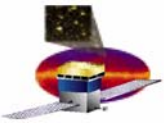


GLAST Large Area Telescope:

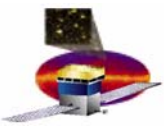
LAT System Engineering
LAT Quality Assurance

Pat Hascall
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Topics

- **NCR Metrics**
- **Significant NCRs**
- **NCR List**



LAT NCR Metrics 1/26/06

Subsystem	Open NCRs	Closed NCRs last 30 days	NCRs Open 30 days or more	NCRs open 90 days or more	NCRs ready to close (disposition complete; need final QA/MRB review to close)
DAQ	44	20	36	14	29
Tracker	7	0	7	7	7
Mechanical	7	0	6	4	6
CAL	0	0	0	0	0
ACD*	0*	0	0	0	0
I&T	50*	14	38	22	16

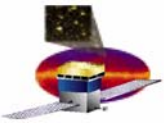
* All NCRs related to ACD are now categorized as I&T NCRs (including 5 open ACD PRs and PFRs from GSFC)



Open I&T NCR Metrics 1/26/06

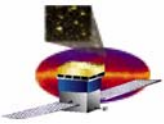
Open I&T NCRs	December	January
	45	50*
New NCRs created	19	9
NCRs closed	5	14
NCRs Ready to Close (analysis complete, need final QA/MRB review to close)	19	16
NCRs with Analysis in Progress	24	30
NCRs to remain open to monitor trend or performance	2	4

* Includes 10 previous ACD subsystem NCRs that are now categorized as I&T NCRs.



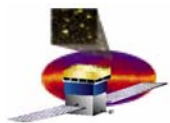
NCR 783

- **Anomaly Description**
 - Sweep events (essentially solicited events) do not complete as expected in the redundant configuration.
 - Traced to the TEM in Bay 8 holding the busy flag high after power on with the redundant side of the GASU
- **Root Cause**
 - Determined to be noise induced on the unpowered, but enabled, primary trigger of TEM 8 by a coincident power up of GASU ACD power supplies in the redundant GASU during LAT power up using the redundant GASU.
 - TEM 8 is susceptible to the Redundant GASU ACD power supply noise due to the close physical proximity of its trigger line combined with the sequencing (LATTE/PIG configuration) of the power supply turn on while the primary trigger input is enabled.
- **Resolution**
 - An audit of similar configuration within the DAQ concluded that this vulnerability is isolated to TEM 8 and the Redundant GASU.
 - LATTE/PIG - A workaround using a reset clears the problem after the power supply has settled and event data flows normally.
 - LICOS/FSW – the TEM masks the unpowered primary trigger line prior to GASU-ACD converter turn on.



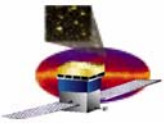
NCR 684

- **Anomaly Description**
 - Tracker modules have occasional out-of-spec noise occupancy in isolated layers (“noise flares”).
- **Investigation**
 - Analysis showed similar noise at INFN.
 - Occupancy still within spec.
 - Noise flares are detected, and have been observed, autonomously on the LAT during data processing.
 - No noise flares have been observed in review of 48 hours of online Tracker FM 8 data taking, a more detailed review of offline data is in process.
- **Resolution Plan**
 - Continue extended testing on Tracker module 8 to further characterize.



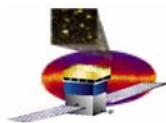
Open I&T NCR List

NCR	Date Opened	Affected Hardware	Problem Description	Status
443	4/27/05	TKR	CAL FLE trigger threshold < 250 Hz requirement, Towers 0,4	Final MRB required
458	5/10/05	TEM/TPS	Observed GTCC and GTRC phasing errors within the TEM	FinalMRB required
477	5/23/05	TEM/TPS	TEM FIFO errors observed during FMA and FMB	Final MRB required
487	5/23/05	TEM/TPS	Failed CAL script register test	Disposition required
529	6/16/05	TKR	TEM register test on PDU1 and GASU redundant failed, Twr 3	Monitor
532	6/16/05	TEM/TPS	TEM register test (Trigger Interface Controller) failed.	Final MRB required
535	6/20/05	TKR	Monitor trend data for TKR 4 thru LAT testing (spin-off NCR)	Monitor
549	6/27/05	TKR	Temperature alarm and setpoints, Bay 1	Final MRB required
604	8/11/05	TKR	Bay 4 TkrReadingConfigurationTest failure on x0, FE0	QA to close
607	8/12/05	CAL	LAT CPT- CAL section, data acquisition TEM errors	QA to Close
608	8/12/05	CAL	LAT CPT - CAL, intermittent range discriminator scan failure.	QA to Close
618	8/17/05	ACD	HldCal output for GARC5 is faulty; counter resets during run	Disposition required
624	8/27/05	ACD	Fluctuations in temperature reading (originally an ACD PR)	Disposition required
625	8/27/05	ACD	AcvVetoHitmapPha failed (originally an ACD PR)	Disposition required
626	8/27/05	ACD	ACDMonitor script high counts during T/V (originally ACD PR)	Monitor
648	9/13/05	ACD	I&T ACD Receiving Test - AcdfGafeNoise failure	Disposition Required
652	9/13/05	ACD	ACD Triggered Ops event numbers skipped by large gaps	Disposition required



