1.31_V2.0 Continuous Clocking Raw Data

Last Revised: August 6, 1999

BRIEF FUNCTIONAL DESCRIPTION:

This procedure will telemeter raw frames in continuous clocking mode to be used to characterize the effects of particle-induced events on CC mode bias maps and event processing. The time required to telemeter one CC raw frame should be about 2 min. This procedure will run for 5 hours and should collect about 15 raw frames from each of the 10 CCDs.

The sequence of actions will be:

1. warm boot and start DEA housekeeping if necessary
2. configure the instrument to collect imaging array data
3. execute the continuous clocking 3x3 mode science run
4. configure the instrument to collect spectroscopy array data
5. execute the continuous clocking 3x3 mode science run
6. return to thermal standby mode if necessary

ASSUMED INSTRUMENT STATE:
Assumes that the instrument is in the cannonical thermal standby mode.
Assumes that the standard patches have been loaded.

SPECIAL INITIAL CONDITIONS:

The continuous clocking 3x3 optional patch must have been loaded before this procedure begins.

OPERATIONAL CONSTRAINTS/CAUTIONS:

REFERENCES:

CHANGE HISTORY:

V1.0

- Initial version, copied from procedure 1.25_V2.1, "Continuous Clocking 3x3"
- Revised brief functional description
- Revised command mnemonics and command echos in steps 3.1, 3.2, 5.1, and 5.2
- Revised description fields in steps 3.2 and 5.2
- In steps 3.15 and 5.15, set time requirement fields to "120 min", tlm criterion field to "A", real time contact field to "Y", and modified the description fields
- Set time requirement field to "1 min" in step 3.16
- Set real time contact field to "Y" in step 5.16

- Added steps 3.17 and 5.17 to wait "25 min" for telemetry to send down the remaining raw frames after the science run is stopped

V2.0

- added SW command mnemonics and command IDs for the PBs and window blocks in steps 3.1,3.2,5.1, and 5.2

Table 1: **Continuous Clocking 3x3 Raw Data**

Step #	Title (Revision 1.31_V2.0)	Time Req (m)	Command Description	Command Mnemonic	Telemetry Description	Telemetry Mnemonic	Expected Value	Units
1	Warm Boot and Start DEA HKP if needed							
1.1	Set Boot modifier off	0.1	DPA FS Boot Mod	1BMODIBM(0)				
1.2	Set warm boot flag on	0.1	DPA Warm Boot	1WRMBTSB(1)				
1.3	Halt BEP	0.1	DPA Com Reset	1RSETIRT(1)				
1.4	Restart BEP	0.1		1RSETIRT(0)				
1.5	Check BEP A Boot	2.0						
1.6	Check HW LEDs	2.0			BEP Select	1STAT4ST	0	
					BEP FIFO Not Full	1STAT6ST	1	
					BEP FIFO Not Empty	1STAT7ST	1	
1.7	Check SW LEDs	2.0			BEP initialization	1STAT3ST	0	
					Watchdog boot	1STAT2ST	1	
					Science run status	1STAT1ST	1	
						1STAT0ST	0or1	
1.8	Load Board 11 DEA HK	1	loadDeaBlock	WD00001024				
1.9	Start DEA Hkp run	1	startDEA	XDZ0000005				
2	Configure for imaging							
2.1	Power up imaging video boards & FEPs	1	changeConfigSetting	WSPOW0CF3F				
					DEA Input V A	1DE28AVO	28.0–32.0	V
					DEA Input I A	1DEICACU	1.3–1.5	A
					DPA Input V A	1DP28AVO	28.0-32.0	V
					DPA Input I A	1DPICACU	1.2–1.4	A
					DPA Input V B	1DP28BVO	28.0–32.0	V

Table 2: (CONT) **Continuous Clocking 3x3 Raw Data**

Step #	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
1									
1.1				disables boot from uplink		Y	1or2		
1.2				enable Warm boot		Y	1or2		
1.3				Hold active BEP reset line		Y	1or2		
1.4				Release BEP reset line		Y	1or2		
1.5	Check bepStartupMessage:		A			Y	1or2		
	bepTickCounter $<$ 10; version =27;		A						
	warmBootFlag = 1, patchValidFlag =1		A						
	Check swHousekeeping messages:								
	startingBepTickCounter $<$ 10;		B						
	endingBepTickCounter=		B						
	=startingBepTickCounter+640								
	version =27		A						
1.6			2	0 indicates BEP A is selected		Y	1or2		
			2	1 mean FIFO not full					
			2	1 mean FIFO not empty					
1.7			1	0 means BEP SW is running		Y	1or2		
			2	1 means no watchdog boot					
			2	1 means science idle					
			2	this bit toggles to indicate BEP is running					
1.8	Check cmdResult == OK		B	Load Fullhouse DEA housekeeping		Y	1or2		
	commandEcho 225			parameter block into slot 4					
1.9	deaHousekeepingData		B	get FP temp, should be stable and		Y	1or2		
	commandEcho 18			± 2 C of desired value					
2									
2.1	Check cmdResult == OK		A			Y	2	60k	
	commandEcho 359		2	Expect DEA side A					
			2	power = 42 ± 3 W					
			2	Expect DPA Side A					
			2	= 38 ± 2 W					
			2	Expect DPA Side B					

