

# Joint Strike Fighter – Lightning II Monthly Assessment Report

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



July 2009

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## Program Summary

Flight Test: As of this report, LM Aero has not performed to Flight Test Plan V15. Execution and support of MS6.1 is significantly behind schedule. A review of V15 is in work, with a schedule update expected in or around the September 2009 timeframe. The revision (incorporated into the Master Schedule) would be used for the October 2009 DAB.

SDD Flight Test (As of 14 July 09)	Performed to Date	Scheduled thru July 09
AA-1	87 flights/118.7 hours	86 flights / 131 hours
BF-1	14 flights/13.3 hours	79 flights / 142 hours
BF-2	2 flights/1.7 hours	55 flights / 99 hours
BF-3	0 flights	1 flight / 2 hours
BF-4	0 flights	10 flights / 18 hours
AF-1	0 flights	1 flights / 2 hours

SDD/LRIP Production Status (As of 12 Jul 09)	
Forward Fuselage	10 – Assembly 11 – Mate/Sub-Systems/Final
Center Fuselage	15 – Assembly/On-Dock 11 – Mate/Sub-Systems/Final
Aft Fuselage	7 – Assembly/On-Dock 11 – Mate/Sub-Systems/Final
Wing	11 – Assembly 11 – Mate/Sub-Systems/Final
Fuselage Structure Mate (EMAS)	5 – (BF-5, CF-3, AF-6, AF-4 & BH-1)
Final Assembly/Sub-Systems/Systems Test/Labs	9 – (CJ-1, CF-2, CF-1, AF-3, AF-2, CG-1, AG-1, AJ-1 & BG-1)
Field Ops/Ground Test/ITF	6 – (AA-1, BF-1, BF-2, AF-1, BF-4 & BF-3)

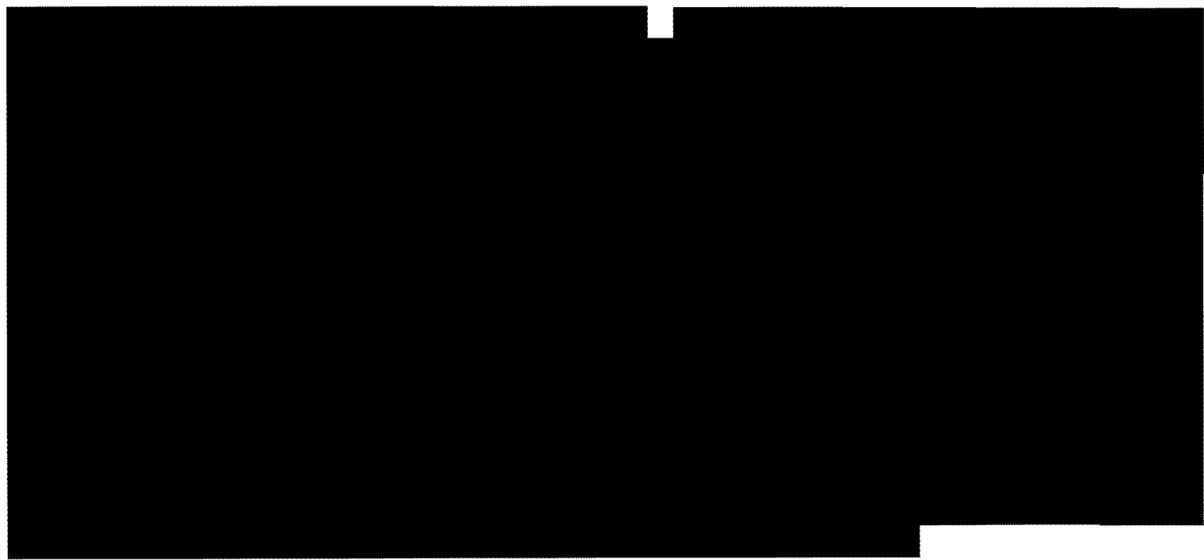
**Schedule:** The Program has surpassed one year since the revised Program Master Schedule (6.1), which established an Over Target Baseline for cost and schedule, was implemented. An initial improvement in overall SDD planned versus actual activity completion performance was observed in May 2008 when MS 6.1 was implemented into the schedule. Over the last seven months, performance has averaged an approximate 40% completion rate. A continuance of schedule degradation, as a result of new projected dates reflecting change volume, traveled work, and more accurate (increased) EMAS span durations, is occurring. MS 6.1 does not appear to be achievable - there is a strong probability of Master Schedule realignment (MS 6.2?) currently under consideration.

SDD Mate tasks which are behind schedule have affected LRIP aircraft production as well. As of month end May 2009, LRIP 1 experienced a marked increase (from ~2 months to an average of ~5 months) behind schedule to their DD-250 delivery dates. LRIP 2 aircraft are now averaging ~3.5 months behind (a ~2.5 month increase from previous report). The Maintain LRIP Aircraft Delivery section of this report provides LRIP 1 examples. Current schedule variance to baseline finish performance of key build activities for AF-6 and AF-7 indicates significant regression to aircraft rollout completions. Similar trends are occurring in all LRIP 2 aircraft.

**Cost:** DCMA IEAC is [REDACTED] for the SDD contract based upon the May 2009 CPR report. LM Aero has expended an average of [REDACTED] per month over the last six months. Assuming a continuance of this expenditure rate, DCMA projects the existing SDD budget with OTB will be depleted in FY2011, [REDACTED]. The LM EAC MR is close to 2.6% of Estimate-to-Complete and is inadequate considering the risks remaining. Using the Standard formula based on cumulative SPI and CPI (since replan) 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 totals [REDACTED] vs. the LM Aero BAC of [REDACTED] and is [REDACTED] than LM Aero's BAC or EAC. The DCMA IEAC includes threats and pressures at [REDACTED] and the BF-4 STOVL Upper Lift Fan Door incident.

LM Aero EAC8 estimate is an additional [REDACTED] EAC8 is scheduled to be incorporated in the June 09 CPR. This incorporation will reduce MR, further straining the management of the program. DCMA's perspective is that EAC 8 is optimistic and does not include factors such as: [REDACTED] in Change Requirements, [REDACTED] for Suppliers, Replan, Performance , Rework, Traveled Work, Aircraft Damages [REDACTED] Flight Test Schedule Performance, Schedule degradation, etc.

**EV Corrective Action Plan (CAP):** LM Aero/Corporate hosted the DCMA EV Center in June 2009 and provided DCMA with status of their EVMS CAP. The EV Center suggested an alternate approach to a full-up Compliance Review, allowing the contractor to do a self assessment. This approach encourages the contractor to implement a more robust review process at the highest company level and allows the EV Center to more effectively use their resources. The approach was agreed to by all parties and LM Aero/Corporate will provide the results to DCMA by the end of August. The data will be reviewed by the DCMA EVMS in September 2009 and then (depending on the results of the self-assessment) a more focus reviewed would occur three to five months later by the DCMA EV Center.



