

# Joint Strike Fighter – Lightning II Monthly Assessment Report

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



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## JSF Executive Summary

AA-1 continues flight testing, and successfully transitioned from subsonic to supersonic flight. BF-1 will be down for the rest of the year and is currently undergoing modifications to prepare for full STOVL operations and future flight envelope expansion. Successful completion of engine durability testing to address the turbine blade high cycle fatigue issue is vital to BF-1 STOVL operations.

CF-1 Wing moved to Mate (EMAS 2) on 17 Nov 08. Several subsystems were uninstalled and the Upper Wing Skin was not attached as a result of skin misalignment issues.

<b>SDD/LRIP Production Status (As of 9 Nov 08)</b>	
Forward Fuselage	10 – Assembly 10 – Mate/Sub-Systems/Final
Center Fuselage	12 – Assembly/On-Dock 9 – Mate/Sub-Systems/Final
Aft Fuselage	4 – Assembly/On-Dock 9 – Mate/Sub-Systems/Final
Wing	11 – Assembly 8 – Mate/Sub-Systems/Final
Fuselage Structure Mate (EMAS)	4 – (AJ-1, AF-3, CG-1 & CF-1)
Final Assembly/Sub-Systems/Systems Test/Labs	5 – (BG-1, BF-4, AF-1, AF-2 & AG-1)
Field Ops/ITF	4 – (BF-3, BF-2, BF-1 & AA-1)

Monthly SDD start and finish activities supporting the execution of MS 6.1 continues a negative performance trend. An initial performance improvement was noted in May 2008, after MS6.1 was incorporated, however; this performance has deteriorated over the last five months.

Overall, Production Operation's performance trend is downward since the incorporation of the program replan in July 08. Cumulative behind schedule position of 17,500 hours as of 10 Nov 08. Drivers are: change traffic, out-of-station work, late engineering, and continuing lack of parts availability to build aircraft as planned. AF-1, AG-1 and BF-4 are behind schedule due to shortages. LM Aero managers Value Stream Mapping meetings are making headway in areas of: immature supplier base, late deliveries, and parts shortages not available to material requirements planning. AF-1, BF-3, and BF-4 are behind but are showing steady improvement in the Final Assembly Moving Line Area. Systems-Check-Out [REDACTED] and Flight Line Operations [REDACTED] are impacting Mate thru Delivery's performance to date. Performance continues to be hindered by: critical part shortages, high change traffic, difficult/inefficient work (out-of-station/out-of-sequence), part and tool locating via metrology (although it has improved as of late), integration of flight test instrumentation, late and/or constant rework of planning and tooling issues/availability.

[REDACTED] continues to meet their major delivery commitments to LM. [REDACTED] Schedule performance continues to degrade modestly as well. We expect the schedule performance to remain under pressure, but DCMA [REDACTED] expects [REDACTED] to meet near term Center Fuselage delivery commitments. In October, LM Aero provided contractual direction to adjust delivery dates for the remaining Center Fuselages to better align with LM Aero need dates and smooth [REDACTED] assembly operations. LRIP: Baseline delivery date for AF-6 Center Fuselage was 27 Mar 09 – new projected date is 21 Apr 09 due to the rework required for the recently approved P-5 contract modification.

[REDACTED] – There is six weeks of pressure on the March 2009 CJ-1 delivery due to [REDACTED] internal material shortages. [REDACTED] is proposing to re-sequence AF-4 ahead of CJ-1 since AF-4 has all critical parts available. CF-1 Aft Fuselage shipped in October 2008 with traveled work. The Electronic Unit boxes and

cables were not installed due to outstanding change requests and keel repair. The keel repair issue is expected to affect CF-1, CF-2 and CG-1. The Electronic Unit redesign is expected to affect CF-1, CF-2 and CF-3.

LM Aero and [redacted] teams have scrubbed [redacted] requirements issues through the month of October to resolve false requirements and obtain missing Estimated Completion Dates (ECDs) that obscure true status. Due to the positive results obtained with [redacted] LM Aero and [redacted] teams plan to start a similar scrubbing effort on [redacted] requirements issues in November. LM Aero has also stated that they plan to perform a similar scrub of requirements issues on LM Aero [redacted] delivery commitments to [redacted]

One Aero [redacted] Transition – In late 2006, LM Aero announced it would begin a transformation of its business processes and systems for Finance, Global Sustainment and Supply Chain over the next several years known as One Aero [redacted] Transition. The purpose of this initiative is to support full-rate F-35 production, provide new Global Sustainment capabilities for performance based contracting, transform and integrate LM Aero's key business processes, retire aging legacy information systems, and align with Corporate strategies built on [redacted]. Deployment 1, which focuses primarily on the Finance and initial Global Sustainment capabilities, went live 8 Jan 08 and was considered a success. Work is underway for Deployment 2 and as briefed on 15 May 08, LM Aero has determined after their blueprinting of tasks under Deployment 2, a rebasing of the implementation schedule will occur.

