



# HESSI SPACECRAFT PRE-THERMAL-VAC CLOSEOUT

HSI\_MIT\_045A

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DAVE CURTIS

As Run on: \_\_\_\_\_ (Date/Time)

By \_\_\_\_\_ (Test Conductor)

**DOCUMENT REVISION RECORD**

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A	2000-11-8	Original draft

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## 1. INTRODUCTION

### 1.1 Purpose

This document describes the physical configuration of the spacecraft for thermal vacuum tests. This document has two sections corresponding to the two parts of thermal vacuum test: First Motion and TV/TB.

## 2. FIRST MOTION SETUP

The first step of the thermal vacuum test is to perform a solar array first motion test under worst case cold conditions. For this test the spacecraft shall be mounted in the thermal vacuum chamber vertically (Imager pointing up), with the first motion MGSE installed. The attenuators will be actuated in this part of the test.

### 2.1 Items to Remove

- |  |             |
|--|-------------|
| 1. Fine Sun Sensor Cover                 | Verify_____ |
| 2. Battery Relay Box (Bus should be OFF) | Verify_____ |
| 3. Battery Cell Monitor Box              | Verify_____ |
| 4. Spectrometer Vacuum Pump              | Verify_____ |
| 5. Lifting Fixture                       | Verify_____ |
| 6. CSS Dust Covers (8x)                  | Verify_____ |
| 7. Vacuum Valve GSE                      | Verify_____ |
| 8. Vacuum Valve plug (VV-P1) demated     | Verify_____ |

### 2.2 Items to Install

- |   |             |
|---|-------------|
| 1. Solar Array First Motion Fixture                     | Verify_____ |
| 2. Umbilical to external GSE                            | Verify_____ |
| 3. Test Access Connector (TAC) to external GSE          | Verify_____ |
| 4. Battery Flight Plug (BFP); as called out in step 2.4 | Verify_____ |
| 5. Flight Enable Plug (FEP)                             | Verify_____ |
| 6. SAS lens covers (TV version)                         | Verify_____ |
| 7. Upper Grid Tray Scaffold with thermal blankets       | Verify_____ |
| 8. TMS Shorting Plug                                    | Verify_____ |
| 9. Actuator Enable Plug (mated)                         | Verify_____ |
| 10. TV Heaters & TC to external GSE                     | Verify_____ |

### 2.3 Other closeouts

- |   |             |
|---|-------------|
| 1. Cage Spectrometer Attenuator Actuators | Verify_____ |
| 2. Close RAS aperture shutter             | Verify_____ |

3. Thermal Blankets closed out in the vicinity of the solar arrays Verify\_\_\_\_\_
4. Inspect blankets and harasses near solar array to ensure clearance  
Verify\_\_\_\_\_

#### 2.4 BFP Installation Procedure

NOTE: The bus will be powered on in launch mode following this procedure. Perform all electrical mates/demates prior to this step.

- a. Power up the spacecraft using 1110-EP-W15998, section 3 via the TAC.
- b. Adjust the TAC voltage to match the battery voltage (as indicated on the ITOS PACI page) plus 0.5V.  
Record Battery Voltage: \_\_\_\_\_
- c. Install the BFP.
- d. Set the TAC current limit to 0.2A above the essential bus current as read out on the PACI page (should be about 0.8A). Set the TAC voltage to 36V. The TAC should current-limit, with the battery current at about 0.2A.

Record TAC Voltage: \_\_\_\_\_

Record Battery Current: \_\_\_\_\_

#### 2.5 BFP Removal Procedure

To be performed after breaking chamber, before demating any connectors

- a. Verify that the TAC and/or UMB connectors are mated
- b. Adjust the TAC voltage to set the battery current to 0+/-0.05Amps (as indicated on the ITOS PACI page)  
Record TAC Voltage: \_\_\_\_\_
- c. Remove the BFP.
- d. Power down the bus per 1110-EP-W15998, section 3.

### 3. PRE-TV/TB CLOSEOUTS

The second step of the thermal vacuum test is the spacecraft Thermal Vacuum/Thermal Balance test. For this test the spacecraft shall be mounted in the thermal vacuum chamber horizontally (Y-axis pointing up) to allow the cryocooler to be run vertically. The spacecraft shall be mounted in the chamber in the thermal vacuum MGSE that holds it horizontally, cantilevered from the base ring. The solar arrays shall be replaced with stub simulators.

#### 3.1 Items to Remove

- |  |             |
|--|-------------|
| 1. Fine Sun Sensor Cover                 | Verify_____ |
| 2. Battery Relay Box (Bus should be OFF) | Verify_____ |
| 3. Battery Cell Monitor Box              | Verify_____ |
| 4. Spectrometer Vacuum Pump              | Verify_____ |
| 5. Lifting Fixture                       | Verify_____ |
| 6. Vacuum Valve GSE                      | Verify_____ |
| 7. Solar Array First Motion Fixture      | Verify_____ |
| 8. Vacuum Valve plug (VV-P1) demated     | Verify_____ |
| 9. Attenuator Actuator enable demated    | Verify_____ |

#### 3.2 Items to Install

- |   |             |
|---|-------------|
| 1. Umbilical to external GSE                            | Verify_____ |
| 2. Test Access Connector (TAC) to external GSE          | Verify_____ |
| 3. Battery Flight Plug (BFP); as called out in step 2.4 | Verify_____ |
| 4. Solar Array Simulator harness to external GSE        | Verify_____ |
| 5. Frangibolt simulator to external GSE                 | Verify_____ |
| 6. Flight Enable Plug (FEP)                             | Verify_____ |
| 7. PMT-RAS test signal to external GSE                  | Verify_____ |
| 8. RAS Stimulus test harness to external GSE            | Verify_____ |
| 9. SAS lens covers (TV version)                         | Verify_____ |
| 10. Upper Grid Tray Scaffold with thermal blankets      | Verify_____ |
| 11. TMS Shorting Plug                                   | Verify_____ |
| 12. TV Heaters & TC to external GSE                     | Verify_____ |
| 13. Solar Array Stubs Heaters & TC to external GSE      | Verify_____ |

#### 3.3 Other closeouts

- |   |             |
|---|-------------|
| 1. Cage Spectrometer Attenuator Actuators | Verify_____ |
| 2. Open RAS aperture shutter              | Verify_____ |

3. Thermal Blankets closed out

Verify\_\_\_\_\_