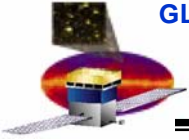
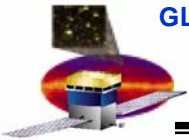


# **Mechanical Systems Mechanical / Thermal Hardware June 2005 Status**

**Marc Campell, Subsystem Manager**



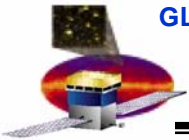
# SLAC Status



# Accomplishments

- **Accomplishments during July.**
  - **Grid #2 delivered to SLAC.**
  - **X-LAT Plate delivered to SLAC**
  - **NRL selected to rework existing shipping container for LAT use**

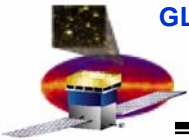




## Grid Qual Static Load Test

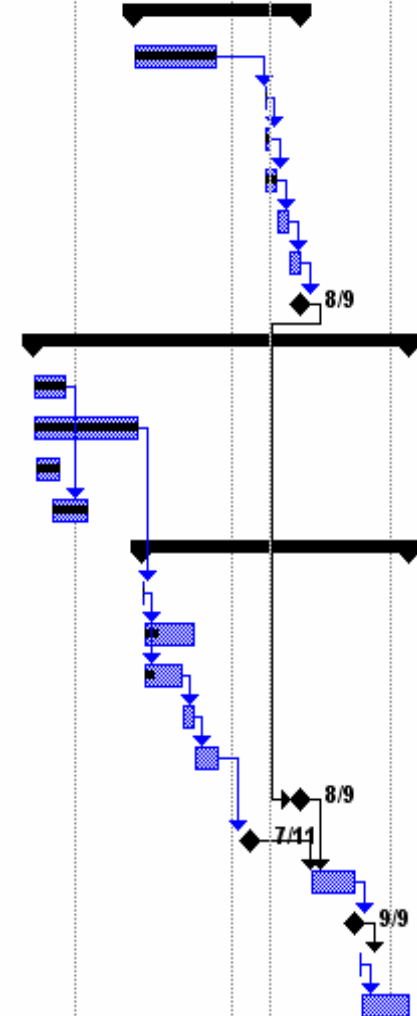
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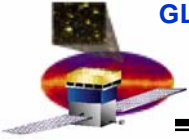
- **Hardware**
  - Deliver to SLAC 7/19/05
  - Grid Box assembly in progress
  - All GSFC and Spectrum provided hardware is on hand
- **Pre-Test (SLAC activities)**
  - Component flexure test required to proof load flexures prior to integration with the Flight LAT on the Test Interface Plate
    - Flexure strain gages also characterized for LAT sine vibe testing
  - Test Interface Plate assembly (TIP) waiting part delivery
  - Shipping container for Grid 2 on TIP out for quote
- **Test**
  - NTS selected as vendor
  - Final test plan approved by GSFC
  - NTS to evaluate final load cases for potential cost impacts (should be minor)



# Grid Qual Static Load Test Schedule

Task ID	Task Name	Duration	Start	Finish	Pred	4th Quarter			1st Quarter			2nd Quarter			3rd Quarter			4th Q
						Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
1	<b>Hardware (SLAC)</b>	<b>68 days</b>	<b>Wed 5/4/05</b>	<b>Tue 8/9/05</b>														
2	Final Machine Flight Grid (4X4 Grid) #2	33 days	Wed 5/4/05	Mon 6/20/05														
3	Ship to SLAC	1 day	Tue 7/19/05	Tue 7/19/05	2													
4	Inspect, prep Flight Grid, EMI skirt, detail:	4 days	Tue 7/19/05	Fri 7/22/05	3													
5	Grid #2 Assembly Operations	5 days	Wed 7/20/05	Tue 7/26/05	4													
6	Grid Box Base Assy #2 Operations	5 days	Wed 7/27/05	Tue 8/2/05	5													
7	Grid Box assembly #2 operations TBD	5 days	Wed 8/3/05	Tue 8/9/05	6													
8	Grid Box Assembly #2 Complete	0 days	Tue 8/9/05	Tue 8/9/05	7													
9	<b>Engineering/Procurement (SLAC)</b>	<b>155 days</b>	<b>Mon 3/7/05</b>	<b>Tue 10/11/05</b>														
10	Write static load plans	15 days	Mon 3/7/05	Fri 3/25/05														
11	SOW / RFQ / PO	45 days	Mon 3/7/05	Fri 5/6/05														
12	Complete load case analysis	10 days	Tue 3/8/05	Mon 3/21/05														
13	Detail MGSE designs	15 days	Thu 3/17/05	Wed 4/6/05	10FS													
14	<b>Test (Supplier)</b>	<b>110 days</b>	<b>Mon 5/9/05</b>	<b>Tue 10/11/05</b>														
15	Contract Award	1 day	Mon 5/9/05	Mon 5/9/05	11													
16	Fixture design & Fab (TBR)	20 days	Tue 5/10/05	Tue 6/7/05	15													
17	Procedure draft	15 days	Tue 5/10/05	Tue 5/31/05	15													
18	SLAC review/approval	5 days	Wed 6/1/05	Tue 6/7/05	17													
19	Procedure released	10 days	Wed 6/8/05	Tue 6/21/05	18													
20	Receive test article from SLAC	0 days	Tue 8/9/05	Tue 8/9/05	8													
21	SLT test readiness review	0 days	Mon 7/11/05	Mon 7/11/05	19FS													
22	SLT Operations (prep & test)	20 days	Mon 8/15/05	Fri 9/9/05	20FS													
23	Static Load Test Complete	0 days	Fri 9/9/05	Fri 9/9/05	22													
24	SLAC OK to tear down	2 days	Mon 9/12/05	Tue 9/13/05	23													
25	Write SLT test report	20 days	Wed 9/14/05	Tue 10/11/05	24													