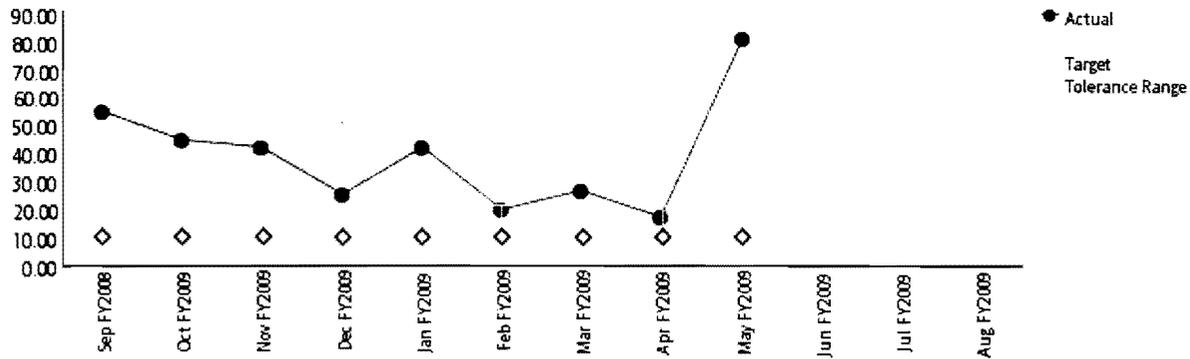
## Report Scope

The Joint Strike Fighter – Lighting II Monthly Assessment Report (MAR) is focused on reporting the status of Customer Outcomes and associated Performance Indicators 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 Indicator	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%)	G
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
Improve Software Productivity	[REDACTED]	[REDACTED]	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

## Maintain LRIP Aircraft Delivery Rate

**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 that have passed their baseline start date 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.



Metric Status: Red

Trend: Degrading

Summary of Metric Status: Metric is -81 Mdays for month end May.

Root Causes: LRIP 1 – Negative critical path float for May increased considerably from last month, mainly a result of new projected dates that reflect CR and traveled work that will need to be accomplished prior to roll out. Additionally, Mate tasks are behind schedule due to SDD aircraft unloading late.

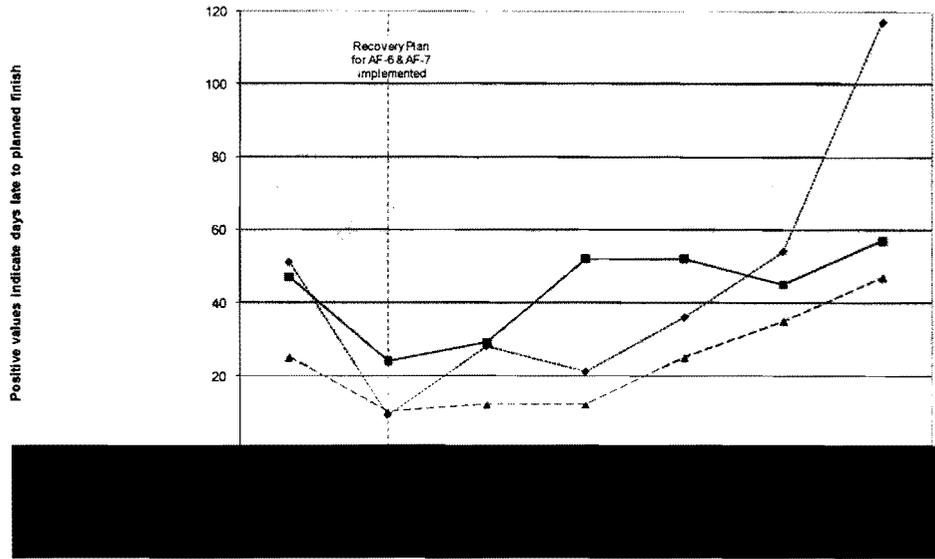
LRIP 2 – Forward Fuselage and the Wing area are now working on the first nine aircraft. [REDACTED] has all twelve Center Fuselages in-work and [REDACTED] has the first six Aft Fuselages in work. The IMS has now been updated with the latest move forecast projections which significantly moved the Program to the right as a result of the EMAS stations loaded with SDD aircraft longer than originally planned. In addition to the SDD delays, the EMAS spans have been increased to more accurately reflect the expected durations (45d to 75d). Concerns – Timely availability of tooling (SDD/LRIP 1 units completing on time) and continued late part deliveries to various SWBS's.

LRIP 1 SRA: Probability Assessment indicates AF-6 could be 133 Mdays late to DD250 and AF-7 could be 138 Mdays late. LRIP 2 SRA: Probability Assessment indicates AF-8 could be 108 Mdays late to Contract DD250.

Contractor Actions: Mitigation activities such as the use of overtime, span adjustments, and out of station installations for late parts continues. Additionally, a potential Master Schedule realignment (MS 6.2?) is in the preliminary discussion stages at this time, as MS 6.1 does not appear achievable.

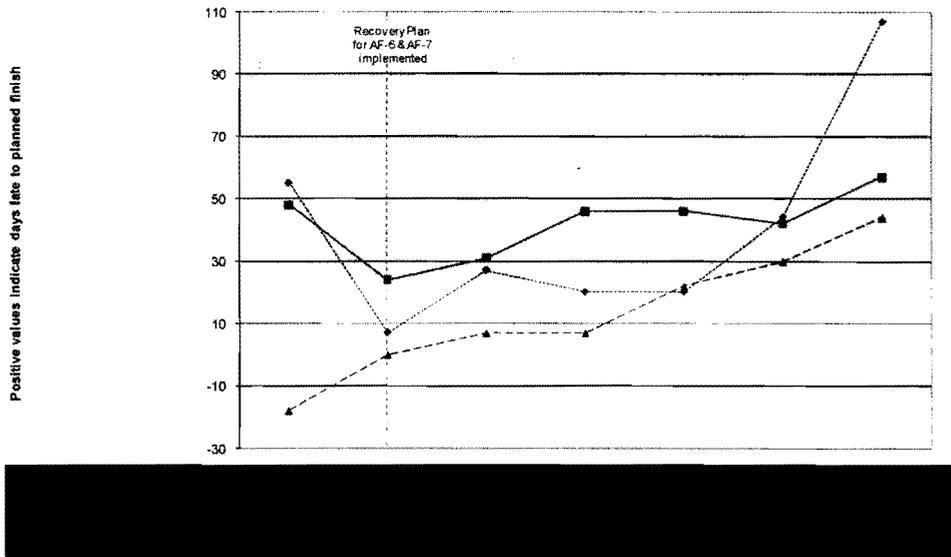
As of month end May 2009, the LRIP 1 aircraft are an average of ~5 months behind schedule to their DD-250 delivery dates, while the LRIP 2 aircraft are an average of ~3.5 months behind. Current schedule variance to baseline finish performance of key build activities for AF-6 and AF-7 indicates significant regression to aircraft rollout completions. Similar trends are occurring in all LRIP 2 aircraft.

