

GLAST LAT I&T

*GLAST Monthly
Mission Review
September 28, 2006*



Monthly Mission Review

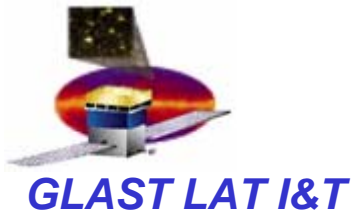
Project Status Overview

September 28, 2006

Ken Fouts

SLAC

kfouts@slac.stanford.edu

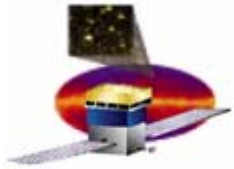


Monthly Agenda

GLAST Monthly
Mission Review
September 28, 2006

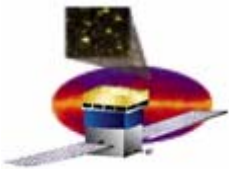
All Times are Pacific Daylight Time

| | | |
|---------------|--|----------------------|
| 8:30-9:00am | Project Status Overview and PMCS Summary | Ken Fouts |
| 9:00-9:30am | LAT I&T Status and Plan | Ken Fouts/Eric Grove |
| 9:30-10:30am | System Engineering-VCRM Status, NCR update | Pat Hascall |
| 10:30-11:15am | FSW Status | Jana Thayer |
| 11:15-12:00pm | ISOC | Richard Dubois |

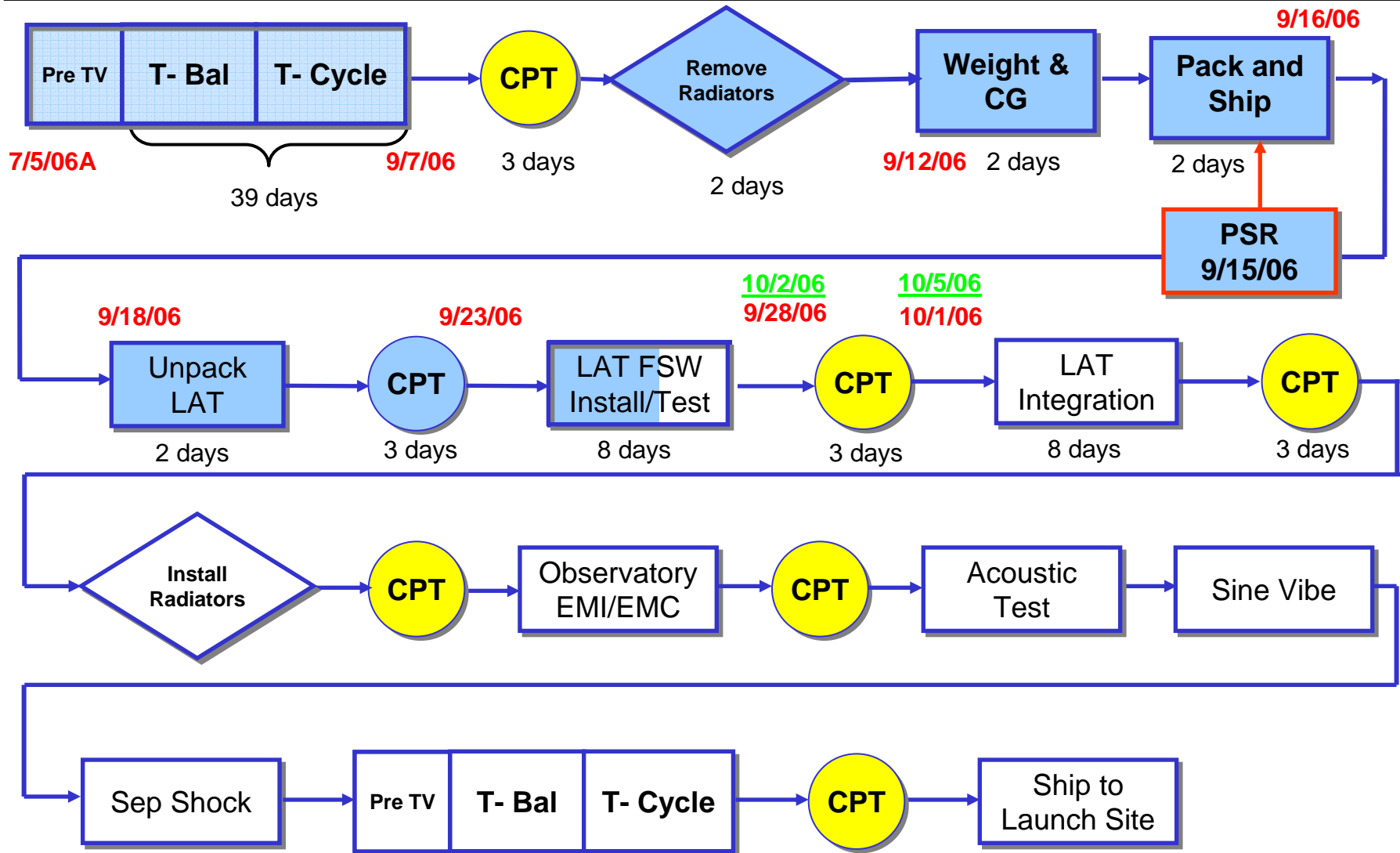


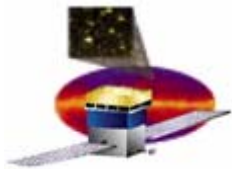
Project Status

- LAT TVAC Test Complete September 8**
- LAT Pre-ship Review – September 15**
- LAT Shipment from NRL – September 16**
- Post ship CPT Complete – September 22**
- FSW B0-6-12 installed – September 25**



