HESSI SPACECRAFT VIBRATION TEST ELECTRICAL CONFIGURATION

HSI_MIT_033C

2000-NOV-10

DAVE CURTIS

As Run on: _____ (Date/Time)

By _____ (Test Conductor)

DOCUMENT REVISION RECORD

Rev.	Date	Description of Change
A	2000-3-20	Original draft
B	2000-11-7	Fix the BFP installation proc.; add bus voltage strip chart recorder setup
C	2000-11-10	Add between-axis aliveness tests

Project Manager: _____ _____
Peter Harvey Date

System Engineer: _____ _____
David Curtis Date

QA: _____ _____
Ron Jackson Date

INTRODUCTION

1.1 Purpose

This document establishes the Electrical configuration of the HESSI spacecraft for Spacecraft-level Vibration tests. The spacecraft will be in the launch configuration, with a small subset of the spacecraft electronics powered, and trickle-charging via the launch vehicle Umbilical. The TAC will be attached to provide the same telemetry that will be available through the launch vehicle during launch.

Between axis an aliveness test will be run consisting of powering up all the subsystems and then powering them back off.

2. SETUP

a. The HESSI spacecraft shall be setup on the vibration table per the Vibration test procedure

b. The bus to GSE harnesses shall be configured as per HESSI Spacecraft Power ON/OFF Procedure, Spectrum Astro document 1110-EP-W15998, section 5 (UMB power). Hook up a strip chart recorder (or equivalent) to the battery conditioning panel as shown.

c. The Umbilical and TAC connectors shall be mated and the harnesses appropriately tied-down to the vibration table.

d. The battery cooler shall not be used. A low trickle charge level shall be used to keep the battery temperature low, and battery temperature will be monitored during the test.

e. The FEP shall NOT be installed to minimize the risk of damage to the solar panels. Array deployment sequence telemetry shall be monitored during vibration to ensure that the panels would not have been deployed.

f. The battery relay box shall not be installed.

2.1 TEST PROCEDURE

a. Power up the spacecraft using 1110-EP-W15998, section 3 via the Launch Vehicle Interface. Bring up the CPU.

b. Command the system to launch mode. Run procedure SC_MM_LAUNCH to set the mission mode to Launch. Verify that PACI telemetry shown LAUNCH mode.

c. Power off the CPU.

d. Adjust the TAC voltage to match the battery voltage (as indicated on the ITOS PACI page) plus 0.5V.

Record Battery Voltage:_____

e. Install the BFP.

f. 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:_____

g. Monitor SOH telemetry via TAC. Record the starting value and note any significant changes during vibration. Set a sequential print to record this data at 1Hz and plot after the test. In the event that the CPU powers on or the arrays show deployment for >3 seconds, TC is to call an ABORT.
h. Run the strip chart recorder during the vibration tests and archive the results. Note any fluctuations that might indicate shorts in the system.

Item	**Telemetry Point**	**Starting Value**	**Changes**
1.	Batt Voltage		
3.	Batt Current		
4.	Batt Temp1		
5.	ESS Bus Curr		
6.	CCB MsnMode (2)		
7.	LV Sep Stat (3)		
8.	Xmtr Status		
9.	CPU Status		
10	Solar Array Deploy Status (8)		

3. BETWEEN-AXIS ALIVENESS TEST

After completing each axis of the vibration test a bus aliveness test shall be performed. This shall consist of powering up all the subsystems, monitoring the SOH data, and then powering them back down. The HSI_MIT_010 procedure shall be used to power the subsystems up, and HSI_MIT_011 to power them down.

a. Command on the CPU and boot flight software.
    1. In the HCD telemetry display set CRC bit 1 ON to turn on the CPU.
    2. Wait approximately 30 seconds for the flight software to boot up.
    3. Type “resync” at the STOL prompt on the ITOS workstation.
b. Verify the following:
    1. CIB Downlinking VC0 AP ID 1 real-time SOH data at 8 Hz rate
    2. System clock incrementing at a 1Hz rate
c. Enable overcurrent protection:
    1. In the “cib_hcd” telemetry display set CRC bit 11 on.
d. Set spacecraft clock to current local time by typing “START SET_SCLK_TO_WALLCLOCK”
e. Power on the bus systems using HSI_SYS_010, steps 3.1c through the end of 3.1
f. Power up the instruments subsystems using HSI_SYS_010, section 3.2; skip steps 3.2.d 7-9 (PMT HV On)
g. Collect SOH data for 2 minutes
h. Power off the instrument using HSI_MIT_011, section 2.1
i. Power off the bus subsystems using HSI_MIT_011 section 2.2. This will completely power-down the bus.
j. Repeat this proc, section 2.1 to re-power the spacecraft for the next axis
k. Append the as-run HSI_MIT_010 and HSI_MIT_011 for each axis to this as-run proc.