**AF-6 Finish Variance Performance  
MS 6.1**



May 2009 end-of-month data – colors based on higher level aircraft delivery metric

**AF-7 Finish Variance Performance  
MS 6.1**



May 2009 end-of-month data – colors based on higher level aircraft delivery metric

DCMA Actions: DCMA LMFV P/SI, PA Production and PA D&I Team members continue to mature performance indicator sub-metrics to assess key build event progress on LRIP aircraft. These metrics will utilize data from the IMS and various shop floor systems.

Estimate when metric will achieve goal: TBD – Part deliveries to various SWBSs and CR implementation continues to impact build activities.

The table below includes the total SCOPs planned for LRIP aircraft, 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 at the trailing end of SWBS 240. The current IMS baseline finish dates for AF-6 through AF-10 are annotated below. Thirty (30) SCOPs have had planning formally released against aircraft AF-6, Twenty Nine (29) against AF-7, Thirteen (13) against AF-8, Twelve (12) against AF-9 and Nine(9) against AF-10.

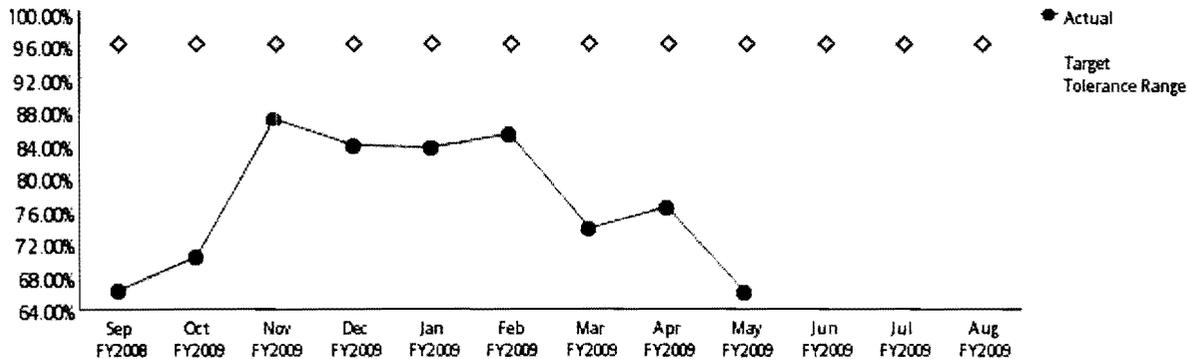
**SCOP Completions per Aircraft (A/C)**

Aircraft Effectivity	Baseline Finish Date (SWBS 240)	Total SCOPs Planned	SCOP Completed	%Complete (Total A/C)	% Complete prior to Rollout
AF-6		95	4	4.21%	Est. Oct 09
AF-7		95	2	2.11%	Est. Nov 09
AF-8		95	-	-	Est. Dec 09
AF-9		95	-	-	Est. Jan 10
AF-10		95	-	-	Est. Feb 10

Currently 103 SCOPs and 21 AEI's (Aerospace Equipment Instructions) are formally released against above aircraft.

### Improve Supplier Delivery Rate

**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%.

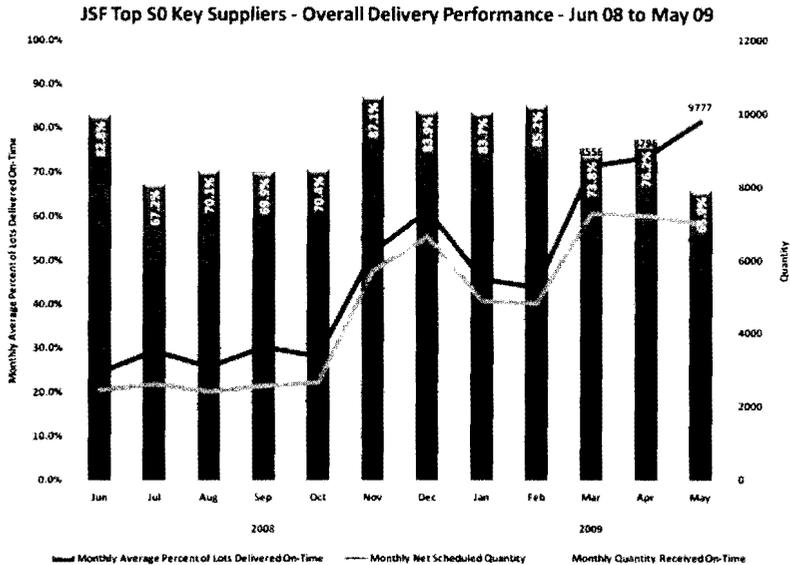


Metric Status: Red

Trend: Degrading

Summary of Metric Status: The delivery rate declined 10.3% to a monthly average of 65.9% following a slight one month improvement.

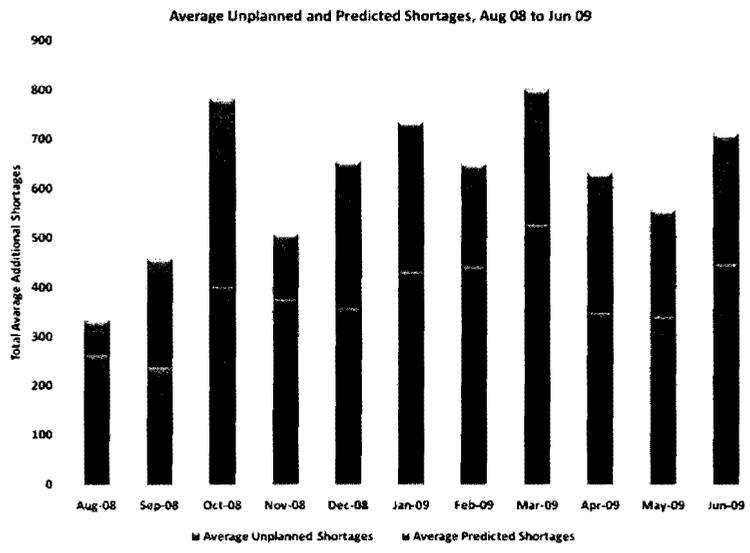
The chart below shows the overall delivery performance over the past 12 months for the top 50 DCMA JSF Key Suppliers. The blue vertical bars represent the monthly average percent of lots delivered on-time. The upper red line represents the monthly net scheduled quantity of parts which were to be delivered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