Table 1: **Continuous Clocking 3x3 Raw Data(Page 2)**

Step #	Title (Revision 1.31_V2.0)	Time Req (m)	Command Description	Command Mnemonic	Telemetry Description	Telemetry Mnemonic	Expected Value	Units
					DPA Input I B	1DPICBCU	1.0–1.2	A
3	Collect ACIS-I data							
3.1	Load parameter block	1	loadCcBlock	WC00023014				
3.2	Load window block	1	load1dBlock	W10001C014				
3.3	Start science	1	startScience	XCZ0000005				
3.4	dump default TE PBs	0.1	dumpParameterSlots	RT_0000001				
3.5	dump default CC PBs	0.1	dumpParameterSlots	RC_0000001				
3.6	dump default 2D PBs	0.1	dumpParameterSlots	R2_0000001				
3.7	dump default 1D PBs	0.1	dumpParameterSlots	R1_0000001				
3.8	dump default DeaHk PBs	0.1	dumpParameterSlots	RD_0000001				
3.9	dump system config.	0.1	dumpSysConfig	RS_0000001				
3.10	dump bad pixel list	0.5	dumpBadPixels	RP_0000001				
3.11	dump bad TE columns	0.1	dumpBadTeColumn	R4_0000001				
3.12	dump bad CC columns	0.1	dumpBadCcColumn	R3_0000001				
3.13	dump Huffman tables	0.5	dumpHuffman	RH_0000001				
3.14	dump patches	2	dumpPatchlist	RU_0000001				
3.15	Wait for data acquisition	120						
3.16	Stop Science	1	stopScience	AA00000000				

Table 2: (CONT) **Continuous Clocking 3x3 Raw Data(Page 2)**

Step #	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
			2	$= 33 \pm 2$ W					
3									
3.1	Check cmdResult == OK commandEcho 1248		B			Y	2	60k	
3.2	Check cmdResult == OK commandEcho 1253		B	Tlm raw frames from I0–I3,S2		Y	2	60k	
3.3	Check cmdResult == OK commandEcho 39		B	run I0–I3,S2,S3		Y	2	60k	
3.4	Check cmdResult == OK commandEcho 78		B		*psci* should not indicate any errors regarding “truncated blocks” for any of these dumps.	Y	2	60k	
3.5	Check cmdResult == OK commandEcho 75		B			Y	2	60k	
3.6	Check cmdResult == OK commandEcho 72		B			Y	2	60k	
3.7	Check cmdResult == OK commandEcho 71		B			Y	2	60k	
3.8	Check cmdResult == OK commandEcho 63		B			Y	2	60k	
3.9	Check cmdResult == OK commandEcho 66		B			Y	2	60k	
3.10	Check cmdResult == OK commandEcho 83		B			Y	2	60k	
3.11	Check cmdResult == OK commandEcho 80		B			Y	2	60k	
3.12	Check cmdResult == OK commandEcho 77		B			Y	2	60k	
3.13	Check cmdResult == OK commandEcho 68		B			Y	2	60k	
3.14	Check cmdResult == OK commandEcho 65		B			Y	2	60k	
3.15			A	wait for 1st packet with exp# > 15		Y	2	60k	
3.16	Check cmdResult == OK	scienceReport	A			Y	2	60k	