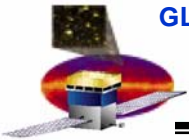




# Drawing Release Plan

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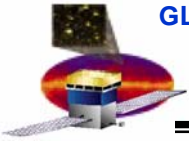
- **66 of 73 (90%) drawings released**
  - **3 MLI drawings (in work)**
  - **4 unreleased parts not needed until Radiator fit check**
- **Known drawing revisions**



# Concerns

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- **Lockheed Martin - Radiator delivery schedule**
  - **See LM presentation**
- **Completion of Grid Thermal Control System hardware installation delay until Aug 05.**
  - **Will try to perform on a non-interference basis, but may impact LAT schedule.**

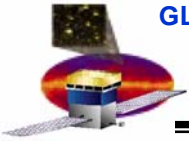


# Open Flight Design Issues

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- **TCS validation vs. LM modified Radiator Thermal Vacuum & Balance plans**
  - **Test plan reviewed, need final approval from GSFC**
  - **Bi-weekly Test planning meetings continuing**

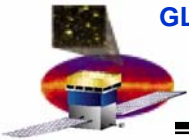




## Open Flight Design Issues (cont)

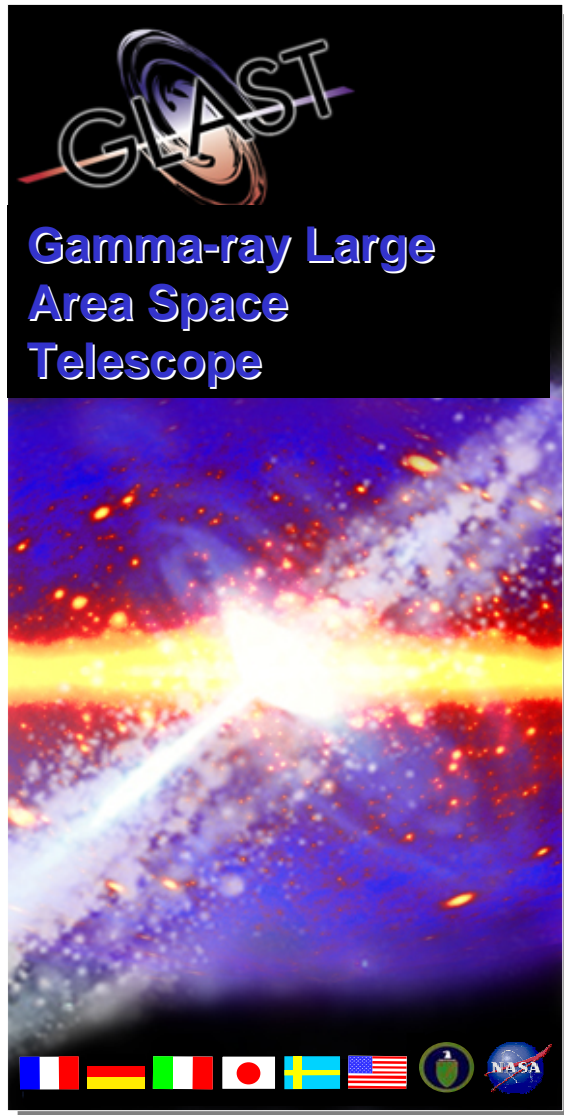
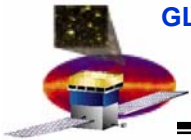
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- Radiator integration sequence
  - Coupon testing of repeated make & break of joint has been tested. Results were inconclusive due to test facility problems.
  - Test facility alternatives under investigation.
  - Disassembly facilitated by use of mold release agent
- Radiator vibration requirements
  - Sine vibration testing will not be performed at LM
    - Test options under investigation