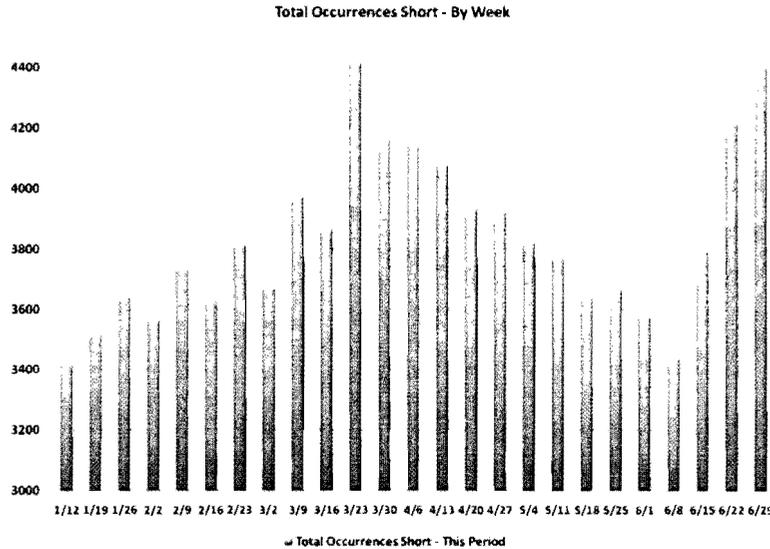
**Root Causes:** The root causes of the poor delivery performance continue to be late authorizations (late requirements to suppliers, rapidly changing requirements due to engineering changes, schedule pressures, and Bill of Material errors). Additionally, increasing scrap/loss is causing an increase in unplanned shortages.

**Contractor Actions:** To correct the negative delivery performance, Lockheed Martin has now deployed a total of 47 Supply Chain Managers to focus suppliers. They've initiated a "Change War Room" to directly address the negative impact of engineering changes on suppliers. And they have established a buffer stock for high scrap parts.

**DCMA Actions:** DCMA has initiated approximately 25 Letters of Delegation to monitor and report on JSF Key Suppliers with significant negative impact on the delivery rate. DCMA Lockheed Martin Fort Worth is continuing their analysis of "unplanned shortages." These are shortages that result from design issues, supplier quality assurance reports, and parts that are either scrapped during installation or "lost in shop." As shown in the chart below, after a two month decline, there was an increase in both unplanned and predicted shortages.



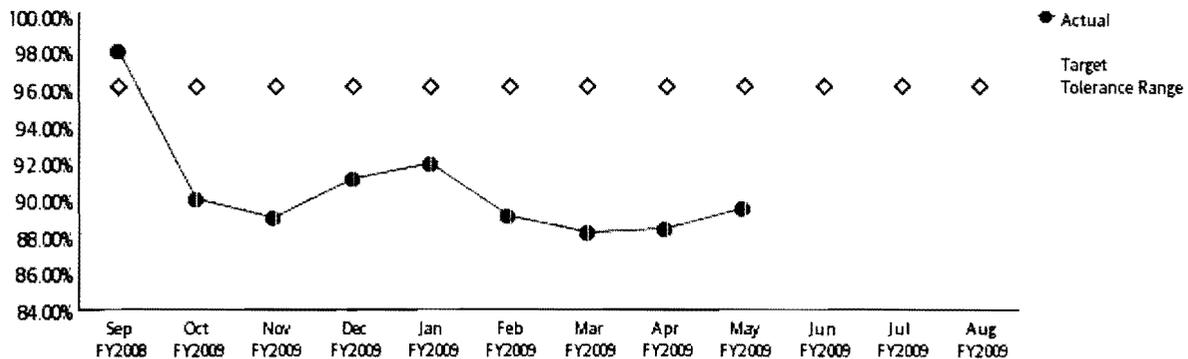
As shown in the chart below the overall amount of shortages remains high, is trending upward, and negatively impacts the overall supplier delivery rate.



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

### Improve Supplier Quality Rate

**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:  $\geq 96\%$ , Yellow: 87 to 95%, Red:  $< 87\%$ .



Metric Status: Yellow

Trend: Improving

## Maintain Cost and Schedule

**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%).

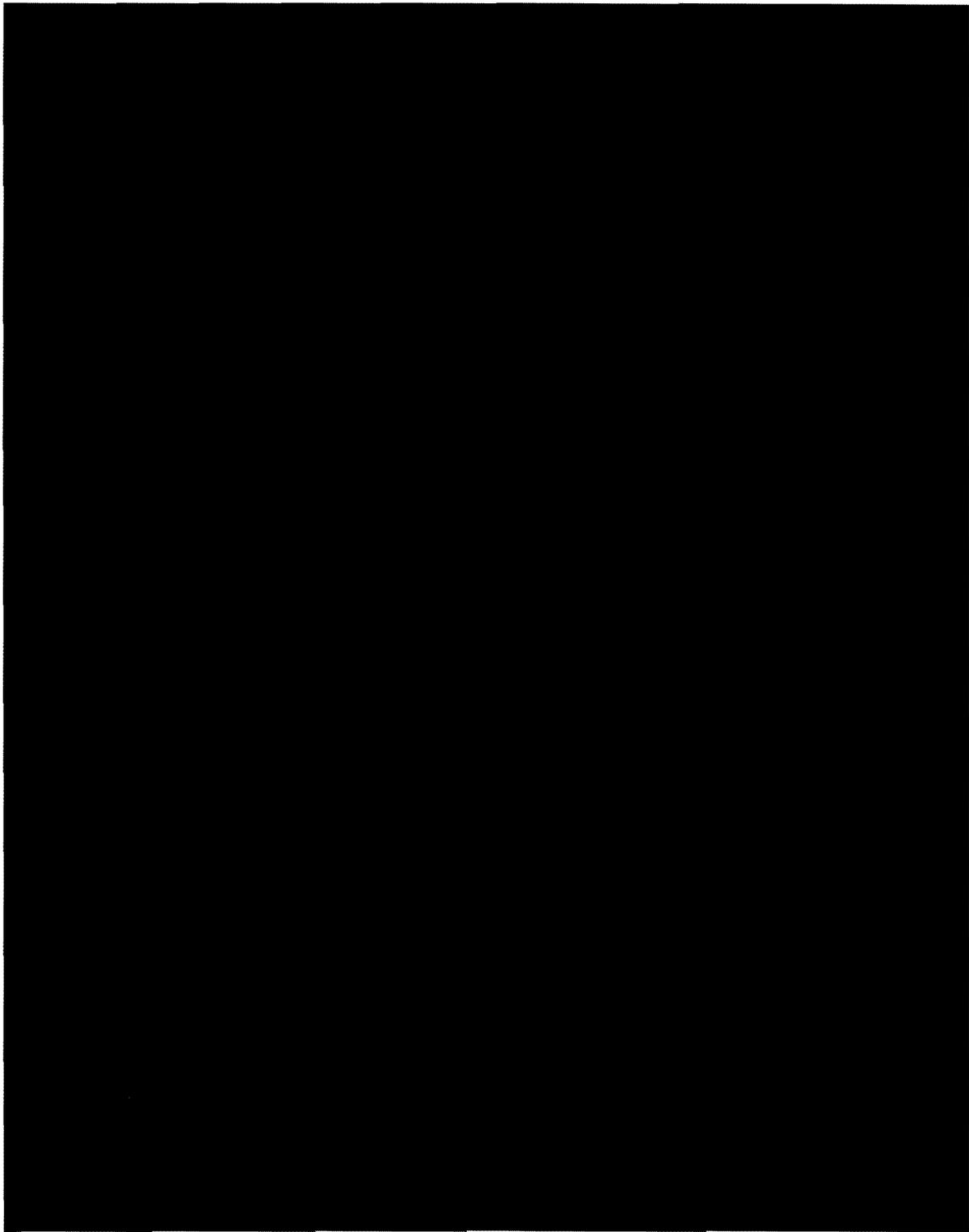
Lockheed Martin is now reporting to an Over Target Baseline of [REDACTED] reported in the May 2009 Cost Performance Report (CPR). DCMA IEAC is [REDACTED] for the SDD contract. This DCMA IEAC is based upon the May 2009 CPR report. LM Aero has expended an average of [REDACTED] per month over the last six months. Assuming a continuance of this expenditure rate, DCMA projects the existing SDD budget with OTB will be depleted in FY2011, [REDACTED]

