

# Joint Strike Fighter – Lightning II Monthly Assessment Report

Prepared for the Joint Strike Fighter Program Office  
Prepared by DCMA Lockheed Martin Fort Worth



January 2009

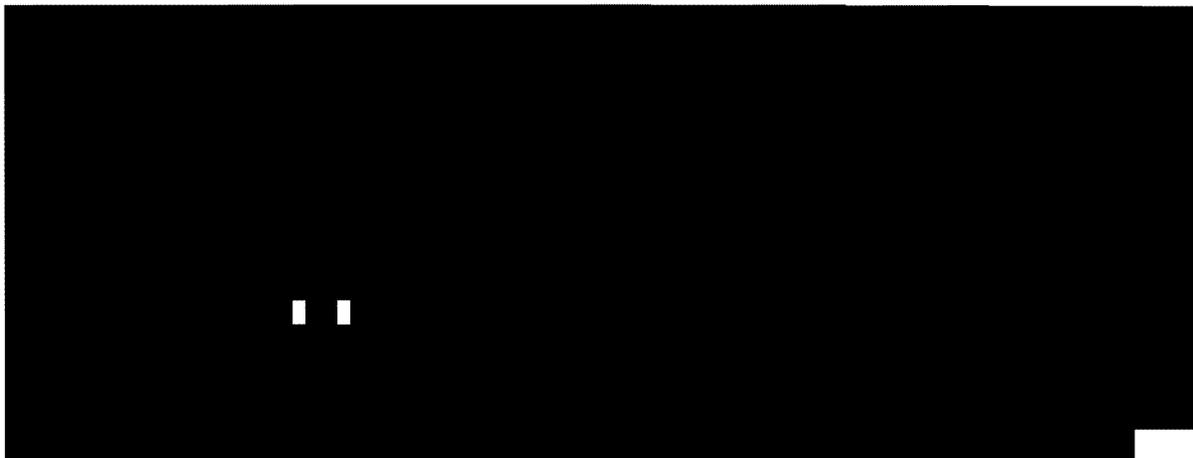
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## JSF Executive Summary

AA-1 flight test is projected by LM Aero to commence no earlier than the week of 9 Feb 09. BF-1 continues its modification and is planned to finish up by mid-February 2009. As a result of seat anomalies observed in the ejection sequence during an escape system sled test on 20 Nov 08, seat sequencer software has been updated. The new software was tested on 14 Jan 09 – Preliminary testing at [REDACTED] has been successfully completed and steps are being taken to retrofit the modified Sequencer Assembly LRU into JSF aircraft upon final approval by the JSF Program Office.

BF-2 missed its baseline first flight date of 13 Jan 09 and is currently projected for 2 Feb 09. BF-4 baseline rollout was 21 Oct 08 and most likely occur the last week of January, with a projected first flight in May 09 versus the baseline flight date of 24 Mar 09.



SDD/LRIP Production Status (As of 11 Jan 09)	
Forward Fuselage	11 – Assembly 9 – Mate/Sub-Systems/Final
Center Fuselage	12 – Assembly/On-Dock 9 – Mate/Sub-Systems/Final
Aft Fuselage	6 – Assembly/On-Dock 8 – Mate/Sub-Systems/Final
Wing	10 – Assembly 9 – Mate/Sub-Systems/Final
Fuselage Structure Mate (EMAS)	5 – (AJ-1, AF-3, CG-1, CF-1 & CF-2)
Final Assembly/Sub-Systems/Systems Test/Labs	7 – (BF-4, AF-2, AF-1, BF-3, BF-2, AG-1 & BG-1)
Field Ops/ITF	3 – (AA-1, BF-1, & BF-2)

A recovery plan to MS 6.1 has been developed and briefed to JPO/DCMA by LM Aero the week of 12 Jan 09. LM Aero estimates that recovery to the following Mate events per MS 6.1 will occur as follows: Aft – AF-11 (Sep '09), Center – BF-6 (Nov '09), and Wing – AF-9 (Jul '09). Wing/Mate span time and overlap are still planned within the parameters of MS 6.1 projections.

DCMA [REDACTED] reports that [REDACTED] submitted a new recovery plan SOP 7. [REDACTED] is currently projecting return to MS 6.1 "Green" of the Aft Fuselage by 2B F-9 (LRIP 2) in January 2010, the Horizontal Tail by the end of LRIP 2 and the Vertical Tail return in early LRIP 3. DCMA [REDACTED] is continues to monitor [REDACTED] recovery to MS 6.1.

Key LM Aero initiatives such as crew size adjustments, overtime compression, as well as factory build teams working concurrently with flightline teams are a fundamental part of the plan. The limitation of this plan appears to be reliance on parts availability and the ability for major components to load to the projected Mate plan based on EMAS availability. Past performance indicates that these plans have been exceedingly optimistic and challenging to execute.

DCMA IEAC is \$26.420 Billion for the SDD contract. This DCMA IEAC is based upon the contractor's historical cost and schedule performance. LM Aero has expended an average of [REDACTED] Million per month over for the last six months. Assuming a continuance of this expenditure rate, DCMA projects the existing SDD budget (with OTB) will deplete in FY2011, (BAC of [REDACTED] – ACWP of [REDACTED] = [REDACTED] remaining).

Using November 08 C PR data, the IEAC formula:  $EAC = ACWP + [(BAC - BCWP) / (SPI * CPI)]$  yields an SDD EAC projection of [REDACTED] Million above the current LM Aero BAC. With the addition of risk factors: Supplier Costs; Late to Need parts; Schedule Impacts; Production Delays; Change Requirements; Flight Test; DCROM data; etc., the DCMA IEAC total is [REDACTED] verses the LM Aero BAC of [REDACTED].

December 2008 DCMA review of LM Aero Earned Value Management noted a lack of progress against established milestones for: Data Integrity and Demonstration of Scheduling Implementation. DCMA is in process of implementing a \$10 Million withhold (against the SDD contract) for each item – a [REDACTED] total. A further assessment will be conducted in the summer of 2009.

## Report Scope

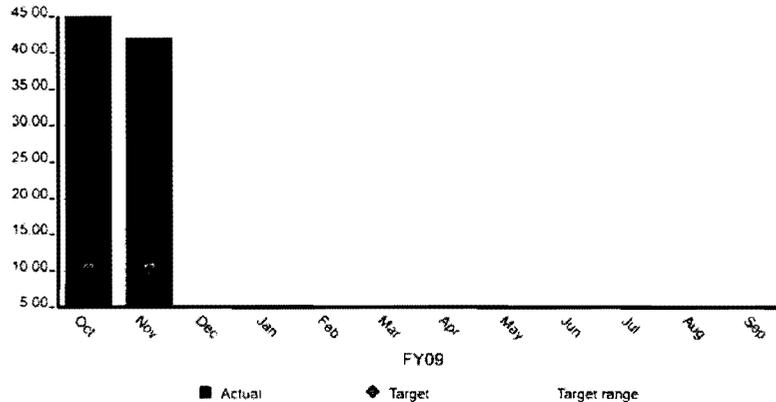
The Joint Strike Fighter – Lighting II Monthly Assessment Report (MAR) is focused on reporting the status of Customer Outcomes and associated Performance Commitments identified in the Memorandum of Agreement with the JSF Program Office. Interdisciplinary teaming between DCMA personnel is used to ensure customer outcomes are ascertained; risks to outcomes are identified and assessed.

Title	Performance Commitment	Metric Rating Criteria	Rating
Maintain LRIP Aircraft Delivery Rate	Maintain LRIP aircraft delivery to within 10 M-days of contract delivery date	Green: ≤10 M-day variance to delivery date Yellow : 11 – 21 M-day variance Red: >21 M-day variance to contract delivery date	
Improve Supplier Delivery Rate	JSF Key Suppliers have an average delivery rating of greater than or equal to 96%	Green: 100.0 to 96.0% Yellow: 95.9 to 87.0% Red: ≤86.9%	
Improve Supplier Quality Rate	Each delegated supplier has quality ratings >96%	Green: ≥ 96% Yellow: 87%-95% Red: <87%	Y
Maintain Cost and Schedule	Resource requirements are aligned in support of funding and budget allocations. IEAC data and projections match actual performance within + / - 10% of contractors budget at completion	Green: 1.0 to 0.95 variance (5%) Yellow: 0.95 to 0.90 variance (5% to 10%) Red: 0.90 or greater variance (>10%)	Y
Reduce Schedule Variation	Reduce the average Wing touch labor variance "at move to mate" to within 10% by SDD completion	Green: < -10% Yellow: -10% to -15% Red: > -15%	Y
Non-Conformance Reduction	10% reduction in MRB discrepancies per year	Green: < the goal of 21 Yellow: within 10% of the goal Red: >10% above the goal of 21	G
Safety of Flight (SoF)	Number of SOF inspections passed on first attempt to the number of SOF inspections conducted	Green: >85% Yellow: 80%-84% Red: <79%	G
Improve Software Productivity	Defect phase containment (DPC) will be improved at least 10% over the Block 0.5 value (73.2% DPC) when progress is 98% complete for Block 1.0	Green = Block 1.0 DPC ≥83% Yellow = Block 1.0 DPC at least 73% but less than 83% Red = Block 1.0 DPC <73%	G
Improve Minor Variance	Maintain at least a 95% correct classification rate of variances	Green: % of properly classified minor variances is ≥95% Yellow: 90% up to but not including 95% Red: <90%	G
Improve FCA/PCA	Ensure that at least 95% of systems reviewed in interim FCA/PCAs meet the design requirements	Green: % of parts meeting design requirements is ≥ 95% Yellow: 90-94% Red: <90%	G
Improve Minor Change	Ensure that 95% of minor changes are correctly classified	Green: >95% Yellow: ≥90% to ≤95% Red: <90%	G
Maintain Assist Audit Request Timing	Process contractor/PCO requests for domestic/international Assist Audits within 2 business days 85% of the time	Green: >84% Yellow: 75%-84% Red: <75%	G
Maintain FAR Requests for Contract Closeout	Maintain 94% contract closeout actions within the Federal Acquisition Regulation (FAR) mandated timeframes	Green: >93% Yellow: 85%-93% Red: <85%	G
Reduce Cancelling Funds	90% of canceling funds will be billed and/or de-obligated before the end of the fiscal year	Green: >89% Yellow: 80%-89% Red: <80%	G