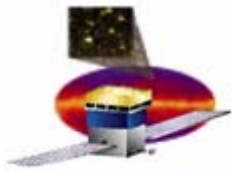
LAT Flow at GD-SASS





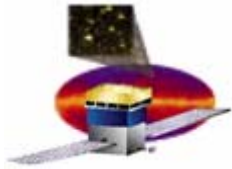
Detailed Plan (1 of 1)

| ID | Task Name | Start | Finish | % Complete | September 2006 | | | | | | | | | | | October 2006 | | | | |
|-----|---|---------|---------|------------|----------------|---|---|---|----|----|----|----|----|----|----|--------------|---|---|----|--|
| | | | | | 30 | 2 | 5 | 8 | 11 | 14 | 17 | 20 | 23 | 26 | 29 | 2 | 5 | 8 | 11 | |
| 1 | Environmental Test | 5/11/06 | 9/19/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 77 | TVAC | 7/5/06 | 9/6/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 112 | Post TVAC Open Door CPT | 9/6/06 | 9/9/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 113 | LAT EGSE Deliver to GD-SASS | 9/10/06 | 9/19/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 117 | LAT EGSE ready at GD-SASS | 9/19/06 | 9/19/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 118 | Remove LAT from Chamber | 9/10/06 | 9/10/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 119 | Remove Radiators | 9/11/06 | 9/12/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 120 | Weight & CG | 9/13/06 | 9/14/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 125 | Install LAT in shipping container and prep for shipping | 9/15/06 | 9/15/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 126 | Load & Ship LAT to GD-SASS | 9/16/06 | 9/18/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 127 | GD-SASS | 9/19/06 | 10/6/06 | 54% | 100% | | | | | | | | | | | | | | | |
| 128 | LAT Post Ship CPT | 9/19/06 | 9/22/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 129 | LAT FSW B0.6.12 | 9/25/06 | 9/25/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 130 | LAT CPT/Regression test | 9/26/06 | 9/27/06 | 100% | 100% | | | | | | | | | | | | | | | |
| 131 | LAT FSW B0.6.13 | 9/28/06 | 9/28/06 | 0% | 100% | | | | | | | | | | | | | | | |
| 132 | LAT CPT Config 1 and Config 2 | 9/29/06 | 9/29/06 | 0% | 100% | | | | | | | | | | | | | | | |
| 133 | LAT FSW B0.7.0 Install | 10/2/06 | 10/2/06 | 0% | 100% | | | | | | | | | | | | | | | |
| 134 | LAT FSW B0.7.0 Regression Test | 10/3/06 | 10/5/06 | 0% | 100% | | | | | | | | | | | | | | | |
| 135 | LAT Hand-off Meeting (DD250 Preparation) | 10/6/06 | 10/6/06 | 0% | 100% | | | | | | | | | | | | | | | |
| 136 | LAT Ready for Integration @ GD-SASS | 10/6/06 | 10/6/06 | 0% | 100% | | | | | | | | | | | | | | | |