Table 1: **Continuous Clocking 3x3 Raw Data(Page 3)**

Step #	Title (Revision 1.31_V2.0)	Time Req (m)	Command Description	Command Mnemonic	Telemetry Description	Telemetry Mnemonic	Expected Value	Units
3.17	Wait for telemetry	25						
4	Configure for spectro							
4.1	Power up spectro video	1	changeConfigSetting	WSPOW3F03F				
5	Collect ACIS-S data							
5.1	Load parameter block	0.1	loadCcBlock	WC00025014				
5.2	Load window block	0.1	load1dBlock	W10001B014				
5.3	Start science	0.1	startScience	XCZ0000005				
5.4	dump default TE PBs	0.1	dumpParameterSlots	RT_0000001				
5.5	dump default CC PBs	0.1	dumpParameterSlots	RC_0000001				
5.6	dump default 2D PBs	0.1	dumpParameterSlots	R2_0000001				
5.7	dump default 1D PBs	0.1	dumpParameterSlots	R1_0000001				
5.8	dump default DeaHk PBs	0.1	dumpParameterSlots	RD_0000001				
5.9	dump system config.	0.1	dumpSysConfig	RS_0000001				
5.10	dump bad pixel list	0.5	dumpBadPixels	RP_0000001				
5.11	dump bad TE columns	0.1	dumpBadTeColumn	R4_0000001				
5.12	dump bad CC columns	0.1	dumpBadCcColumn	R3_0000001				
5.13	dump Huffman tables	0.5	dumpHuffman	RH_0000001				

Table 2: (CONT) **Continuous Clocking 3x3 Raw Data(Page 3)**

Step #	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
	commandEcho 1539								
3.17			A			Y	2	60k	
4									
4.1	Check cmdResult == OK commandEcho 360		A			Y	2	60k	
5									
5.1	Check cmdResult == OK commandEcho 1251		B			Y	2	60k	
5.2	CheckcmdResult == OK commandEcho 1254		B	Tlm raw frames from S0,S1,S3–5		Y	2	60k	
5.3	Check cmdResult == OK commandEcho 39		B	run S0–S6 CCDs		Y	2	60k	
5.4	Check cmdResult == OK commandEcho 78		B		*psci* should not indicate any errors regarding “truncated blocks” for any of these dumps.	Y	2	60k	
5.5	Check cmdResult == OK commandEcho 75		B			Y	2	60k	
5.6	Check cmdResult == OK commandEcho 72		B			Y	2	60k	
5.7	Check cmdResult == OK commandEcho 71		B			Y	2	60k	
5.8	Check cmdResult == OK commandEcho 63		B			Y	2	60k	
5.9	Check cmdResult == OK commandEcho 66		B			Y	2	60k	
5.10	Check cmdResult == OK commandEcho 83		B			Y	2	60k	
5.11	Check cmdResult == OK commandEcho 80		B			Y	2	60k	
5.12	Check cmdResult == OK commandEcho 77		B			Y	2	60k	
5.13	Check cmdResult == OK commandEcho 68		B			Y	2	60k	

Table 1: **Continuous Clocking 3x3 Raw Data(Page 4)**

Step #	Title (Revision 1.31_V2.0)	Time Req (m)	Command Description	Command Mnemonic	Telemetry Description	Telemetry Mnemonic	Expected Value	Units
5.14	dump patches	2	dumpPatchlist	RU_0000001				
5.15	Wait for data acquisition	120						
5.16	Stop Science	1	stopScience	AA00000000				
5.17	Wait for telemetry	25						
6	Return to Thermal Standby **Only if necessary**							
6.1	Power down FEPS, vid bds	0.1	changeConfigSetting	WSPOW00000				
6.2	dump system config.	0.1	dumpSysConfig	RS_0000001				
6.3	Check DPA and DEA pwr				DPA Input V A	1DP28AVO	28.0–32.0	V
					DPA Input I A	1DPICACU	0.38–0.43	A
					DPA Input V B	1DP28BVO	28.0–32.0	V
					DPA Input I B	1DPICBCU	0.28–0.32	A
					DEA Input I A	1DEICACU	0.66–0.75	A
					DEA Input V A	1DEP3AVO	28.0-32.0	V
	Total Time	313.5						

Table 2: (CONT) **Continuous Clocking 3x3 Raw Data(Page 4)**

Step #	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
5.14	Check cmdResult == OK commandEcho 65		B			Y	2	60k	
5.15			A	wait for 1st packet with exp# > 15		Y	2	60k	
5.16	Check cmdResult == OK commandEcho 1539	scienceReport	A			Y	2	60k	
5.17			A			Y	2	60k	
6									
6.1	Check cmdResult == OK commandEcho 773		A	return to thermal standby state		Y	2	60k	
6.2	Check cmdResult == OK commandEcho 66		B			Y	1or2		
6.3			2	Expect 12 W for side A, power consumption		Y	1or2		
			2	should be more stable than I or V.					
			2	Expect 9 W for side B, power consumption					
			2	should be more stable than I or V.					
			2	DEA A Power should be 21 $\pm$ 3 W, current is noisy so an avg. is needed					