The LM EAC MR is close to 2.6% of Estimate-to-Complete and is inadequate considering the risks remaining. Using the Standard formula based on cumulative SPI and CPI (since replan) 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 totals [REDACTED] vs. the LM Aero BAC of [REDACTED] and is [REDACTED] than LM Aero's BAC or EAC. The DCMA IEAC includes threats and pressures of [REDACTED] and [REDACTED]

LM Aero has prepared EAC8, incorporating DCROM threats and pressures of [REDACTED]. The newly prepared EAC8 is scheduled to be incorporated in the June 09 CPR. This incorporation will reduce MR, further straining the management of the program. EAC8 does not take into consideration Suppliers' cost growth, future CRs, past performance, etc.

LM Aero/Corporate hosted the DCMA EV Center in June 2009 and provided DCMA with status of their EVMS CAP. A path forward to DCMA compliance review was discussed. The EV Center suggested an alternate approach to a full-up Compliance Review, allowing the contractor to do a self assessment, one that is completely transparent to the EV Center. This approach encourages the contractor to implement a more robust review process at the highest company level and allows the EV Center to more effectively use their resources.

After further discussion and some follow on meetings, it was agreed by all parties that LM Aero/Corporate would conduct self assessment of their EVMS and provide the results (including all data acquired) to DCMA by the end of August. This self assessment would be modeled similar to a DCMA EV Center Compliance Review and all results would be provided to the government. The raw data and the result would be reviewed by the DCMA EVMS in September 2009 and then (depending on the results of the self-assessment) a more focus reviewed would occur three to five months later by the DCMA EV Center. This self assessment approach by the EV Center is serving as test case for how the center will conduct audits in CY 2010.



The May 2009 SDD/LRIP cost summary and program status is as follows:

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

LRIP 1	BAC	LM EAC CPR	DCMA IEAC
Performance Measurement Baseline (PMB)			
Management Reserve (MR)			
Total:			

LRIP 2	BAC	LM EAC CPR	DCMA IEAC
Performance Measurement Baseline (PMB)			
Management Reserve (MR)			
Total:			

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				
ULO				
Performance Start/End	Oct 2001/Oct 2014	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%
						8.2%		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 8.2 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

**Secondary Trip Wires –**

- **SDD Baseline Execution Index (BEI):** Cumulative tasks from October 2001 thru June 2009:  
Cum BEI = 141,635 Completed Tasks/144,967 Planned Tasks = 0.98
- **SDD Monthly (June 2009) Tasks:** 419 Completed Tasks vs. 1060 Baselined to Complete Tasks
- **SPI** (since replan) = BCWP/BCWS= 0.972
- **SDD CPLI** = (1326 + (26)/1326 = 0.98 (Time Now = 28 Jun 09)
- **CPI** (since replan) = BCWP/ACWP= 0.955
- **CPI/TCPI**= 0.955/1.040=.918
- **Contracts Mods** – (BAC now)/original BAC 10/01= [REDACTED] =1.40

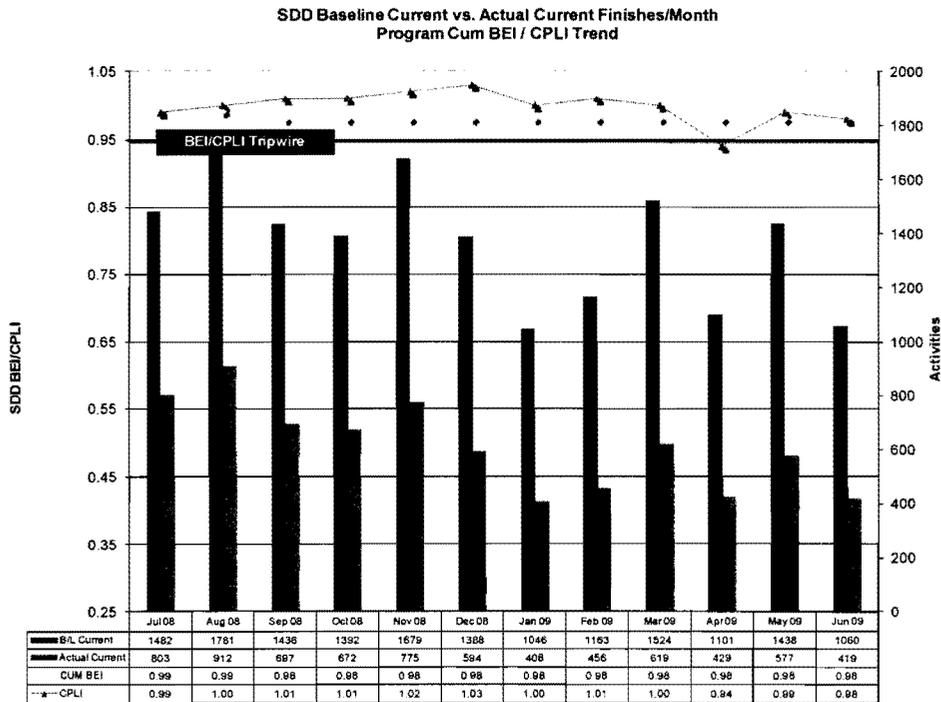
The DCMA Risk Rating for EVMS at the total program level is rated Yellow using the agreed to parameter of VAC (-4.78%).