The revised schedule is:

1. [redacted] From April 2009 to August 2009
2. Remainder of Fort Worth - From October 2009 to February 2010
3. All Marietta Programs - From April 2010 to November 2010
4. Palmdale - Unclassified Programs - From September 2010 to May 2011
5. Palmdale - Classified Programs - From January 2011 to August 2011

LM Aero recently informed DCMA that [redacted] could not readily segregate recurring from non-recurring costs. As a result, the company is preparing accounting changes to accommodate cost estimating relationships that heretofore used recurring material as its independent variable. DCMA is not certain this situation complies with the EVMS ANSI Guidelines #20 and #21. The company's current Estimate-at-Completion (EAC) is [redacted] which is significantly higher than the original base line of [redacted]

Estimate-at-Completion (\$ millions):

	<u>May 07</u>	<u>Dec 07</u>	<u>Feb 08</u>	<u>May 08</u>
Deployment 1	62.0	52.2	52.2	55.3
Deployment 2	255.9	265.7	269.8	390.4
Total	317.9	317.9	322.0	445.7

## Report Scope

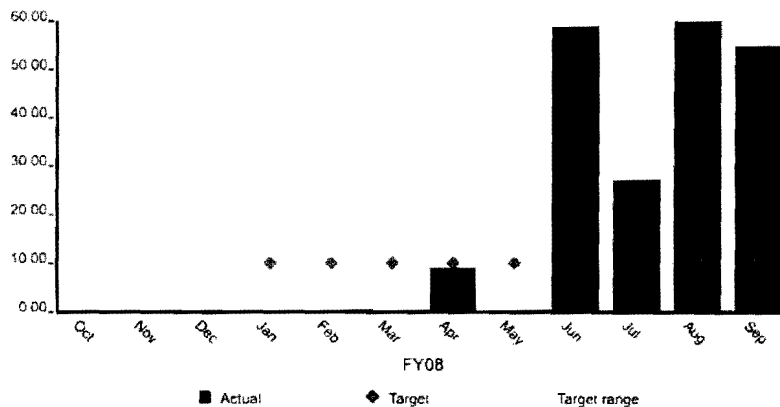
The Joint Strike Fighter – Lighting II Monthly Assessment Report (MAR) is focused on reporting the status of Customer Outcomes and associated Performance Commitments identified in the Memorandum of Agreement with the JSF Program Office. Interdisciplinary teaming between DCMA personnel is used to ensure 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	An improvement of 1% per annum over SDD baseline for delivery for key airframe suppliers, based upon SDD delivery data	Green: ≥1% Yellow: 0-1% Red: <0%	New / In-Work
Improve Supplier Quality Rate	Each delegated supplier has quality ratings >96%	Green: ≥ 96% Yellow: 87%-95% Red: <87%	G
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%	New / In-Work
Improve Minor Change	Ensure that 95% of minor changes are correctly classified	Green: >95% Yellow: ≥90% to ≤95% Red: <90%	New / In-Work
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 LMFV F-35 NSF198AJ17 Maintain LRIP Acft Delivery



Data as of: September 2008

Metric Status: Red

Trend: Improving

Summary of Metric Status: Metric is currently -55 Mdays (~2.6 months) for month end September.

Root Causes: The Critical Path driver for both AF6 and AF7 is the projected late delivery of the Aft Fuselages. Late parts are continuing to hamper AF6 and AF7 build as well. [REDACTED] deliveries are being impacted by hard machining issues. An additional [REDACTED] machine was projected to come online mid-October. Additionally, P5 implementation at [REDACTED] is adding pressure to Center Fuselage delivery dates. It is projected that these pressures will begin to impact LRIP 2 aircraft delivery dates.

The majority of past due items are in the Forward Fuselage, driven by late part deliveries. As parts arrive, it is expected that the Forward Fuselage Build team will recover schedule and that this component will move to Mate without impact to scheduled DD-250.

Contractor Actions: Lockheed Management is presently working with [REDACTED] Management to develop an integrated recovery plan to preserve contract DD-250 dates.

DCMA Actions: The LRIP Annex to the MOA between DCMA and the JSFPO has been signed by [REDACTED] (DCMA LMFV) and is effective as of 1 Oct 2008. DCMA P/SI, PA Production and PA D&I Team members are in the process of developing a formal LM Aero/DCMA Joint Process Review list based on cause and effect analysis as part of our strategy to influence LRIP aircraft deliveries. Potential review areas are: Production Control, BOM and Shop Floor exceptions. Reviews currently in-work that support this performance commitment are Tube & Weld Fabrication and JSF Wing Special Tooling Storage and Control.

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

This is the first monthly report on the recently realigned the Performance Comment (PC) NSF198AJ16 to support NSF198A17 Maintain LRIP Delivery as a sub-metric.

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).

Please note that 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	75	-	-	Est. Oct 09
AF-7	75	-	-	Est. Nov 09

Currently 75 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.

█ – AF-6 and up modifications around the fuel floor area will be accomplished at █ to accommodate P5 Line item Replaceable Units (LRU). The units are going to be installed by LM Aero Fort Worth – this will move the delivery dates to the right. █ top three schedule impacts are: Late Load/Move Delay, Producibility, and Part Shortages. The latest SOP revision addresses a number of factors, among them are, critical keel and bulkhead shortages, composite panel shortages, █ shortages, late engineering changes, and new hire performance impact. Unavailability of fuel floors and bulkheads will prevent AF-9 (and on) to be loaded into █. AF-8 is scheduled to leave █ by 10 Nov 08, leaving the cost center vacant. LRIP Risk to schedule is currently driven by SDD/CV units experiencing schedule impacts and critical parts shortages.





Contractor Actions: [REDACTED]: Several Corrective Action Requests (CARs) were written to [REDACTED] by Lockheed. [REDACTED] did not respond to those CARs so Lockheed has suspended [REDACTED] delegation for end item acceptance for the JSF program only. Lockheed will now perform that function. [REDACTED] A CAR was issued by Lockheed to [REDACTED]. All corrective actions are due by 21 November 2008.

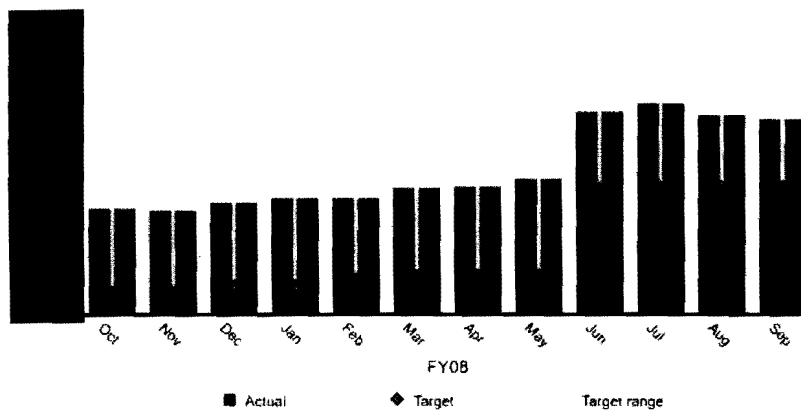
DCMA Actions: [REDACTED] DCMA Northern California will be monitoring [REDACTED] corrective actions. [REDACTED] The CAR was forwarded to DCMA at the supplier facility for tracking of corrective actions.

AME DD-250 Requirement: The LRIP 1 contract requires a DD-250 for Ancillary Mission Equipment (AME) (i.e. pylons, launchers, pilot flight equipment, etc.). Meetings are occurring with Lockheed Martin and DCMA on the processes needed to accomplish that requirement. DCMA will “flag” the purchase order for Government Source Inspection (GSI) and issue a Letter of Delegation to DCMA at the responsible supplier where the equipment will be accepted. One of the purchase orders to [REDACTED] was released without DCMA notification. Lockheed is correcting that purchase order and the process so that issue will not occur again. Lockheed is recommending a “mock” DD-250 process at the suppliers, so that when the event occurs, there will be no issues. We are meeting bi-weekly to assure all processes are in place.

### 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 \$24,135,053K reported in the Cost Performance Report (CPR). The September 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	Cost Plus Award Fee	Cost Plus Award Fee	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%
[REDACTED]	(b) Yellow	0.98	0.987	1.01	0.975	9.6%	[REDACTED]	N/A

**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 9.6 percent more efficient. The BAC has increased by 39% 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 [REDACTED] database for the corresponding month shows a net cost growth of threats and pressures exceeding [REDACTED]

**Secondary Trip Wires –**

- Baseline Execution Index (BEI): Cumulative tasks from October 2001 thru October 2008: Cum BEI = 132,046 Completed Tasks/134,263 Planned Tasks = 0.98
- Monthly (October 2008) Tasks: 672 Completed Tasks vs. 1392 Baselined Tasks
- SPI= BCWP/BCWS= [REDACTED] =0.987
- CPLI= (1490 + 11)/1490 = 1.01 (Time Now = 26 Oct 08)
- CPI= BCWP/ACWP= [REDACTED] =0.975
- CPI/TCPI= 0.975/1.079=.904
- Contracts Mods – (BAC now)/original BAC 10/01= [REDACTED] )=1.398

The DCMA Risk Rating for EVMS at the total program level is rated Green using the agreed to parameter of VAC (-4.59%). Compare this to the LM Aero's EAC and one can see a difference of 4.5%. Similarly, the TCPI<sub>EAC</sub> is different when using the DCMA IEAC versus the contractor's EAC:

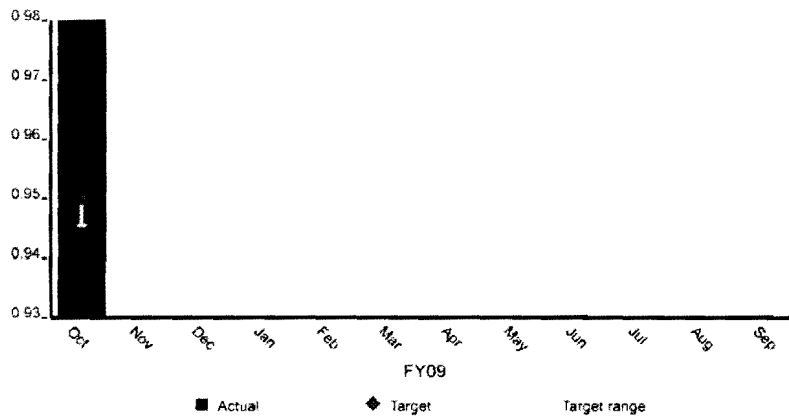
$$\begin{aligned} \text{TCPI}_{\text{DCMA IEAC}} &= 0.916 \\ \text{TCPI}_{\text{LM EAC}} &= 1.079 \end{aligned}$$

The DCMA IEAC is based upon the figures provided in the September 08 CPR report. LM Aero incurred about [REDACTED] Million dollars a month on average for the last 6 months. With expenditures of this magnitude, DCMA projects that the existing contract budget with OTB will be depleted in FY2011, at least three years prior to contract close (BAC of [REDACTED] – ACWP of [REDACTED] remaining). Even with an immediate 50% reduction in the burn rate the program will have a daunting task of meeting the funding shortfall. The DCMA IEAC considers the additional one year of performance in the new OTS. Another factor was the cost growth of Cost-Plus Suppliers – for example, the Mission and Vehicle System Supplier EAC has grown by [REDACTED] million from June 07 to August 08.