## Maintain LRIP Aircraft Delivery Rate

**PC – NSF198AJ17:** Description: Maintain LRIP aircraft delivery to within 10 M-days of contract delivery date. The Maintain LRIP Delivery Rate is an Integrated Master Schedule (IMS) based metric of the monthly average (+/-) float manufacturing days (M-days) of all reported LRIP aircraft to their contract delivery schedule (DD-250). Goal is to maintain delivery of LRIP aircraft to within 10 M-days of contract delivery date. **Note: Float M-days are entered as positive values, but represent behind schedule status.** Monthly IMS LRIP CDRL data is directly used as data source. Data shall be updated NLT the 20th of each month. Total Float of all reported aircraft in flow will be averaged monthly for metric. Green: ≤10 M-day variance to delivery date, Yellow: 11 – 21 M-day variance, Red: >21 M-day variance to contract delivery date.

**YS-AJH DCMA LMFW F-35 NSF198AJ17 Maintain LRIP Acft Delivery**



Metric Status: Red

Trend: Improving

Summary of Metric Status: Metric is currently -42 Mdays (~2.0 months) for month end November. *Note: Recent developments and recovery plan efforts impacting this metric will be reported on next month as a result of the holiday's / report deadline.*

Root Causes: The Critical Path driver for both AF-6 and AF-7 continues to be the projected late delivery of the Aft Fuselages. For LRIP 1, the majority part shortages in the Forward Fuselage – it is expected that the Forward Fuselage Build team will recover schedule once parts arrive, and this component will move to Mate without impact to DD-250 delivery.

DCMA [redacted] is reporting high risk to LRIP Center Fuselage deliveries as a result of SDD/CV variant impacts. [redacted] is working to another revised SOP (Rev F) with projected [redacted] Production delivery target dates for AF-6 – AF-13 beyond LM Aero Fort Worth MS 6.1 on-dock dates.

[redacted] Management Input: [redacted] anticipates a contract update to MS 6.1 for the incorporation of the P5 upgrade for LRIP 1 and LRIP2 (AF-6 through AF-13). At this time we are still projecting the current P5 delivery of 4/22/09 for the first LRIP aircraft AF-6, which significantly reduces the risk and expect to deliver on time.

Contractor Actions: LM Aero [redacted] agreed to a revised recovery plan to expedite deliveries of the Aft Fuselages while extending the Empennage deliveries. Production Operations has created a recovery plan to be implemented into the IMS by month-end December 2008.

DCMA Actions: DCMA P/SI, PA Production and PA D&I Team members are developing performance commitment sub-metrics to assess key build event progress on LRIP aircraft. These metrics will utilize data from the IMS and various shop floor systems. DCMA continues to work with LM Aero Q&MS in the coordination of JSF specific LM Aero/DCMA Joint Process Reviews for 2009 as part of our strategy to influence LRIP aircraft deliveries.

New processes and metrics being developed by LM Aero Production Control, and are expected to take into account: shortages, kit availability, transaction history (FA007s, FA020, etc.), aged orders, etc. For this reason, the intention is to perform a JPR on JSF Production Control during the latter part of 2009 after these processes and metrics have been put in place.

Estimate when PC will achieve goal: TBD – Part deliveries to various SWBSs continue to impact build activities.

Data files have been created to support SCOP reporting of AF-6 and AF-7 (LRIP-1) and will be used to populate the following table. This table includes the total SCOPs planned per A/C, the number of SCOPs completed as of the reporting period, the percentage of SCOPs completed relating to the total planned for the specific test article and the percentage of testing completed prior to test article rollout from the factory to the flight line (Rollout).

SCOP testing starts once the aircraft build enters SWBS 240. The current IMS baseline finish dates are 19 Jan 09 and 9 Feb 09 for AF-6 and AF-7 respectively. We can expect data collection to commence during that timeframe.

**SCOP Completions per Test Article / Aircraft (A/C)**

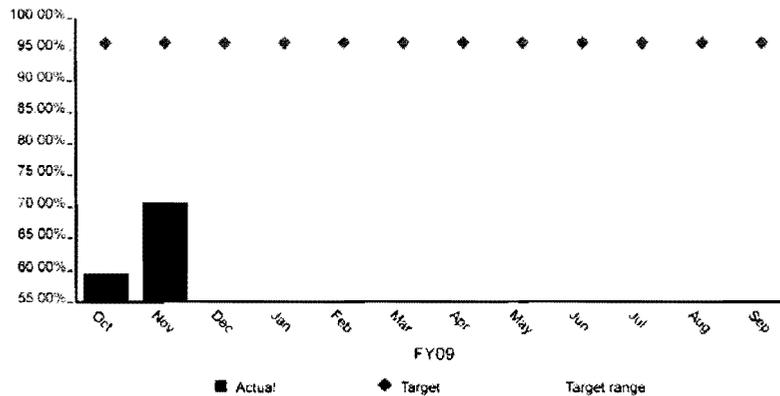
Test Article	Total SCOPs Planned	SCOP Completed	%Complete (Total A/C)	% Complete prior to Rollout
AF-6	73	-	-	Est. Oct 09
AF-7	73	-	-	Est. Nov 09

Currently 73 SCOPs and 7 AEI's (Aerospace Equipment Instructions) are formally released against AF-6 and AF-7. These numbers are certain to increase as the LRIP-1 builds mature over the next year.

**Improve Supplier Delivery Rate**

**PC – NSF198AJ21:** Description: JSF Key Suppliers have an average delivery rating of greater than or equal to 96 percent. JSF Key Suppliers are determined by analyzing category 3 and 4 shortages to jig load. JSF Key Suppliers may be adjusted on a quarterly basis as new issues emerge. This metric is a monthly average percent of lots delivered on-time for JSF Key Suppliers. The goal is to achieve an average of 96 percent or greater on-time lot delivery rate. Supplier delivery data is obtained from LM Aero's Supplier Quality Management and Procurement Quality Network databases. These databases are updated on approximately the 15th of each month. The monthly data from each database is reflective of the previous month's performance. This metric will be updated within one week of the LM database updates. Green: 100.0 to 96.0%, Yellow: 95.9 to 87.0%, Red: ≤86.9%.

**YS-AJH DCMA LMFW F-35 NSF198AJ21 Imp Supplier Delivery Rate**

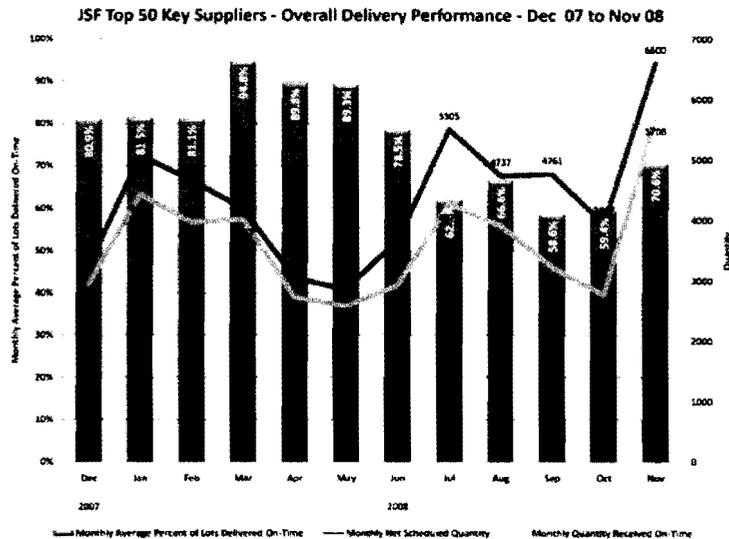


Metric Status: Red

Trend: Improving

Summary of Metric Status: The delivery rate rose 11.2% to a monthly average of 70.6% and showed significant improvement.

The chart below shows the overall delivery performance over the past 12 months for the top 50 DCMA JSF Key Suppliers. The blue vertical bars represent the monthly average percent of lots delivered on-time. The upper red line represents the monthly net scheduled quantity of parts which were to be delivered by these 50 suppliers, and the lower green line represents the monthly quantity of parts received on-time from these 50 suppliers.



