

SWA Power Off HIS  
 File: IA-FCP-007.xls  
 Author: daniel lakey




**Procedure Summary**

**Objectives**

Power Off SWA HIS

**Summary of Constraints**

This will turn off the Decontamination heaters, if they are currently on.

DO NOT ALLOW AIAF007B TO EXECUTE AROUND THE TIME OF A SPICE DECONTAMINATION HEATER SWITCHING:  
 ATCF400A SPICE\_OU\_DEC\_HTR\_ON  
 ATCF400B SPICE\_CE\_DC\_N\_HTR\_ON  
 ATCF400E SPICE\_CE\_DC\_R\_HTR\_ON  
 ATCF401A SPICE\_OU\_DEC\_HTR\_OFF  
 ATCF401B SPICE\_CE\_DC\_N\_HT\_OFF  
 ATCF401E SPICE\_CE\_DC\_R\_HT\_OFF

The following minimum delay between sending the DPU HPC Off command and switch off of the different SWA sensors LCLs shall be respected:  
 - HIS: 1 min

**Spacecraft Configuration**

Start of Procedure

End of Procedure

**Reference File(s)**

Input Command Sequences

Output Command Sequences

AIAF007A  
 AIAF007C  
 AIAF007B

**Referenced Displays**

ANDs GRDs SLDs  
 (None)

**Configuration Control Information**

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
22/02/2018		0.01	SWA Feb inputs, part 2	dlakey	M7
12/03/2018	0.2				M7
19/03/2018		0.02	Split HIS Power Off into 2 sequences (for SWA DPU and Platform LCL/Relay)	dlakey	M7
24/04/2018		0.03	Added constraints on power up/down timing	dlakey	M7

SWA Power Off HIS  
 File: IA-FCP-007.xls  
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27/04/2018		1	Updates following comments from SWA 25/04/2018	dlakey	M7
18/06/2018	0.3				M7
17/09/2018		1.01	Moved to PFM DB	dlakey	M7
26/02/2019		2	Updated to fix flow chart, added safety TCs for HIS on/off	dlakey	M7
18/03/2019		1			M7
16/08/2019		2			M7
15/01/2020		2.01	SOL_FCR-251 - Refresh SWA/SoloHI to fix clean-report issues 01320PFM	dlakey	M7
20/01/2020		3			M7

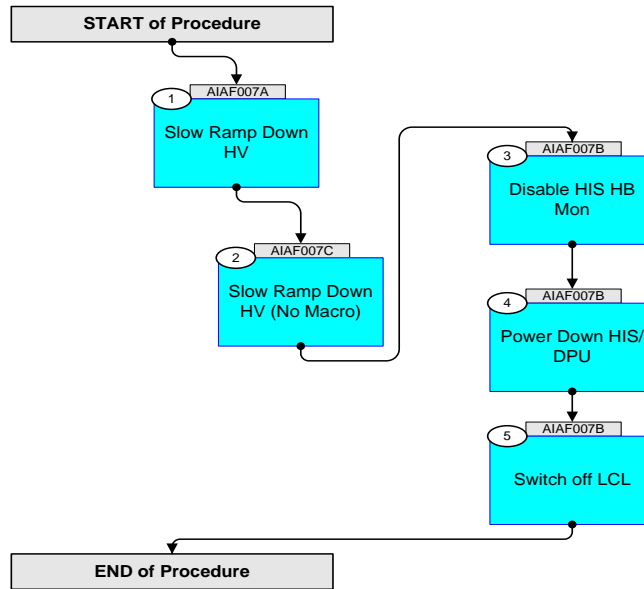
SWA Power Off HIS  
File: IA-FCP-007.xls  
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solar orbiter



### Procedure Flowchart Overview



SWA Power Off HIS File: IA-FCP-007.xls Author: daniel lakey	 
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Step	Label/Time	Activity/Remarks/Branch	CK	Display
<b>Beginning of Procedure</b>				
Beginning of Sequence				
<b>AIAF007A</b>		<b>SWA Power Off HIS HV</b> SeqFlags [ Crit/Plan/Stdalone/Sched ] : NSYN Forced Subschedule : SWA (109) TimeTag type : B		
1		<b>Slow Ramp Down HV</b>  <i>Next step(s):</i> -> 2		
	+00.00.00	<b>Execute Telecommand</b> <b>ZIA58941 SWA_TC_HIS_SAFE_NOMINAL</b> TC Control Flags: GBM IL DSE --Y NC ---		
<b>AIAF007A</b> End of Sequence				
Beginning of Sequence				
<b>AIAF007C</b>		<b>SWA PwrOffHisNoMacro</b> SeqFlags [ Crit/Plan/Stdalone/Sched ] : NSYN Forced Subschedule : SWA (109) TimeTag type : B		
2		<b>Slow Ramp Down HV (No Macro)</b>  <i>Next step(s):</i> -> 3		
	+00.00.00	<b>Execute Telecommand</b> <b>ZIA58917 SWA_TC_HIS_MODE</b> TC Control Flags: GBM IL DSE --Y NC ---  Command Parameters : <b>PIA59011 MODE = HVSTDBY</b>		
	+00.00.10	<b>Execute Telecommand</b> <b>ZIA58908 SWA_TC_HIS_DAC_SET</b> TC Control Flags: GBM IL DSE --Y NC ---  Command Parameters : <b>PIA59050 DAC = PA (Def)</b> <b>PIA60354 TARGET = 0 &lt;dec&gt;</b> <b>PIA60353 STEP = 12 &lt;dec&gt;</b> <b>PIA60345 DWELL = 10 &lt;dec&gt;</b> <b>PIA59054 RANGE = NONE (Def)</b>		