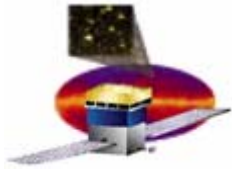
LAT Staffing Plan

| | Post FSW 0-6-12 CPT | FSW 0-6-13 + CPT | | | Post FSW 0-6-13 CPT | FSW 0-7-0 | Post FSW 0-7-0 CPT | Post FSW 0-7-0 CPT | Post FSW 0-7-0 CPT | | | LAT/S/C Integration | LAT/S/C Integration | LAT/S/C Integration | LAT/S/C Integration | LAT/S/C Integration | | | LAT/S/C Integration | LAT/S/C Integration | LAT/S/C Integration | LAT/S/C Integration | LAT/S/C Integration |
|------------------|---------------------|------------------|----|---|---------------------|-----------|--------------------|--------------------|--------------------|----|----|---------------------|---------------------|---------------------|---------------------|---------------------|--------|----|---------------------|---------------------|---------------------|---------------------|---------------------|
| Updated: 9/26/06 | 28 | 29 | 30 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Name | T | F | S | S | M | T | W | T | F | S | S | M | T | W | T | F | S | S | M | T | W | T | F |
| Grist, Brian | GD | GD/Trav | | | SLAC | SLAC | SLAC | SLAC | SLAC | | | Trav/GD | GD | GD | GD | GD/Trav | | | SLAC | SLAC | SLAC | SLAC | SLAC |
| Hoang, Phuc | GD | GD/Trav | | | SLAC | GD/Trav | GD | GD | GD/Trav | | | SLAC | SLAC | SLAC | SLAC | SLAC | | | SLAC | SLAC | SLAC | SLAC | SLAC |
| Ludvik, Jeffery | GD | GD/Trav | | | GD/Trav | GD | GD | GD | GD/Trav | | | SLAC | SLAC | SLAC | SLAC | SLAC | | | Trav/GD | GD | GD | GD | GD/Trav |
| Nguyen, Albert | GD/Trav | SLAC | | | GD/Trav | GD | GD | GD/Trav | SLAC | | | SLAC | SLAC | SLAC | SLAC | SLAC | | | Trav/GD | GD | GD | GD | GD/Trav |
| Roberts, Drew | GD | GD/Trav | | | SanD | SanD | SanD | SanD | SanD | | | SanD | SanD | SanD | GD/Trav | GD | GD | GD | GD | GD | GD | GD | GD |
| Sandora, Patty | NRL | NRL | | | Travel | GD | GD | GD | GD | GD | GD | GD | GD | GD | GD | GD | Travel | | NRL | NRL | NRL | NRL | NRL |
| Young, Patrick | GD | GD/Trav | | | SLAC | SLAC | SLAC | SLAC | SLAC | | | Trav/GD | GD | GD | GD | GD/Trav | | | Trav/GD | GD | GD | GD | GD/Trav |
| Nieland, Tom | SLAC | SLAC | | | GD/Trav | GD | GD | GD | GD | GD | GD | GD | GD | GD | GD | GD/Trav | | | GD/Trav | GD | GD | GD | GD |



Issues and Concerns

- ❑ **LAT Electrical Staffing**
 - Two team members have left
 - On travel for extended period
 - Long shifts and 24/7 taking its toll
 - Currently under-staffed for 24/7 for extended periods
- ❑ **FSW Status**
 - We all want the same end result
 - More detail from Jana later
 - Schedule weekly tag-up
- ❑ **LAT Integration with the S/C**
 - **LAT minimum criteria for integration established**
 - FSW Compression (B0-7-0) installed
 - LAT CPT Complete
 - **LAT ADP nearly complete**
 - **Need to schedule hand-off meeting**
 - Propose 10/5
- ❑ **LAT Post Integration Plan**
 - **Continue to run LAT tests on a non-interference basis**
 - **Support Observatory integration and test activities as required**



LAT Test (1 of 3)

1. Regressions tests for FSW build

- **Principles:**

- a. **Reacquire all (still-useful) old tests for comparison.**

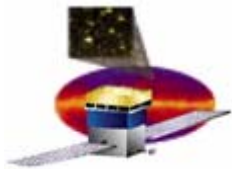
- b. **Verify that FSW contains expected updates**

Principle a. - reacquire the old stuff

- CPT (including LAT-22x and LAT-22xGammafilterNoPer)
- calibration sequence (LAT-07x)
- ACD Veto Threshold test with muons
- calibGen
- calibDAC
- e2e_LAT-71x_0.50hr (once)
- TACK scan suite
- TkrTotGain_SVAC

Principle b. - test the new FSW features

- LAT-12x (modes), with Philip Hart present
- LAT-20x (diagnostics), enable filters `_and_`
- periodic triggers simultaneously
- Enable Gamma filter
- Enable Heavy Cosmic filter
- Enable OR of Gamma, Heavy Cosmic, Mip, Passthru filters

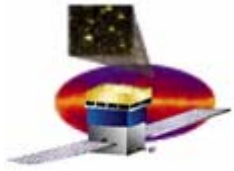


2. Runs to accumulate heritage with B0-6-12, B0-7-0, etc, looking for reboots, etc

- ❑ Principles: loop repeatedly over run a mix of LPA and LCI, giving equal time to each.
- ❑ Loop over
 - Portions of LAT07x
 - TkrTotGain_SVAC [6 hrs]
 - calibGen [2 hrs]
 - e2e_LAT-71x_0.50hr [repeat for 4 hrs, i.e. execute 8 times]
 - LAT22x
 - e2e_LAT-22xGammafilterNoPer_0.50hr ** [0.5 hrs]
 - e2e_LAT-22x_0.50hr *** [execute 3 times, 1.5 hrs]
 - e2e_LAT-22xGammafilterNoPer_0.50hr ** [0.5 hrs]
 - e2e_LAT-22x_0.50hr *** [execute 3 times, 1.5 hrs]

** Once FSW update is confirmed, should replace this with
e2e_LAT-22xGamma_0.50hr

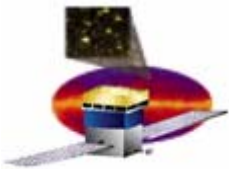
*** Once FSW update is confirmed, should replace this with
e2e_LAT-22xGamHfcMipThru_0.50hr



LAT Test (3 of 3)

