SOP 62036

TITLE: **Power Up HRC on CEA B**

PURPOSE: **Power HRC on CEA B**

PARTICIPANTS: OC, CC, SOT

PROCEDURE: http://ipa.harvard.edu/int/HRC_procs/power-up_b.html rev 1.2

62036.1 OVERVIEW

This procedure uses a high-level pulse command to turn-on the HRC B-side +5V power supply. Once this supply is on the HRC is capable of receiving the serial digital commands necessary to activate the remainder of its power systems.

62036.2 SUPPORT SUMMARY

SUMMARY	Verify Command Processing configuration for command loads Uplink SCS load Verify that the proper HRC power bus is on Turn on the HRC B-side +5V power supply
CONSTRAINTS	This command sequence is expected to be used after the proper instrument power configuration has been established by **SOP 62034 "Power configure HRC to use CEA B with Primary Power Bus"** (or **SOP 62035 "Power configure HRC to use CEA B with Redundant Power Bus"**) and the HRC primary (or redundant) power bus has been turned on (via the command **EHRCPPON** (or **EHRCRPON**)). If the CTU is currently operating in format 1 only the first set of serial digital housekeeping values in a major frame will be valid. In order to be sure of having completely valid HRC serial digital telemetry this sequence should be followed by the appropriate sequence to set the telemetry format.
INITIAL CONDITIONS	None
DISPLAYS	F_OPERATIONS_COMMAND I_HRC_S
COMPS	None
COMMAND GROUPS	None
PIX MAPS	None
COMMAND LOADS	2A_G0035_142.CLD 2B_G0035_142.CLD
SCRIPTS	O_SCSCTRL

62036.3 CONFIGURE COMMAND SYSTEM

Author: A. Northrup **EST. Time :** 00:35

SOP 62036

TITLE: **Power Up HRC on CEA B**

A. Set the following command system configuration parameters:

Clear To Send Mechanism	= FSV
CAR Processing	= Enabled
FSV Processing	= Enabled
CRR Processing	= Disabled
Output Format	= NRZM
Minimum Time Delay (sec)	= 3
CAR Time-out (sec)	= 40
FSV Time-out (sec)	= 45
Blocking Factor	= 90
Burst Factor	= 1

62036.4 UPLINK COMMAND LOAD

A. Depending on which OBC is online, uplink the appropriate command load

OBC	Command Load	Checksum
A	2A_G0035_142	E4E7B64
B	2B_G0035_142	E4E7B64

62036.5 VERIFY HRC POWER BUS STATES

A. If HRC has been configured for using CEA B on the Primary Bus –

a) SOT verifies telemetry:

Description	MSID	Value	Script Verification
HRC Power On/Off Pri Status PSU-1 (A2K1)	EHRCPPWR	ON	N
HRC Power On/Off Rdnt Status PSU-2 (A2K1)	EHRCRPWR	OFF	N

b) If telemetry does not verify:

1. If necessary, SOT authorizes OC to uplink command **EHRCPPON** to turn HRC primary bus power on.
2. If necessary, SOT authorizes OC to uplink command **EHRCRPOF** to turn HRC redundant bus power off.
3. Verify telemetry as in step A.

B. If HRC has been configured for using CEA B on the Redundant Bus –

a) SOT verifies telemetry:

Description	MSID	Value	Script Verification

SOP 62036

TITLE: **Power Up HRC on CEA B**

HRC Power On/Off Pri Status PSU-1 (A2K1)	EHRCPPWR	OFF	N
HRC Power On/Off Rdnt Status PSU-2 (A2K1)	EHRCRPWR	ON	N

b) If telemetry does not verify:

1. If necessary, SOT authorizes OC to uplink command **EHRCPPOF** to turn HRC primary bus power off.
2. If necessary, SOT authorizes OC to uplink command **EHRCRPON** to turn HRC redundant bus power on.
3. Verify telemetry as in step B.