SWA Power Off HIS  
 File: IA-FCP-007.xls  
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Step	Label/Time	Activity/Remarks/Branch	CK	Display
	+00.00.10	<b>Execute Telecommand</b> <b>ZIA58913 SWA_TC_HIS_MACRO_START</b> TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : <b>PIA60001 MACRO = 20 &lt;dec&gt;</b>		
	+00.40.00	<b>Execute Telecommand</b> <b>ZIA58913 SWA_TC_HIS_MACRO_START</b> TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : <b>PIA60001 MACRO = 21 &lt;dec&gt;</b>		
	+00.04.00	<b>Execute Telecommand</b> <b>ZIA58907 SWA_TC_HIS_HV_PWR</b> TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : <b>PIA59000 STATE = DISABLE</b> <b>PIA59006 SUPPLY = PA</b>		
<b>AIAF007C</b>		End of Sequence		
<b>AIAF007B</b>		Beginning of Sequence <b>SWA Power Off HIS Pr</b> SeqFlags [ Crit/Plan/Stdalone/Sched ] : NSYN Forced Subschedule : SWA (109) TimeTag type : B		
<b>3</b>		<b>Disable HIS HB Mon</b>  <b>Next step(s):</b> -> 4		
		DO NOT ALLOW AIAF007B TO EXECUTE AROUND THE TIME OF A SPICE DECONTAMINATION HEATER SWITCHING: ATCF400A SPICE_OU_DEC_HTR_ON ATCF400B SPICE_CE_DC_N_HTR_ON ATCF400E SPICE_CE_DC_R_HTR_ON ATCF401A SPICE_OU_DEC_HTR_OFF ATCF401B SPICE_CE_DC_N_HT_OFF ATCF401E SPICE_CE_DC_R_HT_OFF		
		Disable DPU HIS HB monitor		

SWA Power Off HIS  
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Step	Label/Time	Activity/Remarks/Branch	CK	Display
	+00.00.00	<b>Send SWA_TC_PARS_MON_DIS</b> <b>ZIA58064 SWA_TC_PARS_MON_DIS</b> TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : <b>PIA60452 NUM_OF_MON_ID = 1 &lt;dec&gt;</b> <b>PIA60449 MON_ID = HISHEARTB_MI &lt;hex&gt;</b>		
4		<b>Power Down HIS/DPU</b>  <b>Next step(s):</b> -> 5		
		Power down HIS for DPU to disable HIS SpaceWire		
	+00.00.01	<b>Send SWA_TC_HIS_OFF</b> <b>ZIA58730 SWA_TC_HIS_OFF</b> TC Control Flags: GBM IL DSE --Y NC ---		
5		<b>Switch off LCL</b>  <b>Next step(s):</b> -> END		
		OBC to switch power off to HIS  Note; this will temporarily switch off the decontamination heaters, if on, as they share an LCL.		
		Nominally there should be an hour between the A and B sequence, to allow HIS to ramp down the HV Element		
	+00.00.01	<b>Execute Telecommand</b> <b>ZCS2209W Decont. HIS A LCL Off</b> TC Control Flags: GBM IL DSE --Y NC ---		

