AXAF COMMAND ACTION PROCEDURE

CAP #785B:
DATE: 12 March 2002

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COMMANDS CHECKED BY: Buehler, Plucinsky
Time of CAP Execution (GMT): 2002:073:12:45-15:30

DESCRIPTION/RATIONALE

This CAP executes the first test of the new charge injection technique on the S0 CCD. This test will allow us to probe the CTI of the S0 CCD at low energies. The intention is to inject an amount of charge which is approximately equivalent to the charge packet of an Al-Kα x-ray (E $\approx$ 1.5 keV). This CAP will execute two science runs: the charge injection science run and an ACIS-S CTI measurement. The charge injection science run will clock the S0 CCD in "raw" mode (telemeter pixel data, not just the pixels with x-ray events).

This test will be attempted during the 10 ks period overlapping what is normally a CTI measurement on the in-bound leg of the orbit. The FOT MPers have removed the commands to execute the normal ACIS CTI measurement but have retained the OBSID update and the stopScience command in the daily load.

The EPHIN rates should be at 1/3 or lower of the SCS 107 trigger levels at the start of the science run for this CAP to proceed.

Once the charge injection science run has been successfully completed, we will command ACIS to execute a CTI (S-array) measurement.

RESTRICTIONS/WARNINGS/NOTES/SCHEDULE REQT:

This commanding will be interleaved upon the daily load. There should be no potential conflicts except with ACIS (see discussion above), but the operators should be cognizant nevertheless. The ACIS commanding should begin as soon as the radiation environment permits. The OBSID will be updated to 61267 at 2002:073:12:48 (right at COMM start) and the stopScience command for the charge injection science run will be executed in real-time by this CAP. The stopScience for the charge injection science run will occur at about $\sim$ 073:14:00 to allow time for the dumps of the PRAM and SRAM. Once ACIS confirms receipt of the PRAM and SRAM dumps, the OBSID will be updated to 62852 and an ACIS-S CTI measurement will be launched to ensure that the S0 CCD is behaving as expected. The daily load will execute an ACIS stopScience command at 2002:073:15:24 to halt the CTI measurement.

STEP	INSTRUCTIONS (Command/Script)	RESPONSE (TLM Verifier)
1	Verify OBSID = 61267	
2	Uplink Loads:	
	1A_WS007_164.CLD	7021872
	1A_WS041_252.CLD	50391DC
	1A_XB000_250.CLD	417494C
	1A_XB001_251.CLD	A0E1874
	1A_WB01F_131.CLD	4C888D2
	1A_WB020_132.CLD	4735B36
	1A_WB021_133.CLD	25913AE
	1A_WB022_134.CLD	786484F

