



GLAST Monthly PSR

LAT Instrument

B. Graf
Instrument Manager

- 1



Accomplishments



- ***Sub-Systems which have begun flight production***
 - ***Calorimeter: Csl crystal procurement complete; first three structures***
 - ***Tracker: MCM production underway at Teledyne***
 - ***GRID in finish machining (# 2 in rough machining)***
 - ***Downspout and top flange heat pipes complete at LM***
 - ***Over 50% of flight TDAs delivered and tested***
- ***DOE/NASA Joint Review***
 - ***twenty-five recommendations; cost, schedule, and technical***
- ***All ASIC devices in various stages of screening, qualification and TID testing***
- ***Added staff at SLAC and Italy – I&T next to increase***
- ***Tracker***
 - ***Assembly fixture complete and tested on EM***
 - ***Sidewall drawings complete and prepreg procurement underway***
 - ***GRID Bottom tray interface design final; drawings in review; parts in fab/procurement***
- ***Calorimeter***
 - ***Assembly of the first flight Pre-electronics Module (PEM) in progress***
 - ***Flight AFEE PCB being manufactured and assembly contract in place***
 - ***Ready for CDE insertion; tooling and training complete***



ACCOMPLISHMENTS (con't)

- ***Electronics***

- ***Assembling hardware in lab; six TEMs, PDU/GASU, SIU (with 1553), FES (34 out of 45)***

- ***Vendors selected for board fab, enclosure fab, assembly of boards/enclosure***

- ***ACD***

- ***New mounting to resolve the phototube anomaly in qualification***

- ***GARC/GASU interface start-up issue resolved***

- ***Received replacement capacitor for the HVBS; in test***

- ***Integration and Test***

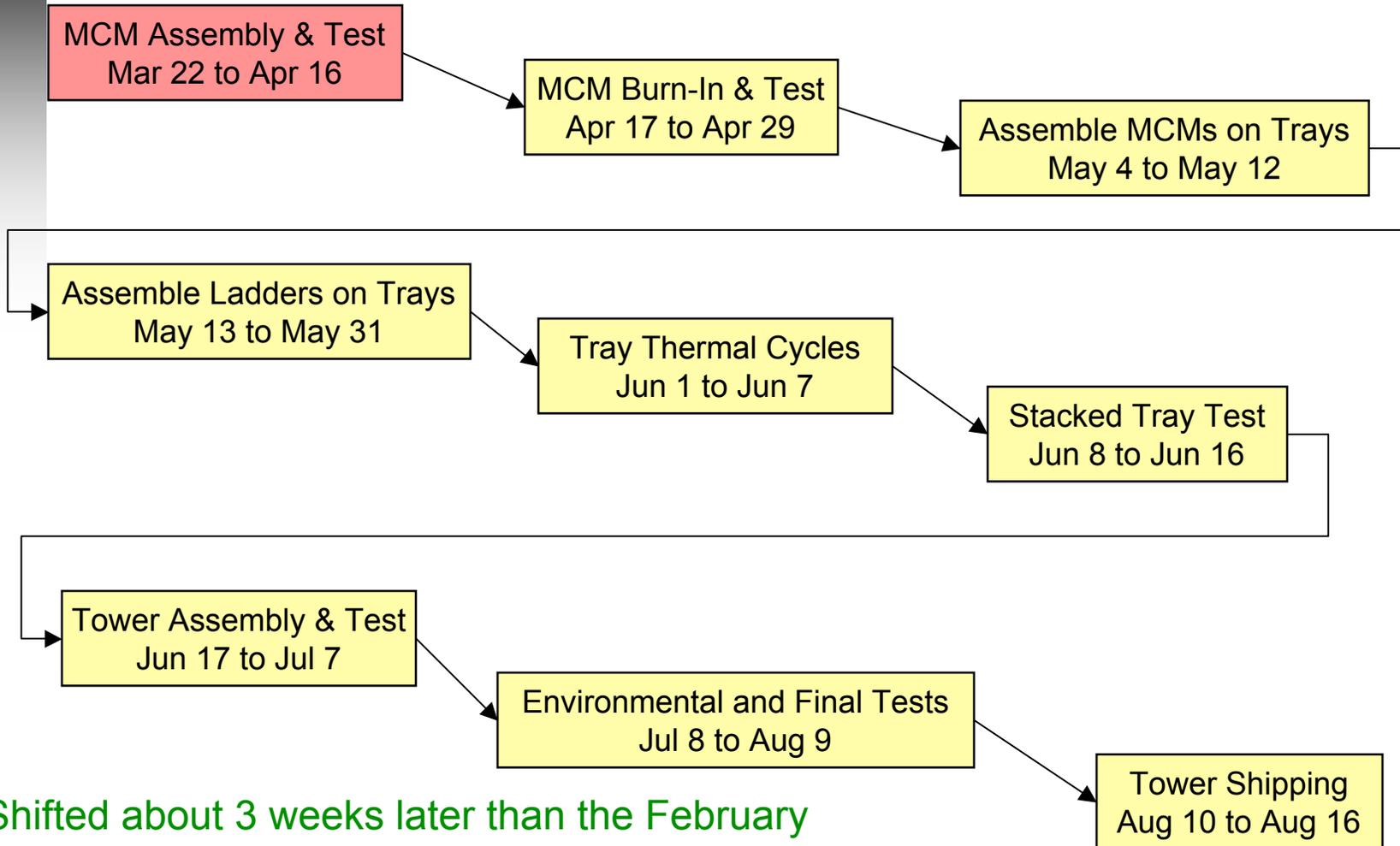
- ***Integration Kick-off review held on March 9***

- ***Filled six of ten open positions on the I&T staff***

- ***Initial online software for integration (LATTE v3.0) released***



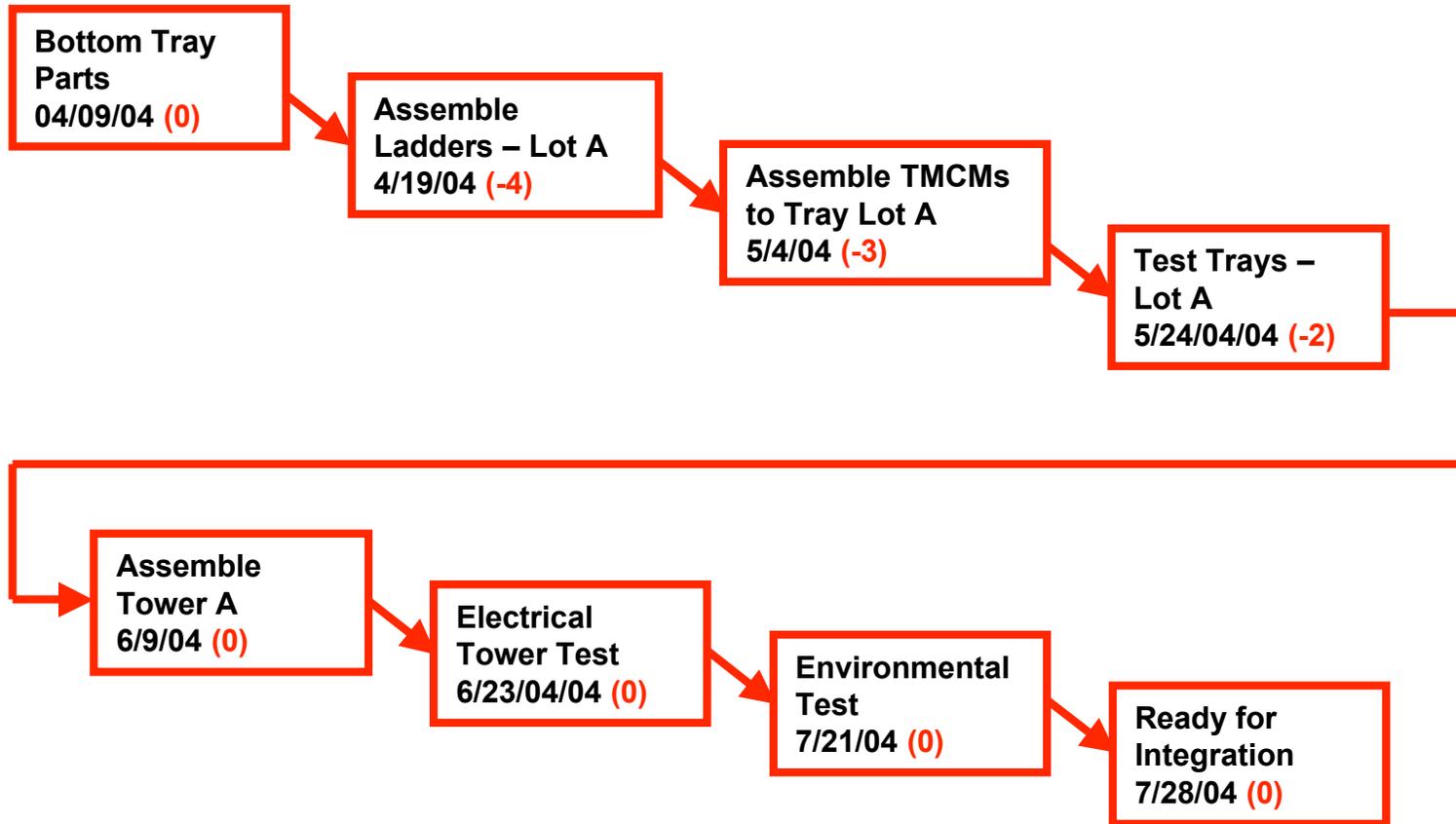
Critical Path for Tower A



Shifted about 3 weeks later than the February PMCS report, primarily due to delays in starting MCM flight production.



