CRaTER Mechanical Design Mass/Overview

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Mechanical Design Mass/Overview

- 12 years with Raytheon Company working as a Manufacturing Engineer, Quality Assurance Engineer and Mechanical Designer.
- 8 years with MIT, Center for Space Research
  - Contamination Control Engineer for the ACIS Project (NASA Chandra Observatory)
  - Mechanical Designer for LIGO Project, for the NSF.
  - Mechanical Designer/Engineer for VOILA project, for the International Space Station.
  - Mechanical Engineer for ASTRO E2, for ISAS.
  - Currently the Mechanical Engineer for PICTURE, CRaTER and Echellette.

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mass summary

	grams	lbs
Electronics Assembly		
Analog board	750	1.7
Digital board	1100	2.4
..interconnect cables A/D	60	0.2
Mechanical enclosure and fasteners	1250	2.8
..interconnect cables Detector to Analog board	240	0.5
Sub-Total	**3400**	**7.5**
Detector Assembly		
Detector Board (3 total)	315	0.7
TEP Package (2 total)	172	0.4
Detector Mechanical enclosure ad fasteners	600	1.2
Sub-Total	**1087**	**2.4**
MLI Blanket	100	.22
Crater Total	4587	10.2

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- Mechanical Testing
  - Sinusoidal Vibration 5-100Hz at 8g's (Proto-flight) 4 Octaves/minute/axis.
  - Random Vibration 14.1 grms (Proto-flight) 60 sec/ axis.
  - Acoustics OASPL 149.6 dB, (Proto-flight) 60 sec/axis.
  - Shock Testing to be done at the Observatory.
    - CRaTER has no self induced shock.
  - Will perform low level sine sweep, up to 2000Hz. 1/2g?
  - We will not produce an FEM since our predicted first frequency is >>75 Hz.
  - Will a couple loads analysis be provided?

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- We will not require access while on the launch pad.
- At this point a weekly Nitrogen purge of the camera is expected.
- No immediate trouble spots in the mechanical design. Special attention will be given to the design of the housing given that the camera is cantilevered beyond the edge of the table (unless it is brought inboard).

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- Questions
  - How close to the edge of the SIM table can an insert be located?
  - Can CRaTER be brought inboard with a hole in the SIM table?
  - What type of interface connectors are preferred? D-Sub, MIL-C-38999?
  - Is electrically conductive conversion coating acceptable for electronics enclosure finish (in contact with SIM)? On entire box?
  - When/Will a Coupled Loads Analysis be provided?
  - Is the SIM table flat near the edge or is there a lip?