Test and Verification

C. J. Sweeney
Boston Univ.
# Protoflight Test Program

**Environmental Verification Test Matrix**

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<td>NR</td>
<td>12G</td>
<td>14Gms</td>
<td>8G</td>
<td>NR</td>
<td>A</td>
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<td>EMC by similarity</td>
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Legend:  
- **A** = Analysis  
- **I** = Inspection  
- **NR** = Not Required  
- **T** = Test

Temperature Units = °C

**Cosmic Ray Telescope for the Effects of Radiation**
Test Facilities

Calibration:  88” Cyclotron, Berkley, CA

EMC:    Chomerics, Woburn, MA

Vibration:  Draper Labs, Cambridge, MA

Thermal-Vac:  MIT/MKI, Cambridge, MA
EGSE: Command and Data Simulator

- Simulator consists of a 1553-to-ethernet packet converter, a 28 VDC power supply, and a 1 Hz sync pulse source.
- Single TCP/IP socket for commands; multiple UDP connections for telemetry.
- Software for commands, engineering, and science resides on available workstations.
- Future trade study will determine software choice, e.g., PearlTK, LabView, etc.
MGSE: Gas Purge

- All sensitive equipment (e.g., telescope, detectors) will be stored under clean, low-humidity conditions (e.g., active dessication, purging)
- Flight units will have provision for clean, dry nitrogen purging
- Purge flow will be monitored with a thermistor flow indicator
Cosmic Ray Telescope for the Effects of Radiation