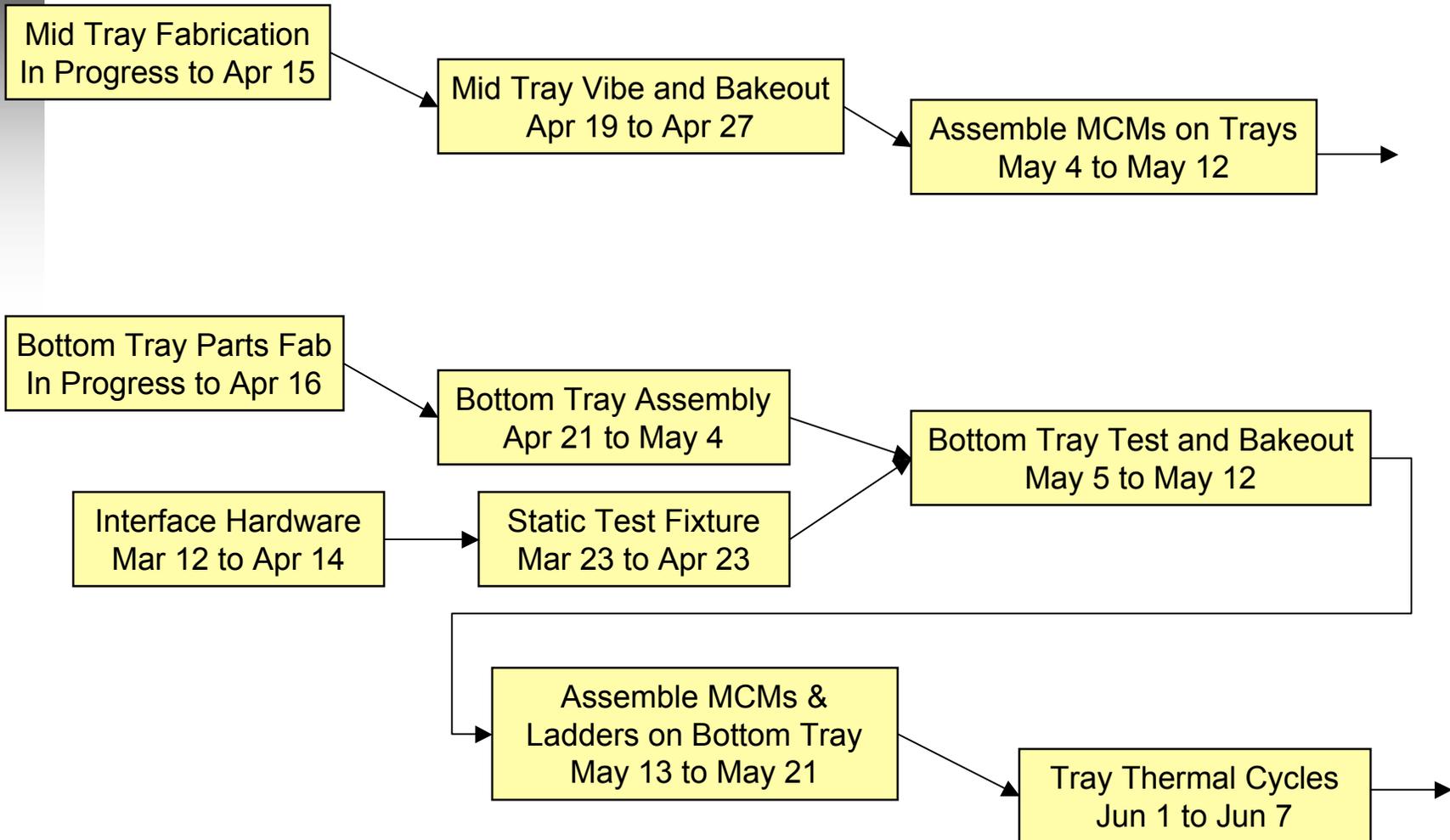
Feb 25 PMCS Schedule to Tower A



Completion Dates (baseline variance)



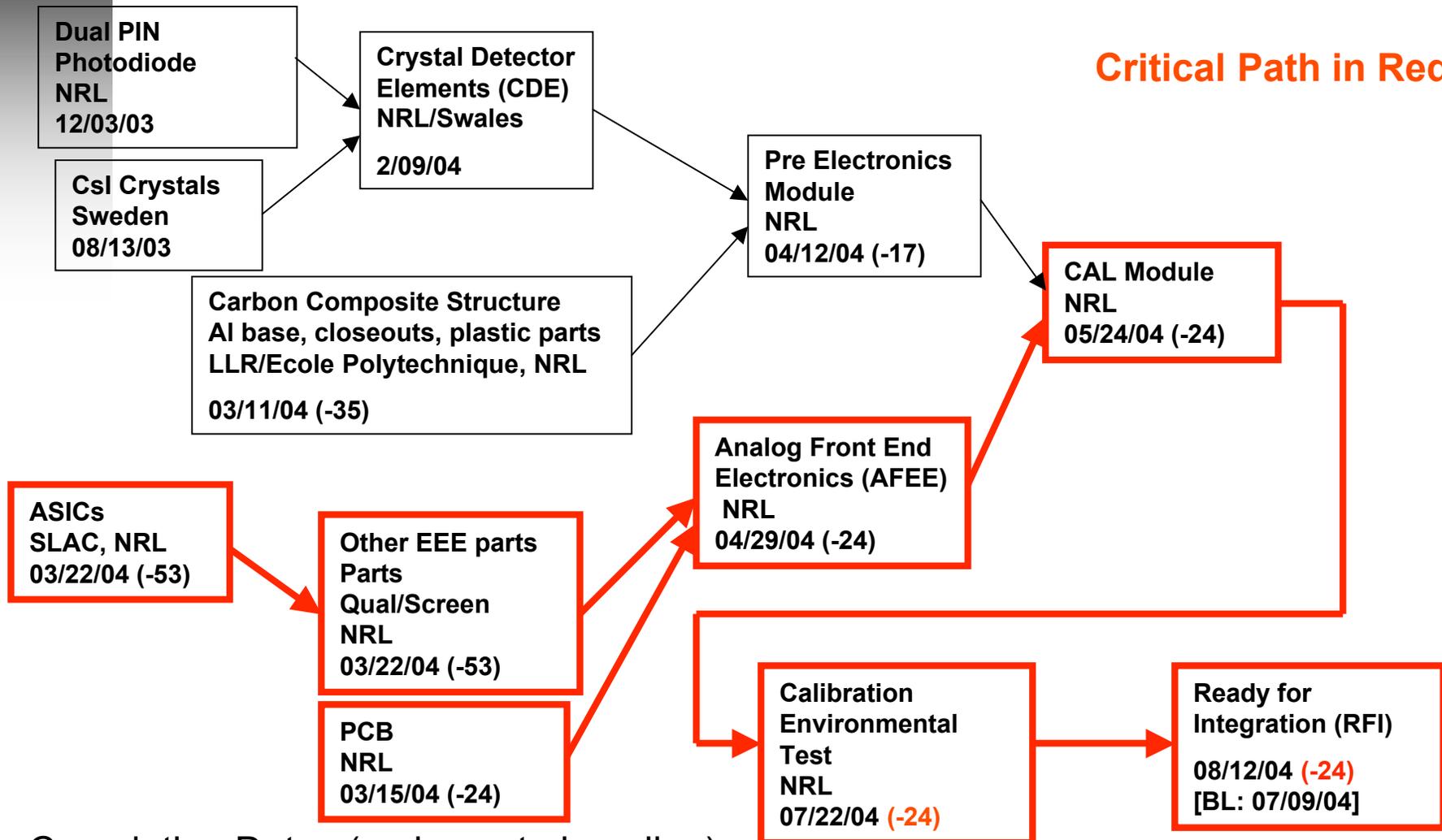
Other Nearly Critical Paths





Path to first flight CAL Module (FMA)

Critical Path in Red



Completion Dates (variance to baseline)



Issues/Problems



- **SCHEDULE - SCHEDULE - SCHEDULE**
 - *nine weeks float till PER and four additional till PSR*
- **Software Development**
- **Tracker EM testing – tracker schedule**
 - *vibe testing in parallel with tower A assembly*
- **MCM production rate at Teledyne**
 - *PO not in place, successful MRR, QA in place, but production rate not assured*
- **Drawings – we have their attention, but progress is not good**
- **Completion date for the full test bed is late and slipping - there is a lot of testing and development to be done**
- **Tracker and I&T management need to be strengthened**
- **Parts**
- **Key new hires need to be in place ASAP**
- **Funding for remainder of FY 04 is very tight**