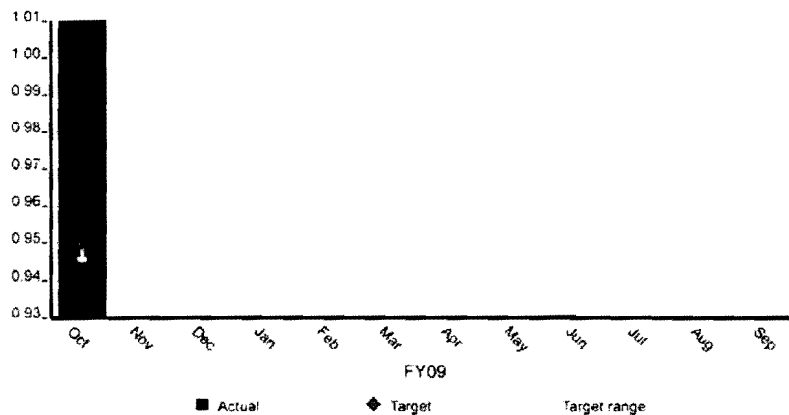
**NSF198AJ08 Sub-Metrics:** Description: The SDD Baseline Execution Index (BEI) metric is an Integrated Master Schedule (IMS) based metric that calculates the efficiency with which actual work has been accomplished when measured against the baseline. The BEI provides insight into the realism of program 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**

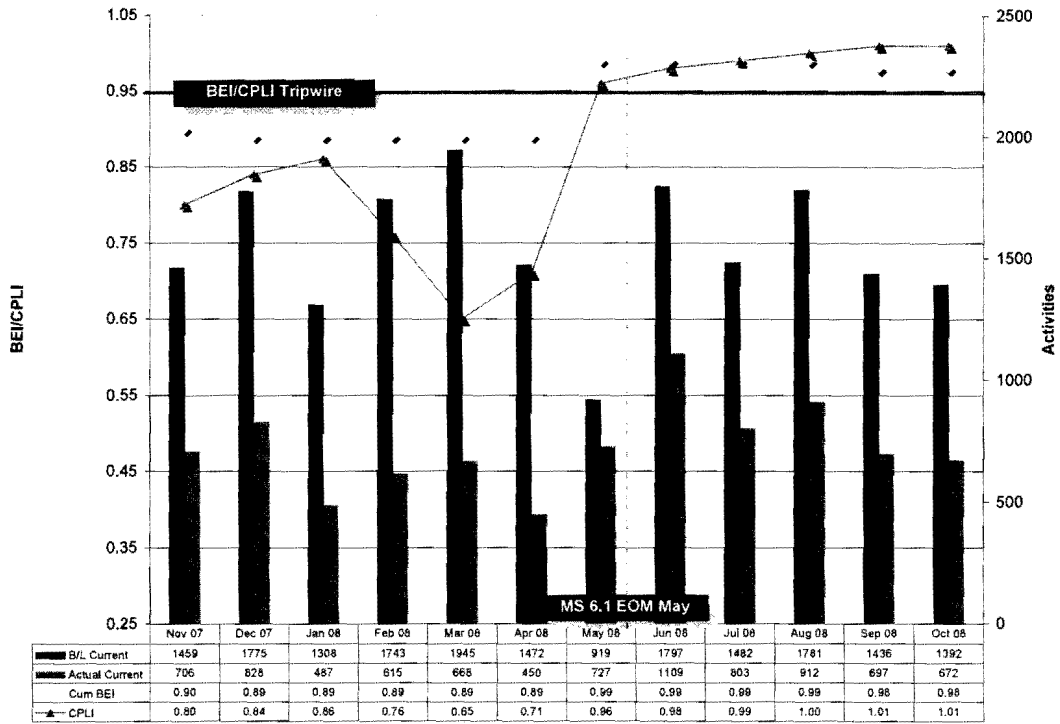


**YS-AJH DCMA LMFW F-35 SDD IMS CPLI**



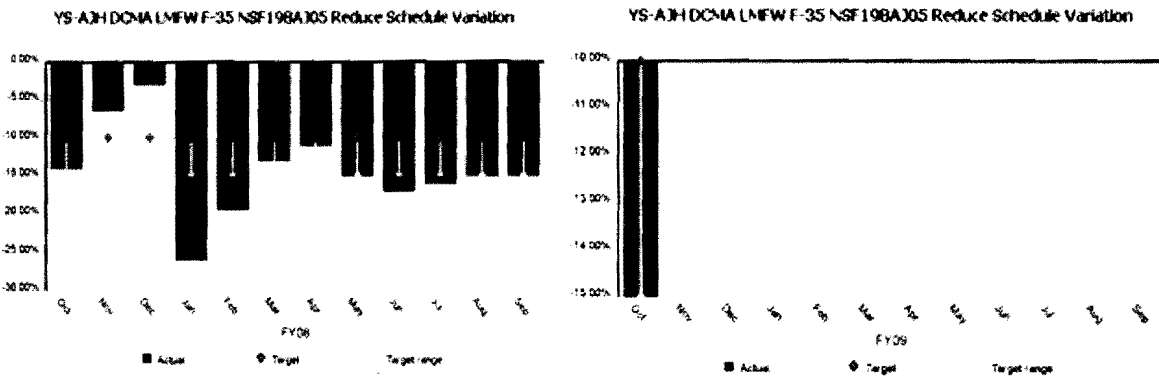
BEI and CPLI sub-metrics are rated Green for this period, with the SDD Program Cum BEI at .98, and SDD CPLI at 1.01 for month end October. As of month-end May 2008, MS-6.1 baseline replan dates have been incorporated into the IMS. A decrease in monthly performance to baseline task completions continues.

