4.34_V2.1 Flight Software Standard Patch H Optional Patch J

Last Revised: July 27, 2023
Filename: sw_stdhoptj

BRIEF FUNCTIONAL DESCRIPTION:

This procedure loads the standard H patches and six optional J patches. The changes from sw_stdgopti consist of an updated standard patch. None of the optional patches were functionally modified from the I patches. The text that describes the changes in the standard patch in this procedure follows below the italic note:

The set of standard release H patches is loaded into a common address space so that each optional patch can be loaded independently of the others, provided the load order defined in the patch combination certification is maintained.
The eventhist patch requires that smtimedlookup is also loaded.
The ACIS Flight SW team recommends that the optional patches be loaded together with the standard patches; therefore this procedure first removes any patches which may have been installed and then proceeds to load the standard patches followed by the optional patches.
This procedure loads "standard Rev. H" and "optional Rev. J". Refer to the release notes for standard patches, optional patches, and patch combination certification (see references below).

Standard patches fepbiasrec and biasphase3 have been added to address errors in FEP flight software which were identified in software anomaly investigations and reports. Standard patch mostfatal has been added to assist in preserving BEP register contents in the event of an unexpected hardware interrupt, and therefore to assist in its analysis. Standard patch buscrash has been updated to force an end to science processing if all video boards are found to be powered down.

This procedure will change the flight software version from 58 to version 60. Ground software should be changed to reflect the version change once this procedure is executed.

The FOT should implement the loading of the patches (steps 3.1 through step 10.1) as eight realtime command loads in order to maximize the uplink efficiency. The command system should be configured with a blocking factor of 90 and a minimum time delay of 3 s.

The following procedure loads the Standard H and smtimedlookup / cc3x3 / eventhist / compressall / txings / deahktrip optional set of patches into the ACIS instrument, as well as the new version number patch, and dumps the load to the ground for verification. It then executes a warm boot and loads and starts DEA housekeeping.

This procedure implements the following basic operations:

1. Confirm the current state of ACIS by verifying BEP HW and SW LEDs

2. Reset the contents of the patch list to remove any existing patches, dump the contents of the patch list to verify that the list is empty

3. Load the "standard Rev. H" patch load

4. Load the smtimedlookup patch (part of "optional Rev. J")

5. Load the cc3x3 patch (part of "optional Rev. J")

6. Load the eventhist patch (part of "optional Rev. J")

7. Load the compressall patch (part of the "optional Rev. J")

8. Load the txings patch (part of the "optional Rev. J")

9. Load the deahktrip patch (part of the "optional Rev. J")

10. Load the patch load version number (60)

11. Dump the contents of the patch list to verify the load

12. Warm boot the BEP to activate the new load and verify proper BEP boot

13. Start the DEA housekeeping and verify proper reporting

Refer to ECO 36-1062 for the contents and review status of the patch load, and to ECO 36-1063 for the certified combinations of optional patches. The ECO's for each new or updated standard patch are: ECO 36-1056 (fepbiasrec), 36-1057 (mostfatal), 36-1061 (biasphase3), and 36-1064 (buscrashC).

The telemetry verifiers for the procedure will be:

1. ACIS Ops will confirm the current status of the BEP

2. A command echo for the reset patch list command

3. A command echo for the 1st dumpPatchlist command

4. A single bepReadReply packet for the 1st empty dump

5. A series of command echoes for the addPatch commands. The SOT will verify that each Result field of each commandEcho packet has a value of 1.

6. A command echo for the dumpPatchlist command

7. A series of bepReadReply packets for the dump command

8. A comparison of the dumped patchlist to expected values.

9. A bepStartupMessage packet with a modified "version = 60" field plus several other bepStartupMessage packet fields.

10. A verification that DEA housekeeping is being reported.

11. ACIS flight software personnel will review the contents of the patchlist dump while the procedure is running.

ASSUMED INSTRUMENT STATE:
This assumes that DPA-A and/or DPA-B is on and the flight SW is running on either BEP-A or BEP-B.