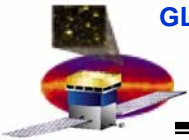


## MECH Qualification Program

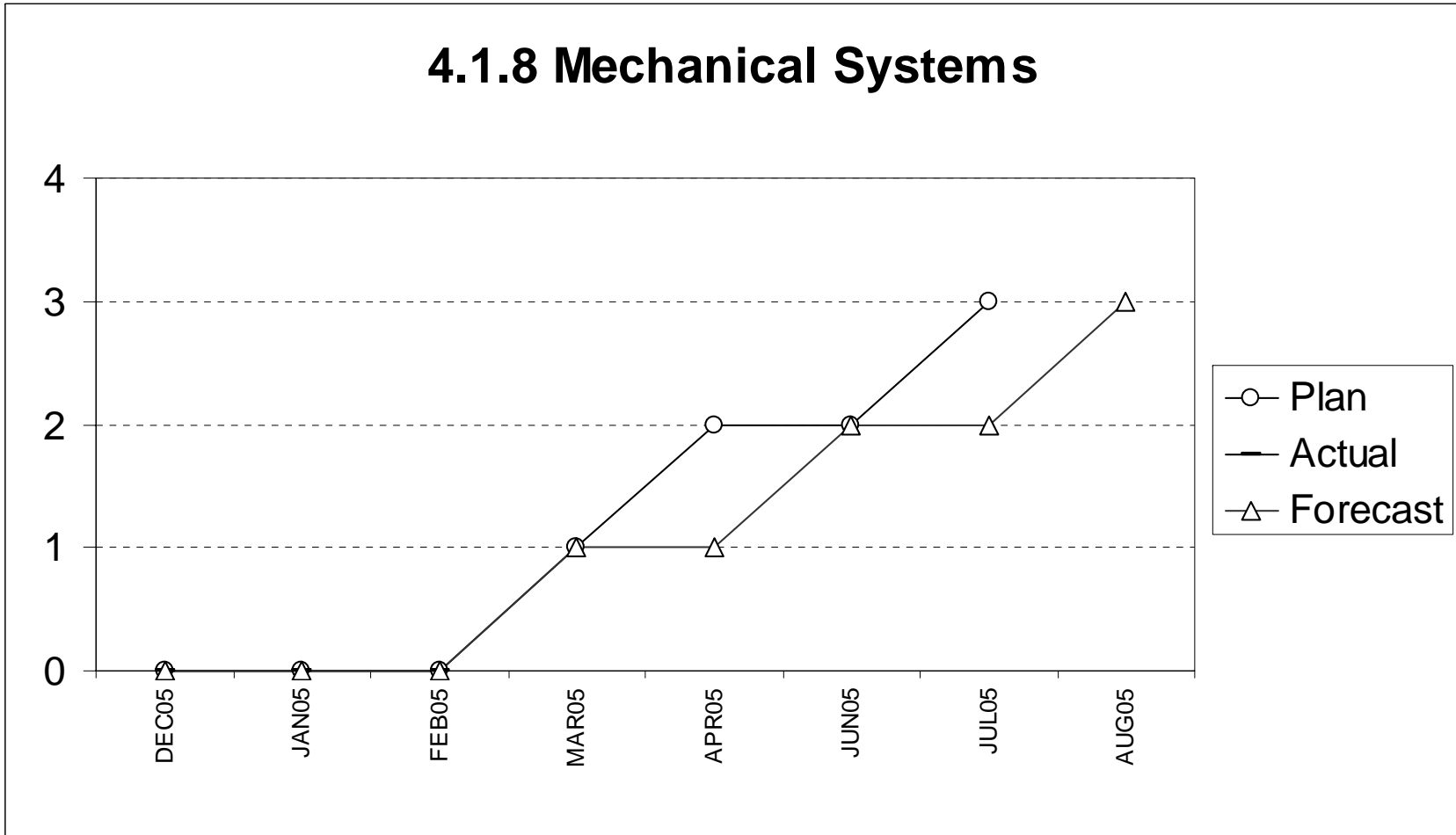
<b>Grid-Top Flange Heat Pipe bond process qual</b>	<b>Complete. Report released</b>	<b>Comp</b>
<b>Grid Box Assy Static Load test</b>	<b>Planning in work. Perform on Grid #2</b>	<b>Aug 05</b>
<b>X-LAT Plate Thermal Vac test</b>	<b>Complete less MRB on final results</b>	<b>Comp</b>
<b>Radiator Variable Conductance Heat Pipe new extrusion</b>	<b>Passed burst test, heat capacity test after charging</b>	<b>Comp</b>
<b>Radiator Acoustic</b>	<b>at LMMS</b>	<b>July 05</b>
<b>Radiator Thermal Vacuum</b>	<b>at LMMS</b>	<b>Aug 05</b>
<b>TCS-Radiator Thermal Balance</b>	<b>at LMMS</b>	<b>Aug 05</b>