Similarly, the TCPI<sub>EAC</sub> is different when using the DCMA IEAC versus the contractor’s EAC:

$$\begin{aligned} \text{TCPI}_{\text{DCMA IEAC}} &= 0.883 \\ \text{TCPI}_{\text{LM EAC}} &= 1.040 \end{aligned}$$

**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 underperformance. Goal is to achieve BEI values ≥.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 values ≥.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



Cumulative SDD Program BEI and CPLI sub-metrics are rated Green. Cum BEI is at .98 and CPLI is at .98 for month end June 2009, however; monthly planned versus actual performance has averaged an approximate 40% completion rate over the last seven months. MS-6.1 baseline replan dates were incorporated into the IMS month-end June 2008.

## Reduce Schedule Variation

**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.

Summary of Metric Status: Chart 1 (below) is a breakout of the Wings which build up the -12% variation average metric. The Wing has gradually reduced their out of station tasks traveled to Mate. This is very important since history has shown that Mate and Final Assembly performance has been significantly affected by the condition (maturity) and timing of the Wing delivery. The last SDD aircraft wings (CJ-1 and AF-4) are in various stages of Wing build. DCMA does not include "ground" aircraft performance in its variance calculations.

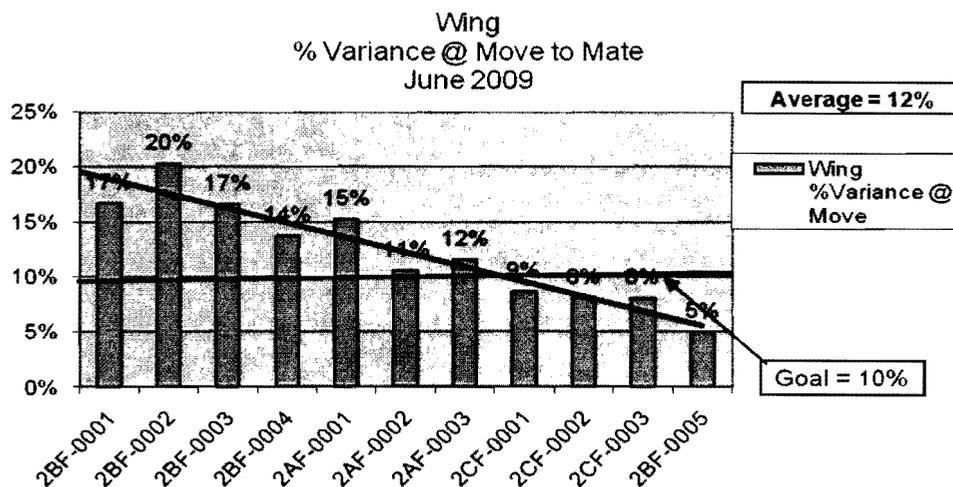


Chart 1

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. Mate thru Delivery build performances continue to be under pressure to meet schedule requirements. Mate's cost and schedule variances continue to be impacted by critical part shortages, high change traffic, difficult/inefficient work (out-of-station/out-of-sequence, integration of flight test instrumentation) BOM (bill of material) accuracy, late and/or constant rework of planning and tooling issues/availability. Some data adapted from program Format 5 CPR 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."

Mate-Final Assembly  
% Variance @ Move to Flight Line  
June 2009

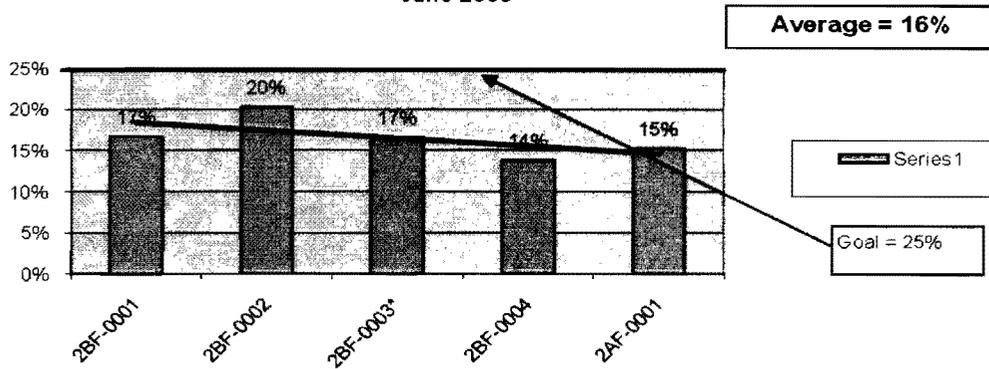


Chart 2

Root Causes: Late Wing component deliveries to Mate, final System Checkout and Flightline are the significant drivers impacting Mate schedule variances. Performance continues to be impacted by part shortages, high change traffic, difficult/inefficient work (out-of-station/out-of-sequence, part and tool locating via metrology, integration of flight test instrumentation) BOM (bill of material) accuracy and late and/or constant rework of planning.

Subsequent corrective actions for the AF-I discrepancy did not prevent reoccurrence.

Contractor Actions: The WAM (Wing at Mate) Team is working with the Mate team to mitigate the planned out of station work schedule impact to Mate through communication of the impacts to the daily assigned tasks and being able to capture these in crew boards for Wing sequence issues. Also working with Planning to release planning on time to support installation activities in order to reduce the out of station work from Forward and Wing to improve ability to support Mate activities.

DCMA Actions: Regular interface with LM project teams to: assess progress on recovery initiatives look for process review or corrective action opportunities, monitor impacts on Mate, update metrics and report progress in monthly report to customers.

Estimate when metric will achieve goal: Every first new Variant disrupts the overall metric performance with each subsequent A/C showing improvement. Goal may not be reached until after SDD completion (2014) when Wing and Mate overlap is eliminated.

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 July 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 Fuel Barn. BF-3 has moved from the factory on during this reporting period.