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



### 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.



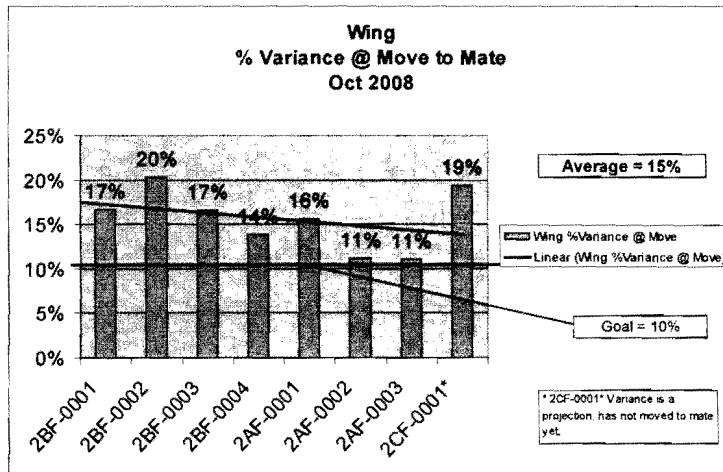
Data as of: October 2008

Metric Status: Yellow

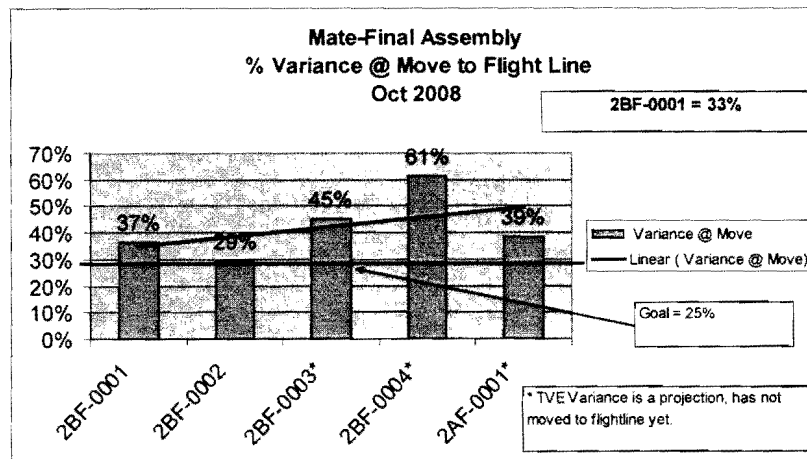
Performance Commitment is rated Yellow this period with a current overall Wing average touch labor variance to schedule holding steady at -15%.

Trend: No Change

Summary of Metric Status: The chart below is a breakout of the Wings which build up the -15% variation average. The Wing has gradually reduced their out of station tasks travelled to Mate but will still overlap with Mate for some time. With such an overlap, it will continue to be a challenge in completing aircraft within cost and schedule requirements. Past performance has shown that Mate and Final Assembly performance has been significantly affected by the condition (maturity) of the Wing at delivery. There has been no change to the average variance since no Wings have moved to Mate during this reporting period. CF-1 missed its move to Mate (Sept 08) due to a Wing skin misalignment issue.



The chart (sub-metric) below is a breakout of the aircraft that have either gone through or are in Mate and Final Assembly along with their associated percent variance to schedule. What we are seeing is that LM often starts behind schedule and over time works down the variance before it has to move aircraft out. BF-3 and BF-4 and AF-1 are behind but are showing steady improvement in the Final Assembly Moving Line Area. Our chart uses SPI data for aircraft that have yet to move to the flight line. *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."*



Root Causes: Performance continues to be hindered by: Critical parts shortages, high change traffic, difficult/inefficient work (Out of Station/Out of Sequence, part & tool locating via metrology (although it has improved as of late), integration of flight test instrumentation, etc.), late and/or constant rework of planning and tooling issues/availability.

Contractor Actions: LM Aero continues to put emphasis on cost/schedule savings initiatives – Shortage Resolution Process with consulting company ( ), advanced workable set up teams to review job packages prior to major assembly start, design and tooling changes 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 (starting to show progress), process improvement initiatives (such as Bracket locating/bulkhead marking and portable/perishable tools) and increased manpower and outsourcing to reduce planning backlog ( ).

DCMA Actions: A Joint Process Review (JSF Wing Special Tooling Storage and Control) was completed September 11-18, 2008. A total of 18 Findings were documented during the review and each will require LM-Aero corrective action. In addition to the Findings, there were 4 Favorable Observations and 6 Unfavorable Observations where no additional LM Aero actions are required. The initial responses were received and DCMA is currently working with the Contractor on their resolutions. The JPR team will verify that each Finding was corrected as soon as all of the corrective action responses have been received. The JPR team will then close the review.

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

This is the first monthly report on the recently realigned the Performance Comment (PC) NSF198AJ16 to support NSF198A05 Reduce Schedule Variation as a sub-metric during System Development and Demonstration (SDD) phase of the F-35 program.

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 (4 Nov 08), 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 LMFW.

**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	123	93	75.6%	47.8% (16 Aug 08)
BF-3	122	28	22.9%	9/29/08
BF-4	121	20	16.5%	10/21/08
AF-1	97	20	20.6%	11/25/08
AF-2	92	9	9.7%	1/15/09
AF-3	89	7	7.8%	2/19/09

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 prior to Move to Mate**

Test Article	Total SCOPs Planned	% 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	19	94.74%(18)	0%(9/11/07)	78.94% (15)	-216 <sup>1</sup>
BF-3	19	26.32%(5)	0%(12/16/07)	-	-147 <sup>1</sup>
BF-4	19	21.05%(4)	0%(3/3/08)	-	-87 <sup>1</sup>
AF-1	15	13.33%(2)	0%(3/27/08)	-	-109 <sup>1</sup>
AF-2	14	0%(0)	0%(6/13/08)	-	-
AF-3	13	0%(0)	0%(8/1/08)	-	-

<sup>1</sup> Wing testing is still in-work. Travel work from SWBS 400 to SWBS 800 will be in effect until LRIP 2. Value is not final until all testing is completed.

