on legacy aircraft experience. The weight projections were reviewed and risk-weighted by a team of subject matter experts.

As of 5 February 2004, projected weights exceed IOC targets (in pounds) as follows: CTOL +1479, STOVL +2350, and CV +1372.

Recognizing the currently projected STOVL weight overage of 2350 pounds, the Current Estimate for STOVL Mission Performance (i.e., execute 550' Short Take-off with stated weapons and fuel load) reflects a realization of improved performance through the following: (1) maximize weight reduction from design improvements (2) optimize installed thrust efficiencies; (3) minimize realization of known weight growth threats (4) minimize weight growth from Critical Design Review to IOC (i.e., lower than historical average); and (5) optimize Concept of Operations and techniques.

Some non-KPP threshold requirements will not be met for all variants.
Program acquisition leadership will continue to work with the Service warfighters and the prime contractor to optimize the performance of the JSF aircraft and gain margin in critical areas.

Change Explanations:
The Current Estimate changed from the December 2002 SAR as follows due to design maturation:

Change Explanations Redacted

Unit Cost:

SAR December 2003 - Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
81.298	-2.238	2.368	6.389	2.130	8.017	0.000	1.684	18.350	**99.648**

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
68.934	-2.113	1.129	3.342	1.045	7.768	0.000	1.694	12.865	**81.799**

SAR_Dec2004

Breaches: **APB Schedule Threshold Breach**

Performance: **SAR December 2004**

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
STOVL Mission Performance	Execute 550 ft STO with 4 JDAM (2 external & 2 internal), 2 AIM -120 (internal), fuel to fly 550 nm	Execute 550 ft. STO with 4 JDAM (2 external & 2 internal), 2 AIM-120 (internal), fuel to fly 550nm	Execute 550 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm	TBD	Execute 508 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm
Combat Radius NM - CTOL Variant	690	690	590	TBD	**632**
Combat Radius NM - STOVL Variant	550	550	450	TBD	**452**
Combat Radius NM -CV Variant	730	730	600	TBD	**732**

Unit Cost:

SAR December 2004 - Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
81.298	0.881	2.333	7.450	4.165	4.987	0.000	3.287	23.103	**104.401**

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
68.934	0.720	1.130	4.276	3.093	4.784	0.000	3.307	17.310	**86.244**

SAR_Dec2005

Breaches:

APB Breaches
Schedule ☑
Performance ☐
Cost RDT&E
Procurement
MILCON Acq
O&M

Unit Cost PAUC
APUC

Nunn-McCurdy Breaches
Current UCR Baseline
PAUC None
APUC None
Original UCR Baseline
PAUC **Significant**
APUC **Significant**

Explanation of Breaches

The Acquisition Program Baseline (APB) Schedule breach for Short Take-Off Vertical Landing (STOVL) First Flight results from the combination of (1) expected manufacturing lead times and (2) matching STOVL airframe structure load to expected flight loads results. The fivemonth expected delay for STOVL First Flight does not affect the low rate production plans or fielding for the Marine Corps.

In accordance with the FY 2006 National Defense Authorization Act (P.L. 109-163), the Department is required to report Nunn-McCurdy unit cost breaches to the "original" Acquisition Program Baseline (APB), i.e., the APB established at Milestone B (previously Milestone II). Accordingly, this program is reporting an increase in the Program Acquisition Unit Cost (PAUC) and Average Procurement Unit Cost (APUC) of at least 30% to the "original" APB. Compared to the MS B (October 2001) APB, the F-35 Program PAUC and APUC increased 32.8% and 31.3%, respectively. These increases are primarily due to historical increases previously reported in the December 2003 SAR (26.2% and 21.7% for PAUC and APUC, respectively, including programmatic changes).

Additional unit cost breach information is provided in the Unit Cost Information section of this SAR. F-35 (JSF) December 31, 2005 SAR.

Performance: SAR December 2005

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
STOVL Mission Performance	Execute 550 ft STO with 4 JDAM (2 external & 2 internal), 2 AIM - 120 (internal), fuel to fly 550 nm	Execute 550 ft. STO with 4 JDAM (2 external & 2 internal), 2 AIM-120 (internal), fuel to fly 550nm	Execute 550 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm	TBD	Execute 550 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm
Combat Radius NM - CTOL Variant	690	690	590	TBD	**639**
Combat Radius NM - STOVL Variant	550	550	450	TBD	452
Combat Radius NM -CV Variant	730	730A	600	TBD	**759**

Unit Cost:

SAR December 2005 - Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
81.298	3.095	2.334	7.488	4.381	8.800	0.000	5.077	31.175	**112.473**

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
68.934	2.693	1.129	4.314	3.311	9.367	0.000	5.109	25.923	**94.857**

Nunn-McCurdy Comments:

The Unit Cost Report (UCR) Baseline includes the quantity benefit of 150 United Kingdom (UK) aircraft only.