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

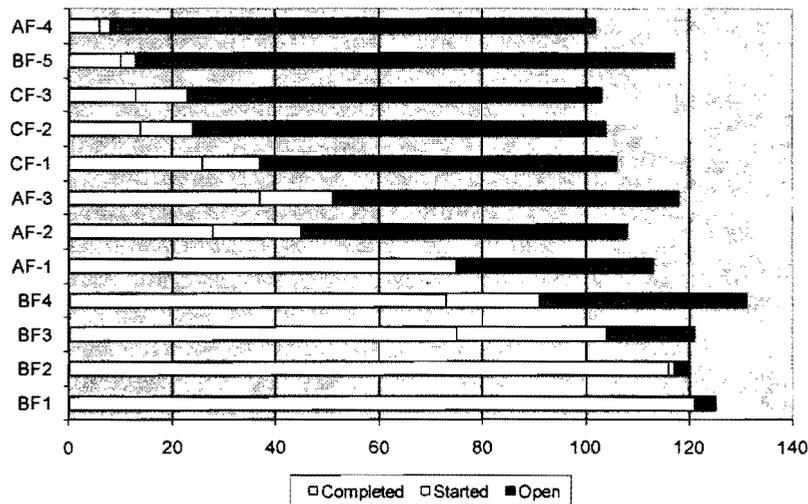
Test Article	Total SCOPs Planned	SCOP Completed	%Complete (Total A/C)	% Complete prior to Rollout
BF-1	125 <sup>(1)</sup>	121	96.80%	28.0% (18 Dec 07)
BF-2	120 <sup>(1)</sup>	116	96.67%	51.6% (16 Aug 08)
BF-3	121	75	61.98%	61.98%(2 July 09)
BF-4	131 <sup>(2)</sup>	73	54.89%	30.8% (1/21/09)
AF-1	113 <sup>(1)</sup>	60	53.10%	38.1% (2/5/08)
AF-2	108 <sup>(1)</sup>	28	25.93%	
AF-3	118 <sup>(1)</sup>	37	31.36%	
CF-1	106 <sup>(1)</sup>	26	24.53%	
CF-2	104 <sup>(1)</sup>	14	13.46%	
CF-3	103 <sup>(1)</sup>	13	12.62%	
BF-5	117	10	8.55%	7/27/09
AF-4	102 <sup>(1)</sup>	6	5.88%	10/6/09

<sup>1</sup> Newly released SCOPs added to effectivity during this reporting period

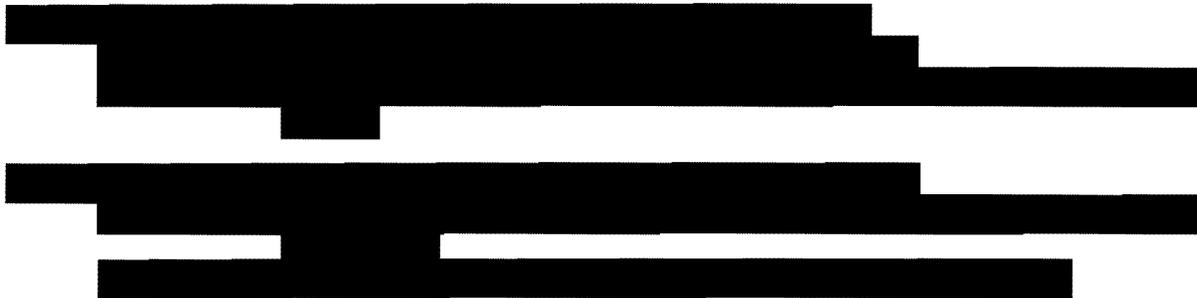
<sup>2</sup> SCOPs removed from the effectivity during this reporting period

The chart below depicts the current SCOP completion status for all flight test articles in SDD. List is organized by current firing order as depicted in Master Schedule 6.1.

**SDD SCOP Completions - Aircraft**



The following are for SCOP's which have not been formally completed on flight certified test articles. Each SCOP was reviewed and contains the particular test article's effectivity.



The table below is provided to track Wing specific SCOP testing prior to move to mate and percentage of testing completed prior to test article moving from the Factory Floor to the Fuel Barn.

### SCOP Completions on Wing Assemblies

Test Article	Total SCOPs Planned to Date	%Complete (No. SCOPs Completed)	% Complete Prior to Rollout	Avg Days Behind MS 6.1 (for Completed Tests)
BF-1	15	100% (15)	40% (6)	-170
BF-2	18	100%(18)	83.3% (15)	-216
BF-3	18	83.3%(15)	83.3%(15)	-270
BF-4	19	68.4%(13)	42.1% (8)	-221
AF-1	15	93.3%(14)	68.8% (11)	-217
AF-2	14	50.0%(7)	-	-161
AF-3	16	75.0%(12)	-	-156
CF-1	18	44.4%(8)	-	-147
CF-2	17	23.5%(4)	-	-102*
CF-3	18	11.1%(2)	-	-116*
BF-5	17	0%(0)	-	-
AF-4	17	0%(0)	-	-

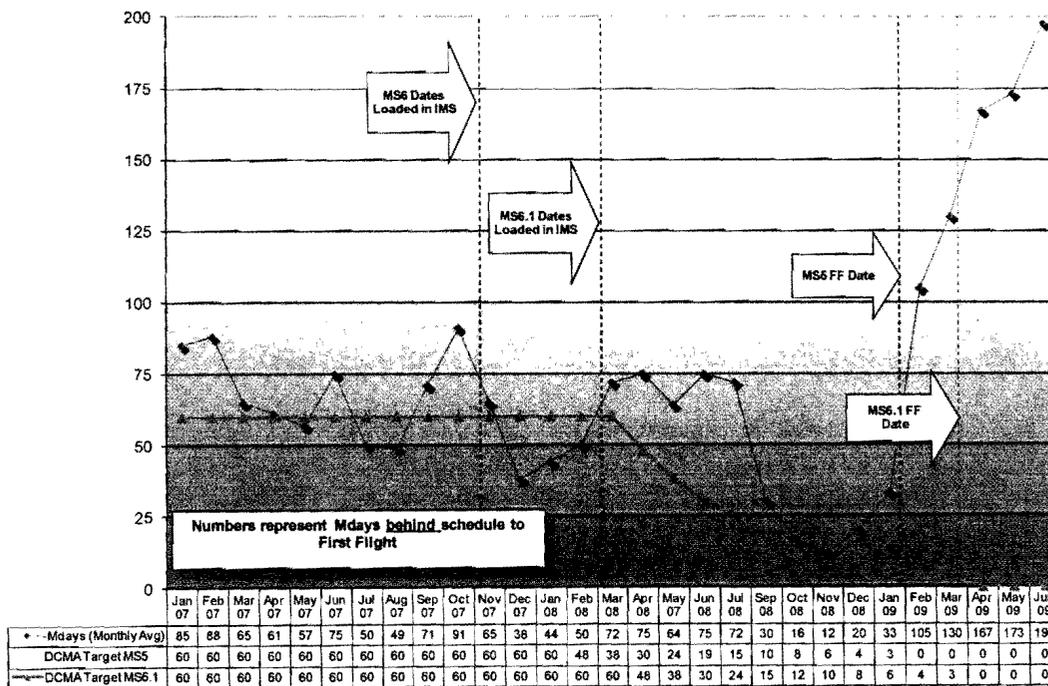
<sup>1</sup> New wing specific SCOPs added this reporting period

\* Wing testing is still in-work. Travel work from [REDACTED] will be in effect until LRIP ?? 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).**