3. Revised configs

- **Need to revise configurations again:**
 - a. **Return to flight-nominal thresholds from TVAC-conservative thresholds**
 - b. **Update TKR trigger and data masks to incorporate current hot strips**
 - c. **Update TKR buffering to current guess of flight setting**
Set GTRC max hits = 14 and GTCCC almost-full = 126 (i.e. $9 * 14$)



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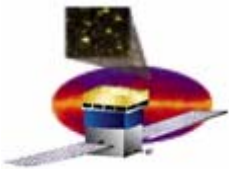
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GLAST
**Gamma-ray Large
Area Space
Telescope**

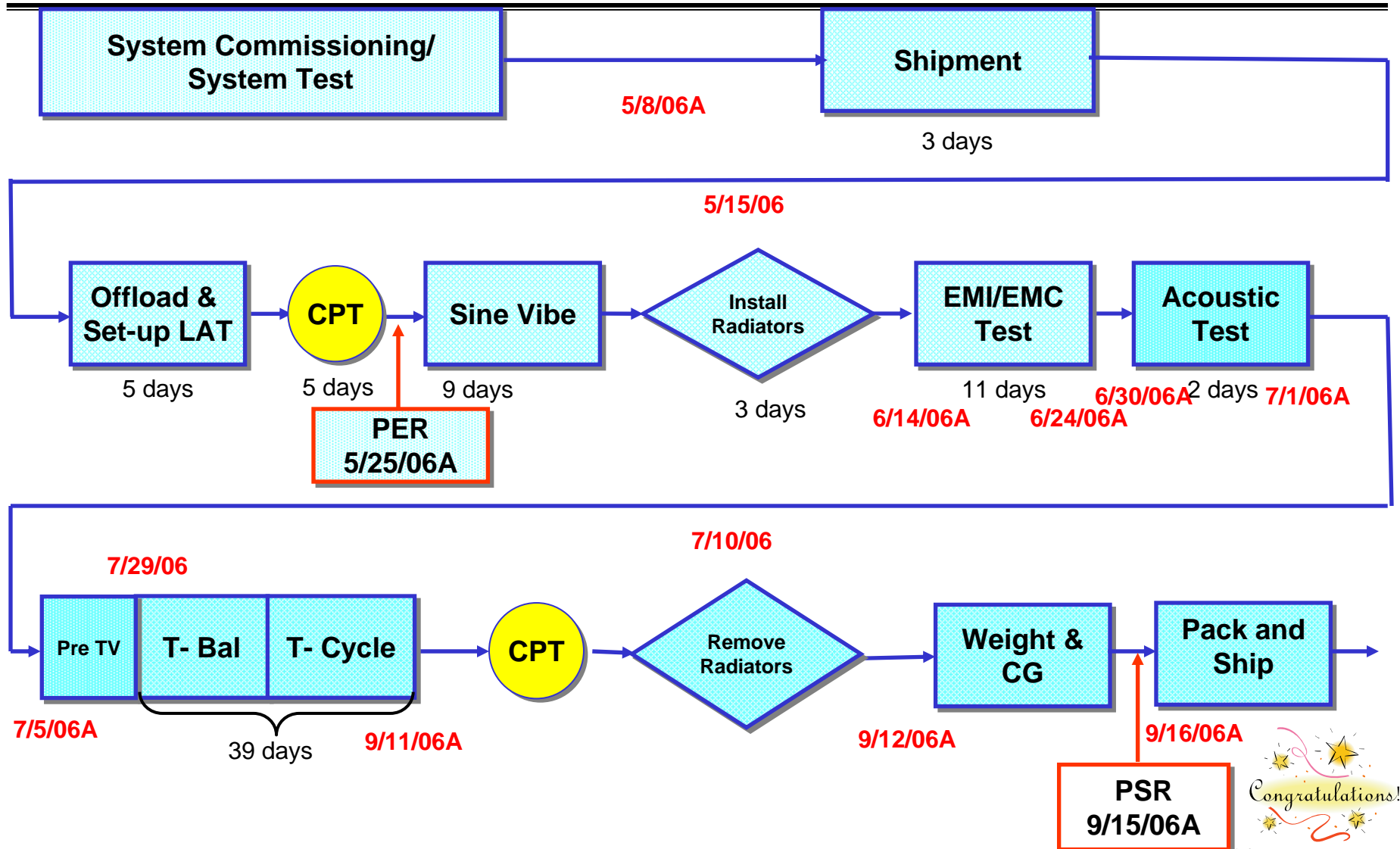
A vibrant image of the cosmic microwave background radiation, showing a bright yellow and orange band across the center, with a blue and purple background filled with numerous small, bright spots representing distant galaxies and stars.

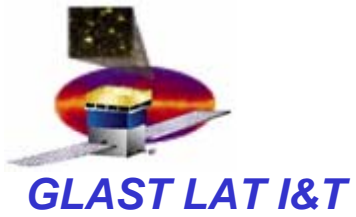
A row of logos representing the international partners of the GLAST mission: France, Germany, Italy, Japan, Sweden, the United States, and NASA.

