

ACC Memory Patch
 File: H_CRP_SYS_PATA.xls
 Author: F. Keck



Procedure Summary

Objectives

Perform ACC memory patches for all 4 images. Activities are spread over 4 DTCPs.

Summary of Constraints

Each ACC reboot leads to SA(S)M, which means that the LGA must be used and a maximum of 5k TM rate will be available in this case. Therefore the TM rate must be changed to 5k via LGA before each ACC reboot.

Only images of the active ACC PM can be updated.

The patch activities must be coordinated with the SGS (e.g. mission planning shall not plan instrument activities during patch DTCPs).
 For the PM reset and switchover DTCPs no ACMS commands must be in the MTL.
 Some DTCPs require pass extensions.

This procedure assumes that the current OBSW images are available on ground (dumped by H_FCP_OBS_2242).

Spacecraft Configuration

Start of Procedure

Mode = NOM/SCM
 Instruments must be in standby/safemode

End of Procedure

Mode = NOM/SCM
 Instruments in standby/safemode

Reference File(s)

Input Command Sequences

Output Command Sequences

HCYPATA

Referenced Displays

ANDs GRDs SLDs
 (None)

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
04/03/09	2.1	1	Created	F. Keck	
17/03/09		1.01	Validation : Improvement using H-SVT-3 outcome	F. Keck	
25/03/09		1.02	Validation : Replacing ACC PM Switchover activities by procedure call	F. Keck	
25/03/09	2.2	1.03	Validation : Leaving MTL fully enabled, because it's required by some subsystem procedures	F. Keck	

Status : Version 4 - Unchanged
 Last Checkin: 13/07/09

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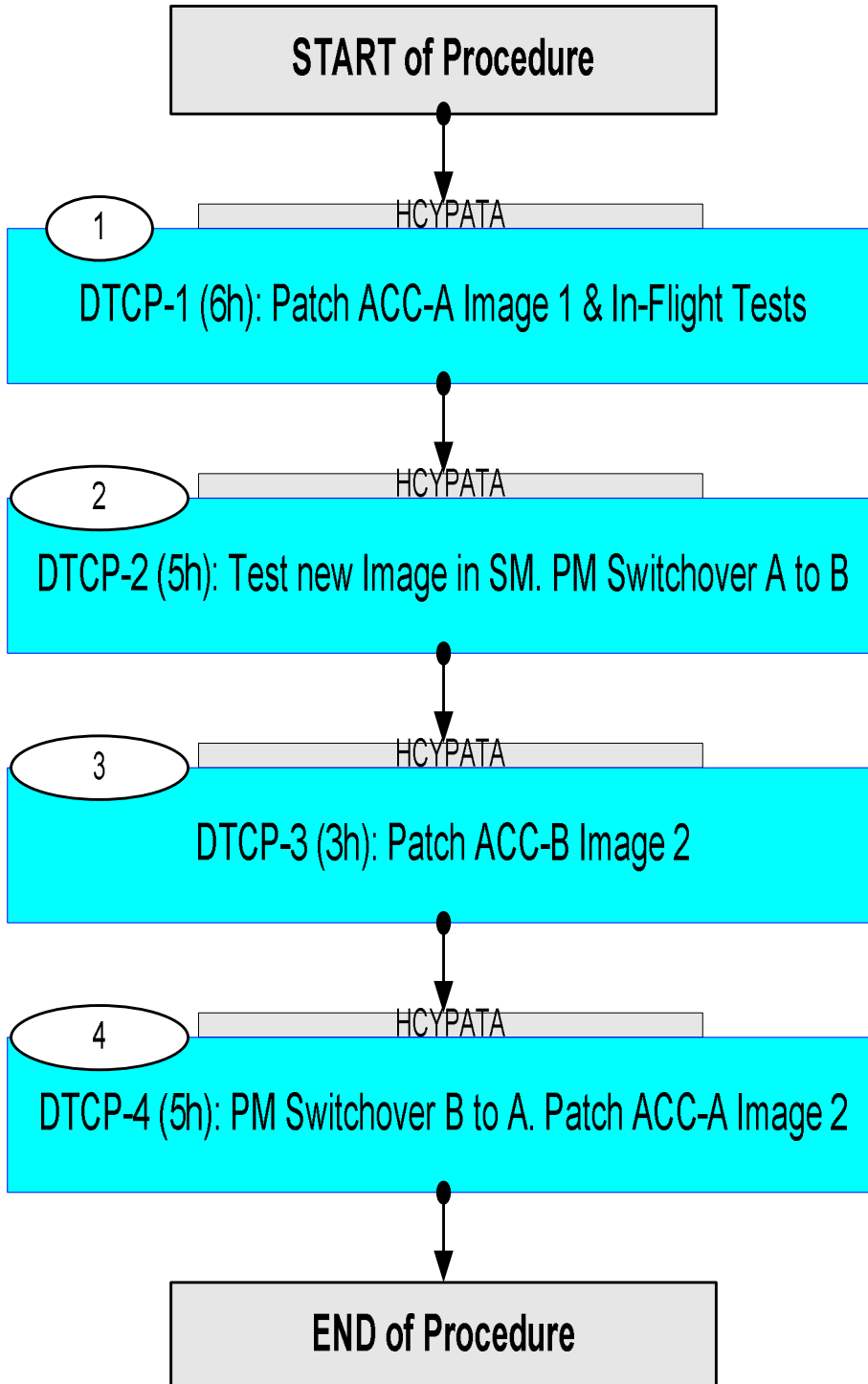


