



**THE AEROSPACE  
CORPORATION**



**UF**



# **MISSION ASSURANCE**

**BRIAN KLATT  
MISSION ASSURANCE MANAGER**

*Cosmic **RAY** Telescope for the **E**ffects of **R**adiation*



# GENERAL

- **PERFORMANCE ASSURANCE IMPLEMENTATION PLAN**
  - LRO MAR
  - Model PAIP
  - CRaTER PAIP is 32-01204, Rev. F - Approved by GSFC
  - PAIP applies equally to BU, MIT, and Aerospace Corp.



# QUALITY ASSURANCE

- **QUALITY MANAGEMENT SYSTEM**
  - **REQUIREMENTS FLOW-DOWN IMPLEMENTED THROUGH:**
    - SUBCONTRACT (CDRLs)
    - PAIP
    - PURCHASE ORDERS



# SYSTEM SAFETY

- **NO CHANGES**

**HAZARD ANALYSIS REPORTS UPDATED AND SUBMITTED - see 32-04015**

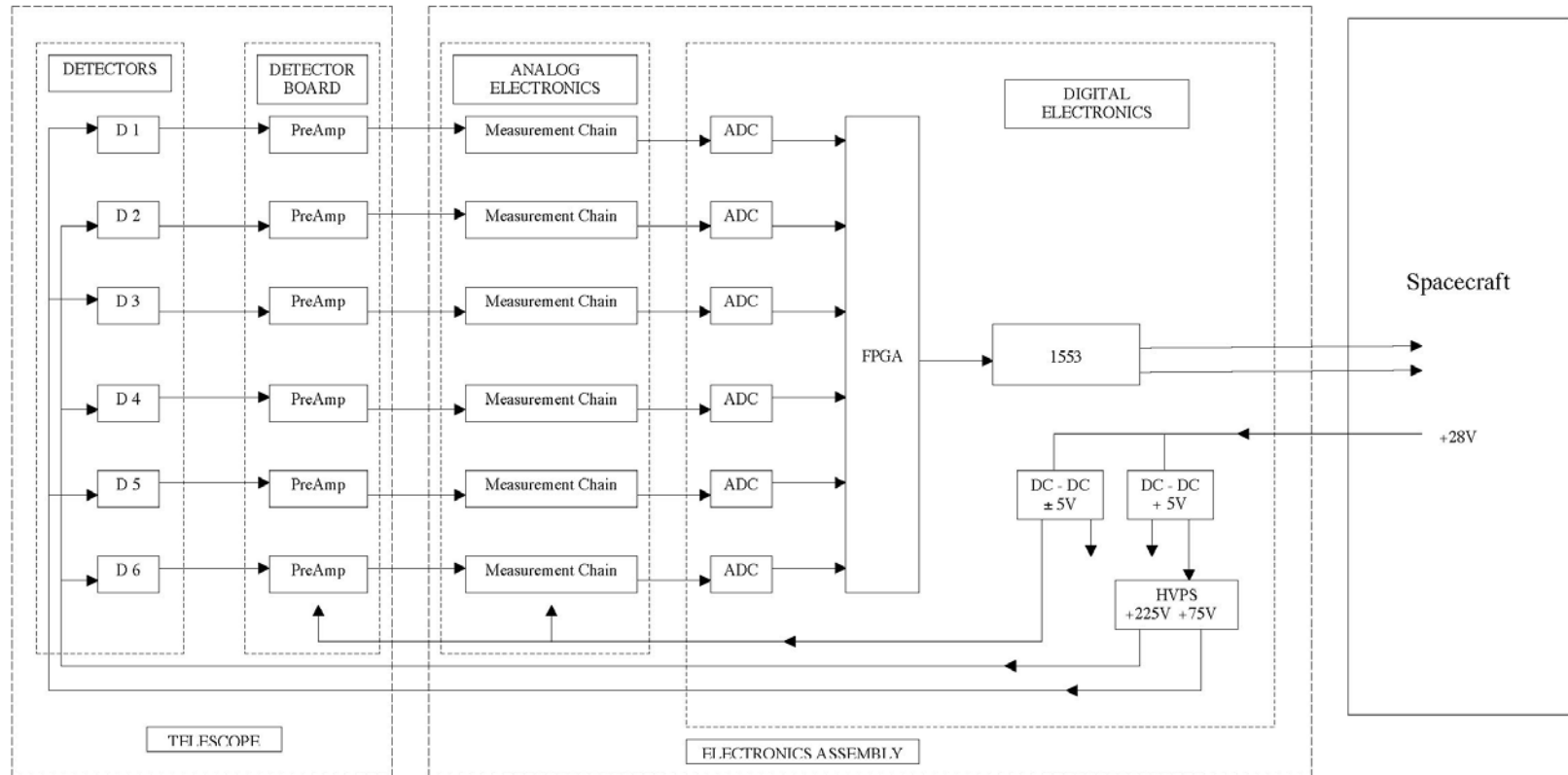
**Hazard Verification and tracking is 32-04014**