SPECIAL INITIAL CONDITIONS:
The OCC command system must be configured with "Minimum Time Delay" of 3 s and a "Blocking

Factor" of 90.

Spacecraft telemetry should be in Format 2 when the patches are loaded in order to ensure that all command verifiers can be included in the telemetry stream.

OPERATIONAL CONSTRAINTS/CAUTIONS:

In order to avoid truncating a dump, each dumpPatchlist command must be followed by at least a 30 second delay.

The warmboot will set the parameters of the *txings* patch to their defaults. Immediately upon completion of this SOP, the optimal parameters should be uploaded via a CAP.

As each patch is uploaded, 1STAT7ST will switch from 0 to 1 and then back to 0 as the BEP input FIFO is filled and then cleared. Some versions of PMON will show 1STAT7ST=1 in red, and some software may send alerts. It is best to wait for 1STAT7ST to go back to zero between steps. If it does not clear after a reasonable period, see the contingency plans for how to clear a stuck FIFO.

CONTINGENCY PLANS:

In case of a problem that may arise during the procedure, the following contingencies may be followed:

1. If there is a failure to confirm a telemetry verifier, ACIS flight software personnel will visually determine, via bi-levels, if the ACIS FIFO needs to be cleared (1STAT7ST = 1, FIFO Not Empty). If it does, the FIFO will be cleared via step 14. If the FIFO does not need to be cleared, ACIS Ops has the discretion to restart the procedure at step 2, or to continue on from this point.

    Should the FIFO clear procedure be executed and is successful, the ACIS operator will observe the following responses. First, in PMON, the operator will see the correct command echo from the stuck command. Next, also in PMON, the "Serial Command" column will show "UNUSED", and the "Result Code" column will show "NO_HANDLER". Lastly, the bilevels will return to their nominal values. 1STAT7ST will read 0 indicating FIFO Empty, and 1STAT6ST will read 1, indicating FIFO Not Full.

    If the FIFO does not need to be cleared and the problem cannot be determined, a full ACIS system dump will be executed, using SOP_ACIS_FSW_DUMP to obtain the ACIS diagnostic information. The patchlist will be cleared, if necessary, and the present version of software will continue to run. Should ACIS reboot, however, it will revert to Version 11 of the ACIS software.

2. If there is a failure to confirm the patch list dump (step 11), first repeat step 11, dumping the patch list, to confirm that there wasn't a downlink corruption. If the list is confirmed, continue to step 12, otherwise, restart from step 2 and reload the patches. If SOT cannot confirm telemetry verifiers for reasons other than telemetry corruption, run SOP_ACIS_FSW_DUMP (SOT Procedure 1.10_V2.2, sw_dump) to obtain ACIS diagnostic information and then run SOP_ACIS_SW_STDGOPTI to reload version 58 patches (SOT Procedure 4.33_V2.0, sw_stdgopti).

3. If the warm boot of the BEP fails (step 12), retry the reboot (step 12). If this continues to fail, run SOP_ACIS_FSW_DUMP to dump additional information for diagnostic purposes (SOT Procedure 1.10_V2.2, sw_dump) and SOP_ACIS_SW_STDGOPTI to reload version 58 patches (SOT Procedure 4.33_V2.0, sw_stdgopti).

4. If there is a comm loss during the procedure, request a new comm. The time at which the new comm is needed depends on the point of loss of signal. The only vulnerability would occur if comm was dropped before the complete patch set was loaded (completion of step 10). If the BEP then rebooted spontaneously, it would return to version 11 flight software.