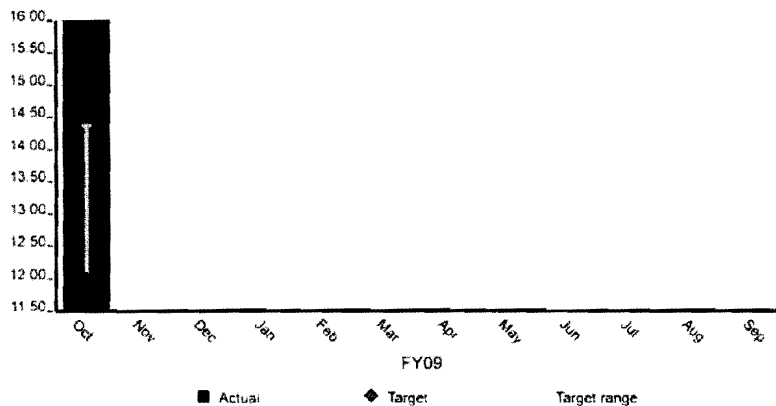
██████████ – ██████ has responsibility for SCOP development of their systems included in the Empennage (AFT, Horizontal Tail and Vertical Tail assemblies) for the various F-35 variants. DCMA ██████ is tracking the progress for SCOP preparation, sign off and release. All CTOL, STOVL and CV SCOPs have been issued to ██████ factory floor.

Testing of Empennage assemblies is still behind schedule. Two (2) AFT sections (CF-3) and eight (8) aircraft components scheduled for SCOP testing completion in Sept/Oct 08 timeframe were not completed. Schedule shortfalls are due to AFT material shortages (internal) and deterioration of touch labor performance.

██████████ has developed an SDD production recovery plan (SOP6, Issue 2) that aligns AFT F usage and Empennage deliveries closer to MS 6.1 contract dates. Furthermore ██████ is managing the critical suppliers individually that adversely impact this revised execution plan as well as developing additional sources of supply.

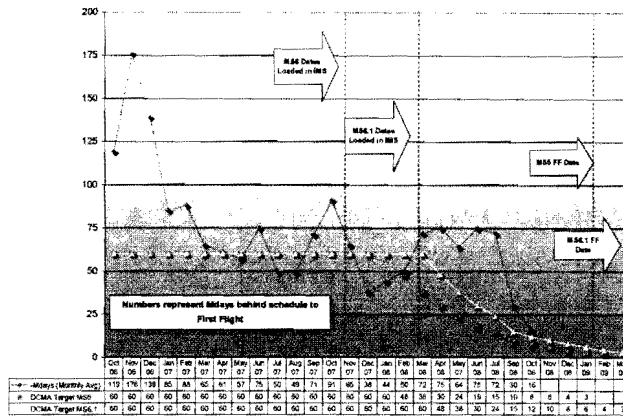
**NSF198AJ05 Sub-Metric:** Description: Reduce monthly average of negative float manufacturing days (Mdays) of key variant First Flight dates over baseline aircraft's (AA-1) delayed (~80Mdays) First Flight date. BF-4 (STOVL - Mission Systems Article) targets a 50% reduction in negative float over baseline, 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 LMFV F-35 BF-4 First Flight Date**

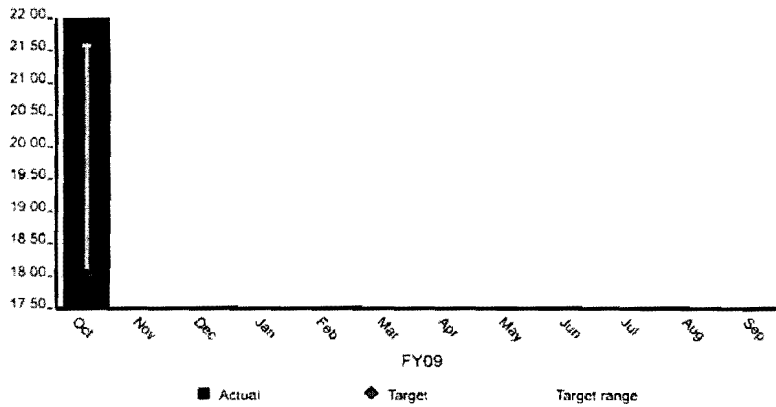


BF-4 sub-metric is rated Red, with an October average of 16 Mdays late to first flight date. BF-4 roll-out date is projected to slip from 21 Oct 08 to mid-December as a result of part shortages impacting build.

**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

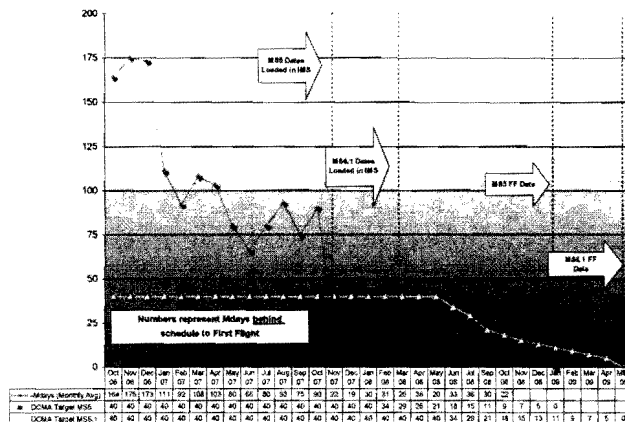


**YS-AJH DCMA LMFV F-35 AF-1 First Flight Date**



AF-1 sub-metric is rated Red, with an October average of 22 Mdays late to first flight date. Similar to BF-4, A F-1 rollout date is projected to slip from 25 Nov 08 to mid-December as a result of part shortages impacting build.