Root Causes: The root causes of the poor delivery performance continue to be late requirements to suppliers, rapidly changing requirements due to engineering changes, schedule pressures, and material availability.

Contractor Actions: To correct the negative delivery performance, Lockheed Martin has deployed 20+ Supply Chain Managers to focus suppliers. Additionally, they began a Tier 2 initiative called "Deliver the Parts." In this program 25 suppliers have been identified for expanded oversight and assistance, with corporate resources solicited.

DCMA Actions: DCMA is initiating Letters of Delegation to monitor and report on JSF Key Suppliers with significant negative impact on the delivery rate. For example, [REDACTED] had a lot delivery rate of 33.6% for the month of November with 254 parts scheduled for delivery and 99 actually delivered.

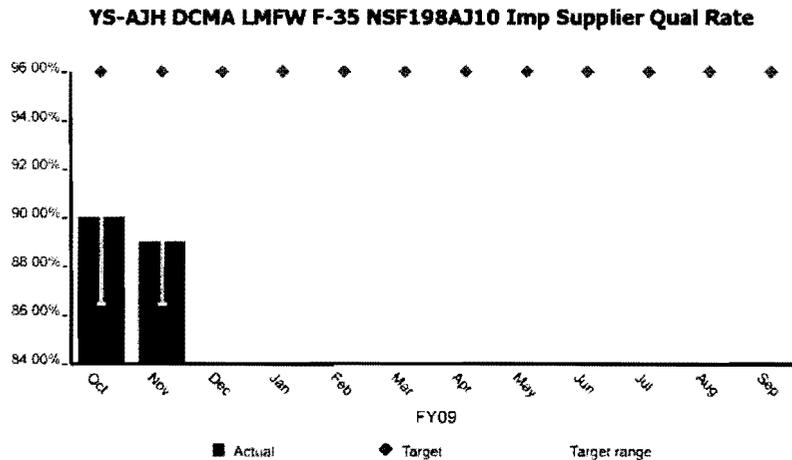
Estimate when PC will achieve goal: LRIP 3 to LRIP 4 (2011 to 2013).

The F-35 LMFW [REDACTED] Value Stream Map (VSM) Tri-Company conference identified issues regarding LMFW system/process discipline and data integrity in the areas of Engineering Change Release, Procurement and Production Control. The VSM team identified patterns of working around the established engineering release system, working around the purchase order's failure to establish complete, unambiguous [REDACTED] end item delivery requirements and a significant expenditure of time; manpower and budget with "heroes" chasing phantom Operations Shortage Tracking System (OSTS) false shortage issues. Failure to maintain engineering releases of part/system configuration changes, maintain MRP data, maintain [REDACTED] process/procedures and maintain purchase order requirement changes in a timely manner are major contributing factors to the false OSTs shortages. Other potentially impacted system issues

include: L MFW supplier delivery performance metrics, DCMA supplier delivery performance metrics, IMS, EVMS and MMAS.

## Improve Supplier Quality Rate

**PC – NSF198AJ10:** Description: Each delegated supplier has quality ratings greater than 96 percent. The total LM Quality rating for key suppliers (areas of consideration are: cost, issues, technical, criticality). The top suppliers are summed and divided by quantity which gives an average QA rating per month. The goal is to achieve an average of greater than 96%. Supplier quality data is obtained from LM Aero's Procurement Quality Assurance database and metric updated no later than the 20th of each month. Green: ≥96%, Yellow: 87 to 95%, Red: <87%.



Metric Status: Yellow

Trend: There are only three months of data for FY09, so there is no definitive trend at this time. Twenty-three “key suppliers” are being tracked for FY09 based on a high number of quality escapes for FY08, known issues, safety of flight, new technology and single/sole source.

Root Cause: The suppliers that were Red (less than 89% QA rating) for this month are: [REDACTED] (Center Fuselage), [REDACTED] (Aft Fuselage), [REDACTED] (Nacelle Vent), and [REDACTED] (Flight Opening Door Up-lock System). [REDACTED] had numerous anomalies with two of those anomalies being quality escapes i.e. duct assembly was missing partial coating; GPS would not initialize, fouling conditions, etc. [REDACTED] also had several anomalies identified with one quality escape i.e., tube too short; fuel boost pump capacitors damaged during manufacturing, fouling, holes not countersunk, etc. [REDACTED] trend continues to decline due to numerous anomalies affecting the nacelle vent.

Contractor Actions: Quality Assurance Reports have been issued documenting these anomalies and corrective actions are being tracked.

DCMA Actions: A Letter of Delegation (LOD) will be issued to DCMA [REDACTED] for oversight of the issues at [REDACTED]. The data shows a declining trend for Quality and Delivery. We are still collecting data on [REDACTED]. If the trend continues, an LOD will be issued to provide oversight of this supplier. LODs are in place at [REDACTED]. We will continue to monitor these suppliers for trends and corrective actions.

Estimate When PC Will Achieve Goal: Approximately 6 months – after an assessment of supplier trends.

Additional Supplier Information: [REDACTED] – Network Daughter Boards (NDBs) – NDBs are manufactured by [REDACTED] and are considered Contractor Furnished Equipment (CFE) furnished by LM Aero to [REDACTED] for use in the Electronic Units. There have been numerous issues with the NDBs, i.e. cable stiffness, cable solderability issues, and Insulation Resistance (IR) failures.

A lot (30 NDBs) were rejected at [REDACTED] and returned to [REDACTED]. A root cause analysis was conducted and solder wicking up the solid shielding was found to be the reason for the cable stiffness. [REDACTED] stated that an alternate supplier ([REDACTED]) produced some of the parts. The [REDACTED] parts appeared to be the rejected lot. [REDACTED] has reworked the parts for this condition. [REDACTED] has also discovered wicking on their parts.

[REDACTED] has opened a preventive action and they will be working to identify ways to change their build process to minimize the wicking that occurs during build-up.

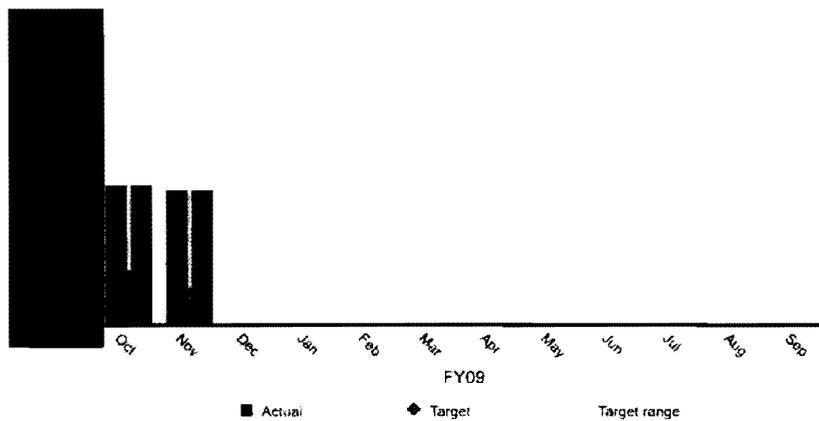
Currently there is no requirement on the NDB design for wicking/stiffness, but [REDACTED] is willing to accept one once they get a better handle on their process and identify what they can achieve.

[REDACTED] – There have been numerous mismatches and gaps exceeding tolerance on the vertical tails and edges. These parts are manufactured by [REDACTED] (tails), [REDACTED] (edges) and [REDACTED] (cap) and assembled at [REDACTED]. The vertical and horizontal tail assemblies are being delivered with a temporary deviation. Numerous Quality Assurance Reports (QARs) have been issued and all are documented in the Integrated Corrective Action database at LM Aero, Fort Worth, TX. Investigation is on-going to determine the root cause of the gaps and mismatches.

**Maintain Cost and Schedule**

**PC – NSF198AJ08:** Description: Resource requirements are aligned in support of funding and budget allocations. IEAC data and projections match actual performance within +/- 10% of contractors budget at completion. DCMA Independent EAC is measured against the prime contractor's BAC. DCMA includes risk, pressures, cost and schedule variances as compared to LM Aero BAC. The source of EV data comes from the monthly JSF SDD Cost Performance Report which lags by 1 month. Metric is updated in Metrics Manager as soon as data is received from contractor (**approximately 45-60 days after end-of-month**). This is represented as the contractor's BAC as the Numerator divided by DCMA's IEAC as the Denominator - with a 10 percent tolerance band. Green: 1.0 to 0.95 variance (5%), Yellow: 0.95 to 0.90 variance (5% to 10%), Red: 0.90 or greater variance (>10%).

**YS-AJH DCMA LMFW F-35 NSF198AJ08 Maint SDD Cost Schedule**



Lockheed Martin is now reporting to an Over Target Baseline of [REDACTED] reported in the Cost Performance Report (CPR).

DCMA IEAC is [REDACTED] for the SDD contract. This DCMA IEAC is based upon the November 08 CPR report. LM Aero has expended an average of [REDACTED] per month over for the last six months. Assuming a continuance of this expenditure rate, DCMA projects the existing SDD budget with OTB will be depleted in FY2011, (BAC of [REDACTED] – ACWP of [REDACTED] = [REDACTED] remaining).