REFERENCES:

1. MIT 36-58010 Rev H (ECO 36-1062) Flight Software Standard Patch Release H.

   `https://acisweb.mit.edu/axaf/eco/eco-1062.pdf`

2. MIT 36-58020 Rev J (ECO 36-1062) Flight Software Optional Patch Release J.

   `https://acisweb.mit.edu/axaf/eco/eco-1062.pdf`

3. MIT 36-58030.35 Rev A (ECO 36-1056) fepbiasrec patch to force a FEP to recompute bias map after restart.

   `https://acisweb.mit.edu/axaf/eco/eco-1056.pdf`

4. MIT 36-58030.36 Rev A (ECO 36-1057) mostfatal patch to save BEP registers after a fatal interrupt

   `https://acisweb.mit.edu/axaf/eco/eco-1057.pdf`

5. MIT 36-58030.37 Rev A (ECO 36-1061) biasphase3 patch to prevent infinite FEP loop when dutyCycle > 0

   `https://acisweb.mit.edu/axaf/eco/eco-1061.pdf`

6. MIT 36-58030.30 Rev C (ECO 36-1064) buscrash patch to force SCIENCE_IDLE when all FEPs or DEAs off

   `https://acisweb.mit.edu/axaf/eco/eco-1064.pdf`

7. MIT 36-58021.04 Rev K (ECO 36-1063) Flight Software Patch Release H-J-K Certification.

   `https://acisweb.mit.edu/axaf/eco/eco-1063.pdf`

CHANGE HISTORY:

V0.1

- Initial version revised from 4.33_V2.0 Flight Software Standard Patch G Optional Patch I.

V1.0

- First pass-through of reviews complete; ready to send to full ACIS team.

V2.0

- Text edits after team review.

V2.1

- One final text edit.

This page intentionally left blank

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 1)

Step #	Title (Revision 4.34_V2.1)	Time Req	Command Description	Command Mnemonic	Telemetry Description	Telemetry Mnemonic	Expected Value
1	**Verify current ACIS status**						
1.1	Verify HW LEDs	2.0			BEP Select	1STAT4ST	0 or 1
					BEP Not in Reset	1STAT5ST	1
					BEP FIFO Not Full	1STAT6ST	1
					BEP FIFO Not Empty	1STAT7ST	0
1.2	Verify SW LEDs	2.0			BEP is running	1STAT0ST	0 or 1
					Science run status	1STAT1ST	1
					Watchdog boot	1STAT2ST	1
					BEP initialization	1STAT3ST	0
2	**Reset the Patchlist**						
2.1	Empty the Patchlist	1	removePatches	AUALLPATCH			
2.2	Read the empty Patchlist	1	dumpPatchlist	RU_0000001			
3	**Load Standard Patches**						
3.1	Load standard Rev. H patches	5	addPatch	WUSTANDH01			
				WUSTANDH02			
				WUSTANDH03			
				WUSTANDH04			
				WUSTANDH05			
				WUSTANDH06			
				WUSTANDH07			
				WUSTANDH08			
				WUSTANDH09			
				WUSTANDH10			

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 1)

Step #	Units	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
1										
1.1				2 2 2 2	0/1 indicates BEP A/B is selected 1 means BEP not in reset 1 means FIFO not full 0 means FIFO empty		Y	2		
1.2				2 2 2 1	this bit toggles to indicate BEP is running 1 means science idle 1 means no watchdog boot 0 means BEP SW is running		Y	2		
2										
2.1		Verify cmdResult == 1 commandEcho 326		A			Y	2		
2.2		Verify cmdResult == 1 commandEcho 65		B	bepReadReply, ACIS EGSE verifies single packet reply		Y	2		
3										
3.1		commandEcho 19197 commandEcho 19198 commandEcho 19200 commandEcho 19203 commandEcho 19205 commandEcho 19206 commandEcho 19209 commandEcho 19210 commandEcho 19212 commandEcho 19215		A A A A A A A A A A	Expect to send 43 packets. Total load size: 5032 bytes. Verify cmdResult == 1 for each packet		Y	2		

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 2)

Step #	Title (Revision 4.34_V2.1)	Time Req	Command Description	Command Mnemonic	Telemetry Description	Telemetry Mnemonic	Expected Value
				WUSTANDH11			
				WUSTANDH12			
				WUSTANDH13			
				WUSTANDH14			
				WUSTANDH15			
				WUSTANDH16			
				WUSTANDH17			
				WUSTANDH18			
				WUSTANDH19			
				WUSTANDH20			
				WUSTANDH21			
				WUSTANDH22			
				WUSTANDH23			
				WUSTANDH24			
				WUSTANDH25			
				WUSTANDH26			
				WUSTANDH27			
				WUSTANDH28			
				WUSTANDH29			
				WUSTANDH30			
				WUSTANDH31			
				WUSTANDH32			
				WUSTANDH33			
				WUSTANDH34			
				WUSTANDH35			
				WUSTANDH36			
				WUSTANDH37			