Cost/Schedule Reports for 4.1 LAT Presentation August 2006 Month End



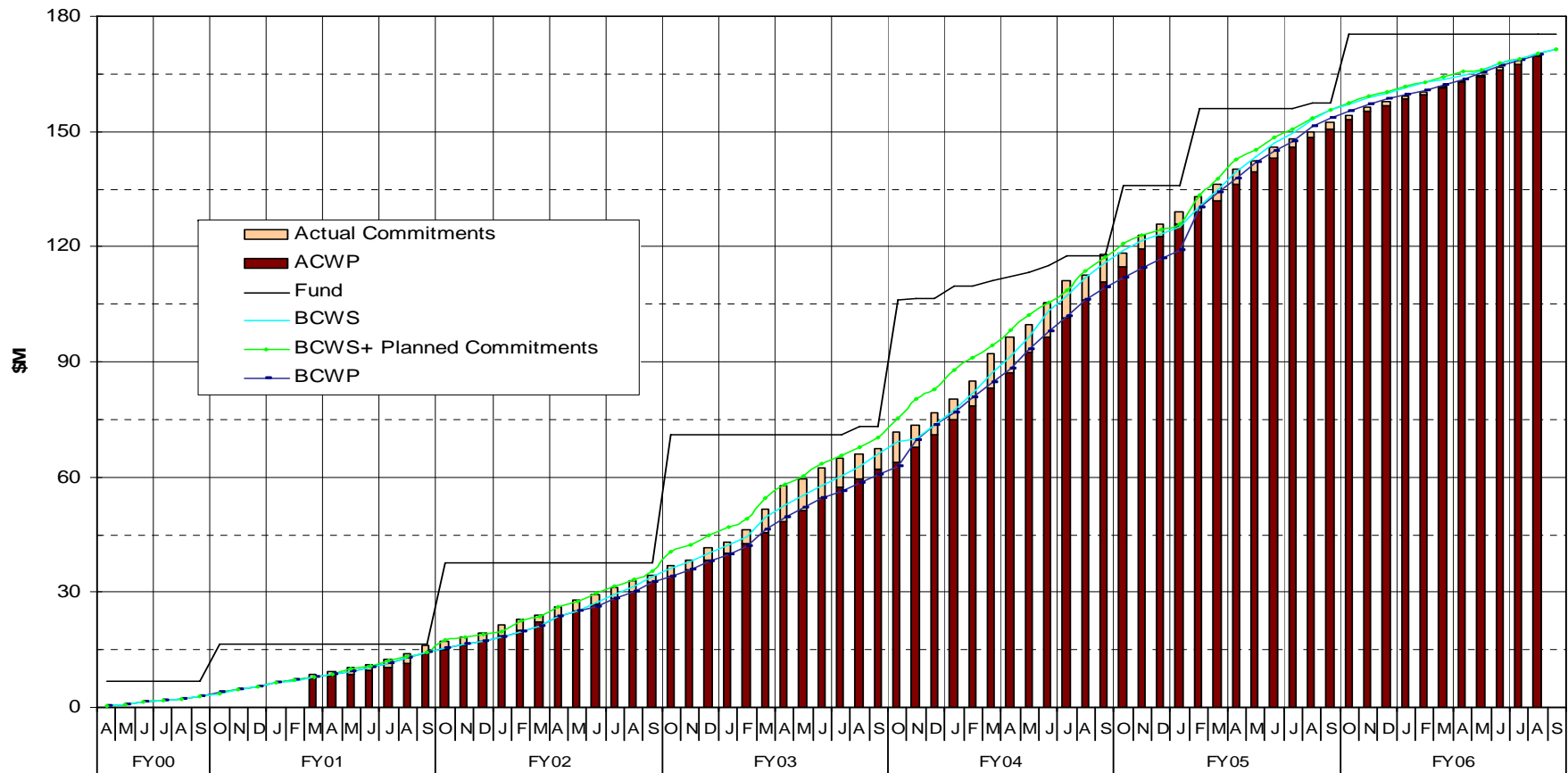
LAT Test Flow

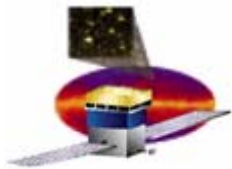




Budget vs Actuals vs Performance

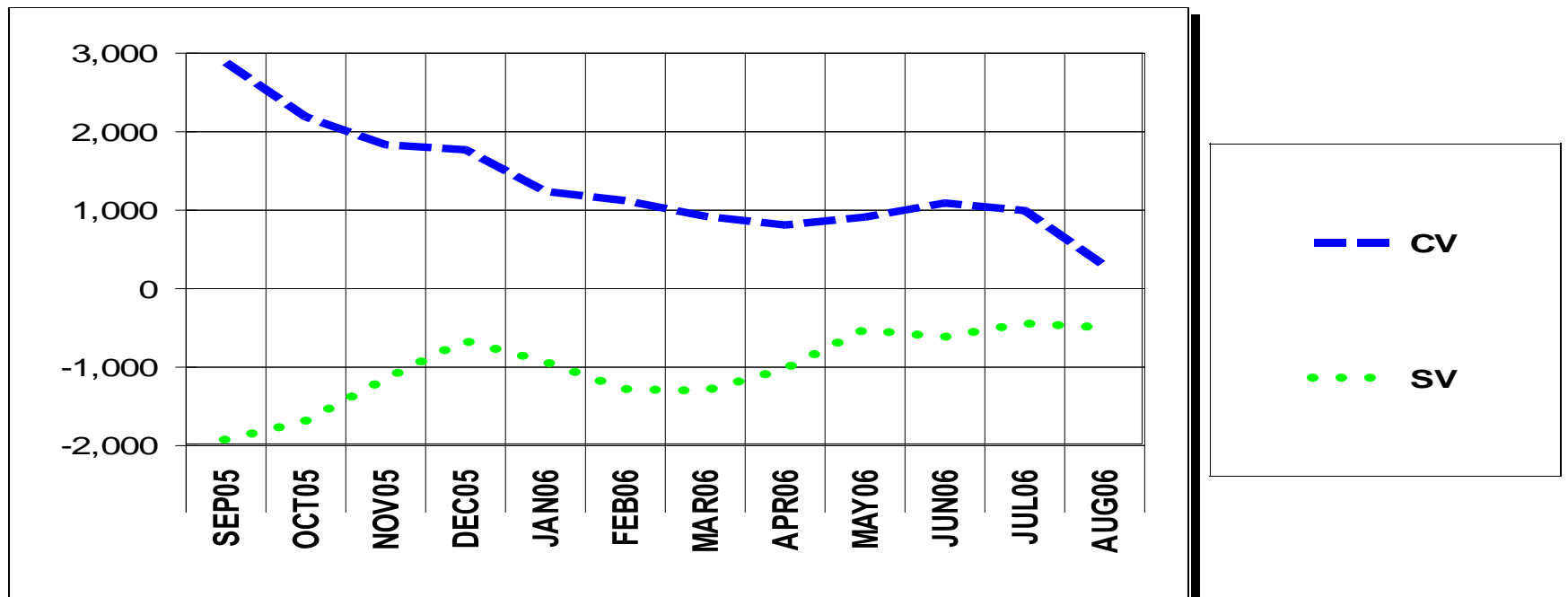
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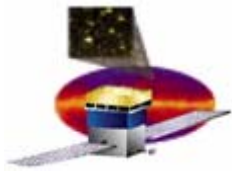




Cost & Schedule Variance

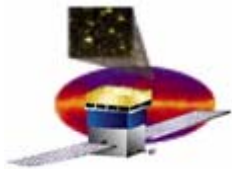
4.1 GLAST LAT PROJECT





CPR Level 3

| Cost Performance Report - Work Breakdown Structure | | | | | | | | | | | | | |
|--|-------------------|-------------------|---------------------------------------|----------|-----------------------|--------------------|-------------------|------------------------|-------------------------|---------------------|--|-------------------------------|----------|
| Contractor: Location: | | | | | | Contract Type/No: | | | Project Name/No: LAT | | Report Period: 7/31/2006 8/31/2006 | | |
| Quantity | Negotiated Cost | | Est. Cost Authorized Unpriced Work | | Tgt. Profit/ Fee % | | Tgt. Price | Est Price | Share Ratio | Contract Ceiling | Estimated Contract Ceiling | | |
| 1 | 0 | | 0 | | 0.00 | | 0 | 0 | | 0 | 0 | | |
| CAPW[3] | | | | | | | | | | | | | |
| Item | Current Period | | | | | Cumulative to Date | | | | | At Completion | | |
| | Budgeted Cost | | Actual Cost Work | Variance | | Budgeted Cost | | Actual Cost Work | Variance | | Budgeted | Latest Revised Estimate | Variance |
| | Scheduled Work | Performed Work | | Schedule | Cost | Scheduled Work | Performed Work | | Schedule | Cost | | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| 4.1.1 INSTRUMENT MANAGEMENT | 377 | 377 | 359 | 0 | 19 | 22,000 | 22,000 | 20,835 | 0 | 1,166 | 25,533 | 25,533 | 0 |