62036.6 POWER UP HRC

A. SOT authorizes OC to start script **O_SCSCTRL**

Enter as follows:
SCS command: **ENABACTI**
SCS number: **142**

Script will buffer commands:

COENASX (with command field COENAS1 set to '142')
[enables SCS 142]
COACTSX (with command field COACTS1 set to '142')
[activate SCS 142}

RTS will issue commands, with 1 second delays before each (except as noted):
205VBON
[+5 Low Voltage Power Supply ON]
2SPHVOF
[HRC-S HVPS Off]
2SPTTHV
[Set HRC-S top MCP HV step to 0]
{Cmd Field Mnemonic 2SPTTHV2}
2SPTBHV
[Set HRC-S bottom MCP HV step to 0]
{Cmd Field Mnemonic 2SPTBHV2}
2SPCLEN
[Enable HRC-S HVPS current limit]
2S1HVOF
[Shield PMT#1HVPS off]
2S1STHV
[Set shield PMT#1 HV step]
{Cmd Field Mnemonic 2S1STHV2}
2IMHVOF

SOP 62036

TITLE: **Power Up HRC on CEA B**

[HRC-I HVPS Off]
2IMTTHV
[Set HRC-I top MCP HV step to 0]
{Cmd Field Mnemonic 2IMTTHV2}
2IMTBHV
[Set HRC-I bottom MCP HV step to 0]
{Cmd Field Mnemonic 2IMTBHV2}
2IMCLEN
[Enable HRC-I HVPS current limit]
2S2HVOF
[Shield PMT#2 HVPS off]
2S2STHV
[Set shield PMT#2 HV step to 0]
{Cmd Field Mnemonic 2S2STHV2}
2MDRVADI
[Disable motor drive electronics]
2MCMRASL
[Motion control mode reset]
2ALMTADS
[Deselect all motors]
215PCAON
[+/-15V low voltage power supply on]
<delay 00:00:02.000>
224PCAON
[+24V low voltage [power supply on]
<delay 00:01:30.000>
2PRB1SL
[Shield PMT#1 select to use B-side preamplifiers]
2PRA2SL
[Shield Pmt#2 select to use A-side preamplifiers]

2NXILASL
[Select timing for HRC next in-line mode telemetry]
2FIFOAOF
[Reset event data fifo]
2FIFOAON
[Enable event data FIFO]

B. OC resumes script to uplink command buffer.
C. SOT verifies telemetry:

Description	MSID	Value	Script Verification
+5V LVPS On/Off	2PS5B0N	ON	N
HRC-S HVPS On/Off	2SP0NST	OFF	N
HRC-S MCP HV Top Step	2SPTPAST	0	N
HRC-S MCP HV Bottom Step	2SPBPAST	0	N
HRC-S HVPS Current Limit	2SPCLST	ENAB	N

Author: A. Northrup **EST. Time :** 00:35

SOP 62036

TITLE: **Power Up HRC on CEA B**

Shield PMT #1 HVPS On/Off	2S1ONST	OFF	N
Shield PMT #1 HV Step	2S1HVST	0	N
HRC-I HVPS On/Off	2IMONST	OFF	N
HRC-I MCP HV Top Step	2IMTPAST	0	N
HRC-I MCP HV Bottom Step	2IMBPAST	0	N
HRC-I HVPS Current Limit	2IMCLST	ENAB	N
Shield PMT #2 HVPS On/Off	2S2ONST	OFF	N
Shield PMT #2 HV Step	2S2HVST	0	N
Motor Drive Electronics Enab/Disa	2MDRVAST	DISA	N
Motion Control Mode Reset	2MCMDARS	RSET	N
Deselect All Motors	2ALMTAST	SEL	N
+/- 15V LVPS On/Off	215PCAST	ON	N
+24V LVPS On/Off	224PCAST	ON	N
Shield on B-Side Preamplifiers	2ELEBSS	PMT1	N
Shield on A-Side Preamplifiers	2ELEASS	PMT2	N
Timing for HRC NIL Mode TLM	2OBNLASL	NEXT	N
Event data FIFO	2FIFOAVR	RSET -> ENAB	N

D. SOT authorizes OC to restart script **O_SCSCTRL**

Enter as follows:
SCS Command: **CLEAR**
SCS Number: **142**

Script will buffer commands:
CODISASX (with command field CODISAS1 Set to '142')
[Disable SCS 142]
COCLRSX (with command field COCLRS1 Set to '142')
[Clear SCS 142]

E. OC resumes script to uplink command buffer.

END OF PROCEDURE