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 2)

Step #	Units	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
		commandEcho 19217		A						
		commandEcho 19218		A						
		commandEcho 19220		A						
		commandEcho 19223		A						
		commandEcho 19224		A						
		commandEcho 19227		A						
		commandEcho 19229		A						
		commandEcho 19230		A						
		commandEcho 19233		A						
		commandEcho 19234		A						
		commandEcho 19236		A						
		commandEcho 19240		A						
		commandEcho 19243		A						
		commandEcho 19245		A						
		commandEcho 19246		A						
		commandEcho 19248		A						
		commandEcho 19251		A						
		commandEcho 19253		A						
		commandEcho 19254		A						
		commandEcho 19257		A						
		commandEcho 19258		A						
		commandEcho 19260		A						
		commandEcho 19263		A						
		commandEcho 19265		A						
		commandEcho 19266		A						
		commandEcho 19268		A						
		commandEcho 19271		A						

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 3)

Step #	Title (Revision 4.34_V2.1)	Time Req	Command Description	Command Mnemonic	Telemetry Description	Telemetry Mnemonic	Expected Value
				WUSTANDH38 WUSTANDH39 WUSTANDH40 WUSTANDH41 WUSTANDH42 WUSTANDH43			
4	**Load smtimedlookup patch**						
4.1	Load opt_smtl patches part of optional Rev. J	5	addPatch	WUSTMLUJ01 WUSTMLUJ02 WUSTMLUJ03 WUSTMLUJ04 WUSTMLUJ05 WUSTMLUJ06 WUSTMLUJ07 WUSTMLUJ08 WUSTMLUJ09 WUSTMLUJ10 WUSTMLUJ11 WUSTMLUJ12			

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 3)

Step #	Units	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
		commandEcho 19272		A						
		commandEcho 19275		A						
		commandEcho 19277		A						
		commandEcho 19278		A						
		commandEcho 19280		A						
		commandEcho 19283		A						
4										
4.1		commandEcho 19286		A	Expect to send 12 packets.		Y	2		
		commandEcho 19289		A	Total load size: 3696 bytes.					
		commandEcho 19290		A	Verify cmdResult == 1 for each packet					
		commandEcho 19292		A						
		commandEcho 19295		A						
		commandEcho 19296		A						
		commandEcho 19299		A						
		commandEcho 19301		A						
		commandEcho 19302		A						
		commandEcho 19305		A						
		commandEcho 19306		A						
		commandEcho 19308		A						

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 4)

Step #	Title (Revision 4.34_V2.1)	Time Req	Command Description	Command Mnemonic	Telemetry Description	Telemetry Mnemonic	Expected Value
5	**Load cc3x3 patch**						
5.1	Load opt_cc3x3 patches part of optional Rev. J	5	addPatch	WUCC3X3J01 WUCC3X3J02 WUCC3X3J03 WUCC3X3J04 WUCC3X3J05 WUCC3X3J06 WUCC3X3J07 WUCC3X3J08 WUCC3X3J09 WUCC3X3J10 WUCC3X3J11 WUCC3X3J12 WUCC3X3J13			
6	**Load eventhist patch**						
6.1	Load opt_eventhist patches part of optional Rev. J	5	addPatch	WUEVHSTJ01 WUEVHSTJ02 WUEVHSTJ03 WUEVHSTJ04 WUEVHSTJ05 WUEVHSTJ06 WUEVHSTJ07 WUEVHSTJ08 WUEVHSTJ09 WUEVHSTJ10 WUEVHSTJ11			

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 4)