15/04/09	2.3	2	Database update	F. Keck	
07/07/09		3	Update to handle a severe patch	F. Keck	
13/07/09	2.5	4	Update of DTCP strategy after experience of in-flight-patch	F. Keck	

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Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
Beginning of Procedure				
<p><i>TC Seq. Name : H_CYPATA (ACC Memory Patch)</i></p> <p><i>TimeTag Type: N</i> <i>Sub Schedule ID:</i></p> <p style="text-align: center;">□</p>				
1		<i>DTCP-1 (6h): Patch ACC-A Image 1 & In-Flight Tests</i>		Next Step: 2
		<p>Activities:</p> <ul style="list-style-type: none"> - Patch SGM (optional) - Patch ACC-A image 1 - Reboot ACC-A (image 1, nominal) - In-Flight Tests of new software - Recovery to SCM <p>Pass Extension required (6h DTCP). No further impact on the nominal DTCP activities.</p>		
1.1		<i>Option: Prepare SGMs for new Software</i>		□
		<p>Should the new OBSW store additional parameters in the SGM, the SGM must be prepared before rebooting with the new software.</p> <p>This is only valid if the new parameters are append to the current list of parameters.</p> <p>To avoid an initialisation of the new parameters with zero values (a warm reboot will try to initialise the new parameters by reading from SGM), the new SGM area (currently filled with zeros) must be patched with the default values.</p>		
		<p>These default values must be provided together with the new software image to run following procedure:</p> <p>H_FCP_OBS_2429 Patch and dump ACC SGM memory area (for ACC severe patch)</p> <p>Both SGMs must be patched.</p>		
1.2		<i>Apply patch to ACC-A Image 1</i>		□
		While patching image 1, image 2 must be selected to handle properly an unexpected reboot.		
		<p>Execute Telecommand</p> <p style="text-align: center;">Select ACC A Image 2</p> <p><i>TC Control Flags :</i></p> <p style="text-align: center;">GBM IL DSE --Y -- ---</p> <p><i>Subsch. ID : 20</i> <i>Det. descr. : TC(2,3) - Select ACC A Image 2 - Mission Specific</i></p>	ACY47109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry ACC_A_IMAGE AEE8H050	= Image 2	(None)
		Execute Procedure: H_FCP_OBS_2210 Load ACC OBS in EEPROM		
		Dump of the checksums is included in the procedure above. Additional the new ACC-A Image 1 can be dumped by following procedure.		
		Execute Procedure: H_FCP_OBS_2242 Execute dump of ACC PM EEPROM		
1.3		<i>Change TM rate to 5k</i>		<input type="checkbox"/>
		There is a high chance that medium TM rate can be supported by the LGA1. In this case use the DTCP commands to change the TM rate from high back to medium.		
		Execute Procedure: H_CRP_DHS_HKCY Cycle through HK / Periodic / Diag CDMU packets		
		Execute Procedure: H_CRP_TTC_TUL2 Tx and TM encoder in use configuration for LR2		
		If not enabled yet, enable Ranging and inform ECC to start Ranging.		
		Execute Procedure: H_FCP_TTC_TURM Transponder in use Ranging Activation/Deactivation		
