SOP 62021

TITLE: **Set HRC-I Unique Defaults with CEA B**

PURPOSE: Set HRC-I Unique Defaults.

PARTICIPANTS: OC/CC, SOT

PROCEDURE: http://ipa.harvard.edu/int/HRC_procs/i_unique_b.html rev 1.2

62021.1 OVERVIEW

This command sequence sets the HRC instrument configuration default settings that are specific to using the HRC-I. High level pulse commands are used to select which detector is connected to the active pre-amps, HRC-S to CEA A (inactive) and HRC-I to CEA B (active). Then a series of serial digital commands are sent to set the defaults for hardware processing.

62021.2 SUPPORT SUMMARY

SUMMARY	Set HRC-I unique defaults on CEA B
CONSTRAINTS	This command sequence assumes that the HRC power configuration has been set using SOP 62034 "Power Configure HRC to use CEA B with prime Bus" (or SOP 62035 "Power Configure HRC to use CEA B with Redundant Bus") and that the HRC has been powered using SOP 62036 "HRC Power Up on CEA B". This sequence should not be executed until the HRC has been powered for at least 90 sec.
INITIAL CONDITIONS	None.
DISPLAYS	F_OPERATIONS_COMMAND I_HRC_S O_SCS_STATUS
COMPS	None
COMMAND GROUPS	None
PIX MAPS	None
COMMAND LOADS	`2A_G001A_135.CLD` `2B_G001A_135.CLD`
SCRIPTS	O_SCSCTRL

62021.3 CONFIGURE COMMAND SYSTEM

A. Set the following command system configuration parameters:

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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

62021.4 UPLINK COMMAND LOADS

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

OBC	Command Load	Checksum
A	2A_G001A_135	CC9BF28
B	2B_G001A_135	CC9BF28

62021.5 SET UNIQUE DEFAULTS

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

Enter as follows:
SCS Command: **ENABACTI**
SCS Number: **135**

Script will buffer commands:
COENASX (with command field COENAS1 set to '135')
[enable SCS 135]
COACTSX (with command field COACTS1 set to '135')
[activate SCS 135]

No critical commands

RTS will issue commands:
2PRASSL
[HRC-S select to use CEA A pre-amplifiers]
2PRBISL
[HRC-I select to use CEA B pre-amplifiers]
2PSHBALD (with command field 2PSHBAL1 set to '0')
[Load High-byte motor control position word]
2PSLBALD (with command field 2PSLBAL1 set to '0')
[Load Low-byte motor control position word]
2SPNLASL
[Select normal mode for HRC-S]
2CALBAAM (with command field 2CALBAA1 set to '0')

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[Set calibration pulse amplitude to 0]
2CLMDAOF
[Set calibration mode to off]
2FCPUALV (with command field 2FCPUAL1 set to '0')
[Set forced coarse U-axis position to 0]
2FCPVALV (with command field 2FCPVAL1 set to '0')
[Set forced coarse V-axis position to 0]
2CBHUALV (with command field 2CBHUAL1 set to '255')
[Set center-blank region U-axis upper limit to 255]
2CBLUALV (with command field 2CBLUAL1 set to '0')
[Set center-blank region U-axis lower limit to 0]
2CBHVALV (with command field 2CBHVAL1 set to '255')
[Set center-blank region V-axis upper limit to 255]
2CBLVALV (with command field 2CBLVAL1 set to '0')
[Set center-blank region V-axis lower limit to 0]
2ULDIATH (with command field 2ULDIAT1 set to '255')
[Set upper level veto threshold to 255]
2LLDIATH (with command field 2LLDIAT1 set to '8')
[Set trigger level threshold to 8]
2GRDVAAM (with command field 2GRDVAA1 set to '28')
[Set grid bias level to step 28 dec (1C hex)]
2WDTHATH (with command field 2WDTHAT1 set to '3')
[Set coarse width veto threshold to 3]
2RSRFAAM (with command field 2RSRFAA1 set to '90')
[Set ADC range switch setting to 90 dec (5A hex)]
2SHL1ADI
[Disable anticoincidence shield veto]
2WDTHADI
[Disable width veto]
2ULDIADI
[Disable upper level discr. veto]
2CBLKADI
[Disable center-blank function]
2EBLKADI
[Disable edge-blank function]
2SMOIAEN
[Enable over-current protection for selected motor]
2SMOTAEN
[Enable over-temperature protection for selected motor]
2CHPLAEN
[Enable primary closed/home limit switch]
2CHSLAEN
[Enable secondary close/home limit switch]
2OMPLAEN
[Enable primary open/maximum limit switch]
2OMSLAEN
[Enable secondary open/maximum limit switch]
2STFLAEN

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[Enable motor stop flags]
2FIFOAOF
[Reset event data FIFO]
2FIFOAON
[Enable event data FIFO]

B. OC resumes script - sending command buffer.
C. OC resumes to end of script after verifying that SCS state has changed.
D. OC informs SOT of wait state in script to verify telemetry:

Description	MSID	Value	Script Verification
HRC select to use CEA A pre-amps	2PREADS	SPEC	N
HRC select to use CEA B pre-amps	2PREBDS	IMAG	N
Load motor Control Word	2SCTHAST	0	N
HRC-S mode	2SPMDASL	NORM	N
Calibration pulse amplitude	2CALPALV	0	N
Calibration mode	2CLMDAST	OFF	N
Forced U-axis position	2FCPUAST	0	N
Forced V-axis position	2FCPVAST	0	N
Center-blank U-axis upper limit	2CBHUAST	255	N
Center-blank U-axis lower limit	2CBLUAST	0	N
Center-blank V-axis upper limit	2CBHVAST	255	N
Center-blank V-axis lower limit	2CBLVAST	0	N
Upper level veto threshold	2ULDIALV	255	N
Trigger level threshold	2LLDIALV	8	N
Grid bias level	2GRDVALV	28	N
Coarse width veto threshold	2WDTHAST	3	N
ADC range switch setting	2RSRFALV	90	N
Anticoincidence shield veto	2SHLDAVR	DISA	N
Width veto	2WDTHAVR	DISA	N
Upper level discr. Veto	2ULDIAVR	DISA	N
Center-blank function	2CBLKAVR	DISA	N
Edge-blank function	2EBLKAVR	DISA	N
Over-current protection sel. Motor	2DROIAST	ENAB	N
Over-temp protection sel. Motor	2DROTAST	ENAB	N
Primary closed/home limit switch	2CPLSAST	ENAB	N
Secondary closed/home limit switch	2CSLSAST	ENAB	N
Primary open/max limit switch	2OPLSAST	ENAB	N
Secondary open/max limit switch	2OSLSAST	ENAB	N
Motor stop flags	2SFLGAST	ENAB	N
Event data FIFO	2FIFOAVR	DISA -> ENAB	N

62021.6 DISABLE AND CLEAR SCS

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

Enter as follows:

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SCS Command: **CLEAR**
SCS Number: **135**

Script will buffer command:

CODISASX (with command field CODISAS1 set to '135')
[disable SCS 135]
COCLRSX (with command field COCLRS1 set to '135')
[clear SCS 135]

No critical commands

B. OC resumes script to uplink command buffer.
C. Resume to end of script O_SCSCTRL.

END OF PROCEDURE

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