Open I&T NCR List

NCR	Date Opened	Affected Hardware	Problem Description	Status
654	9/13/05	ACD	ACD Triggered Ops shows tiles with large pha differences	Disposition required
684	10/3/05	TKR	Noise Occupancy failures due to intermittent hot strips.	Disposition Required
685	10/3/05	ACD	HldCal runs had excessive counts for GARC11, GAFE13	Disposition required
690	10/6/05	PDU	NCR to trend LPT failures observed in box level NCR #00631.	Disposition Required
706	10/18/05	ACD	Excess ACD veto retriggers during NCR #618 evaluation	Disposition required
718	10/27/05	ACD	VETO threshold for channel 1123 can't be set below minimum value of 0.45pC (originally an ACD PR)	Monitor
732	11/3/05	Integration	Spider surface should be flush surface of the TPS.	QA to Close
741	11/11/05	Integration	HIB Cables to short or wrong orientation.	QA to Close
743	11/13/05	Integration	EMI shield mechanical tolerances not met.	QA to Close
744	11/13/05	Integration	X-LAT plate mechanical hole tolerances not met.	Disposition required
765	12/5/05	Integration	X-LAT Heat pipe shims bonding fixture cannot be removed.	MRB Required
768	12/6/05	Integration	Cannot mate ACD cable assy to RF shield.	MRB Required
774	12/8/05	Integration	Cannot mate harness LAT-DS-02092-53.	MRB Required
777	12/13/05	Integration	DAQ-ACD Internal RF shield to GASU cable rework.	MRB Required
783	12/15/05	ACD	ACD data taking sweep evetn errors	MRB Required
785	12/20/05	GASU	GASU register test, GEM cr_statistics intermittent failure.	Disposition Required



Open I&T NCR List

NCR	Date Opened	Affected Hardware	Problem Description	Status
787	12/20/05	ACD	ACD CPT crashes run control	Disposition Required
788	12/21/05	GASU	GASU AEM temperature alarm	MRB Required
789	12/21/05	TKR	TKR test software isn't reading in bad channel lists	Disposition Required
790	12/21/05	Integration	Cannot mate LAT-DS-02094 harness to +X Doghouse holes.	QA to Close
791	12/22/05	ACD	ACD CPT script turns off/on all TEMs simultaneously	Disposition Required
793	12/28/05	ACD	GARC digital 3.3V current is slightly below allowed range	Disposition Required
795	12/30/05	ACD	ACD TciRegRange test gives bad linearity fits	Disposition Required
796	12/30/05	ACD	ACD TciHighRange test GARC 0 GAFE 11 Upper Gain slightly below limit.	Disposition Required
797	12/30/05	ACD	ACD long functional run 135005091 had test failures in AcdMaxPha, AcdPhaEnDis, AcdHldCal.	QA to Close
799	1/5/06	DAQ	TKR Analog voltage overshoot during power on sequence	QA to Close
800	1/5/06	ACD	ACD trigger test does not report all error events	Disposition required
804	1/16/06	Trigger	Trigger jitter from CAL-LO TREQ twice as broad as earlier tests on initial towers	QA to Close
805	1/16/06	Mechanical	Mapping problem wit hgrid temperature points 2,3 vs. 4,5	Disposition required
806	1/17/06	Trigger	CAL is retriggering during SVAC run	Disposition required
808	1/17/06	Integration	Harness connector backshell is loose (not properly torqued)	QA to Close
811	1/23/06	Integration	1553 cables rejected for workmanship	MRB Required
813	1/24/06	Integration	Cable backshell ground wire became detached	Disposition required