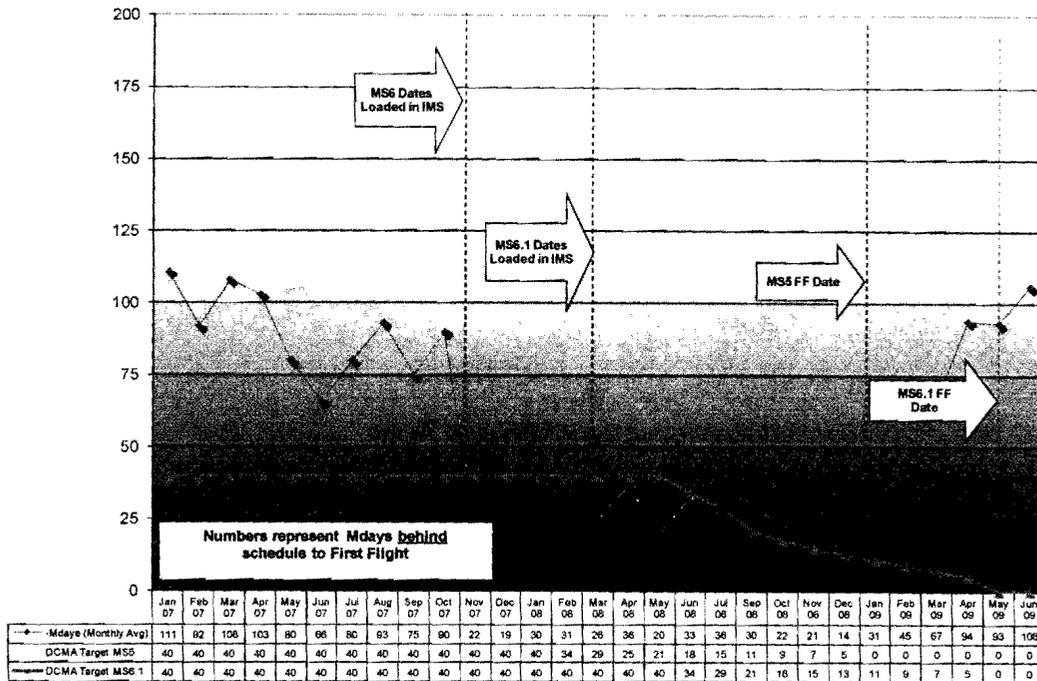
#### BF-4 First Flight (24 March 09 - MS6.1) Total Slack Trend

MS6 dates in IMS 4 Nov 07 / MS6.1 dates in IMS 9 Mar 08



BF-4 sub-metric is rated Red, with a June average of 198 Mdays late calculated to MS 6.1 first flight date of 24 Mar 09. BF-4 baseline rollout was 21 Oct 08 – rollout occurred on 21 Jan 09. Projected first flight is December as of 12 Jul 09 – additional build period to complete the aircraft continues.

**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



AF-1 sub-metric is rated Red, with a June average of 106 Mdays late to first flight date of 14 May 09. Baseline rollout date was 25 Nov 08 – aircraft rolled on 5 Feb 09. Projected first flight is mid-September as of 12 Jul 09.

**Improve Software Productivity**



Summary of Metric Status: Current performance is exceeding our target of 83%. The value this month is 90.54 which is a small negative change over last month's value of 91.1%.

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).

DCMA Actions: DCMA-LMFV Report and Exec Summary-June 2009 – DCMA has witnessed SQT's in an effort to prepare for an upcoming process review. DCMA is also becoming familiar with the contractors aircraft data load process and the verification thereof. DCMA has been reviewing the contract for requirements pertaining to process and product quality metrics to evaluate a temporary tailoring to Prime Team [redacted] Airborne Software Metrics Tempo.

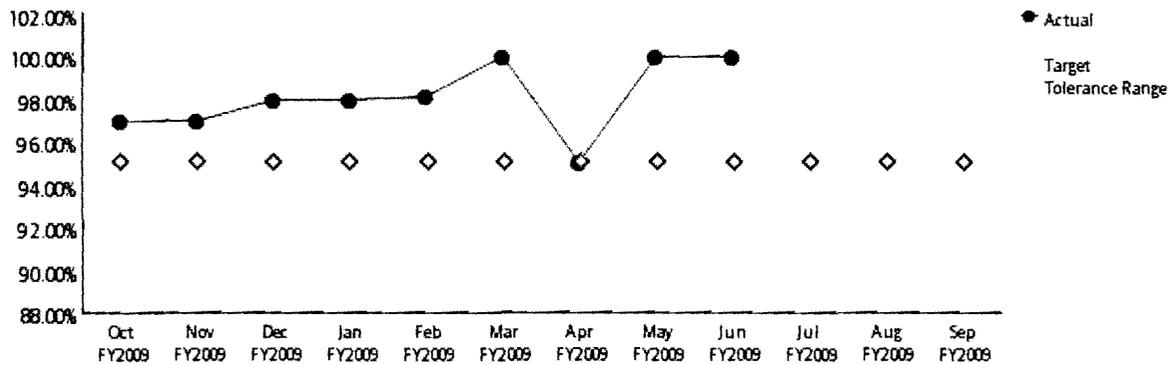
DCMA [REDACTED] Prognostics and Health Management (PHM) Software [REDACTED] [REDACTED] will experience some small staffing and workload transitions. DCMA has confidence that the transition will occur with little or no schedule/technical impact.

[REDACTED] The first SDD DSM MS2 (SDD #6) at MS2 has been upgraded and variances approved. SDD # 6 is now available at [REDACTED]. New variances for SDD # 2, 5 and 6 are being developed.

Estimate when PC will achieve goal: Current performance exceeds target and the trend continues to improve.

### Improve Minor Variance

**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:  $< 90\%$ .



Metric Status: Green

Trend: No Change

Summary of Metric Status: The contractor had a correct classification rate of 100% this month and the goal is to maintain at or above 95%, therefore, the goal has been met. There were 91 minor variances reviewed during the month of June 2009 and all of these were classified correctly. Last month the rate was 100%.

Root Causes: N/A at this time

Contractor Actions: No contractor actions required at this time.

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 when they occur 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 a correct classification rate of 95%.

## Improve FCA/PCA

**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:  $< 90\%$ .

DCMA Actions: DCMA LMFW personnel participated in a pre-planning audit meeting for the [REDACTED] to be accomplished [REDACTED] on 15-17 June, 2009. The Performance Based Spec (PBS) was reviewed against the DOORS database prior to the audit. During the audit it was determined that First Article Inspection (FAI) had not been completed. [REDACTED]

### 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 -  $-10\% < \text{VAC}\% < -5\%$

[REDACTED] - VAC%  $< -10\%$

N/R - Not Rated or Not Reported