Using November 08 CPR data, the above formulae yields an SDD increase of [REDACTED] over current LM Aero BAC. With the addition of risk factors such as; Supplier Costs, Late to Need parts, Schedule

Impacts, Production Delays, Change Requirements, Flight Test, DCROM data, etc., the DCMA IEAC total is [REDACTED] verses the LM Aero BAC of [REDACTED]

The November 2008 SDD cost summary and program status is as follows:

	BAC	LM EAC CPR	DCMA IEAC
Performance Measurement Baseline (PMB)	[REDACTED]	[REDACTED]	[REDACTED]
Management Reserve (MR)	[REDACTED]	[REDACTED]	[REDACTED]
Total:	[REDACTED]	[REDACTED]	[REDACTED]

Budget Baseline and EAC Summaries

Contract Data	KT 1	KT 2	KT 3	KT 4
Contract #	N00019-02-C-3002	N00019-06-C-0291	N00019-07-C-0097	N00019-08-C-0028
Name	JSF SDD	LRIP 1	LRIP 2	LRIP 3
Contract Type	Cost Plus Award Fee			
Obligated Amount	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
ULO	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Performance Start/End	Oct 2001/Apr 2012	May 2007/Feb2010	Apr 2010/Feb 2011	Mar 2011/Dec 2011

Primary Trip Wires			Secondary Trip Wires					
System Indicator	Baseline Indicator	Cum BEI	SPI	Cum CPLI	CPI	CPI/TCPI 10%	Contract Mods 10%	Baseline Revs 5%
		<b>0.98</b>	<b>0.985</b>	<b>1.03</b>	<b>0.975</b>	<b>4.1%</b>		<b>N/A</b>

**Primary Trip Wires –**

- (a) System Indicator: Please see EV section of report.
- (b) Baseline Indicators: A baseline assessment shows the contractors BAC and EAC to be optimistic. To complete the contract within the CBB, the contractor needs to be about 4.1 percent more efficient. The BAC has increased by 40% since the start up in Oct of 2001. The cost growth is likely to increase due to inherent engineering risks in the first versions of STOVL and CV aircraft. The contractors DCROM database for the corresponding month shows a net cost growth of threats and pressures exceeding \$16M.

**Secondary Trip Wires –**

- Baseline Execution Index (BEI): Cumulative tasks from October 2001 thru December 2008: Cum BEI = 134,608 Completed Tasks/137,369 Planned Tasks = 0.98
- Monthly (December 2008) Tasks: 594 Completed Tasks vs. 1388 Baselined to Complete Tasks
- SPI= BCWP/BCWS= [REDACTED]=0.985
- CPLI= (1450 + 39)/1450 = 1.03 (Time Now = 28 Dec 08)
- CPI= BCWP/ACWP= [REDACTED]=0.975
- CPI/TCPI= 0.975/1.016=.959
- Contracts Mods – (BAC now)/original BAC 10/01= (25.250B)/ (18.024B) =1.401

The DCMA Risk Rating for EVMS at the total program level is rated Green using the agreed to parameter of VAC (-4.64%).

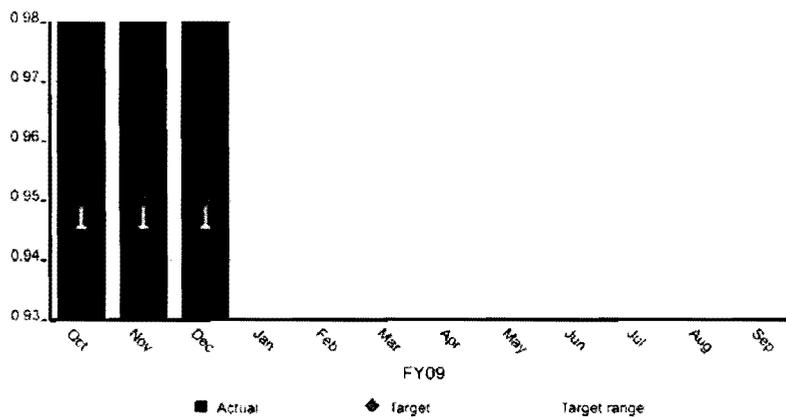
Similarly, the  $TCPI_{EAC}$  is different when using the DCMA IEAC versus the contractor's EAC:

$$\begin{aligned} TCPI_{DCMA\ IEAC} &= 0.888 \\ TCPI_{LM\ EAC} &= 1.016 \end{aligned}$$

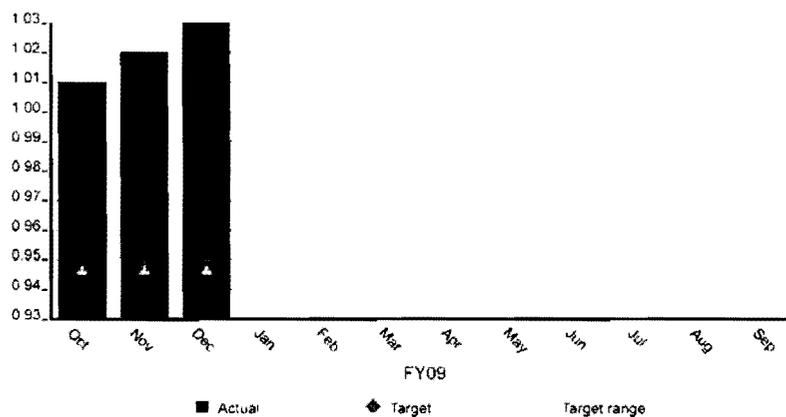
**NSF198AJ08 Sub-Metrics:** Description: The SDD Baseline Execution Index (BEI) metric is an Integrated Master Schedule (IMS) based metric that calculates the efficiency with which actual work has been accomplished when measured against the baseline. The BEI provides insight into the realism of program cost, resource, and schedule estimates. For BEI, an index of <.95 is used as a warning indication of schedule execution under performance. Goal is to achieve BEI value of .95. Cumulative BEI equals actual tasks/activities completed divided by the baseline total tasks/activities.

The SDD Critical Path Length Index (CPLI) indicates whether or not the program schedule can be completed on time. This is an Integrated Master Schedule (IMS) based metric that utilizes the critical path methodology definition being: the longest, continuous sequence of tasks through the network schedule with the least amount of float, from contract start to contract completion. After contract start, the critical path is always measured from "time now" until contract completion. For CPLI, an index of <.95 is used as a warning indication that the program will not complete on time. Goal is to maintain CPLI value of .95. Critical Path Length Index (CPLI) equals the Critical Path Length (CPL) plus or minus the Total Float (TF) divided by the Critical Path Length (CPL). The target efficiency ratio for both metrics is 1.00. An index greater than 1.00 is favorable, and an index less than 1.00 is unfavorable. .95 = Green .90 to <.95 = Yellow <.90 = Red

**YS-AJH DCMA LMFW F-35 SDD IMS BEI**

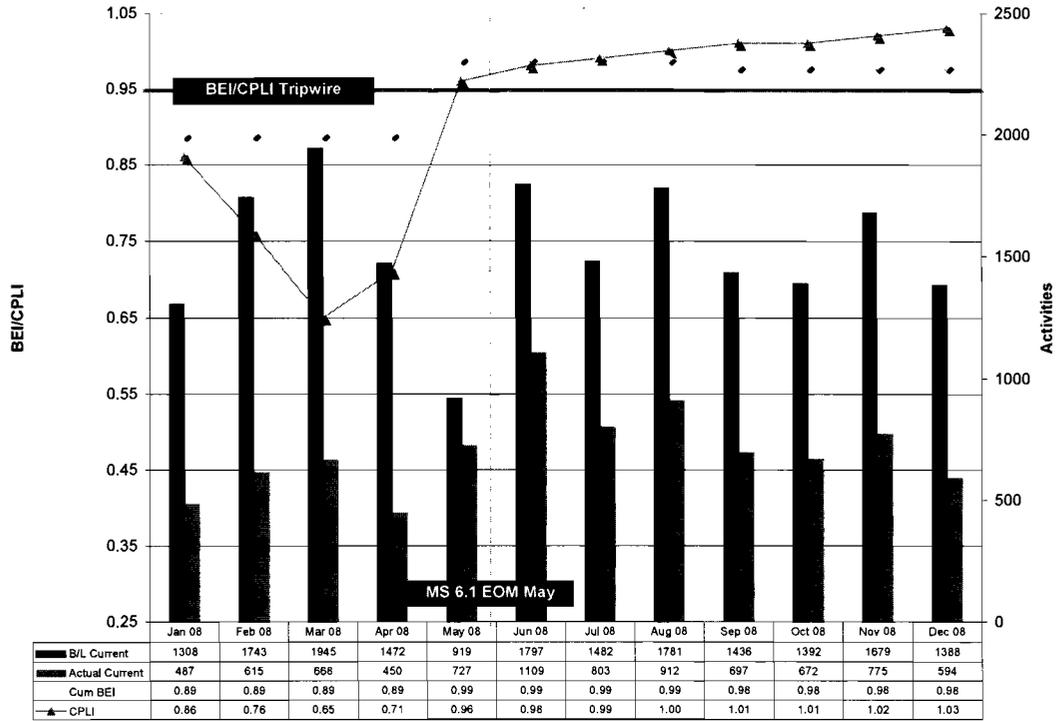


**YS-AJH DCMA LMFW F-35 SDD IMS CPLI**



Cumulative SDD Program BEI and CPLI sub-metrics are rated Green for this period, with the Cum BEI at .98, and CPLI at 1.03 for month end December.