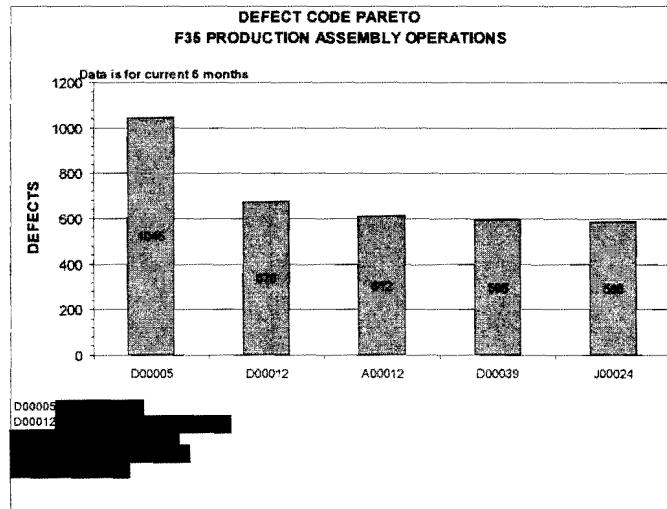
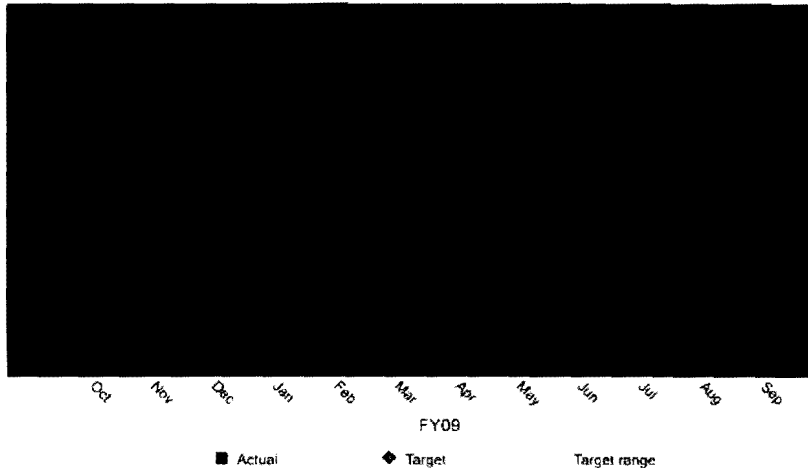
**AF-1 First Flight (14 May 09 - MS6.1) Total Slack Trend**  
 MS6 dates in IMS 4 Nov 07 / MS6.1 dates in IMS 9 Mar 08





## 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.



Data as of: October 2008 – Lower metric shows top five defect drivers overall.

Metric Status: Green

Trend: Improving

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

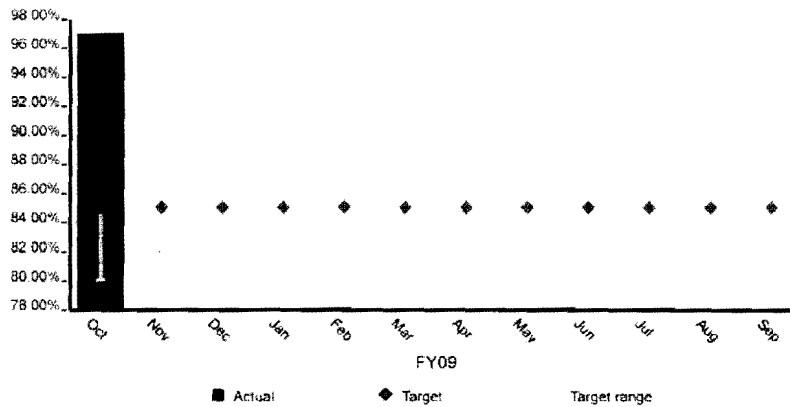
DCMA Actions: Reducing the goal to reflect an effort to further reduce the amount of MRB actions for this year.

Estimate when PC will achieve goal: PC has achieved goal as set last 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**



Data as of: October 2008

Metric Status: Green

Trend: No Change

## Improve Software Productivity

**PC – NSF198AJ07:** [REDACTED]

[REDACTED]

Data as of: October 2008

Metric Status: Green

Trend: No Change

Summary of Metric Status: Metric shows a value of 87.27% for October 2008, which is 0.12% lower than prior report. This doesn't reflect a continuing negative slope. The value of this metric for August 2008 was 86.81%.

Root Causes: DCMA LMFV 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). The contractor's improvement activities may include emphasis in the following areas:

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

DCMA Actions: DCMA Lockheed Martin Fort Worth [REDACTED] Airborne Software]: DCMA-LMFV continues to finalize the SPE Process Review and it should be completed by month's end. The SIMS process review is in the beginning stage of process familiarization.

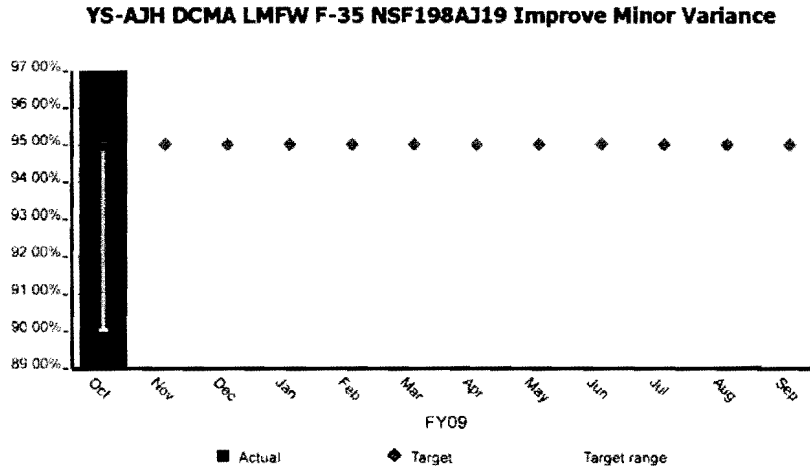
DCMA [REDACTED] [REDACTED] – Prognostics and Health Management (PHM) Requirements [WBS [REDACTED] – Requirements]: DCMA is looking into a new metric (Block 0.5 – which has been green since it was first used). This new metric is Defect Phase Containment (DPC), and may be phased in for monitoring as soon as next month. Currently DCMA is building a historical archive/single source chart from all the individual monthly charts which document this area. The metric being currently considered is an overall roll-up across all MS S/W domains.

