HESSI SPACECRAFT

BUS AND INSTRUMENT POWER-ON

HSI_MIT_010E

2000-NOV-15

DAVE CURTIS

DRAFT

As Run on: _____ (Date/Time)

By _____ (Test Conductor)

Test _____

DOCUMENT REVISION RECORD

Rev.	Date	Description of Change
D	2000-11-14	Increase expected current at power-up to account for CPU on; remove software version number recording
E	2000-11-15	Change reference to SAI proc to equivalent HSI_MIT_049 proc

Western Range/NASA Safety:_____ _____
Date

Project Manager: _____ _____
Peter Harvey Date

System Engineer: _____ _____
David Curtis Date

QA: _____ _____
Ron Jackson Date

1. INTRODUCTION

1.1 Purpose

This document describes the normal HESSI spacecraft power-up sequence to be run prior to performing functional tests.

2. SETUP

2.1 Test Setup

Verify the test set-up is per the HESSI Spacecraft Power ON/OFF Procedure, HSI_MIT_049, Section 3.0, Spacecraft Power via Test Access Connector (TAC). Verify the following conditions:

a. Spacecraft (S/C) to Ground Support Equipment (GSE) interface connectors shall be mated at the start of this procedure. Including:

TAC-J1 _____ OK

BFP-J1 _____ (BFP or Relay Box)

UMB-J1 _____ (Yes/No)

RF connected to Antenna Hats (RX FWD, TX FWD, RX AFT, TX AFT) _____ (Yes/No)

b. Transponder enable plug is installed at spacecraft connector FEP J1 (**flight FEP P1 may be used if frangibolt power connectors are demated or solar arrays not installed**).

_____ (none, FEP, or TEP)

c. Integration and Test (I&T) or Flight Battery is installed and mated per HESSI Spacecraft Power ON/OFF Procedure, HSI_MIT_049.

_____ (I&T or FLIGHT)

d. Solar Arrays, Solar Array Simulator or None attached via SW1-4, J1 and J2:

_____ (SA, SAS, or None)

e. List any non-flight configuration of the spacecraft

QA Verify:
TC Verify:

Spacecraft Non-Flight Configurations

1	
2	
3	
4	
5	
6	
7	
8	

3. TEST PROCEDURE

3.1 Spacecraft Power On

a. Power ON the spacecraft using the Spacecraft Power ON/OFF procedure, HSI_MIT_049, Section 3.0, Spacecraft Power via Test Access Connector (TAC). Record the TAC Voltage and Current.

TAC Voltage		28–36 Vdc
TAC Current		TAC-BATT = 0.5 – 1.4 Adc
Batt Current		

1. Verify Mission Mode on the ITOS PACI page is MISSION (not LAUNCH) _____OK

   - If LAUNCH mode,run ITOS script "sc_mm_nom", power off the bus, and start again at step a.

b. Enable the battery onto the bus:

1. Set the TAC voltage to match the BATT VOLT value on the ITOS PACI telemetry page. _____Volts

2. Enable the battery onto the bus by clicking on the Battery Relay button on the PC _____OK

3. Increase the TAC voltage by 0.2V steps while monitoring the BATT CURRENT on the ITOS PACI page. Increase TAC voltage untill BATT CURRENT reads +1Amp (+0.2Amp with I&T battery). _____OK

c. Enable power to all of the ACS components using the following sequence:

2. Display the “FSW Menu” ITOS telemetry display by typing “page fswmenu,1,1” at the ITOS STOL command prompt.

2. In the FSW Menu telemetry display click on the “PCB Interface” button to display the PCB status ITOS telemetry page.

3. In the “PCB Interface” telemetry display click on the NEB1 “ON” button to command the PCB NEB1 bus on, and verify that the status indicator for NEB1 displays “ON.” _____OK

4. In the “PCB Interface” telemetry display click on the FSS “ON” button to command the PCB to turn on power to the fine sun sensor, and verify that the status indicator for the FSS displays “ON.” _____OK

5. In the “PCB Interface” telemetry display click on the Torque Rod XZ “ON” button to command the PCB to turn on power to the ADB X and Z1

torque rod drivers, and verify that the status indicator for the Torque Rod XZ displays “ON.” _____OK

6. In the “PCB Interface” telemetry display click on the Torque Rod YZ “ON” button to command the PCB to turn on power to the ADB Y and Z2 torque rod drivers, and verify that the status indicator for the Torque Rod YZ displays “ON.” _____OK

7. In the “PCB Interface” telemetry display click on the Magnetometer “ON” button to command the PCB to turn on power to the Magnetometer, and verify that the status indicator for the Magnetometer displays “ON.”

8. In the FSW Menu telemetry display click on the “ACS Subsystem” button to display the ACS status ITOS telemetry page.

9. In the ACS telemetry display verify that the magnetometer magnetic field values are updating. _____OK

10. If possible, verify torque rods are active ("singing") _____OK

11. Turn off acquisition sequence: "/acssetmode idle" _____OK

12. Record the TAC voltage and current:

TAC Voltage		28–36 Vdc
TAC Current		TAC-BATT = 1.0 – 1.5 Adc
Batt Current		

d. This section powers on the batter pressure monitors

a. In the “PCB Interface” telemetry display click on the NEB2 “ON” button to command the PCB NEB2 bus on, and verify that the status indicator for NEB2 displays “ON.” _____OK

b. In the "PCB Interface" telemetry display click on the SPARE 1 "ON" button to command on the battery pressure monitor, and verify the status indicator for SPARE 1 displays "ON" _____OK

c. Record the Battery Pressure telemetry on the "PACI" page

Batt Press 1		3000-5000
Batt Press 2		3000-5000

d. This section powers on the SSR and prepares it for use

1. Start the procedure SSR_ON. Verify SSR status is ON on the "PCB Interface" page _____OK

~~- if ETU SSR is installed, start procedure SSRSIMMAKEPAT _____OK~~

2. Record TAC voltage and current:

TAC Voltage		28–36 Vdc
TAC Current		TAC-BATT = 1.3 – 1.9 Adc
Batt Current		

3.2 Power on the Instrument

a. This section powers on the IDPU. Instrument displays should be on a separate ITOS computer if possible.

1. Display the “IGSE Menu” ITOS telemetry display by typing “page igse_pages” at the ITOS STOL command prompt.

2. In the IGSE menu click on the "SOH Executive" button and the "IDPU Voltages" button

3. Start the "SC_IDPUON" procedure. In the “PCB Interface" page verify that the status indicator for the IDPU displays “ON.” Verify IDPU current is less than 0.7A _____OK

4. Verify that the IDPU_MODE on the "SOH Executive" displays "Normal"_____OK

5. Record any errors on "SOH Executive" page (SPECTEMP error is normal if detectors are warm)

Error Count: _____ Errors Code:_____

6. Start the "SC_IDPU_SPWRON" procedure. In the “PCB Interface" page verify that the status indicator for the IDPU+28V displays “ON.” Verify IDPU LD CUR on "PACI" page is less than 0.1A _____OK

7. Start the "SC_CPCON" procedure. In the “PCB Interface" page verify that the status indicator for the CRYO displays “ON.” Verify CRYO Current is less than 0.1A _____OK

8. On the "PCB" page verify no OC trips. _____OK

9. Record TAC voltage and current:

TAC Voltage		28–36 Vdc
TAC Current		TAC-BATT = 1.8 – 2.2 Adc
Batt Current		

b. Turn on the Imager

1. In the IGSE menu click on the "SOH ADP" button and the "SOH Imager Voltages" button

2. Start the IMGR_ON procedure. Verify that 5 IADP_PWR fields on the SOH ADP page are all "ON". _____OK

3. Send /IDPUCLEAR to clear errors. Verify that the IDPU_ERRCODE field on the SOH Executive page reads "NONE" _____OK

4. Send /IADPMODE VALUE=15 to clear ADP errors. Verify that the 4 ADP_STATUS fields on the SOH ADP page read "OK" _____OK

5. Load the default parameter file: start "v4s0r0_003". Verify all 4 IADP_STATUS values on the SOH ADP page are "OK" _____OK

6. Send /IADPRUN. Verify all 4 IADP_STATUS values on the SOH ADP page are "OK" _____OK

7. Record TAC voltage and current:

TAC Voltage		28–36 Vdc
TAC Current		TAC-BATT = 2.0 – 2.6 Adc
Batt Current		

c. Turn on the Spectrometer Interface

1. In the IGSE menu click on the "SOH Spec Power" button

2. Display the "IDIB" ITOS page

3. Start the IDIB_ON procedure. Verify that the voltages (+12, +5, -5, -12) for all 9 DIBs are nominal (+/-0.3V) _____OK

4. Start the IDIB_TM_ON procedure _____OK

5. Record TAC voltage and current:

TAC Voltage		28–36 Vdc
TAC Current		TAC-BATT = 2.9 – 3.5 Adc
Batt Current		

d. Power on the Particle Detector and PMT

1. In the IGSE menu click on the "SOH Particle Detector", "SOH PMT", and "SOH MEM DUMP" buttons

2. Enable the particle detector high voltage. "/IDPUARM PDHV". Verify that the PDHV value on the SOH Particle Detector page reads "ENABLED" _____OK

3. Turn on the particle detector using the IPD_ON procedure. Verify that the IPDHVDAC value on the SOH Particle Detector page starts to increment once a second. _____OK

4. Enable PMT VC1 telemetry: On the Downlink ITOS page, select "Bypass Transmitter", then "Stored SOH On", then "IDPU Diagnostics ON" _____OK

5. Enable the PMT High Voltage: "/IDPUARM PMT". Verify that the PMT HV field on the SOH PMT page indicates ENABLED. _____OK

6. Turn on the high voltage 28V source supply: start "IHV_ON". Verify that the IDPU_28HV value on the SOH Volages page reads 28V+/-0.5V _____OK

7. Turn on the PMT: Start "IPMT_ON". Verify that IPMT_HVDAC on the SOH PMT page starts to increment once a second _____OK

8. Start PMT telemetry: "/IDPUDUMPTABL PMTVARS". _____OK

9. Wait for IPDHVDAC and IPMT_HVDAC to reach their final values. (IPDHVDAC = 122, IPMT_HVDAC = 130) _____OK

10. Record bus voltage and current:

TAC Voltage		28–36 Vdc
TAC Current		TAC-BATT = 3.0 – 3.5 Adc
Batt Current		

e. Increase the TAC current limit on the PC GSE to 6Amps _____OK

f. Increase the TAC voltage on the PC GSE in 0.1V steps until the Batt Current is about 0.8A (0.2A if I&T battery), but not greater than 36V. _____OK

g. Record Battery Temperature on PACI page. If greater than 25C notify engineer immediately _____OK

h. Organize screens so that all data can be seen. Take page snaps of all screens (Instrument and Spacecraft). Be sure that a system clock is on each screen _____OK

3.3 Collect Trending Data

a. Start the "Sprt_trnd" ITOS Procedure to collect trending data _____OK

Completed Date/Time: _____