**Baseline Current vs. Actual Current Finishes/Month  
Program Cum BEI / CPLI Trend**

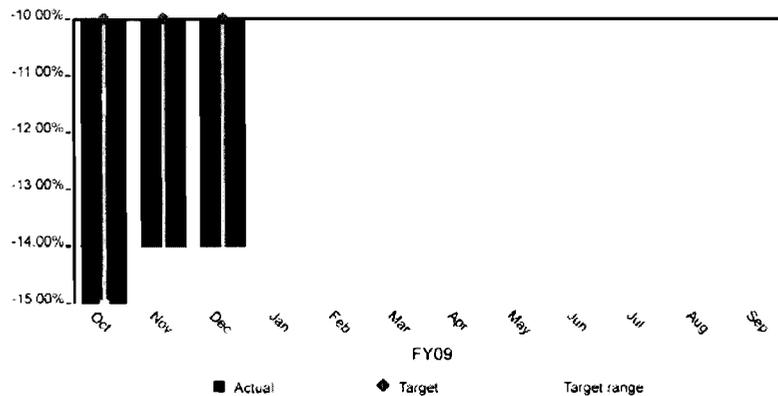


MS-6.1 baseline replan dates were incorporated into the IMS month-end May 2008. A decrease in planned monthly performance to MS 6.1 baseline task completions continues.

### Reduce Schedule Variation

**PC – NSF198AJ05:** Description: Reduce the average Wing touch labor variance "at move to Mate" to within 10% by SDD completion. In addition to monthly performance indicators, linear trend lines are used to project out subsequent Wing builds that have not moved to mate yet – projection is used to access current and predict future Wing variance performance. Metric will be updated NLT the 20th of the following month. Green: <-10% variance, Yellow: -10% and -15% variance, Red: >-15% variance.

**YS-AJH DCMA LMFW F-35 NSF198AJ05 Reduce Schedule Variation**



Metric Status: Yellow

Performance Commitment is rated Yellow this period with a current overall Wing average touch labor variance to schedule holding steady at -14%.

Trend: No change

Summary of Metric Status: Chart 1 (below) is a breakout of the Wings which build up the -14% variation average. The Wing has gradually reduced their out of station tasks travelled to Mate. This is noteworthy since history has shown that Mate and Final Assembly performance has been significantly affected by the condition (maturity) of the Wing at delivery. The CF-1 Wing moved to Mate just before Thanksgiving on 17 Nov 08 – missing its baseline move date of 19 Sep 08 primarily due to part shortages, Wing skin misalignment and landing gear boring issues. There was no change in our variation average this month due to no new “flyer” Wings being moved to Mate since our last report. DCMA does not include ground aircraft Wing performance in its variance calculations.

The BH-1 Wing is experiencing delays in its Wing boxes due to skin shortages that are preventing scheduled work to be completed. The AG-1 Wing is experiencing shortages of upper fuel tank skins which are preventing drilling, closure and testing of the upper fuel tanks. The AF-4 Wing is experiencing lateness/shortages in primary load parts such as fuel floors and shear webs along with planning cards in its Inner Wing. The AF-4 Outer Wing was not loaded due to tool constraints, part shortages and planning. Some data adapted from program Format 5 CPR (Nov 08) report.

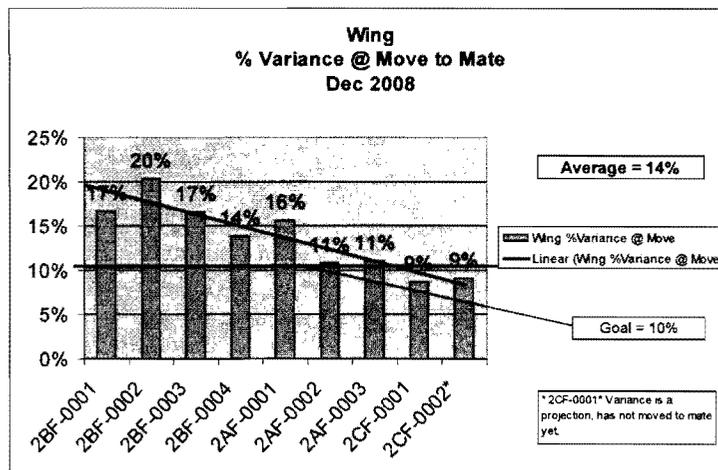


Chart 1

Chart 2 (sub-metric) below is a breakout of some of the aircraft that have either gone through or are in Mate and Final Assembly along with their associated % variance to schedule. BF-3 left Mate and Final Assembly temporarily and returned from the Calibration Lab in mid January 2009 and now carries a 48% variance to its planned schedule. BF-3, BF-4 and AF-1 all missed their late 2008 originally planned “roll out” dates. There was no change in our variation average (33%) since no aircraft have moved to the Fuel Barn/Flight Line since writing the last report.

Mate thru Delivery build performances continue to be under pressure to meet schedule requirements. AF-1, AF-2, AF-3 and CF-1 are behind schedule primarily due to parts availability, shortages and late Wing component delivery to Mate. Critical parts currently disrupting build include Main Landing Gear Skins and Chine Fairings, All A/C Orifices and Ground Test Fittings for AG-1. Other parts issues creating work stoppages this month include the NVI QAR, Boom Strike skins QAR and the L/H Main Landing Gear Skin QAR. Mate is also experiencing delays caused by instrumentation for AF-3 and CF-2 where planning was not released to begin its fabrication activities.

For Flight Line Operations ( ) primary issues are centered on coordinating work with traveled work from the factory, BF-3's projected late receipt/start at ( ) which has moved to February 2009 and BF-2's late receipt from System Checkout by 2 months. Some data adapted from program Format 5 CPR (Nov 08) report.

Both our charts use SPI data for variance projections on wings/aircraft that haven't moved to mate/flight line yet. Per Lockheed Martin, "The data used in the charts is from shop floor systems and is not auditable data or official EV data. It is for status purposes only."

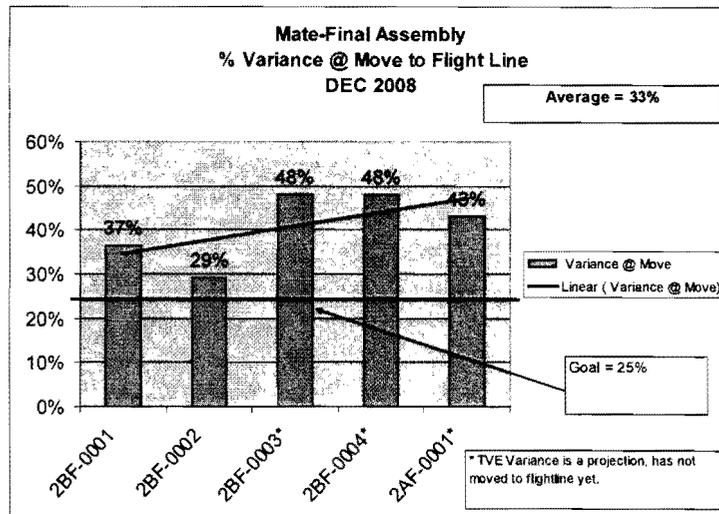


Chart 2

Root Causes: Performance continues to be hindered by: Critical parts shortages, high change traffic, difficult/inefficient work (Out of Station/Out of Sequence/Work-Around Plans, metrology, etc.), integration of flight test instrumentation, etc.), late and/or constant rework of planning and tooling issues/availability.

Contractor Actions: LM continues to put emphasis on Value Stream recovery initiatives such as: Shortage Resolution Process with consulting company ( ), on-site subcontract management support to top suppliers, advanced workable set up teams to review job packages prior to major assembly start, design and tooling updates to reduce metrology work (available for CF-1, AF-3 and starting to show progress), WAM (Wing at Mate) Teams to mitigate planned out of station work impacting Mate (showing progress), process improvement initiatives (such as Bracket locating/bulkhead marking and portable/perishable tools), increased manpower and outsourcing to reduce planning backlog ( ), as well as span time, crew size and schedule compressions in the factory and Flight Line areas.

DCMA Actions: Regular interface with LM project teams to: assess progress on initiatives, look for process review opportunities, update metrics, reporting progress in monthly report to customer and monitoring impact on Mate.

The Joint Process Review (JSF Wing Special Tooling) that was completed September 11-18, 2008 (in order to determine the suitability, adequacy and effectiveness of Lockheed Martin's JSF Wing special tooling storage and control processes/procedures) will undergo verification on the shop floor over the next several weeks. Once this is complete, the JPR team will close the review. Two new JSF process reviews are planned for 2009 and will be announced once schedules are solidified.

Estimate when PC will achieve goal: Every first new Variant disrupts the overall PC performance with each subsequent A/C showing improvement. Goal may not be reached until the end of SDD (2014).

The following table depicts the SCOP completions per test article/aircraft. The table includes the total SCOPs planned per A/C, the number of SCOPs completed as of this reporting period (7 Jan 09), the percentage of SCOPs completed relating to the total planned for the specific test article and the percentage of testing completed prior to test article rollout from the factory to the flight line. This table is provided to better align the data to the new PCs as well as a major milestone (Rollout) for LMFV.

**SCOP Completions per Test Article / Aircraft (A/C)**

Test Article	Total SCOPs Planned	SCOP Completed	%Complete (Total A/C)	% Complete prior to Rollout
BF-1	123	119	96.7%	27.0% (18 Dec 07)
BF-2	119	112	94.1%	52.1% (16 Aug 08)
BF-3	123	32	26.0%	
BF-4	131	31	23.7%	
AF-1	104	32	30.8%	
AF-2	96	11	11.5%	1/15/09
AF-3	98	14	14.3%	2/12/09
CF-1	80	6	7.5%	4/10/09
CF-2	80	5	6.3%	6/24/09

This table is provided to track Wing specific SCOP testing prior to move to mate and percent of testing completed prior to factory rollout.

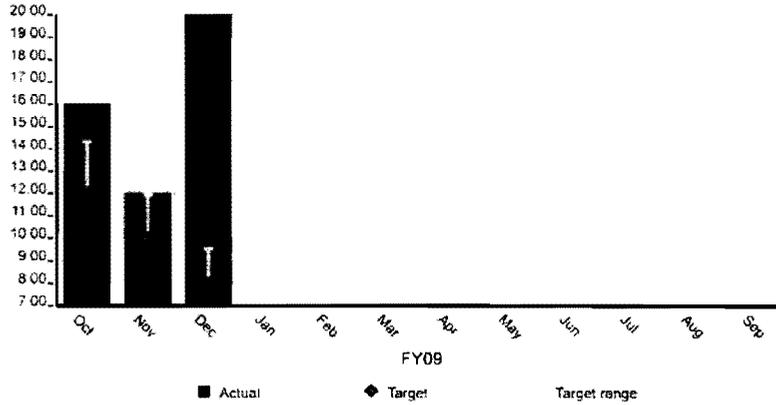
**SCOP Completions on Wing Assemblies**

Test Article	Total SCOPs Planned to Date	%Complete (No. SCOPs Completed)	% Complete prior to Move to Mate (Assy Move Date)	% Complete prior to Rollout	Max Calendar Day Behind MS 6.1
BF-1	15	100% (15)	0%(5/30/07)	40% (6)	-168
BF-2	18	100%(18)	0%(9/11/07)	83.3% (15)	-216
BF-3	18	44.4%(8)	0%(12/16/07)	-	-175
BF-4	19	31.6%(6)	0%(3/3/08)	-	-127
AF-1	15	46.7%(7)	0%(3/27/08)	-	-154
AF-2	14	7.1%(1)	0%(6/13/08)	-	-98
AF-3	15	9.7%(1)	0%(8/1/08)	-	-81
CF-1	10	0%(0)	0%(11/17/08)	-	-29
CF-2	11	0%(0)	-	-	+48

\* Wing testing is still in-work. Travel work from [REDACTED] will be in effect until LRIP 2. Value is not final until all testing is completed.

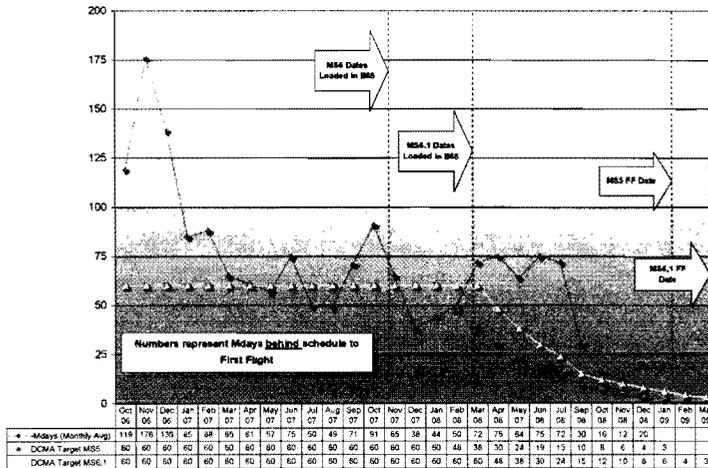
**NSF198AJ05 Sub-Metric:** Description: Reduce monthly average of negative float manufacturing days (Mdays) of key variant First Flight dates over baseline aircraft's (AA-1) delayed (~80Mdays) First Flight date. BF-4 (STOVL - Mission Systems Article) targets a 50% reduction in negative float over baseline, incorporating a 20% reduction each month in negative float Mdays, AF-1 (CTOL - Optimized vs. AA-1) targets a 50% reduction in negative float over baseline, incorporating a 15% reduction each month in negative float Mdays, 12 months out from Master Schedule First Flight date. (Note: Mdays are displayed as positive values, but represent behind schedule status).

**YS-AJH DCMA LMFW F-35 BF-4 First Flight Date**

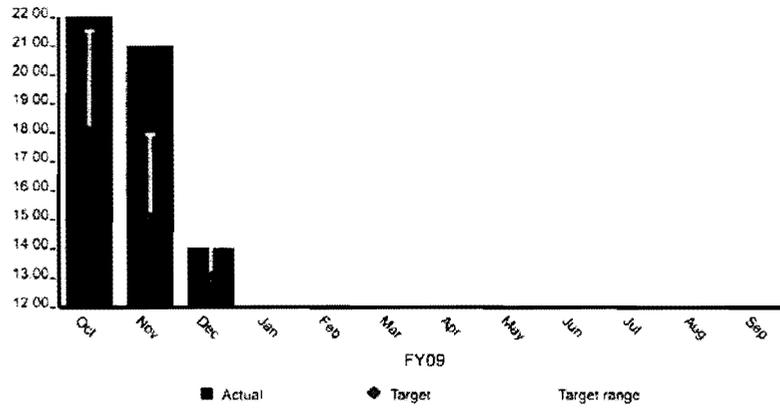


BF-4 sub-metric is rated Red, with a December average of 20 Mdays late to first flight date of 24 Mar 09. BF-4 baseline rollout was 21 Oct 08 and will now most likely occur the last week of January, with a projected first flight in May versus the baseline flight date.

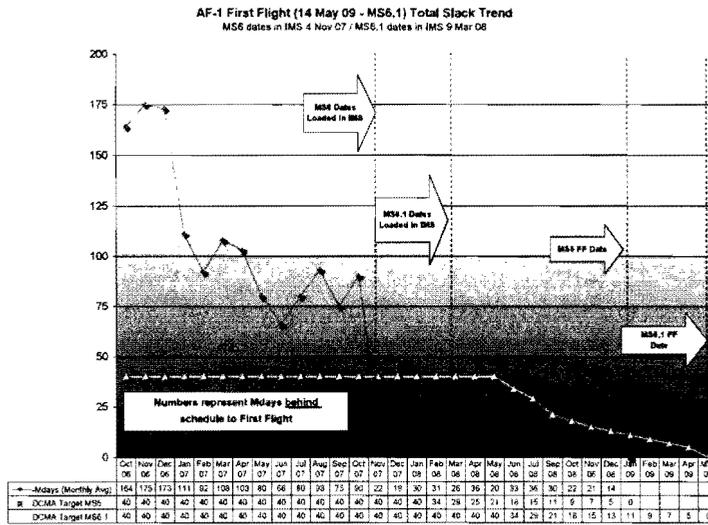
**BF-4 First Flight (24 March 09 - MS6.1) Total Slack Trend**  
MS6 dates in IMS 4 Nov 07 / MS6.1 dates in IMS 9 Mar 08



### YS-AJH DCMA LMFW F-35 AF-1 First Flight Date

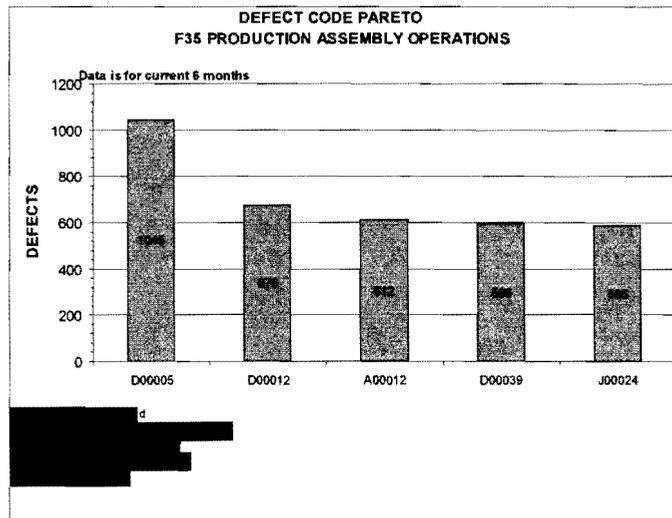
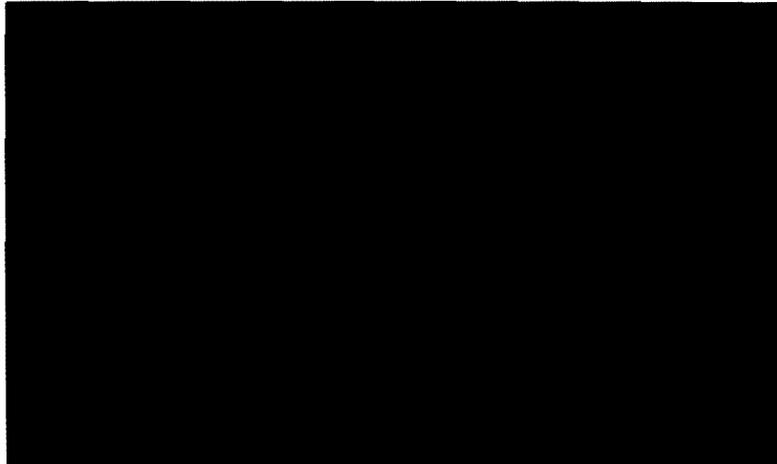


AF-1 sub-metric is rated Red, with a December average of 14 Mdays late to first flight date of 14 May 09.



## Non-Conformance Reduction

**PC – NSF198AJ06:** Description: 10% reduction in MRB discrepancies per year. Metric shows the average number of MR defects per 1000 actual manufacturing hours. The goal is to reduce MR defects per 1000 actual manufacturing hours by 10% per year. Metric is based on contractor provided data that is collected updated in metrics manager NLT the 20th of each month and averaged against all prior months to illustrate normalized trend. Green: <goal of 21, Yellow: within 10% of the goal, Red: >10% above the goal of 21.



Metric Status: Green

Trend: No change

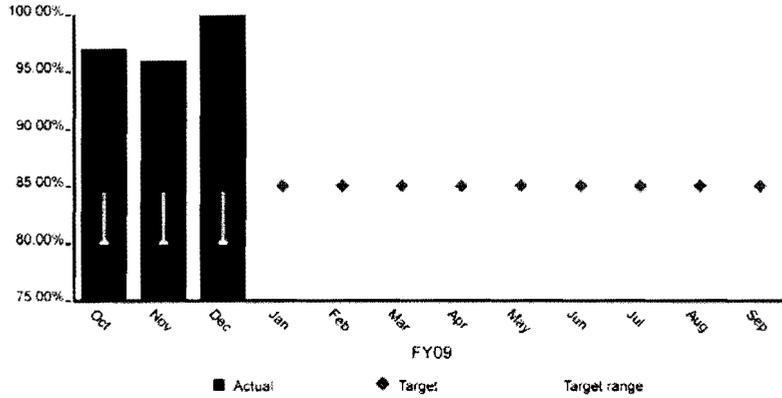
Summary of Metric Status: Metric illustrates improving trend that has been maintained for the last 12 months.

DCMA Actions: Reducing the goal to reflect an effort to further reduce the amount of MRB actions for this year.

## Safety of Flight (SoF)

**PC – NSF198AJ01:** Description: Measures contractor performance in passing Safety of Flight inspections on the first attempt. It is a measure of quality where the target is 85%. Normally, SoF metrics measure the number of SoF escapes to the customer. The F-35 program is not yet delivering to the customer; therefore, we are measuring the contractor's learning curve in presenting to DCMA defect free products in SoF designated areas. Formal SoF implementation was June 2007 – a traditional SoF metric based on customer reported escapes will be adopted once delivery of aircraft begins. Data is updated in Metrics Manager NLT the 20th of the following month. Performance data obtained from local DCMA quality data base as a result of DCMA inspections. Green: >85%, Yellow: 80%-84%, Red: <79%.

**YS-AJH DCMA LMFW F-35 NSF198AJ01 Main SoF Insp 1st time pass**

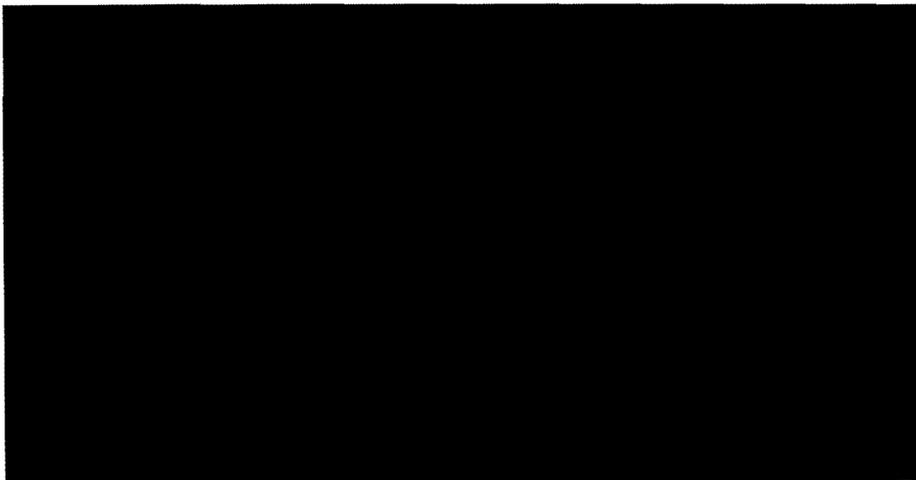


Metric Status: Green

Trend: No Change

## Improve Software Productivity

**PC – NSF198AJ07:** [Redacted]



Metric Status: Green

Trend: Improving

Summary of Metric Status: Current performance is 88.77% – exceeding our target of 83%.

Root Causes: DCMA LMFW performed a risk assessment for this revised PC. Process areas of focus include Software Product Evaluation (SPE) and Interface Work Package (IWP) processes. Another focus area is improved communication through consistent use of developmental software configuration management practices.

Contractor Actions: The contractor’s process includes process improvement activities (Kaizens, Tiger Team Efforts, Value Stream Mapping, Lean Events, etc).

- System Build Process
- Reducing the amount of effort spent working SPAR RWP’s

DCMA Actions: DCMA-LMFW Report and Exec Summary-December 2008 – DCMA met with the contractor to discuss SPE Process Review findings and planned corrective actions. DCMA is in process of developing an IWP process review checklist and also plans to discuss/coordinate with the contractors Quality and Mission Success team to incorporate contractor audit checklist, Subject Matter Expert’s comments and process review suggestions to expedite the process.

DCMA [REDACTED] – Prognostics and Health Management (PHM) Requirements [WBS: 114A – Requirements]

- It is DCMA’s impression that the effect of the combination of recent personnel and physical location moves/changes may produce some reduction in efficiency over the short to medium term.

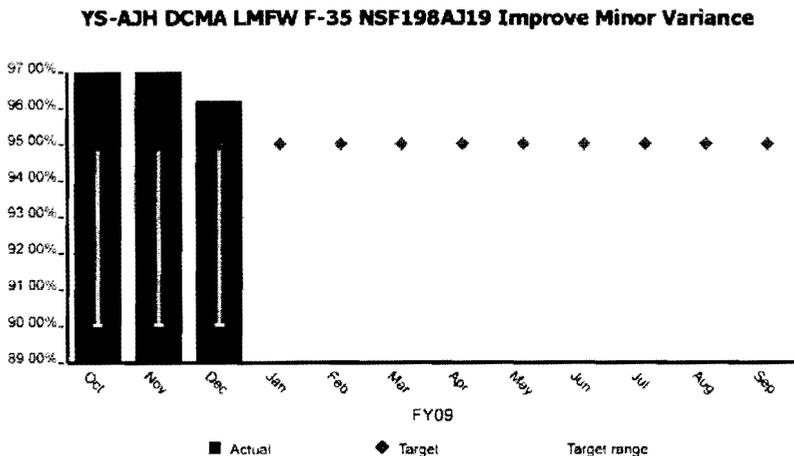
DCMA [REDACTED] – [REDACTED] – Integrated Core Processor (ICP)

- [REDACTED] and DCMA reviewed the following procedures while conducting Q.A. Audit: Software Audit, Risk Management, and JSF-Requirements Management, Requirements Verification. There were some minor findings but no major findings were discovered for this month.

Estimate when PC will achieve goal: Current performance exceeds target and the trend is improving.

### Improve Minor Variance

**PC – NSF198AJ19:** Description: Maintain at least a 95% correct classification rate of variances. Cumulative number of minor variances classified correctly divided by the cumulative number of minor variances reviewed. Metric should be updated at the end of each month but no later than the twentieth of the following month. Green: % of properly classified minor variances is ≥95%, Yellow: 90% up to but not including 95%, Red: <90%.



Metric Status: Green

Trend: Degrading

Summary of Metric Status: The contractor had a correct classification rate of 96.2% this month – goal is to maintain at or above 95%.

Root Causes: No root causes identified at this time

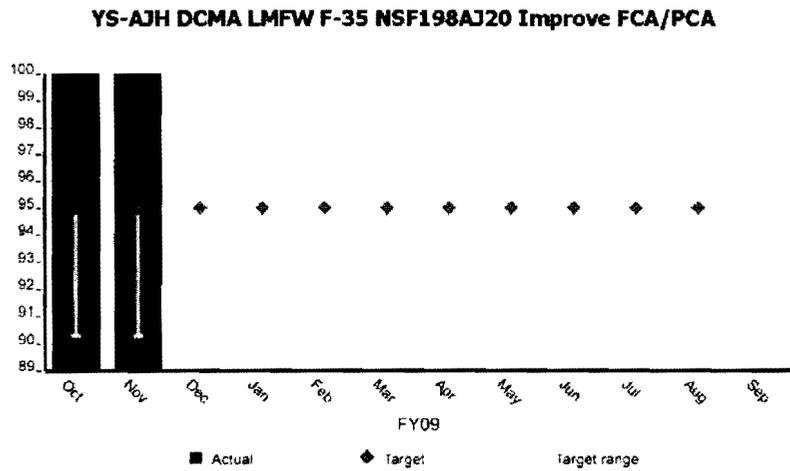
Contractor Actions: No contractor actions required at this time until root causes can be identified.

DCMA Actions: Continue to review Minor Variances for correct classification and to work with the contractor to determine root causes of incorrect classifications. Ensure the contractor takes the necessary corrective actions to preclude any incorrect classifications in the future.

Estimate when PC will achieve goal: The PC has currently achieved its goal by being at or above a correct classification rate of 95%.

### Improve FCA/PCA

**PC – NSF198AJ20:** Description: Ensure that at least 95% of systems reviewed in interim FCA/PCAs meet the design requirements. Technical Description: Verification of the F-35's physical configuration to the design requirements by performing PCAs (physical configuration audits). Percentage of part and assembly numbers reviewed in interim audits in accordance with engineering drawings divided by total population of parts and assemblies assessed. The data used to assess this comes from interim audits from suppliers. Green: % of parts meeting design requirements is  $\geq 95\%$ , Yellow: 90-94%, Red:  $< 90\%$ .



Metric Status: Green

Trend: N/A

Summary of Metric Status: Requirements analysis/ definition.

Root Causes: N/A

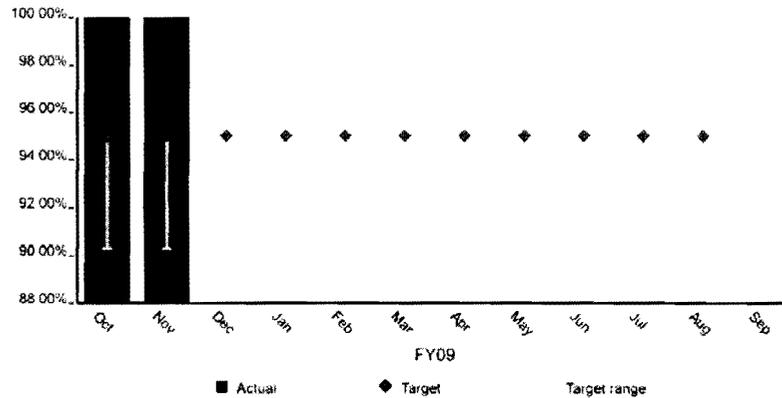
Contractor Actions: Meetings with DCMA personnel.

DCMA Actions: Review of contractor processes. DCMA LMFW participated in QAR audit that found part number marking discrepancies on lower wing skins for AF-1, AF-2, AF-4, and AF-6.

## Improve Minor Change

**PC – NSF198AJ18:** Description: Ensure that 95% of minor changes are correctly classified. A Minor Change is defined as a change to an item which remains interchangeable with the same item in which the change has not been incorporated (form/fit /function interchangeable), has little or no impact to any downstream functions and has no effect on any criteria governing Major A and/or Major B type changes. Criteria for classification of changes are presented in PD-44. Data Source(s): PDM, JDL and weekly CIB meetings participation. Metric is calculated by the number of minor changes correctly classified ÷ by the total number of minor changes reviewed during the month. Data is updated in Metrics Manager NLT the 20th of the following month. Green: >95%, Yellow: ≥90% to ≤95%, Red: <90%.

YS-AJH DCMA LMPW F-35 NSF198AJ18 Improve Minor Change



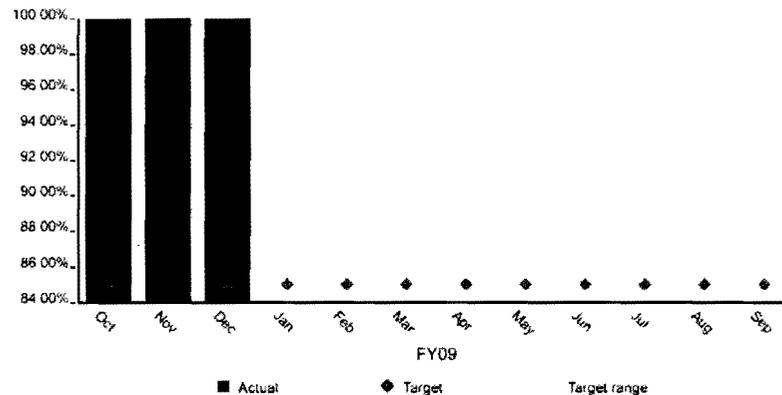
Metric Status: Green

Trend: No Change

## Maintain Assist Audit Request Timing

**PC – NSF198AJ13:** Description: Process contractor/PCO requests for domestic/international Assist Audits within 2 business days 85% of the time. The percentage will be calculated by dividing the number of Assist Audits processed within 2 business days by the total number of Assist Audits requested. Source data will be obtained prior to the 15th of the following month and updated in Metrics Manager NLT the 20th of the following month. Green: >84%, Yellow: 75-84%, Red: <75%.

YS-AJH DCMA LMPW F-35 NSF198AJ13 Maint Asst Audit Req Timing

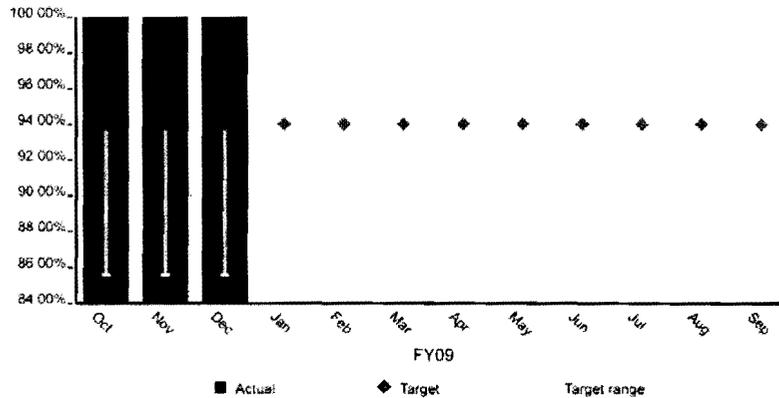


The performance commitment is rated Green for this period.

## Maintain FAR Requests for Contract Closeout

**PC – CDDAGYOC02:** Description: Maintain 94% contract closeout actions within the Federal Acquisition Regulation (FAR) mandated timeframes. The percentage will be calculated by dividing the number of on time contracts closed by the total number of contracts closed. Source data will be obtained prior to the 15th of the following month, and updated in Metrics Manager NLT 20th of the following month. Green: >93%, Yellow: 85-93%, Red: <85%.

YS-AJH DCMA LMFW F-35 CDDAGYOC02 Main FAR Req for K Closeout

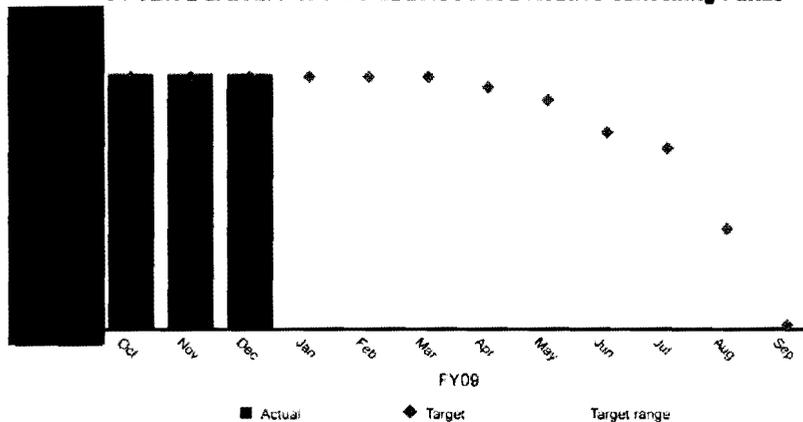


The performance commitment is rated Green for this period.

## Reduce Cancelling Funds

**PC – CDDAGYOC01:** Description: 90% of canceling funds will be billed and/or de-obligated before the end of the fiscal year. Attainment of the goal will be calculated by dividing the total dollar amount of canceling funds billed and/or de-obligated by the total amount of canceling funds identified. Source data will be obtained prior to the 15th of the following month, and updated in Metrics Manager NLT the 20th of the following month. Green: >89%, Yellow: 80-89%, Red: <80% of the funds identified to cancel at year end.

YS-AJH DCMA LMFW F-35 CDDAGYOC01 Reduce Cancelling Funds



The performance commitment is rated Green for this period.

## Earned Value

The complete EV report is attached:



## Appendix A – EV Assessment Criteria

Rating Criteria is based on the DCMA VAC% and when possible should include MR in the DCMA IEAC

- Green - VAC%>-5%
- Yellow -  $-10% < \text{VAC}\% < -5\%$
-  - VAC%<-10%
- N/R - Not Rated or Not Reported