Step #	Units	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
5										
5.1		commandEcho 19313		A	Expect to send 13 packets.		Y	2		
		commandEcho 19314		A	Total load size: 4620 bytes.					
		commandEcho 19316		A	Verify cmdResult == 1 for each packet					
		commandEcho 19319		A						
		commandEcho 19320		A						
		commandEcho 19323		A						
		commandEcho 19325		A						
		commandEcho 19326		A						
		commandEcho 19329		A						
		commandEcho 19330		A						
		commandEcho 19332		A						
		commandEcho 19335		A						
		commandEcho 19336		A						
6										
6.1		commandEcho 19341		A	Expect to send 15 packets.		Y	2		
		commandEcho 19342		A	Total load size: 5892 bytes.					
		commandEcho 19344		A	Verify cmdResult == 1 for each packet					
		commandEcho 19347		A						
		commandEcho 19349		A						
		commandEcho 19350		A						
		commandEcho 19353		A						
		commandEcho 19354		A						
		commandEcho 19356		A						
		commandEcho 19359		A						
		commandEcho 19360		A						

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 5)

Step #	Title (Revision 4.34_V2.1)	Time Req	Command Description	Command Mnemonic	Telemetry Description	Telemetry Mnemonic	Expected Value
				WUEVHSTJ12 WUEVHSTJ13 WUEVHSTJ14 WUEVHSTJ15			
7	**Load compressall patch**						
7.1	Load opt_compressall patches part of optional Rev. J	5	addPatch	WUCMPRSJ01 WUCMPRSJ02 WUCMPRSJ03 WUCMPRSJ04 WUCMPRSJ05 WUCMPRSJ06 WUCMPRSJ07 WUCMPRSJ08			
8	**Load txings patch**						
8.1	Load opt_txings patches part of optional Rev. J	5	addPatch	WUTXINGJ01 WUTXINGJ02 WUTXINGJ03 WUTXINGJ04 WUTXINGJ05 WUTXINGJ06 WUTXINGJ07 WUTXINGJ08 WUTXINGJ09 WUTXINGJ10 WUTXINGJ11 WUTXINGJ12 WUTXINGJ13			

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 5)

Step #	Units	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
		commandEcho 19363		A						
		commandEcho 19365		A						
		commandEcho 19366		A						
		commandEcho 19369		A						
7										
7.1		commandEcho 19372		A	Expect to send 8 packets.		Y	2		
		commandEcho 19375		A	Total load size: 2352 bytes.					
		commandEcho 19377		A	Verify cmdResult == 1 for each packet					
		commandEcho 19378		A						
		commandEcho 19380		A						
		commandEcho 19383		A						
		commandEcho 19384		A						
		commandEcho 19387		A						
8										
8.1		commandEcho 19390		A	Expect to send 13 packets.		Y	2		
		commandEcho 19392		A	Total load size: 3432 bytes.					
		commandEcho 19395		A	Verify cmdResult == 1 for each packet					
		commandEcho 19397		A						
		commandEcho 19398		A						
		commandEcho 19401		A						
		commandEcho 19402		A						
		commandEcho 19404		A						
		commandEcho 19407		A						
		commandEcho 19409		A						
		commandEcho 19410		A						
		commandEcho 19412		A						
		commandEcho 19415		A						

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 6)

Step #	Title (Revision 4.34_V2.1)	Time Req	Command Description	Command Mnemonic	Telemetry Description	Telemetry Mnemonic	Expected Value
9	**Load deahktrip patch**						
9.1	Load opt.deahktrip patches part of optional Rev. J	5	addPatch	WUDHKTPJ01 WUDHKTPJ02 WUDHKTPJ03 WUDHKTPJ04 WUDHKTPJ05 WUDHKTPJ06 WUDHKTPJ07			
10	**Patch the version number**						
10.1	Load the version number patch	1	addPatch	WUFSV0003C			
11	**Dump Installed Patches**						
11.1	Dump Patchlist	1	dumpPatchlist	RU_0000001			
12	**Activate Patches**						
12.1	Set Boot Modifier off	0.1	DPA FS Boot Mod.	1BMODIBM(0)			
12.2	Set Warm Boot Flag on	0.1	DPA Warm Boot	1WRMBTSB(1)			
12.3	Halt BEP	0.1	Halt BEP	1RSETIRT(1)			
12.4	Restart BEP	1	Restart BEP	1RSETIRT(0)			

