



CRaTER Pre-Environmental Review
(I-PER)

MISSION ASSURANCE ACTIVITIES
Brian Klatt

September 10-11, 2007

Cosmic RAY Telescope for the Effects of Radiation



RELIABILITY

- Reliability Block Diagram
Submitted to NASA/GSFC (Lydia Lee)
- Reliability Prediction
Submitted to NASA/GSFC ($\lambda_t = 3.568127 \times 10^{-6}$ Hours)
- Probability of Mission Success
Submitted to NASA/GSFC ($P_S = 0.96464$)



THE AEROSPACE
CORPORATION



UT



QUALITY ASSURANCE

Monitor/Witness

- Verification
 - Thermal Vacuum
 - Vibration
 - Electromagnetic Interference/Compatibility
- Beam Line Tests on Flight Instruments
- Packing for Shipment
- Delivery to NASA/GSFC

Cosmic RAY Telescope for the Effects of Radiation



DISCREPANCIES

Non-conforming Material Reports (NMRs)

- NMR 383 Mounting Hole in Digital PCB (S/N 001F and 002F) was in error. Hole radius increased .0025 inch. (CLOSED 7/16/07)
- NMR 384 Actel FPGA was incorrectly Lead Formed causing toe-down soldering. FPGA was removed and replaced on Digital PCB S/N 001F. This is a “rework to specification”. (CLOSED 8/24/07)



EEE PARTS and MATERIALS

EEE Parts Qualification and Approvals

- Kemet 1000 Volt Ceramic Capacitor failed Kemet Qualification Test. Part was replaced by qualified CalRamic 500 Volt Ceramic Capacitor.
- InterFET N-Channel JFET was successfully Qualified by InterFET (P/N SNJ 90347)
- Additional screening performed on eight (8) part types.
- PIL Database, 32-04002.01 approved by NASA/GSFC (Rich Williams)

Materials Testing and Approvals

- Six (6) different materials were submitted to NASA/GSFC Materials Branch (Pilar Joy) for approval:
- Tissue Equivalent Plastic (TEP) was approved providing it is vacuum baked before assembly
- Shin-Etsu KJR 9022E was approved providing it is cured at 125 C for 24 hours.
- Remaining four (4) items were approved as submitted.
- MIUL, 32-04001.01 approved by NASA/GSFC (Pilar Joy)



WAIVERS and DEVIATIONS

- One waiver was submitted for use of a commercial Yellow Springs 300 Ω thermistor without any screening or qualification. This part is not used in flight and is only used to sense flow of purge gas during Integration and Test. Failure during flight will not affect the Instrument or Spacecraft.
- The waiver was approved. (Rich Williams). The wavered thermistor has since been designed out of the instrument.