Current Estimates of PAUC and APUC include the quantity benefit of 138 UK and 508 other International Partner aircraft.

Excluding the benefits of the 508 other International Partner aircraft, PAUC and APUC **(in BY02 $M)** would be $84.5 (+8%) and $68.4 (+12%), respectively (% increases are in comparison to Current APB). – Ed Note: versus the reported **$82.071 Million** and **$65.964 Million**.

SAR_Dec2006

Breaches: **Explanation of Breaches**

This program reflects a significant Nunn-McCurdy breach to the original baseline that was first reported in the December 2005 SAR. The supporting breach information and explanations can be found in the Unit Cost Report section of that SAR.

Performance: SAR December 2006

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
STOVL Mission Performance	Execute 550 ft STO with 4 JDAM (2 external & 2 internal), 2 AIM -120 (internal), fuel to fly 550 nm	Execute 550 ft. STO with 4 JDAM (2 external & 2 internal), 2 AIM-120 (internal), fuel to fly 550nm	Execute 550 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm	TBD	Execute 515 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm
Combat Radius NM - CTOL Variant	690	690	590	TBD	**625**
Combat Radius NM - STOVL Variant	550	550	450	TBD	**498**
Combat Radius NM -CV Variant	730	730	600	TBD	**642**

Unit Cost:

SAR December 2006 - Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
81.298	2.956	3.147	12.048	5.203	9.636	0.000	7.691	40.681	**121.979**

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
68.934	2.455	1.130	8.902	3.853	11.408	0.000	7.738	35.486	**104.420**

SAR_Dec2007

Breaches: **Nunn-McCurdy Threshold Breach - Explanation of Breaches**

This program reflects a significant Nunn-McCurdy breach to the original baseline that was first reported in the December 2005 SAR. The supporting breach information and explanations can be found in the Unit Cost Report section of that SAR.

Performance: SAR December 2007

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
STOVL Mission Performance	Execute 550 ft STO with 4 JDAM (2 external & 2 internal), 2 AIM -120 (internal), fuel to fly 550 nm	Execute 550 ft. STO with 4 JDAM (2 external & 2 internal), 2 AIM-120 (internal), fuel to fly 550nm	Execute 550 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm	TBD	Execute 511 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm
Combat Radius NM - CTOL Variant	690	690	590	TBD	**606**
Combat Radius NM - STOVL Variant	550	550	450	TBD	**503**
Combat Radius NM -CV Variant	730	730	600	TBD	**641**

Unit Cost:

SAR December 2007 - Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
81.298	2.162	3.216	12.058	5.207	16.909	0.000	0.829	40.381	**121.679**

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
68.934	1.680	1.130	8.902	3.853	18.619	0.000	0.833	35.017	**103.951**

SAR_Dec2008 **NO SAR (2008 US PRESIDENTIAL ELECTION YEAR)**

SAR_Dec2009

Breaches:

APB Breaches		
Schedule	☑	
Performance	☐	
Cost	RDT&E	
	Procurement	
	MILCON Acq	
	O&M	
Unit Cost	**PAUC**	
	APUC	
Nunn-McCurdy Breaches		
Current UCR Baseline		
PAUC		None
APUC		None
Original UCR Baseline		
PAUC		**Critical**
APUC		**Critical**

Explanation of Breaches

In accordance with the section 2433, title 10, United States Code, the Department is required to report Nunn-McCurdy unit cost breaches established for Milestone B/II Programs. Accordingly, this program is reporting a critical increase in the Program Acquisition Unit Cost (PAUC) and Average Procurement Unit Cost (APUC) of at least 50% to the October 2001 Acquisition Program Baseline (APB), which is the original APB.

