2013.10.03

SPP – ISIS – EPI-Hi – Mechanical Peer Review

Attendees:

Sandy Shuman (SwRI)

Susan Pope (SwRI)

Scott Weidner (SwRI)

David Braun (JPL)

Tim Cole (JPL)

Mary White (JPL)

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Craig Auletti (GSFC)

We distributed the ICD draft to the spacecraft. This shows all of the Thermal Limits.

We are now going though the slides:

- are there any blind connections?

> Yes. In the telescopes, but they have guide pins

- how do you access the mounting hardware to the bracket?

(a) top fastener (short side) is blocked by the LET2 telescope. Need to show clearances for tools at PDR



(a) we need to check if the 303SS fasteners will pass on the M&P list. We can use A286 for most fasteners unless there is a size issue or a special head that is required.

- what torque requirements are used?
- > GSFC has a torque spec. but it only covers #4 and up.
- Spacecraft Connectors are hardmounted to the PCB
- > screwed to the board
- > then reflowed

(a) the DPU needs to have the two different types of connectors to a mounting fixture and then tie them to the PWB and then reflow. Otherwise, the two connector types may not be square and aligned in such a way that they will mount flush to the frame for a good EMI seal.

(a) the frame that holds the DPU and the Bias Supply should be extended up to include the DPU connectors. They should NOT close out against the LVPS frame.

(a) have the scientists agree that the drum-warping that you might see from differential thermal expansion will not affect the science measurement (make calculation before PDR).

- purge connector will be on the main box but will not purge the electronics. It will be routed with a Teflon hose up to the telescopes.

- concern about TRL6 vs TRL5 on the thin detectors

> similar mount configuration

> diaphragm in a tube is different than a diaphragm by itself.

> need to have combined load with thermal test

> need to test critical environment in a flight-like way

- Mass

> 20% contingency. That is an NTE

> hardware is included in the estimate

>

- What is dynamic clearance between boards

> there is an extra millimeter 0.040" if two tall components face each other.

> stiffeners flowed to PCB layout guys:

> ³/₄ mm of extra room with keep out zones

- voltage spacing between wirebonds is okay even when boards are back-to-front

- locking philosophy for fasteners

> will have to file a Gold Rule Waiver

> A286's would be better for high torque

@ analysis required for bolted joint analysis. Do you need a pin to hold it in place?

- minimum number of threads engagement: 4 threads minimum

- are there any blind holes? Don't think so, but if so we will vent them. Also recommend 5 threads in this case.

@ Bore-sight alignment requirement? Connect the dots with spacecraft folks

> need a budget and

(a) Combined case of acoutstic and thermal load on the detector show that it is positive at launch (need to know launch temperature)

@ redundant load path for the board mounted connector. Thermal load will pull on the board. This is probably not supercritical but

@ Structural analysis – need it before PDR

@ M&P List – need it soon.