1.4		<i>Switch from MGA to LGA1</i>		<input type="checkbox"/>
		The sequences of following procedures contain MTL commands.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		For following procedure select "Sun acquisition otherwise (SUN1)" RFDN SWS position BBAB D/L path: TX1 - TWT1 - LGA1 U/L path: LGA1 - RX1 (MGA - RX2)		
		Execute Procedure: H_FCP_TTC_SWX Configure RFDN switches		
		Execute Procedure: H_FCP_TTC_TU01 Switch ON TX and TWTA in use		
1.5		<i>Slew to Sun Pointing Attitude</i>		<input type="checkbox"/>
		To safe fuel and minimise the thruster impact on the orbit by the transition to SAM, the slew to sun pointing will be performed while in SCM.		
		TPFs required from FD to perform this step.		
		Execute Procedure: H_FCP_AOC_3S01 Perform SCM Fine Pointing		
1.6		<i>Disable Event Action for AIR</i>		<input type="checkbox"/>
		To avoid a S/C reconfiguration (and instrument safemodes) in case of an AIR, the Event Action for AIR will be disabled.		
		Execute Procedure: H_FCP_DHS_3049 Event-action table maintenance		
1.7		<i>ACC PM Reconfiguration (A to A, Image 1)</i>		<input type="checkbox"/>
		Execute Telecommand Select ACC A Image 1 TC Control Flags : GBM IL DSE --Y -- -- Subsch. ID : 20 Det. descr. : TC(2,3) - Select ACC A Image 1 - Mission Specific	ACY46109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Procedure: H_CRP_AOC_XA2C Recovery from SIR		
		The SCM slew shall bring the MGA back to DTCP attitude (or this will be done later after the in-flight tests).		
1.11		<i>In Flight Tests of new Software</i>		<input type="checkbox"/>
		Depending on the fixes and features of the new software, the in-Flight tests can start.		
		After the tests a SCM slew shall bring the S/C back to DTCP attitude.		
1.12		<i>Enable Event Action for AIR</i>		<input type="checkbox"/>
		Execute Procedure: H_FCP_DHS_3049 Event-action table maintenance		
1.13		<i>Switch from LGA1 to MGA</i>		<input type="checkbox"/>
		Inform ECC to stop Ranging and disable Ranging.		
		Execute Procedure: H_FCP_TTC_TURM Transponder in use Ranging Activation/Deactivation		
		The sequences of following procedures contain MTL commands.		
		For following procedure select "Nominal/Earth acquisition (NOM1)" RFDN SWs position ABAB D/L path: TX1 - TWTAL - MGA U/L path: MGA - RX1 (LGA1 - RX2)		
		Execute Procedure: H_FCP_TTC_SWX Configure RFDN switches		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Procedure: H_FCP_TTC_TU01 Switch ON TX and TWTA in use		
1.14		<i>Between the DTCPs</i>		<input type="checkbox"/>
		Between the DTCPs the new software will be in use. Following safety fallbacks are active: - Image A2 (old s/w) is pre-selected - Both ACC-B images still on old s/w => In case of FDIR 3a, 3b or 4 the old s/w will be in use again. Comment: The MTL will ensure that the TM rate will be at medium rate for the next DTCP.		