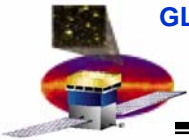


# Cost/Schedule Reports for 4.1.8 Mechanical Systems Presentation June 2005 Month End



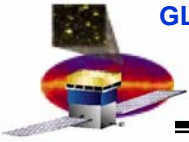
# Level 3 Milestone Count





# Level 3 Milestone List

Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish	2005												2006											
						F	M	A	M	J	J	J	A	S	O	C	N	D	E	J	A	F	M	A	M	J	J		
<b>4.1.8 Mechanica</b>																													
Flight Grid RFI-Mech to I&T	03/23/05	-5	-5	-5	03/30/05A																								
X-LAT Thermal Plate RFI from Mech	04/20/05	-29	-43	-65	07/22/05																								
Radiators ready for I&T (from Mech	07/22/05	-13	-12	-17	08/16/05																								

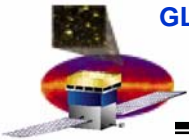


## Milestone Variance Explanation

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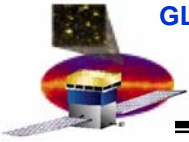
### Radiator RFI -17 days

- **Schedule Impact**
  - **No impact to LAT schedule**
- **Cost Impact**
  - **LM requested additional funds to complete Radiator testing**
- **Corrective Action**



# Cost Report

Monthly Contractor Financial Management Report							NASA form 533M		Report for Month Ending:	
30-Jun-05							Approved OMB # 2700-		6/30/2005	
To:				From:				Contract Value		
								Cost:	Fee:	
								0	0	
LAT4		Type:			Contract Number and Latest					0
LAT					Definitized Amendment No:			Billing		
								Invoiced amts billed		
								4/3/2000		
Reporting Category	Cost Incurred/Hours Worked				Estimated Cost/Hours to Complete			Estimated Final Cost/Hours		Unfilled Orders
	During Month		Cum. to Date		Detail		Balance of Contract	Contractor Estimate	Contract Value	Outstanding
	Actual	Planned	Actual	Planned	JUL05	AUG05				
4.1.8 MECHANICAL SYSTEMS										
4.1.8.1 MANAGEMENT	-36	77	3,626	3,631	79	85	82	3,871	3,871	574
4.1.8.2 RELIABILITY & QUALITY ASSURANCE	6	0	399	393	0	0	-6	393	393	0
4.1.8.3 MECHANICAL SYSTEM DEVELOPMENT	0	0	1,088	1,088	0	0	0	1,088	1,088	0
4.1.8.4 THERMAL SYSTEMS DEVELOPMENT (LM)	0	0	1,043	1,043	0	0	0	1,043	1,043	0
4.1.8.5 THERMAL CONTROL SYSTEM (SLAC)	122	15	691	647	95	108	35	929	929	110
4.1.8.6 RADIATORS, HEAT PIPES, THERM TEST, X-LAT (LM)	482	232	7,804	7,572	165	59	-177	7,851	7,851	0
4.1.8.7 GRID	0	0	656	640	0	0	-16	640	640	0
4.1.8.8 FABRICATION, ASSEMBLY, AND TEST	4	146	513	658	51	235	148	947	947	139
4.1.8.9 LAT I&T SUPPORT	0	16	0	68	22	13	69	104	104	0
CAPW[3]Totals:	577	485	15,820	15,739	412	500	134	16,866	16,866	823



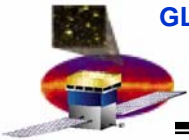
# Cost Variance Explanation

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**LM cost variance addressed in LM presentation**

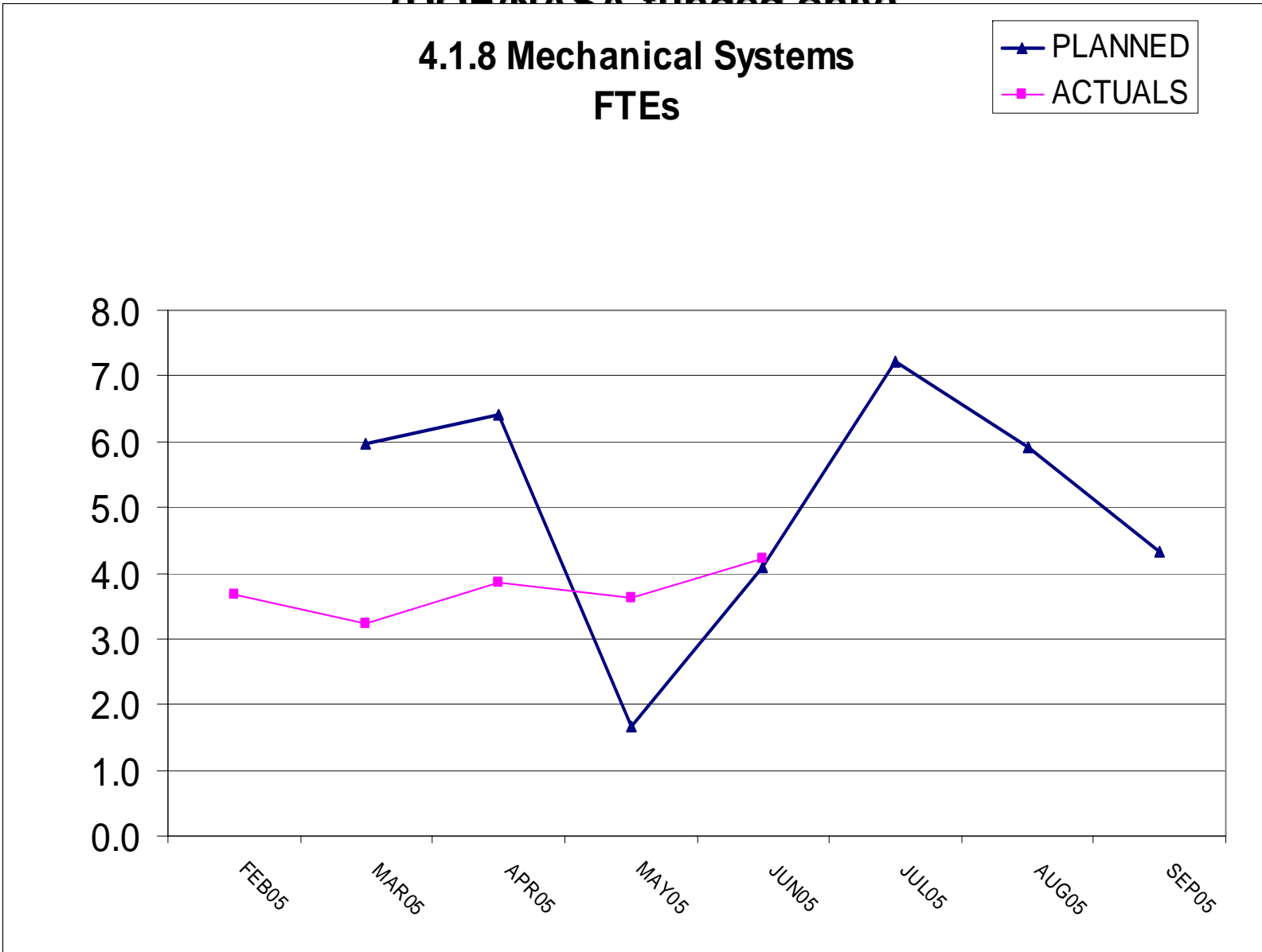
- **Why overrun/underrun?**
- **What will be done to correct?**

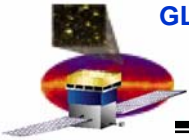




# FTE Report

(DOE/NASA funded only)





# FTE Variance Explanation

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- **Why overrun/underrun?**
- **What is the impact?**
- **What will be done to correct?**