Upcoming Events



- *April Sub-system Managers Face-to-Face - April 14 at NRL*
- *April Monthly Status - April 28 ??*
- *Deliver G3 EGSE to ACD*
- *EMI/EMC testing approach - mid April*
- *EMI/EMC conducted requirements – mid April*
- *Complete ASIC screening and TID testing*
- *MCM Burn-in and testing (Tower A) – April 17-29*
- *Assemble tracker tower A SSD ladders – April 19*
- *Complete calorimeter FMA AFEE – April 29*



LAT Top Level Schedule



Activ ID	Activity Description	Current Start	Current Finish	2004												2005											
				M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D		
LAT Instrument																											
LAT Major Milestones																											
LAT Major Milestones																											
0010	LAT PER	06/07/05*	06/07/05																								
0030	Ready for CD-4 Review	06/07/05*	06/07/05																								
0019	LAT Ship to NRL for Environmental Test	07/20/05*	07/19/05																								
0058	LAT Unpack, Post-Ship Testing/Checkout	07/20/05*	07/29/05																								
0295	LAT Ready for Environmental Test @ NRL		08/05/05																								
0073	LAT Environmental Test Complete @ NRL		10/31/05																								
0016	LAT PSR		12/01/05																								
LAT ACD																											
LAT ACD Top-Level Development/Milestones																											
2509	Analog ASIC Development (3-Fit) (SUM)	09/03/02A	03/15/04																								
2527	Flight Shell Subassy Development (SUM)	03/12/03A	03/22/04																								
2512	Digital ASIC Development-SUMMARY	10/01/02A	04/12/04																								
2521	Flight TDA Fab, Assy & Test (SUM)	02/18/03A	04/15/04																								
2530	Flight Micrometeoroid Shield Development (SUM)	03/27/03A	05/11/04																								
2518	Receive & Integrate PMTs(1-240) w/RNs (SUM)	10/15/02A	05/24/04																								
2515	FREE FU Development (SUM)	12/12/03A	06/18/04																								
0017	ACD Subsystem Integration & Test (SUM)	03/24/04	06/28/04																								
0032	ACD System Integration & Test (SUM)	10/01/02A	08/18/04																								
0035	ACD Environmental Testing (SUM)	08/19/04	11/16/04																								
0048	ACD PSR	11/17/04*	11/16/04																								
0038	ACD Shipping, Unpacking, Testing @ SLAC, RFI		01/04/05																								

Start Date	04/03/00		Early Bar	GL15 Sheet 1A of 4B GLAST LAT Project Schedule Top-Level Schedule Status as of 3/1/04	Date	Revision	Checked	Approved
Finish Date	05/18/07		Progress Bar					
Data Date	03/01/04		Critical Activity					
Run Date	04/06/04 11:25							

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LAT Top Level Schedule



Activ ID	Activity Description	Current Start	Current Finish	2004												2005											
				M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D		
0238	TCS EGSE Development (SUM)	05/26/04	12/16/04																								
0235	TCS Fab (Thermistors, Heaters) (SUM)	03/01/04	03/18/05																								
0244	TCS Flight Radiator Fab & Test (SUM)	06/27/03A	05/02/05																								