# RELIABILITY

- **Failure Modes and Effects Analysis Prepared (see 32-04009)**
- **Part Stress Analysis Prepared (see 32-04010)**
  - Derating per EEE-INST-002
- **Reliability Assessment (see 32-04003)**
  - **Probability of Mission Success  $P_s = 96.5\%$**

# CRaTER



Reliability Block Diagram  
32-04003.01, Rev. A

Brian Klatt

6/16/06



# SOFTWARE ASSURANCE

- NO CHANGES - -NO SOFTWARE

*Cosmic RAY Telescope for the Effects of Radiation*



THE AEROSPACE  
CORPORATION



UT



# DESIGN REVIEWS

- Formal Reviews
  - Preliminary Design Review (IPDR) - held at MIT on 9/28/05
    - 5 RFAS: 4 closed, 1 in-work at MIT & GSFC
  - Critical Design Review (ICDR) - held at MIT on 6/27/06
- Peer Reviews
  - Mechanical peer review held at MIT on 5/5/06
    - 17 Comments in process at MIT
  - Electrical peer review held at GSFC on 5/22/06
    - 15 Comments with responses to initiators

*Cosmic RAY Telescope for the Effects of Radiation*





# DESIGN VERIFICATION

- Performance and Environmental Verification Plan - see 32-01206
- Performance Verification - Comprehensive Performance Testing (CPT) is performed during extremes and at completion of Environmental Verification
- Environmental Test Matrix - see 32-01206.01



# WORKMANSHIP and ELECTRONIC PACKAGING

- **WORKMANSHIP** - Recertification scheduled for late August
- Staking and Conformal Coating
- Soldered Electrical Connections
- Crimping, Cables, Harnesses, and Wiring
- Electrostatic Discharge (ESD) Avoidance
  
- **PRINTED CIRCUIT BOARDS**
  - Coupons submitted for Engineering PCBs. Coupons passed but comments have prompted redesign for flight hardware.



# MATERIALS and PROCESSES

- Materials
  - Changed from AL 7075-T651 to AI 7075-T73
  - Fasteners were bought to NASA Directive 541-PG-8072.1.2
- Processes
  - Conversion Coating is Alodine only



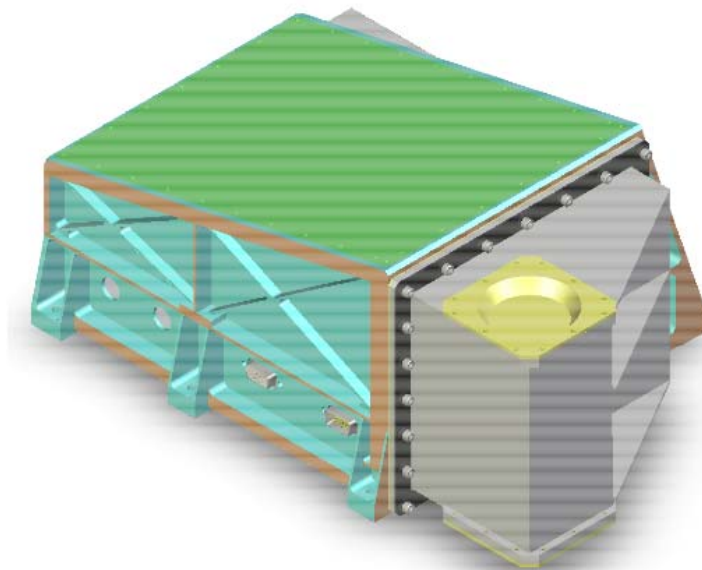
# EEE PARTS

- PART SELECTION, SCREENING, QUALIFICATION and DERATING is per EEE-INST-002
- ALERTS
  - Review ALERTS and NASA Advisories monthly - report to GSFC



# CONTAMINATION CONTROL

- Contamination Control Plan is CRaTER document number 32-01203
- CRaTER Contamination Sensitivity - quite insensitive
  - Detector is not hermetically sealed and has .001 aluminum bond wires (purge)



*Cosmic RAY Telescope for the Effects of Radiation*