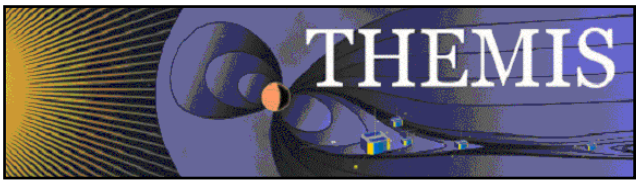

PFR-022 Title: SPHERE BOSS BACKING OUT OF DOOR RETAINER

Assembly: SPB Top Assy, THM-SPB-MEC-001	**Subassembly : Sphere Sensor, THM-SPB-MEC-200**
Component: Sphere, THM-SPB-MEC-208	**SPB S/N: 901**
Originator: B. Donakowski/ 24FEB05	**Organization: UCB/SSL/EFI**
Phone: 510.642.9050	**Email: billd@ssl.berkeley.edu**

Failure Occurred During (Check one √)

♦ Functional test □ Qualification test □ S/C Integration □ Launch operations

Environment when failure occurred:

♦ Ambient □ Vibration □ Shock □ Acoustic
□ Thermal □ Vacuum □ Thermal-Vacuum □ EMI/EMC

Problem Description

(In this section it is important to document the specific symptoms, which exhibited the problem. In the event we see it happen again, we would like to know as much as possible.)

During SPB Electrical Testing in Clean Room 125, it was discovered that the Sphere external boss, which normally engages into the preloaded Release Doors and Door Retainer, had moved to a position in which it was no longer inserted in the recess in the front door. See Figure 1, Sheet 2. The Sphere is held inside the SPB Snout by virtue of the two bosses (180 degree apart from each other) being compressed by the preloaded door. This new boss position would render the Sphere improperly set for vibration as the preload would be ineffective without the Sphere boss firmly set into the Retainer recess.

Analyses Performed to Determine Cause

(How do we know how the failure happened? Was it a bad part, bad handling, what?)

Origin of the incident is unknown. The Doors are carefully stowed by only two people on the project (Stephan Martin or Greg Dalton). The Sphere movement could only have occurred if improperly installed during last door closeout, the SPB was jostled during Clean Room activities, or the Sphere Boss (which has a threaded hole for electrical probing) was manually moved by hand. Each event is unlikely and not backed by any evidence.

Corrective Action/ Resolution

(How do we fix the unit? And how do we make sure it doesn't happen again?)

For this unit, Release Door should be opened, Sphere repositioned, and Release Doors set to preload. For future build-up activities, extra care will be taken to 1) ensure the Sphere bosses are properly engaged into the Door Retainer recess following stowing and 2) make sure all Clean Room activities prevent any undesirable movement of the SPB and 3) inspect THM-SPB-MEC-208 Sphere half for scratches and change out with new if possible.

Acceptance:

MAM: Ron Jackson_____; MSE: Ellen Taylor_____

PM: Peter Harvey_____; Cognizant Engineer_____

Date of Closure_____

PFR-022 Sphere Boss Mislocated into Release Door Retainer

Problem Description

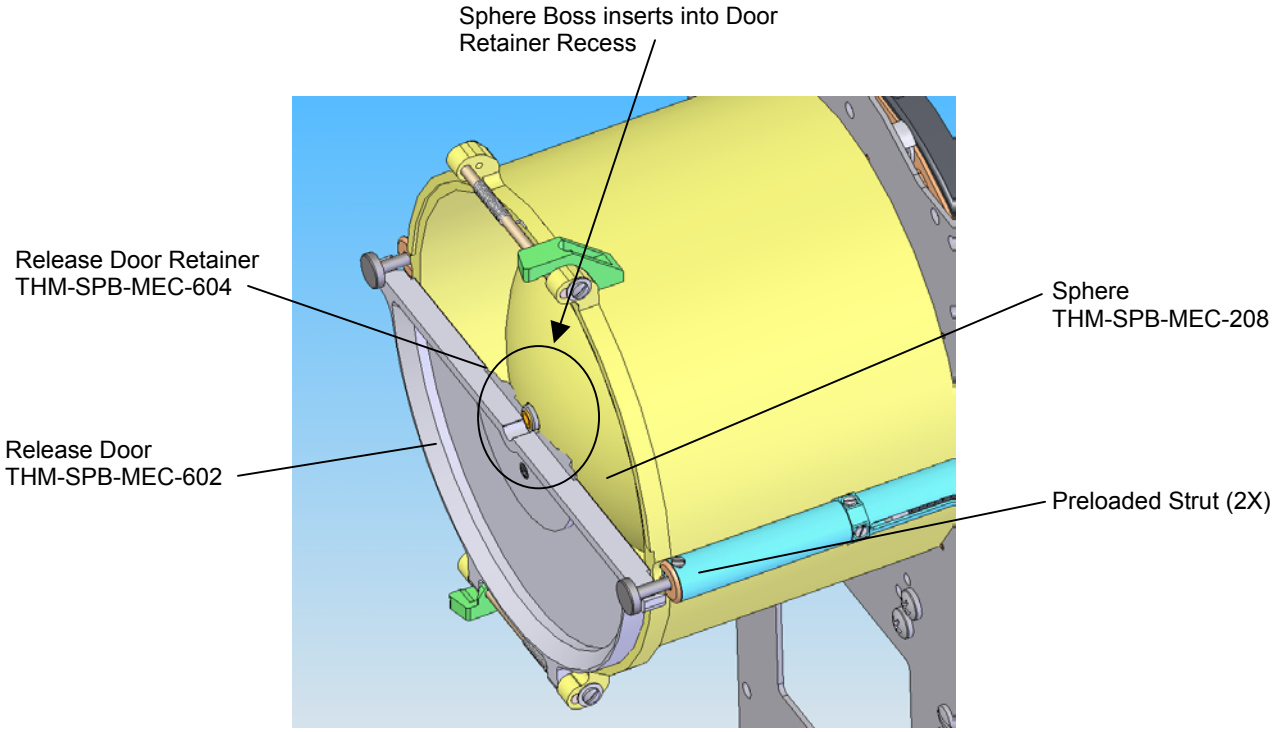

Figure 1: SolidWorks Model showing Sphere Boss correctly inserted into Recess in Door Retainers (one door removed for clarity).