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 6)

Step #	Units	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
9										
9.1		commandEcho 19419 commandEcho 19421 commandEcho 19422 commandEcho 19425 commandEcho 19426 commandEcho 19428 commandEcho 19431		A A A A A A A	Expect to send 7 packets. Total load size: 1924 bytes. Verify cmdResult == 1 for each packet		Y	2		
10										
10.1		Verify cmdResult == 1 commandEcho 19437			Expect to send 1 packet. Total load size 16 bytes. Sets the version number to 60.		Y	2		
11										
11.1		Verify cmdResult == 1 commandEcho 65			bepReadReply ACIS EGSE verifies reply against file /home/jennyg/Data/Reference/PatchDumps/ wuhjk.acom_compare.dumpedPatches.1.dat		Y	2		
12										
12.1					disables uplink boot		Y	2		
12.2							Y	2		
12.3							Y	2		
12.4		bepStartupMessage			ACIS EGSE verifies "version" field == 60 decimal		Y	2		

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 7)

Step #	Title (Revision 4.34_V2.1)	Time Req	Command Description	Command Mnemonic	Telemetry Description	Telemetry Mnemonic	Expected Value
12.5	Verify BEP Boot	2.0					
12.6	Verify HW LEDs	2.0			BEP Select BEP Not in Reset BEP FIFO Not Full BEP FIFO Not Empty	1STAT4ST 1STAT5ST 1STAT6ST 1STAT7ST	0 or 1 1 1 0
12.7	Verify SW LEDs	2.0			BEP is running Science run status Watchdog boot BEP initialization	1STAT0ST 1STAT1ST 1STAT2ST 1STAT3ST	0 or 1 1 1 0
13.0	**Execute DEA HK run**						
13.1	Load Board 11 DEA HK	1	loadDeaBlock	WD00001024			
13.2	Start DEA Hkp run	1	startDEA	XDZ0000005			

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 7)

Step #	Units	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
12.5		Check bepStartupMessage: bepTickCounter < 10; version=60; watchdogFlag = 0 patchValidFlag =1 warmbootFlag = 1 Check swHousekeeping messages: startingBepTickCounter < 10; endingBepTickCounter= startingBepTickCounter+ ~645; version = 60		A A A A A B B A			Y	2		
12.6				2 2 2 2	0/1 indicates BEP A/B is selected 1 means BEP not in reset 1 means FIFO not full 0 means FIFO empty		Y	2		
12.7				2 2 2 1	this bit toggles to indicate BEP is running 1 means science idle 1 means no watchdog boot 0 means BEP SW is running		Y	2		
13.0										
13.1		Verify cmdResult == 1 commandEcho 225		B	Load Fullhouse DEA housekeeping parameter block into slot 4			1or2		
13.2		Verify cmdResult == 1 commandEcho 18 confirm DEAhk values		B				1or2		

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 8)

Step #	Title (Revision 4.34_V2.1)	Time Req	Command Description	Command Mnemonic	Telemetry Description	Telemetry Mnemonic	Expected Value
14	**Contingency FIFO Clear**						
14.1-C	Fix FIFO Command	1	clearFIFO	FF_FIXFIFO			
14.2-C	Verify HW LEDs	2.0			BEP FIFO Not Full BEP FIFO Empty	1STAT6ST 1STAT7ST	1 0
	Total Time:	55.3					

Table 1: ACIS Flight Software Standard Patch H Optional Patch J (Page 8)

Step #	Units	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
14										
14.1-C		Verify: cmdResult = NO_HANDLER commandEcho 0 UNUSED		A 2 2	Expect to send 1 packet of 512 bytes		Y Y Y	2 2 2		
14.2-C				2 2	1 means FIFO not full 0 means FIFO empty					