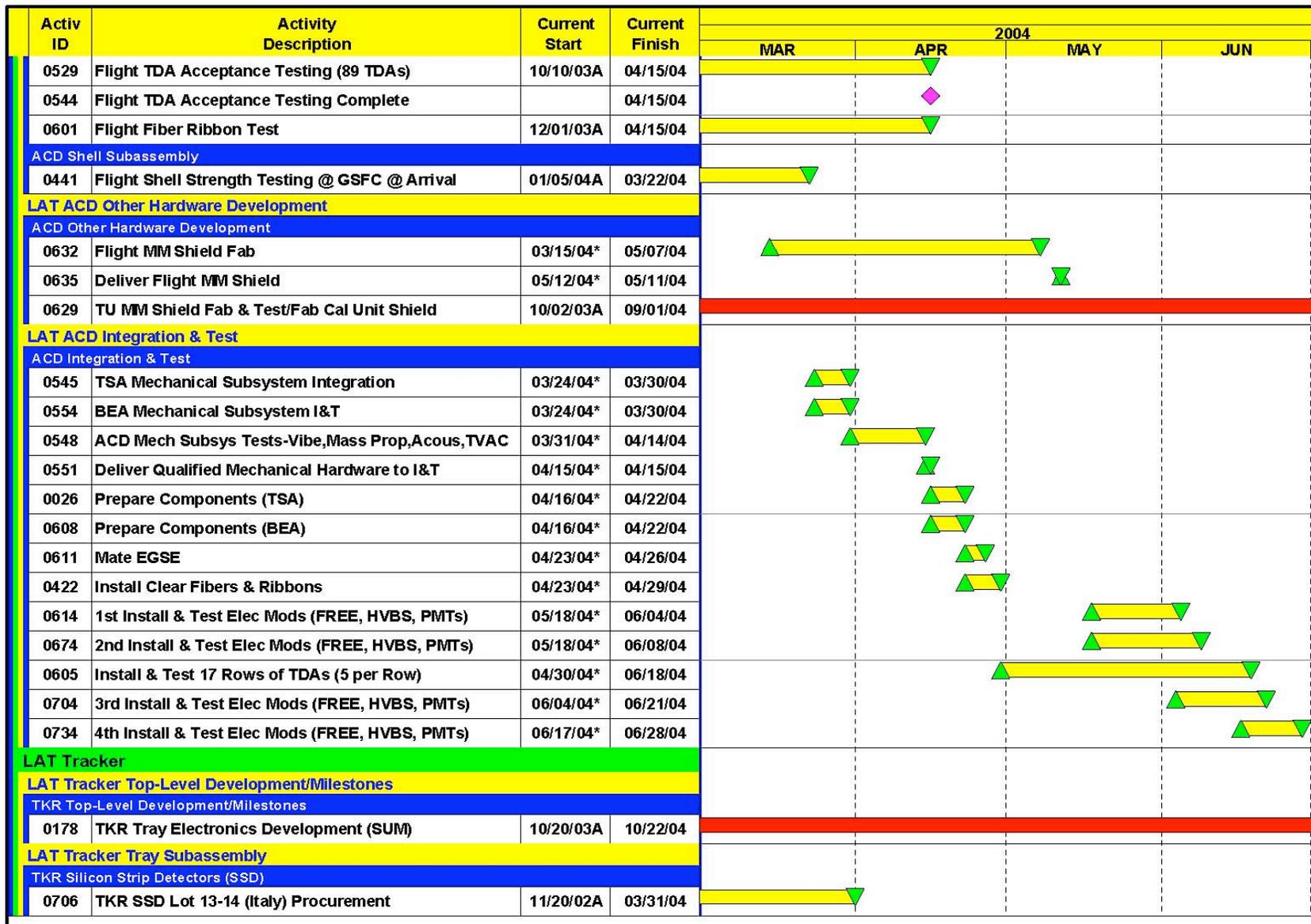
LAT Rolling Wave Schedule



Activ ID	Activity Description	Current Start	Current Finish	2004					
				MAR	APR	MAY	JUN	J	
LAT Instrument									
LAT ACD									
LAT ACD Top-Level Development/Milestones									
ACD Top-Level Development Milestones									
2509	Analog ASIC Development (3-Fit) (SUM)	09/03/02A	03/15/04	[Yellow bar with green arrowhead]					
2527	Flight Shell Subassy Development (SUM)	03/12/03A	03/22/04	[Yellow bar with green arrowhead]					
2512	Digital ASIC Development-SUMMARY	10/01/02A	04/12/04	[Yellow bar with green arrowhead]					
2521	Flight TDA Fab, Assy & Test (SUM)	02/18/03A	04/15/04	[Yellow bar with green arrowhead]					
2530	Flight Micrometeroid Shield Development (SUM)	03/27/03A	05/11/04	[Red bar with red arrowhead]					
2518	Receive & Integrate PMTs(1-240) w/RNs (SUM)	10/15/02A	05/24/04	[Yellow bar with green arrowhead]					
2515	FREE FU Development (SUM)	12/12/03A	06/18/04	[Yellow bar with green arrowhead]					
0017	ACD Subsystem Integration & Test (SUM)	03/24/04	06/28/04	[Yellow bar with green arrowhead]					
LAT ACD Base Electronic Assembly (BEA)									
ACD Analog ASIC									
2500	GAFE Flight Development & Test	01/02/03A	03/15/04	[Yellow bar with green arrowhead]					
ACD Digital ASIC									
0527	Procure Contract for FU D_ASIC Tstng Servs/Revw	03/01/04*	04/12/04	[Yellow bar with green arrowhead]					
ACD Front End Electronics Card									
0530	FREE FU Pop w/D_ASICs	03/16/04*	05/03/04	[Yellow bar with green arrowhead]					
3503	FREE FU Populate w/A_ASICs	03/16/04*	05/03/04	[Yellow bar with green arrowhead]					
0710	FREE FU 1 Testing	03/22/04*	06/18/04	[Yellow bar with green arrowhead]					
ACD Photo-Multiplier Tubes (PMT)									
0476	PMT FU, Integrate RNs 1-240 + Conformal Coat	03/30/04*	05/24/04	[Yellow bar with green arrowhead]					
LAT ACD Tile Shell Assembly (TSA)									
ACD Tile Detector Assemblies (TDAs)									
0538	Flight TDA Fab & Assembly (89 TDAs)-Fermi	02/18/03A	03/15/04	[Yellow bar with green arrowhead]					
0541	Flight Termination & Test (80 PMT/Fiber Cables)	02/28/03A	03/15/04	[Yellow bar with green arrowhead]					
0505	TDA Installation Drawing & Procedure Complete	06/03/02A	03/22/04	[Yellow bar with green arrowhead]					
Start Date	04/03/00			GL15		Sheet 1 of 10			
Finish Date	05/18/07			GLAST LAT Project Schedule		Rolling Wave		Date	Revision
Data Date	03/01/04			Status as of 3/1/04				Checked	Approved
Run Date	04/06/04 11:19								
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LAT Rolling Wave Schedule





LAT Rolling Wave Schedule



Activ ID	Activity Description	Current Start	Current Finish	2004					
				MAR	APR	MAY	JUN	J	
TKR Tray Electronics									
0736	Ship TKR Flight Tray Elex Mod A to PISA	04/06/04*	04/12/04		▲▼				
0746	Ship TKR Flight Tray Elex Mod B to PISA	04/21/04*	04/27/04			▲▼			
0739	Ship TKR Flight Tray Elex Mod 1 to PISA	04/29/04*	05/05/04				▲▼		
0779	Ship TKR Flight Tray Elex Mod 2 to PISA	05/19/04*	05/25/04					▲▼	
0742	Ship TKR Flight Tray Elex Mod 3 to PISA	05/28/04*	06/04/04						▲▼
0752	Ship TKR Flight Tray Elex Mod 4 to PISA	06/09/04*	06/15/04						
0745	Ship TKR Flight Tray Elex Mod 5 to PISA	06/29/04*	07/06/04						
0727	FabTKR Flight Tray Elex Mods	10/20/03A	07/08/04						
LAT Tracker Tray Assembly									
TKR Tray Assembly									
0733	Assemble Flight TKR Tray Panels Lot A	03/01/04*	03/26/04	▲▼					
0743	Assemble Flight TKR Tray Panels Lot B	03/26/04*	03/26/04		▲▼				
0853	Assemble TKR SSD Ladders Lot 7	03/01/04*	04/09/04	▲▼					
0961	Assemble Ladders to TKR Tray Lot A	04/06/04*	05/03/04		▲▼				
1051	(REC) M55J for Bottom Tray	04/06/04*	05/03/04		▲▼				
1091	Assemble Ladders to TKR Tray Lot B	04/20/04*	05/03/04			▲▼			
0787	Assemble TMCs to TKR Tray Lot A	04/20/04*	05/13/04			▲▼			
0947	Assemble TMCs to TKR Tray Lot B	05/05/04*	05/13/04				▲▼		
0877	Assemble TKR SSD Ladders Lot 13	04/01/04*	05/17/04		▲▼				
0837	Thermal Test Trays A @ Terni 1	05/13/04*	05/24/04				▲▼		
0778	Assemble Ladders to TKR Tray 1	05/05/04*	05/25/04				▲▼		
0898	Assemble Ladders to TKR Tray 2	05/17/04*	05/25/04					▲▼	
0957	Trays A to Pisa	05/25/04*	05/25/04						▲▼
0997	Elec Tests on TKR Tray Lot A	04/28/04*	05/25/04			▲▼			
1077	Elec Tests on TKR Tray Lot A	05/25/04*	05/25/04						▲▼
0817	Test Trays lot B @ Terni 1	05/14/04*	05/26/04				▲▼		
0865	Assemble TKR SSD Ladders Lot 9	04/13/04*	05/26/04		▲▼				
1007	Elec Tests on TKR Tray Lot B	05/14/04*	05/26/04				▲▼		
1195	Assemble TKR SSD Ladders Lot 10	05/06/04*	05/26/04				▲▼		



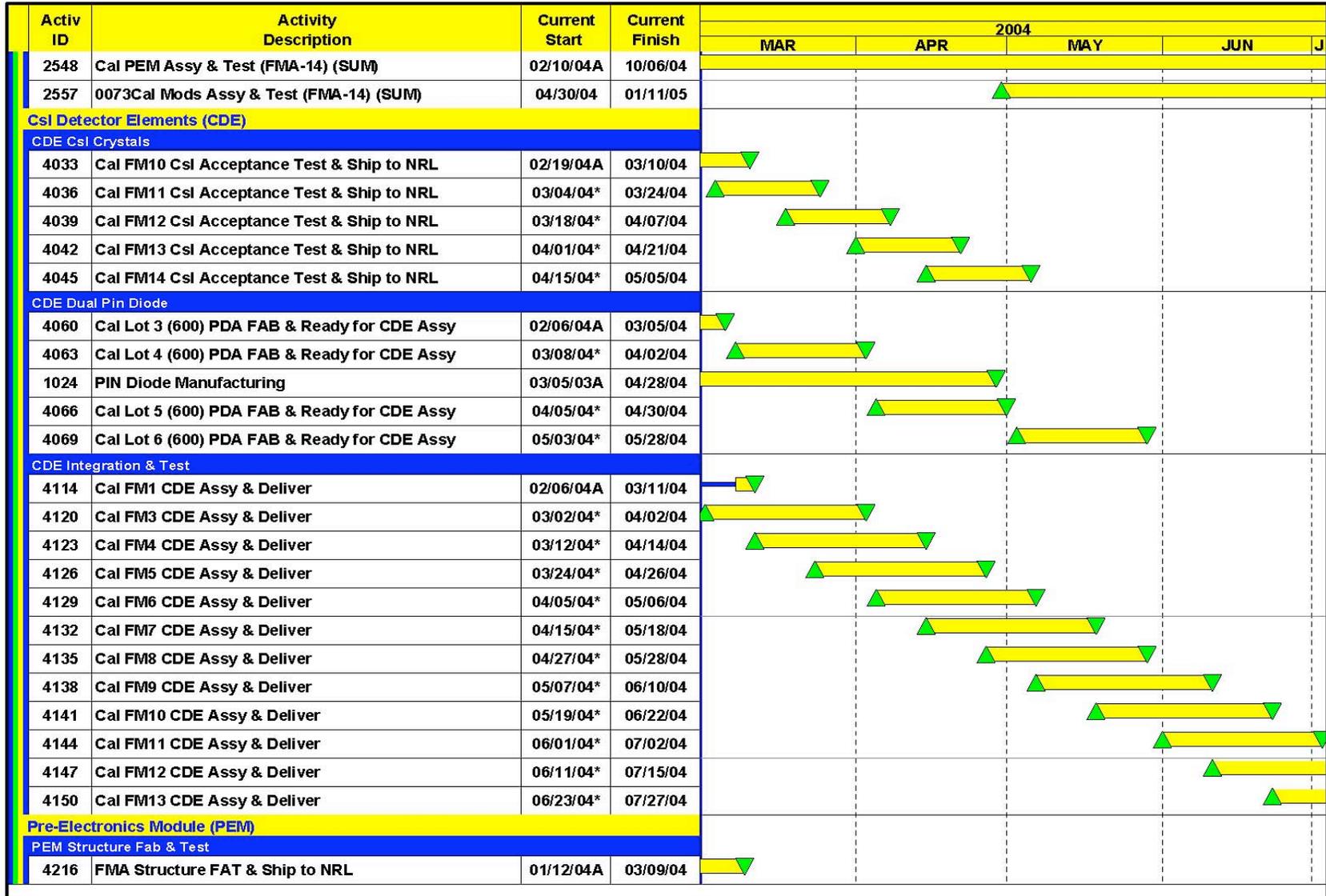
LAT Rolling Wave Schedule



Activ ID	Activity Description	Current Start	Current Finish	2004					
				MAR	APR	MAY	JUN	J	
0776	Assemble Ladders to TKR Tray Lot 4	05/26/04*	06/04/04						
0790	Assemble TMCMs to TKR Tray Lot 1	05/17/04*	06/04/04						
0800	Assemble TMCMs to TKR Tray Lot 2	05/26/04*	06/04/04						
0766	Assemble Ladders to TKR Tray Lot 3	05/26/04*	06/07/04						
0897	Thermal Test Trays B @ Terni 1	05/27/04*	06/08/04						
0917	Trays B to Pisa	06/09/04*	06/09/04						
1000	Ship TKR Tray Lot A to INFN	05/26/04*	06/09/04						
1010	Ship TKR Tray Lot B to INFN	06/09/04*	06/09/04						
0781	Elex Testing on TKR Tray Lot 1	05/26/04*	06/11/04						
1421	Elex Testing on TKR Tray Lot 2	06/07/04*	06/11/04						
0888	Assemble TKR SSD Ladders Lot 6	06/18/04*	06/17/04						
0784	Ship TKR Tray Lot 1 to INFN	06/10/04*	06/21/04						
0814	Ship TKR Tray Lot 2 to INFN	06/21/04*	06/21/04						
0793	Assemble TMCMs to TKR Tray Lot 3	06/08/04*	06/25/04						
0854	Assemble Ladders to TKR Tray Lot 6	06/18/04*	06/28/04						
0844	Assemble Ladders to TKR Tray Lot 5	06/18/04*	06/29/04						
0769	Elex Testing on TKR Tray Lot 3	06/17/04*	07/02/04						
0819	Elex Testing on TKR Tray Lot 4	06/28/04*	07/02/04						
1054	Assemble Flight TKR Tray Panels Lot 1-14	03/29/04*	09/13/04						
LAT Tracker Tower Assembly									
TKR Tower Assembly & Test									
0927	TKR Tower Assembly B	06/10/04*	06/23/04						
1003	TKR Tower Assembly A	05/26/04*	07/07/04						
0889	Assemble TKR Tower 1	06/24/04*	07/21/04						
LAT Calorimeter									
LAT Calorimeter Top-Level Development/Milestones									
LAT Calorimeter Top-Level Development/Milestones									
2536	Cal CDE (FMA-14) Acct Test/Ship to NRL	05/19/03A	05/05/04						
2551	Cal Analog Front End Elex Dev (FMA-14) (SUM)	04/19/04	06/25/04						
2542	Cal CDE Integration & Test (FMA-14) (SUM)	12/16/03A	08/06/04						
2545	Cal PEM Structure Fab & Test (FMA-14) (SUM)	01/12/04A	09/20/04						