| 4.1.2 SYSTEM ENGINEERING | 285 | 285 | 318 | 0 | -33 | 10,411 | 10,411 | 10,373 | 0 | 39 | 12,165 | 12,165 | 0 |
| 4.1.4 TRACKER | 0 | 0 | -6 | 0 | 6 | 21,486 | 21,486 | 21,491 | 0 | -5 | 21,486 | 21,486 | 0 |
| 4.1.5 CALORIMETER | 0 | 0 | 0 | 0 | 0 | 21,554 | 21,554 | 21,553 | 0 | 2 | 21,554 | 21,554 | 0 |
| 4.1.6 ANTICOINCIDENCE DETECTOR | 0 | 0 | 0 | 0 | 0 | 18,164 | 18,164 | 18,165 | 0 | 0 | 18,164 | 18,164 | 0 |
| 4.1.7 ELECTRONICS | 104 | 53 | 204 | -51 | -151 | 31,431 | 31,264 | 31,580 | -167 | -316 | 32,455 | 32,455 | 0 |
| 4.1.8 MECHANICAL SYSTEMS | 0 | 0 | 5 | 0 | -5 | 17,463 | 17,463 | 17,466 | 0 | -3 | 17,463 | 17,463 | 0 |
| 4.1.9 INTEGRATION & TEST | 335 | 335 | 888 | 0 | -553 | 13,801 | 13,464 | 14,799 | -338 | -1,335 | 16,130 | 16,130 | 0 |
| 4.1.A PERFORMANCE AND SAFETY ASSURANCE | 171 | 171 | 196 | 0 | -25 | 5,350 | 5,350 | 5,182 | 0 | 168 | 6,028 | 6,028 | 0 |
| 4.1.B LAT INSTRUMENT SCIENCE OPERATIONS CENTER | 0 | 0 | 0 | 0 | 0 | 317 | 317 | 317 | 0 | 0 | 317 | 317 | 0 |
| 4.1.C EDUCATION AND PUBLIC OUTREACH | 60 | 60 | 57 | 0 | 3 | 3,269 | 3,269 | 2,970 | 0 | 299 | 3,988 | 3,988 | 0 |
| 4.1.D SCIENCE ANALYSIS SOFTWARE | 94 | 94 | 56 | 0 | 38 | 3,847 | 3,847 | 3,567 | 0 | 280 | 5,114 | 5,114 | 0 |
| 4.1.E SUBORBITAL FLIGHT TEST | 0 | 0 | 0 | 0 | 0 | 1,325 | 1,325 | 1,325 | 0 | 0 | 1,325 | 1,325 | 0 |
| Gen. and Admin. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Undist. Budget | | | | | | | | | | | 0 | 0 | 0 |
| Sub Total | 1,426 | 1,375 | 2,077 | -51 | -702 | 170,419 | 169,914 | 169,621 | -505 | 294 | 181,722 | 181,722 | 0 |
| Contingency | | | | | | | | | | | 6,333 | 6,333 | 0 |
| Total | 1,426 | 1,375 | 2,077 | -51 | -702 | 170,419 | 169,914 | 169,621 | -505 | 294 | 188,055 | 188,055 | 0 |



GLAST LAT I&T

Cost by Organization

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| Cost Performance Report - Work Breakdown Structure | | | | | | | | | | | | | |
|--|-----------------|-------------------|---------------------------------------|----------|-----------------------|-------------------------|--------------|------------------------|--|-------------------------------|---------------|-------------------------------|----------|
| Contractor: Location: | | Contract Type/No: | | | | Project Name/No: LAT | | | Report Period: 7/31/2006 8/31/2006 | | | | |
| Quantity | Negotiated Cost | | Est. Cost Authorized Unpriced Work | | Tgt. Profit/ Fee % | Tgt. Price | Est Price | Share Ratio | Contract Ceiling | Estimated Contract Ceiling | | | |
| 1 | 0 | | 0 | | 0.00 | 0 | 0 | 0 | 0 | 0 | | | |
| OBS[1] BE[2] | Current Period | | | | | Cumulative to Date | | | | | At Completion | | |
| Item | Budgeted Cost | | Actual Cost Work | Variance | | Budgeted Cost | | Actual Cost Work | Variance | | Budgeted | Latest Revised Estimate | Variance |
| | Scheduled | Performed | | Schedule | Cost | Scheduled | Performed | | Schedule | Cost | | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| DG *** GSFC | | | | | | | | | | | | | |
| RL LABOR | 49 | 49 | 0 | 0 | 49 | 10,063 | 10,063 | 9,598 | 0 | 465 | 10,657 | 10,657 | 0 |
| RT TRAVEL | 4 | 4 | 0 | 0 | 4 | 273 | 273 | 119 | 0 | 154 | 314 | 314 | 0 |
| RM MATERIAL & SERVICES | 1 | 1 | 0 | 0 | 1 | 7,743 | 7,743 | 7,872 | 0 | -129 | 7,750 | 7,750 | 0 |
| RX MPS & LAB TAX | 4 | 4 | 0 | 0 | 4 | 2,600 | 2,600 | 2,435 | 0 | 165 | 2,768 | 2,768 | 0 |
| OBS[1]Totals: | 58 | 58 | 0 | 0 | 58 | 20,680 | 20,680 | 20,024 | 0 | 656 | 21,489 | 21,489 | 0 |
| DH *** HEPL | | | | | | | | | | | | | |
| RL LABOR | 130 | 130 | 100 | 0 | 30 | 5,144 | 5,144 | 4,791 | 0 | 354 | 6,576 | 6,576 | 0 |
| RT TRAVEL | 5 | 5 | 24 | 0 | -18 | 278 | 278 | 282 | 0 | -4 | 349 | 349 | 0 |
| RM MATERIAL & SERVICES | 40 | 40 | 66 | 0 | -25 | 4,664 | 4,664 | 4,668 | 0 | -4 | 5,104 | 5,104 | 0 |
| OBS[1]Totals: | 175 | 175 | 189 | 0 | -14 | 10,086 | 10,086 | 9,741 | 0 | 346 | 12,029 | 12,029 | 0 |
| DL *** SLAC | | | | | | | | | | | | | |
| RL LABOR | 358 | 317 | 403 | -41 | -86 | 37,874 | 37,744 | 38,462 | -130 | -718 | 41,099 | 41,099 | 0 |
| RT TRAVEL | 41 | 34 | 140 | -7 | -106 | 1,232 | 1,213 | 1,096 | -19 | 117 | 1,595 | 1,595 | 0 |
| RM MATERIAL & SERVICES | 462 | 465 | 635 | 2 | -170 | 62,481 | 62,450 | 61,924 | -31 | 525 | 64,617 | 64,617 | 0 |