2		<i>DTCP-2 (5h): Test new Image in SM. PM Switchover A to B</i>		Next Step: 3
		Activities: - SM by rebooting ACC-A (image 1, survival) - SM recovery includes the switchover to ACC-B - Recovery to SCM - Patch ACC-B image 1 Pass Extension required (5h DTCP). No further impact on the nominal DTCP activities.		
2.1		<i>Survival Mode and PM Switchover</i>		<input type="checkbox"/>
		Execute Procedure: H_CRP_SYS_PMSA ACC PM Switchover		
		ACC-B will be in use with the old software.		
2.2		<i>Apply patch to ACC-B Image 1</i>		<input type="checkbox"/>
		While patching image 1, image 2 must be selected to handle properly an unexpected reboot.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <div style="text-align: right;">Select ACC B Image 2</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 20 Det. descr. : TC(2,3) - Select ACC B Image 2 - Mission Specific	ACY49109	
		Verify Telemetry <div style="text-align: center;">ACC_B_IMAGE AEE8J050</div>	= Image 2	(None)
		Execute Procedure: H_FCP_OBS_2210 Load ACC OBS in EEPROM		
		Dump of the checksums is included in the procedure above. Additional the new ACC-B Image 1 can be dumped by following procedure (skip if running out of time).		
		Execute Procedure: H_FCP_OBS_2242 Execute dump of ACC PM EEPROM		
		Execute Telecommand <div style="text-align: right;">Select ACC B Image 1</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 20 Det. descr. : TC(2,3) - Select ACC B Image 1 - Mission Specific	ACY48109	
		Verify Telemetry <div style="text-align: center;">ACC_B_IMAGE AEE8J050</div>	= Image 1	(None)
3		DTCP-3 (3h): Patch ACC-B Image 2		Next Step: 4
		Activities: - Patch ACC-B image 2 No Pass Extension required (3h DTCP). No further impact on the nominal DTCP activities.		
3.1		Apply patch to ACC-B Image 2		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Procedure: H_FCP_OBS_2210 Load ACC OBS in EEPROM		
		Dump of the checksums is included in the procedure above. Additional the new ACC-B Image 2 can be dumped by following procedure (skip if running out of time).		
		Execute Procedure: H_FCP_OBS_2242 Execute dump of ACC PM EEPROM		
4		<i>DTCP-4 (5h): PM Switchover B to A. Patch ACC-A Image 2</i>		Next Step: END
		Activities: - ACC-B survival - Switchover ACC-B survival to ACC-A nominal - Recovery to SCM - Patch ACC-A image 2 Pass Extension required (5h DTCP). No further impact on the nominal DTCP activities.		
4.1		<i>Option: Check SGMs</i>		<input type="checkbox"/>
		If a severe patch was performed in DTCP-1, the new values in the SGMs should be checked again before bringing the new software back in use: H_FCP_OBS_2429 Patch and dump ACC SGM memory area (for ACC severe patch)		
4.2		<i>PM Switchover B to A</i>		<input type="checkbox"/>
		Execute Procedure: H_CRP_SYS_PMSA ACC PM Switchover		
		ACC-A will be in use with the new software.		
4.3		<i>Apply patch to ACC-A Image 2</i>		<input type="checkbox"/>