DCMA Lockheed Martin [REDACTED] Integrated Core Processor (ICP)]: DCMA and LM are working together on monthly Process audits. A CAR was written regarding the Software Release Procedure and LMEagan has requested and was granted an extension until next month.

Estimate when PC will achieve goal: Although the contractor's current performance exceeds our PC goal, the number of defects detected in-phase versus the number of defects caught out-of-phase is not fully known until latter phases of software development have been completed. Therefore DCMA will continue process reviews in an effort to ensure the performance will meet this PC target when Block 1.0 is 98% complete.

## 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  $\geq 95\%$ , Yellow: 90% up to but not including 95%, Red:  $< 90\%$ .



Data as of: October 2008

Metric Status: Green

Trend: No Change

Summary of Metric Status: The contractor had a correct classification rate of 97% this month and the goal is to maintain at or above 95%, therefore, the goal has been met.

Root Causes: No root causes identified at this time.

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

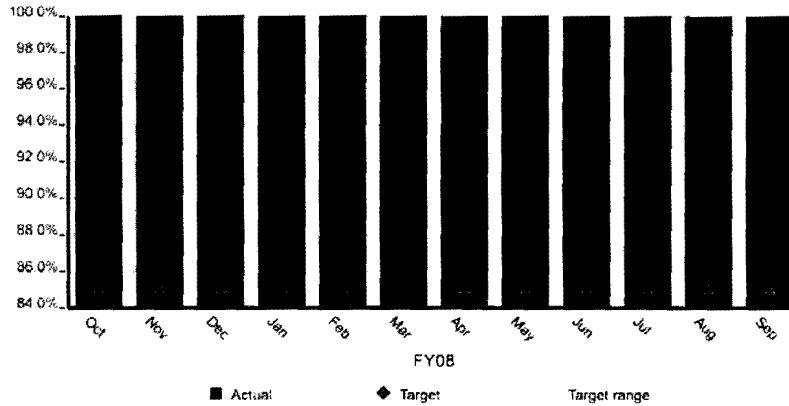
DCMA Actions: None at this time other than to continue to review Minor Variances for correct classification and to work with the contractor to determine root causes of incorrect classifications and to ensure the contractor takes the necessary corrective actions to preclude any incorrect classifications in the future.

Estimate when PC will achieve goal: The PC has currently achieved its goal by being at or above 95% correct classification rate but DCMA must continue to ensure that this goal is maintained or exceeded for the upcoming months.

### 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 LMFW F-35 NSF198AJ13 Maint Asst Audit Req Timing**

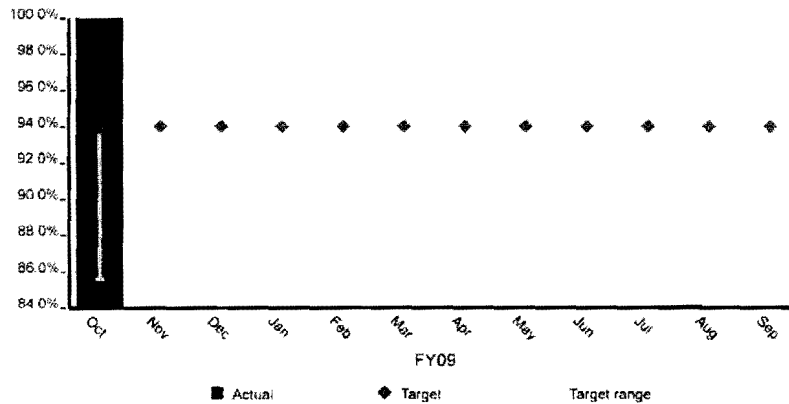


The performance commitment is rated Green for this period.

### 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%.

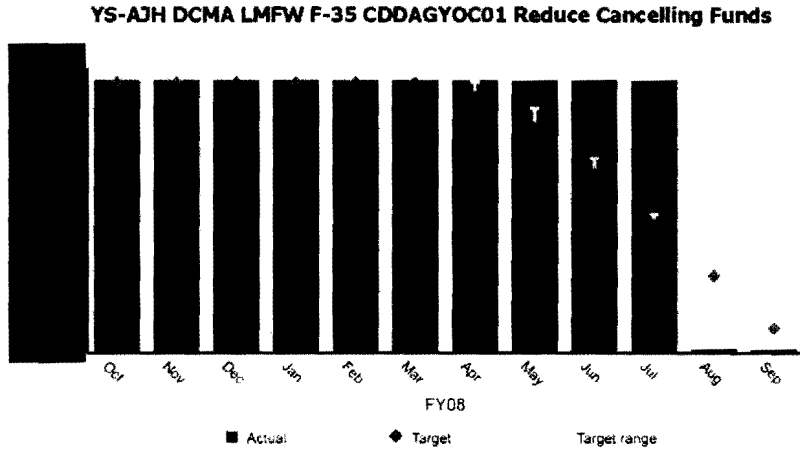
**YS-AJH DCMA LMFW F-35 CDDAGYOC02 Main FAR Req for K Closeout**



The performance commitment is rated Green for this period.

## Reduce Cancellling 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.



The performance commitment is rated Green for this period.

### Earned Value



## 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