| OBS[1]Totals: | 861 | 816 | 1,178 | -45 | -362 | 101,586 | 101,407 | 101,482 | -179 | -75 | 107,311 | 107,311 | 0 |
| DN *** NRL | | | | | | | | | | | | | |
| RL LABOR | 220 | 214 | 365 | -5 | -151 | 24,365 | 24,120 | 25,132 | -244 | -1,012 | 25,878 | 25,878 | 0 |
| RT TRAVEL | 18 | 18 | 12 | 0 | 5 | 851 | 835 | 689 | -16 | 146 | 920 | 920 | 0 |
| RM MATERIAL & SERVICES | 0 | 0 | 239 | 0 | -239 | 6,514 | 6,449 | 6,663 | -65 | -214 | 6,514 | 6,514 | 0 |
| OBS[1]Totals: | 238 | 232 | 616 | -6 | -384 | 31,729 | 31,404 | 32,485 | -325 | -1,081 | 33,311 | 33,311 | 0 |
| DO *** Financial Plan Transfer/Sub Out | | | | | | | | | | | | | |
| RM MATERIAL & SERVICES | 0 | 0 | 0 | 0 | 0 | 59 | 59 | 59 | 0 | 0 | 59 | 59 | 0 |
| OBS[1]Totals: | 0 | 0 | 0 | 0 | 0 | 59 | 59 | 59 | 0 | 0 | 59 | 59 | 0 |
| DS *** SSU | | | | | | | | | | | | | |
| RL LABOR | 34 | 34 | 53 | 0 | -19 | 1,649 | 1,649 | 1,778 | 0 | -129 | 2,139 | 2,139 | 0 |
| RT TRAVEL | 4 | 4 | 2 | 0 | 3 | 141 | 141 | 102 | 0 | 39 | 189 | 189 | 0 |
| RM MATERIAL & SERVICES | 20 | 20 | 2 | 0 | 18 | 1,439 | 1,439 | 1,057 | 0 | 382 | 1,609 | 1,609 | 0 |
| OBS[1]Totals: | 59 | 59 | 57 | 0 | 2 | 3,229 | 3,229 | 2,937 | 0 | 292 | 3,937 | 3,937 | 0 |
| DU *** UCSC | | | | | | | | | | | | | |
| RL LABOR | 16 | 16 | 23 | 0 | -7 | 2,110 | 2,110 | 2,058 | 0 | 52 | 2,418 | 2,418 | 0 |
| RT TRAVEL | 1 | 1 | 0 | 0 | 1 | 144 | 144 | 127 | 0 | 17 | 158 | 158 | 0 |
| RM MATERIAL & SERVICES | 5 | 5 | 0 | 0 | 5 | 388 | 388 | 358 | 0 | 30 | 457 | 457 | 0 |
| OBS[1]Totals: | 22 | 22 | 23 | 0 | -1 | 2,642 | 2,642 | 2,543 | 0 | 98 | 3,034 | 3,034 | 0 |
| DT *** Texas A&M | | | | | | | | | | | | | |
| RL LABOR | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 15 | 0 | 0 | 15 | 15 | 0 |
| OBS[1]Totals: | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 15 | 0 | 0 | 15 | 15 | 0 |
| DW *** UW | | | | | | | | | | | | | |
| RL LABOR | 10 | 10 | 12 | 0 | -2 | 293 | 293 | 268 | 0 | 25 | 398 | 398 | 0 |
| RT TRAVEL | 1 | 1 | 2 | 0 | -1 | 44 | 44 | 45 | 0 | 0 | 54 | 54 | 0 |
| RM MATERIAL & SERVICES | 2 | 2 | 0 | 0 | 2 | 54 | 54 | 21 | 0 | 33 | 85 | 85 | 0 |
| OBS[1]Totals: | 13 | 13 | 14 | 0 | -1 | 392 | 392 | 334 | 0 | 58 | 538 | 538 | 0 |
| Gen. and Admin. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Undist. Budget | | | | | | | | | | | | | |
| Sub Total | 1,426 | 1,375 | 2,077 | -51 | -702 | 170,419 | 169,914 | 169,621 | -505 | 294 | 181,722 | 181,722 | 0 |
| Contingency | | | | | | | | | | | 6,333 | 6,333 | 0 |
| Total | 1,426 | 1,375 | 2,077 | -51 | -702 | 170,419 | 169,914 | 169,621 | -505 | 294 | 188,055 | 188,055 | 0 |