SWA Power Off HIS  
 File: IA-FCP-007.xls  
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Step	Label/Time	Activity/Remarks/Branch	CK	Display
	+00.00.01	<b>Execute Telecommand</b> <b>ZCS2Z09Y Decont. HIS B LCL Off</b> TC Control Flags: GBM IL DSE --Y NC ---		
		Verify LCL & SSS status		
		<b>Verify Telemetry</b> <b>NPWD0050 A_LCL3_09 Decon_HTR1 ST</b> = OFF		(None)
		<b>Verify Telemetry</b> <b>NPWT0050 B_LCL3_09 Decon_HTR1 ST</b> = OFF		(None)
		Verify Relay Status		
		Both Relays in same position		
		<b>Verify Telemetry</b> <b>NBCD0033 SWA-HIS Return_1</b> = Pos 1		(None)
		<b>Verify Telemetry</b> <b>NBCD0043 SWA-HIS Return_2</b> = Pos 1		(None)
		<b>Verify Telemetry</b> <b>NCD2Z010 OBCA SWA-HIS Return_1</b> = Pos 1		(None)
		<b>Verify Telemetry</b> <b>NCD2Z01A OBCA SWA-HIS Return_2</b> = Pos 1		(None)
		EITHER		
		<b>Verify Telemetry</b> <b>NBCD0034 SWA-HIS Nominal</b> = On		(None)
		<b>Verify Telemetry</b> <b>NCD2Z011 OBCA SWA-HIS Nominal</b> = On		(None)
		OR		

SWA Power Off HIS  
 File: IA-FCP-007.xls  
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Step	Label/Time	Activity/Remarks/Branch	CK	Display
		<b>Verify Telemetry</b> <b>NBCD1046</b> SWA-HIS Redundant = On		(None)
		<b>Verify Telemetry</b> <b>NCD2Z01D</b> OBCA SWA-HIS Redundant = On		(None)
		Switch off Relays		
		Set Relay switch positions SWA-HIS Return_1 = RB1_5_OFF SWA-HIS Return_2 = RB2_5_ON SWA-HIS Nominal = RB1_6_OFF SWA-HIS Redundant = RB2_6_OFF  <i>Note; we switch off HIS Redundant to ensure clean configuration</i>		
	+00.00.01	<b>Execute Telecommand</b> <b>ZCS2Z09D</b> RIU SHP SWA_HIS_Ret1Pos2 TC Control Flags: GBM IL DSE --Y NC ---		
	+00.00.01	<b>Execute Telecommand</b> <b>ZCS2Z09E</b> RIU SHP SWA_HIS_Ret2Pos1 TC Control Flags: GBM IL DSE --Y NC ---		
	+00.00.01	<b>Execute Telecommand</b> <b>ZCS2Z09H</b> RIU SHP SWA_HIS_NominOFF TC Control Flags: GBM IL DSE --Y NC ---		
	+00.00.01	<b>Execute Telecommand</b> <b>ZCS2Z09K</b> RIU SHP SWA_HIS_RedunOFF TC Control Flags: GBM IL DSE --Y NC ---		
		Verify Relay Status		
		Both Relays in different position		



SWA Power Off HIS  
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Step	Label/Time	Activity/Remarks/Branch	CK	Display
		<b>Verify Telemetry</b> NBCD0033 SWA-HIS Return_1 = Pos 2		(None)
		<b>Verify Telemetry</b> NBCD0043 SWA-HIS Return_2 = Pos 1		(None)
		<b>Verify Telemetry</b> NCD2Z010 OBCA SWA-HIS Return_1 = Pos 2		(None)
		<b>Verify Telemetry</b> NCD2Z01A OBCA SWA-HIS Return_2 = Pos 1		(None)
		Both Nominal and Redundant OFF		
		<b>Verify Telemetry</b> NBCD0034 SWA-HIS Nominal = Off		(None)
		<b>Verify Telemetry</b> NCD2Z011 OBCA SWA-HIS Nominal = Off		(None)
		<b>Verify Telemetry</b> NBCD1046 SWA-HIS Redundant = Off		(None)
		<b>Verify Telemetry</b> NCD2Z01D OBCA SWA-HIS Redundant = Off		(None)
		Switch Relay Box LCLs back on		
		Both are always commanded on; the relay state is used to ensure electrical isolation of HIS		
	+00.00.01	<b>Execute Telecommand</b> ZCS2Z09V Decont. HIS A LCL On TC Control Flags: GBM IL DSE --Y NC ---		
	+00.00.01	<b>Execute Telecommand</b> ZCS2Z09X Decont. HIS B LCL On TC Control Flags: GBM IL DSE --Y NC ---		

SWA Power Off HIS File: IA-FCP-007.xls Author: daniel lakey	 
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Step	Label/Time	Activity/Remarks/Branch	CK	Display
		Verify LCL & SSS status		
		Verify Telemetry NPWD0050 A_LCL3_09 Decon_HTR1 ST = ON		(None)
		Verify Telemetry NPWT0050 B_LCL3_09 Decon_HTR1 ST = ON		(None)
		Verify Telemetry NPWD0010 A_LCL1_09 Decon_HTR2 ST = ON		(None)
		Verify Telemetry NPWT0010 B_LCL1_09 Decon_HTR2 ST = ON		(None)
<b>AIAF007B</b>		End of Sequence		
<b>End of Procedure</b>				