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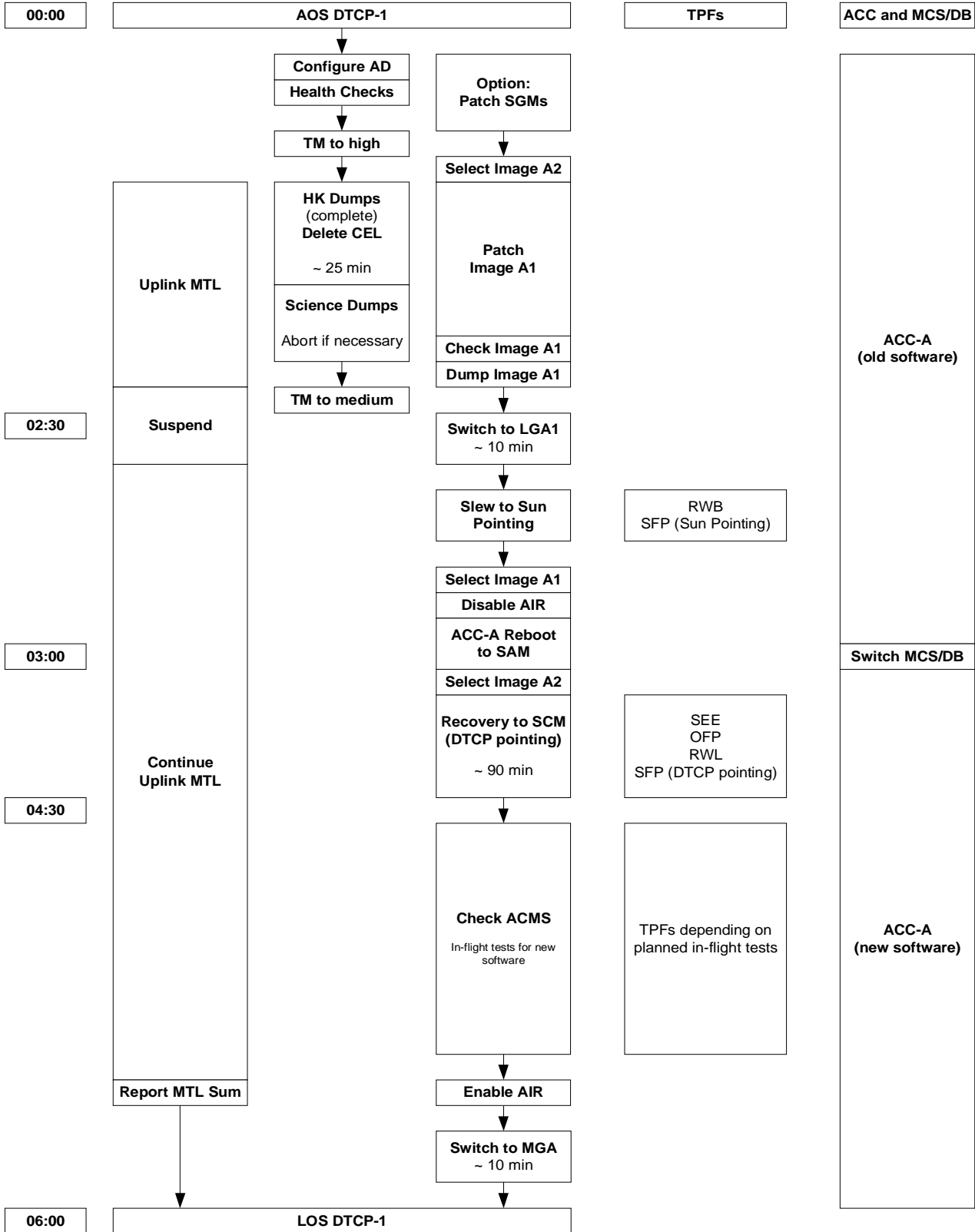


Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Procedure: H_FCP_OBS_2210 Load ACC OBS in EEPROM		
		Dump of the checksums is included in the procedure above. Additional the new ACC-A Image 2 can be dumped by following procedure.		
		Execute Procedure: H_FCP_OBS_2242 Execute dump of ACC PM EEPROM		
End of Procedure				

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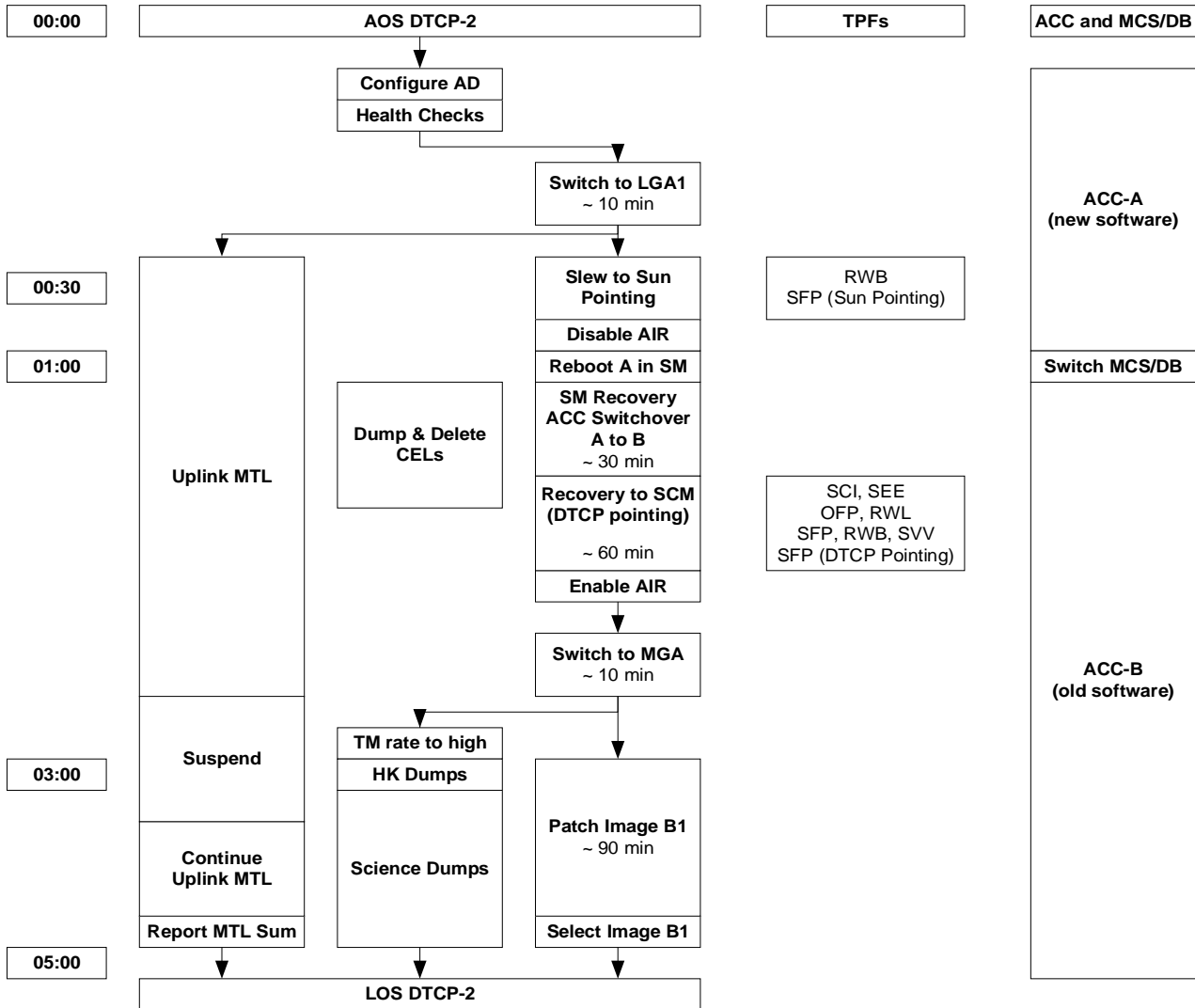
Timeline Day 1



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Timeline Day 2



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Timeline Day 4