LAT Rolling Wave Schedule





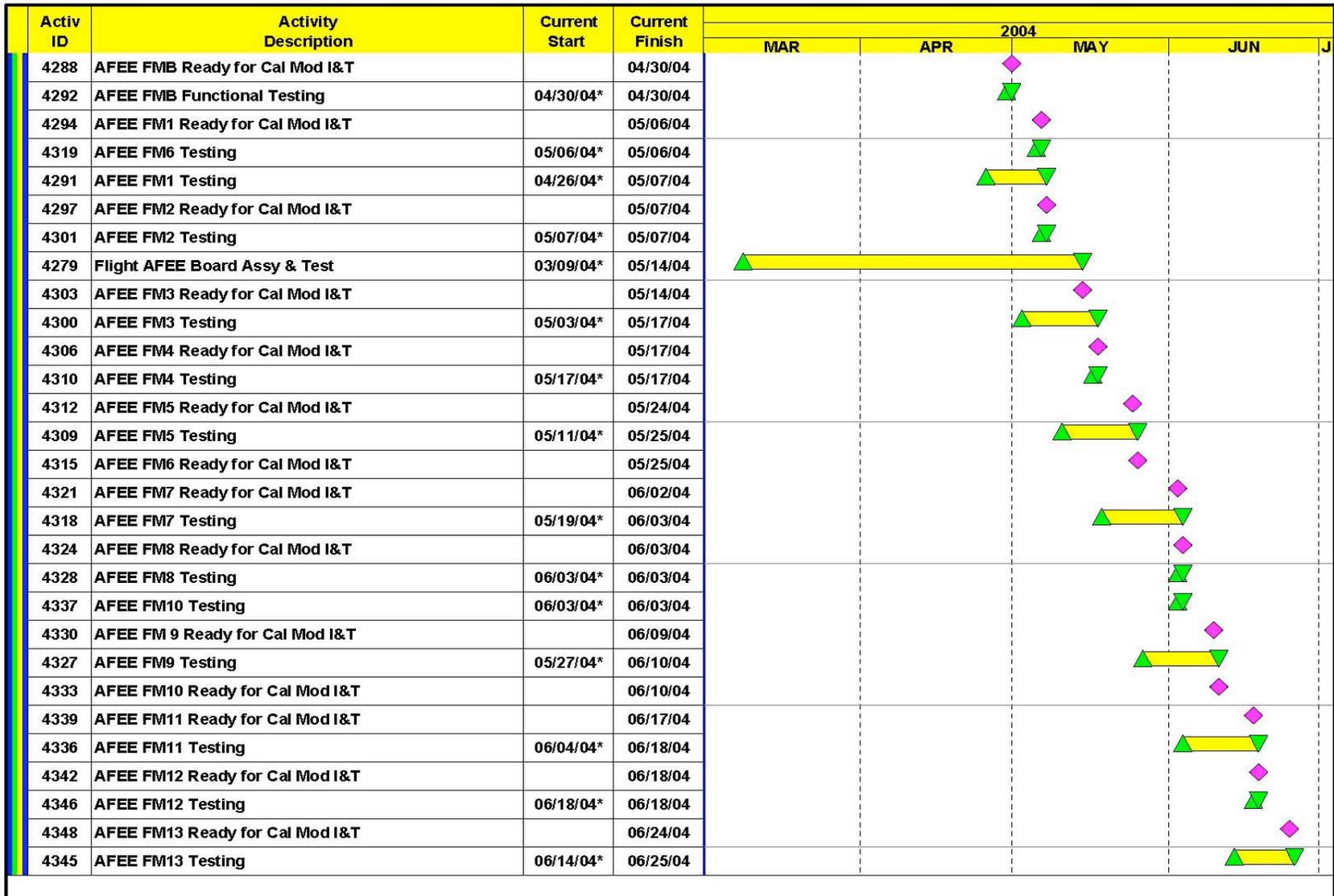
LAT Rolling Wave Schedule



Activ ID	Activity Description	Current Start	Current Finish	2004				
				MAR	APR	MAY	JUN	J
4219	FMB Structure FAT & Ship to NRL	01/27/04A	03/23/04	[Gantt bar from MAR to APR]				
4222	FM1 Structure FAT & Ship to NRL	02/25/04A	04/02/04	[Gantt bar from APR to MAY]				
4225	FM2 Structure FAT & Ship to NRL	03/10/04*	04/16/04	[Gantt bar from APR to MAY]				
4228	FM3 Structure FAT & Ship to NRL	03/22/04*	04/28/04	[Gantt bar from APR to MAY]				
4231	FM4 Structure FAT & Ship to NRL	04/05/04*	05/12/04	[Gantt bar from APR to MAY]				
4234	FM5 Structure FAT & Ship to NRL	04/15/04*	05/24/04	[Gantt bar from APR to MAY]				
4237	FM6 Structure FAT & Ship to NRL	04/29/04*	06/08/04	[Gantt bar from APR to MAY]				
4240	FM7 Structure FAT & Ship to NRL	05/11/04*	06/18/04	[Gantt bar from APR to MAY]				
4243	FM8 Structure FAT & Ship to NRL	05/25/04*	07/02/04	[Gantt bar from APR to MAY]				
4246	FM9 Structure FAT & Ship to NRL	06/07/04*	07/15/04	[Gantt bar from APR to MAY]				
4249	FM10 Structure FAT & Ship to NRL	06/21/04*	07/29/04	[Gantt bar from APR to MAY]				
PEM Assembly & Test								
4162	Cal PEM FMA Assy & Ready for Cal Mod I&T	02/10/04A	03/25/04	[Gantt bar from APR to MAY]				
4165	Cal PEM FMB Assy & Ready for Cal Mod I&T	02/23/04A	04/08/04	[Gantt bar from APR to MAY]				
4168	Cal PEM FM1 Assy & Ready for Cal Mod I&T	03/12/04*	04/21/04	[Gantt bar from APR to MAY]				
4171	Cal PEM FM2 Assy & Ready for Cal Mod I&T	03/24/04*	05/05/04	[Gantt bar from APR to MAY]				
4174	Cal PEM FM3 Assy & Ready for Cal Mod I&T	04/05/04*	05/14/04	[Gantt bar from APR to MAY]				
4177	Cal PEM FM4 Assy & Ready for Cal Mod I&T	04/15/04*	05/28/04	[Gantt bar from APR to MAY]				
4180	Cal PEM FM5 Assy & Ready for Cal Mod I&T	04/27/04*	06/10/04	[Gantt bar from APR to MAY]				
4183	Cal PEM FM6 Assy & Ready for Cal Mod I&T	05/07/04*	06/24/04	[Gantt bar from APR to MAY]				
4186	Cal PEM FM7 Assy & Ready for Cal Mod I&T	05/19/04*	07/07/04	[Gantt bar from APR to MAY]				
4189	Cal PEM FM8 Assy & Ready for Cal Mod I&T	06/01/04*	07/21/04	[Gantt bar from APR to MAY]				
4192	Cal PEM FM9 Assy & Ready for Cal Mod I&T	06/11/04*	08/02/04	[Gantt bar from APR to MAY]				
4195	Cal PEM FM10 Assy & Ready for Cal Mod I&T	06/23/04*	08/16/04	[Gantt bar from APR to MAY]				
Analog Front End Electronics (AFEE)								
Analog FEE ASIC Development								
4276	NASA Evaluation of Test Results	04/19/04*	04/20/04	[Gantt bar in APR]				
Analog Flight FEE Development								
4285	AFEE FMA Ready for Cal Mod I&T		04/29/04	[Gantt bar in APR]				
4282	AFEE FMA Testing	04/19/04*	04/30/04	[Gantt bar in APR]				



LAT Rolling Wave Schedule





LAT Rolling Wave Schedule



Activ ID	Activity Description	Current Start	Current Finish	2004					
				MAR	APR	MAY	JUN	J	
LAT Spacecraft Interface Unit									
LAT Spacecraft Communications Card									
1155	SIU Comm Card EM2 Review	05/10/04*	05/10/04			▲			
1175	SIU Comm Card QU Design	05/11/04*	06/01/04			▲	→	▼	
1205	SIU Comm Card QU Fab, Assy & Test	01/29/04A	06/15/04	→					
LAT Event Builder									
1235	Event Builder EM2 Review	03/16/04*	03/16/04	▲					
1275	Event Builder QU Fab, Assy & Test	05/11/04*	08/26/04			▲	→		
LAT Power Conditioning									
LAT Power Switching Card (PSC)									
1365	PSC QU Design	02/25/04A	05/21/04	→					
1395	PSC QU Fab, Assy & Test	05/24/04*	08/27/04			▲	→		
LAT Enclosures									
LAT TKR/CAL Enclosure									
1485	TKR/CAL TEM Enclosure FU Fab, Assy & Test	06/02/04*	07/28/04				▲	→	
LAT Cable Harness									
LAT Cable Harness Qualification Unit									
1545	LAT Cable Harness Qual Unit Design	11/25/03A	04/30/04	→					
1565	LAT Cable Harness QU Fab, Assy & Test	05/03/04*	05/21/04			▲	→	▼	
LAT Electronics Instrument Integration & Test									
LAT TKR/CAL TEM Box Integration & Test									
1675	TKR/CAL TEM Box FU (A-B,1-14) Acceptance Testing	06/21/04*	09/20/04					▲	→
LAT Mechanical									
LAT Mechanical Top-Level Development/Milestones									
LAT Mechanical Top-Level Development/Milestones									
0256	Flight GRID Fab, Assy & Test (SUM)	03/31/03A	08/12/04	→					
0238	TCS EGSE Development (SUM)	05/26/04	12/16/04				▲	→	
0235	TCS Fab (Thermistors, Heaters) (SUM)	03/01/04	03/18/05	→					
0244	TCS Flight Radiator Fab & Test (SUM)	06/27/03A	05/02/05	→					
Thermal Control System									
Thermal Control System Fabrication (SLAC)									
0881	TCS Flight HW Fab (Heaters, Thermistors)	03/01/04*	02/03/05	▲	→				
Thermal Control Integration Support (SLAC)									
0921	TCS EGSE Development	05/26/04*	12/16/04				▲	→	



LAT Rolling Wave Schedule



Activ ID	Activity Description	Current Start	Current Finish	2004				
				MAR	APR	MAY	JUN	J
Radiators, Heat Pipes, Thermal Testing (LM)								
Radiator Fabrication & Test								
0951	Flight Radiator Fab & Test	06/27/03A	02/22/05					
Mechanical Fab, Assembly & Test								
Flight Grid Fab, Assembly & Test (SLAC)								
1161	Flight Grid Box Assy Operations	06/15/04*	06/14/04				X	
1131	Flight Grid Assy Operations	04/01/04*	06/30/04	▲	▶			▼
1181	Flight Grid Box Test Fab	06/08/04*	09/08/04				▲	
1211	X-LAT Box Fab & Assy	10/02/03A	09/30/04	■				