Compared to the original APB, the F-35 Program PAUC and APUC increased 57.15% and 57.24%, respectively. These increases are partially due to historical increases previously reported in the December 2003 SAR (26.2% and 21.7% for PAUC and APUC, respectively, including programmatic changes), in the December 2005 SAR (32.8% and 31.3% for PAUC and APUC, respectively, including programmatic changes),and in the December 2007 SAR (38.38% and 38.01% for PAUC and APUC, respectively, including programmatic changes). Additional unit cost breach information is provided in the Unit Cost section of this SAR. A Department assessment is ongoing.

Schedule delays have resulted in threshold breaches for the following: 1st Flight Carrier Variant; 1st Production Aircraft Delivery; Initial Operational Test and Evaluation Completion; and Milestone C. (The Services are assessing impact of program changes on their respective planning for Initial Operational Capability.)

The Program Executive Office submitted a Program Deviation Report in February 2010. The Nunn-McCurdy certification process has been initiated.

A revised APB with updated cost and schedule objectives and thresholds is currently being developed.

Note: Consistent with Nunn-McCurdy statutory requirements, a complete Independent Cost Estimate is in process. The Department expects this analysis will result in increases to the stated PAUC and APUC estimates. The projected range of estimates are $97 - $115 million (PAUC) and $79 - $95 million (APUC) in Base Year 2002 dollars. This equates to a unit cost growth from the Milestone B baseline (October 2001) of 57% - 86% and 57% - 89% for PAUC and APUC, respectively.

Performance: SAR December 2009

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
STOVL Mission Performance	Execute 550 ft STO with 4 JDAM (2 external & 2 internal), 2 AIM -120 (internal), fuel to fly 550 nm	Execute 550 ft. STO with 4 JDAM (2 external & 2 internal), 2 AIM-120 (internal), fuel to fly 550nm	Execute 550 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm	TBD	Execute 524 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm
Combat Radius NM - CTOL Variant	690	690	590	TBD	**610**
Combat Radius NM - STOVL Variant	550	550	450	TBD	**481**
Combat Radius NM -CV Variant	730	730	600	TBD	**651**

Unit Cost:

SAR December 2009 - Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
81.298	-2.684	3.246	12.927	5.205	29.122	0.000	4.485	52.301	**133.599**

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
68.934	-3.092	1.131	9.781	3.853	28.486	0.000	4.511	44.670	**113.604**

SAR_Dec2010

Breaches: **Continuing Nunn-McCurdy Threshold Breach**

Performance: SAR December 2010

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
STOVL Mission Performance	Execute 550 ft STO with 4 JDAM (2 external & 2 internal), 2 AIM -120 (internal), fuel to fly 550 nm	Execute 550 ft. STO with 4 JDAM (2 external & 2 internal), 2 AIM-120 (internal), fuel to fly 550nm	Execute 550 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm	TBD	Execute 544 ft. STO with 2 JDAM (internal), 2 AIM-120 (internal), fuel to fly 450nm
Combat Radius NM -CTOL Variant	690	690	590	TBD	**584**
Combat Radius NM -STOVL Variant	550	550	450	TBD	**469**
Combat Radius NM -CV Variant	730	730	600	TBD	**615**

Unit Cost:

SAR December 2010 - Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
81.298	-3.249	3.245	14.210	5.205	45.232	0.000	8.472	73.115	**154.413**

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
68.934	-3.685	1.130	11.071	3.853	42.983	0.000	8.520	63.872	**132.806**

TBA

SAR_Dec2011

Breaches:
Performance:

Not Yet Available But Expect Yet More and Quite Large Increases in the Costs, Delays in Schedule and More Threshold Breaches, Particularly in the Areas of Costs, Schedule & Performance;
e.g.
Combat Radius;
Overall Aero/Propulsive Performance;
Systems' Performance
Low Observability;
Interoperability; and,
Supportability;

as well as a further notice of "*a number of KPIs will not be met by all the JSF variants*".

Then there is this from the DOT&E 2011 Annual Report:

"The JSF is not on track to meet Operational Effectiveness and Operational Suitability Requirements of the Joint Operational Requirements Document (JORD) re-ratified in 2010."

BY RE-BASELINING THE PROGRAM, THE DEFENSE ACQUISITION BOARD (DAB) PROCESS "ABSOLVES" A MULTITUDE OF PROJECT MANAGEMENT AND, THUS, PROGRAMMATIC "SINS", MAKING THEM EFFECTIVELY DISAPPEAR FROM POLITICAL VIEW!

MANY IF NOT MOST WERE COMMITTED UNDER THE MANAGEMENT PURVIEW OF THE DAB MEMBERS, THEMSELVES.