	1A_WB023_135.CLD	FF38308
	1A_WB024_136.CLD	996FA91
	1A_WB025_137.CLD	3910551
	1A_WB026_138.CLD	8755E3A
	1A_WS046_140.CLD	E72324C
	1A_WT066_141.CLD	E9D10A3
	1A_WS047_142.CLD	CDB4B2B
	1A_XT000_190.CLD	C421014
	1A_RS000_207.CLD	4022412
	1A_AA000_191.CLD	502066E
	1A_RYFS0_211.CLD	F423E81
	1A_RZFS0_217.CLD	4424581
3	ACIS informs OC when EPHIN rates are appropriate to start.	
4	Enable and Activate SCS 164	WSVIDALLDN (cmdID = 1541)
5	Enable and Activate SCS 252	WSPOW0103F (cmdID = 2163)
5a	There should be a wait of at least 60 secs	
6	Enable and Activate SCS 207	RS_0000001, bepReadReply/Config (cmdId = 66)
6a	ACIS will dump default configuration Table settings	
7	Enable and Activate SCS 250	executeBep, XB1SLOMO02 (cmdID=2166)
8	Enable and Activate SCS 251	executeBep, XB1SLOMO03 (cmdID=2160)
9	Enable and Activate SCS 131	writeBep, WBCHGINJ01 (cmdID = 4493)
		writeBep, WBCHGINJ02 (cmdID = 4494)
		writeBep, WBCHGINJ03 (cmdID = 4496)
10	Enable and Activate SCS 132	writeBep, WBCHGINJ04 (cmdID = 4499)
		writeBep, WBCHGINJ05 (cmdID = 4501)
		writeBep, WBCHGINJ06 (cmdID = 4502)
11	Enable and Activate SCS 133	writeBep, WBCHGINJ07 (cmdID = 4505)
		writeBep, WBCHGINJ08 (cmdID = 4506)
		writeBep, WBCHGINJ09 (cmdID = 4508)
12	Enable and Activate SCS 134	writeBep, WBCHGINJ10 (cmdID = 4511)
13	Enable and Activate SCS 135	writeBep, WBCHGINJ11 (cmdID = 4512)
14	Enable and Activate SCS 136	writeBep, WBCHGINJ12 (cmdID = 4515)
15	Enable and Activate SCS 137	writeBep, WBCHGINJ13 (cmdID = 4517)
16	Enable and Activate SCS 138	writeBep, WBCHGINJ14 (cmdID = 4518)
		writeBep, WBCHGINJ15 (cmdID = 4521)
17	Enable and Activate SCS 140	WSCINJDAC1 (cmdID = 4535)
18	Enable and Activate SCS 207	RS_0000001, bepReadReply/Config (cmdId = 66)
18a	ACIS will confirm new configuration Table settings	
19	Enable and Activate SCS 141	loadTeBlock, WT00535014 (cmdID=4556)
20	Enable and Activate SCS 190	XTZ0000005, startScience (cmdId = 58)
21	If execution fails (immediate *scienceReport* with abnormal *terminationCode*), do 22 then skip to step 28.	
22	Enable and Activate SCS 142 (wait at least ≈ 30 secs after the startSci command)	WSDFPRLVS0 (cmdId = 1672)
23	ACIS confirms receipt of data (≈ 5 mins after the startSci command)	(dataTeRaw packets)
23a	ACIS will verify that the time stamp difference between successive exposures is 0x0421f57 (decimal 4,333,399)	

24	On bad data, go to step 26 IMMEDIATELY and do 28-38	
25	Collect data for $\sim$ 3.0 ks ($\sim$ 50 frames)	
26	Enable and Activate SCS 191 at $\sim$ 073:14:00	AA00000000, stopScience (cmdId = 1539)
27	ACIS confirms normal completion of science run	look for a dumped ScienceReport packet
28	Activate SCS 207	RS_0000001, bepReadReply/Config (cmdId = 66)
28a	ACIS will verify that the configuration table settings are back to their default values.	
29	Enable and Activate SCS 211	RY_FULL_S0, readPram (cmdId = 1613)
30	ACIS confirms receipt of PRAM dump; if dump fails re-do 29 ONCE more	
31	Enable and Activate SCS 217	RZ_FULL_S0, readSram (cmdId = 1602)
32	ACIS confirms receipt of SRAM dump; if dump fails re-do 31 ONCE more	
33	Set OBSID = 62852	
34	Uplink Load: 1A_CTI02_139.CLD	 5DDF1B7
35	Enable and Activate SCS 139	WSVIDALLDN (command ID = 1541) WSPOW3F03F (command ID = 360) WT0021C024 (command ID = 4541) XTZ0000005 (command ID = 58) RS_0000001 (command ID = 66) RH_0000001 (command ID = 68)
36	Clear and Disable SCS 164, 252, 250, 251, 131, 132, 133, 134, 135 136, 137, 138, 140, 141, 142, 190, 207, 191, 211, & 217	
37	ACIS confirms normal science run.	look for a dumped TE block
38	Clear and Disable 139	

Approved:

Subsystem Engineer: Flight Director:
FOT Manager: Program Manager:
SOT Lead: