

SWA Power On HIS File: IA-FCP-017.xls Author: daniel lakey	
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Procedure Summary

Objectives

Power On SWA HIS

Summary of Constraints

This will briefly remove power to the Relay Box LCL, which power the decontamination heaters. The RB must be unpowered when moving the relays.

After DPU being in OPS mode, the following minimum delays before switching on the different SWA sensors LCLs shall be respected:
 - HIS: 45 min

Spacecraft Configuration

Start of Procedure

End of Procedure

Reference File(s)

Input Command Sequences

Output Command Sequences
 AIAF017A
 AIAF017B

Referenced Displays

ANDs	GRDs	SLDs
DIAA0007		(None)
DIAA0008		

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
24/04/2018		0.02	Added constraints on power up/down timing	dlakey	M7
27/04/2018		1	Updates following comments from SWA 25/04/2018	dlakey	M7
18/06/2018	0.3				M7
17/09/2018		2	Updates post IGST-4_2	dlakey	M7
17/09/2018		2.01	Moved to PFM DB	dlakey	M7
26/02/2019		3	Updated to fix flow chart, added safety TCs for HIS on/off	dlakey	M7
18/03/2019		1			M7

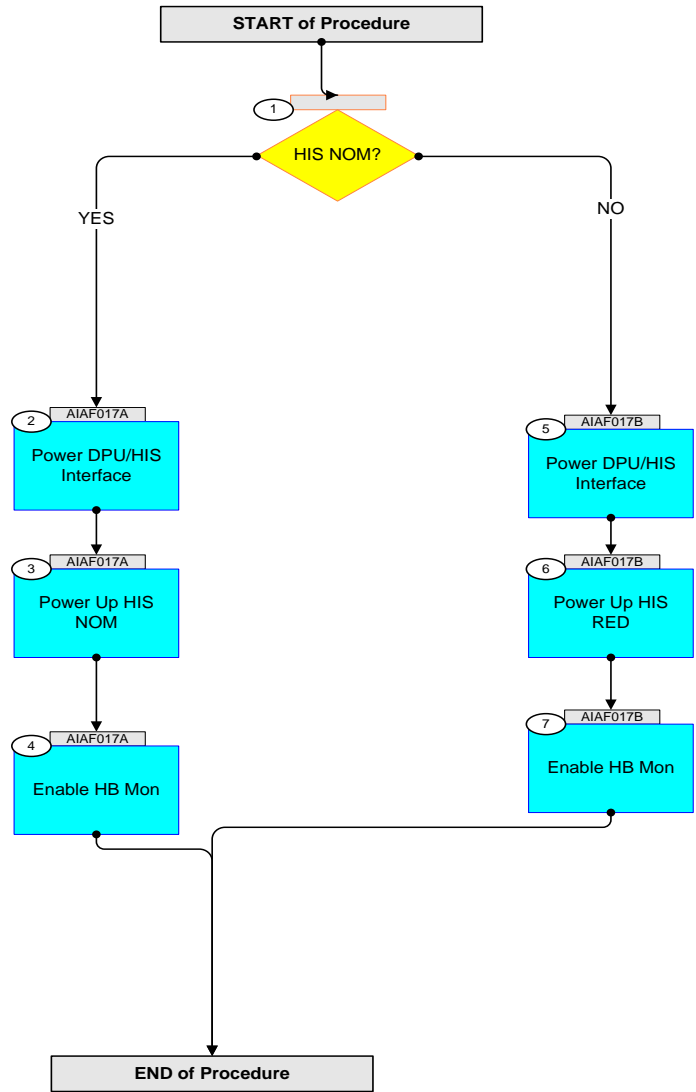
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16/08/2019	2				M7
15/01/2020	3.01	SOL_FCR-251 - Refresh SWA/SoloHI to fix clean-report issues 01320PFM		dlakey	M7
20/01/2020	3				M7

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Procedure Flowchart Overview



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Step	Label/Time	Activity/Remarks/Branch	CK	Display
Beginning of Procedure				
Beginning of Sequence				
TimeTag type : B				
1		HIS NOM? Next step(s): -> 2 YES -> 5 NO		
End of Sequence				
Beginning of Sequence				
AIAF017A		SWA HIS-N ON SeqFlags [Crit/Plan/Stdalone/Sched] : NSYN Forced Subschedule : SWA (109) TimeTag type : B		
2		Power DPU/HIS Interface Next step(s): -> 3		
		Send DPU command to power on HIS		
	+00.00.00	Send SWA_TC_HIS_ON ZIA58729 SWA_TC_HIS_ON TC Control Flags: GBM IL DSE --Y NC ---		
		Wait 1 second for the DPU to enable HIS SpaceWire		
		Send DPU command to power on HIS		
	+00.00.01	Send SWA_TC_HIS_ON ZIA58729 SWA_TC_HIS_ON TC Control Flags: GBM IL DSE --Y NC ---		
		Wait 1 second for the DPU to enable HIS SpaceWire		

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Step	Label/Time	Activity/Remarks/Branch	CK	Display
		The 2nd TC is expected to fail, unless the 1st TC was lost on the SpW bus. It is double commanded due to criticality.		
		Verify Packet Reception YIA58019 SWA_TM_CMD_FACP_HIS_NPLAUS_TC TM(1,2), APID 1585 (99/1) PI1=43011 PI2=0		
3		Power Up HIS NOM <i>Next step(s):</i> -> 4		
		Relay Box LCL must be off before switching		
	+00.00.01	Execute Telecommand ZCS2Z09W Decont. HIS A LCL Off TC Control Flags: GBM IL DSE --Y NC ---		
	+00.00.01	Execute Telecommand ZCS2Z09Y Decont. HIS B LCL Off TC Control Flags: GBM IL DSE --Y NC ---		
		Verify LCL & SSS status		
		Verify Telemetry NPWD0050 A_LCL3_09 Decon_HTR1 ST = OFF		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NPWT0050 B_LCL3_09 Decon_HTR1 ST = OFF		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NPWD0010 A_LCL1_09 Decon_HTR2 ST = OFF		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NPWT0010 B_LCL1_09 Decon_HTR2 ST = OFF		AND=DIAA0007 PKT=YCS1Z154
		Verify Relay Status		

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Step	Label/Time	Activity/Remarks/Branch	CK	Display
		Both Relays in different position		
		Verify Telemetry NBCD0033 SWA-HIS Return_1 = Pos 2		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NBCD0043 SWA-HIS Return_2 = Pos 1		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NCD2Z010 OBCA SWA-HIS Return_1 = Pos 2		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NCD2Z01A OBCA SWA-HIS Return_2 = Pos 1		AND=DIAA0007 PKT=YCS1Z154
		Both Nominal and Redundant OFF		
		Verify Telemetry NBCD0034 SWA-HIS Nominal = Off		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NCD2Z011 OBCA SWA-HIS Nominal = Off		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NBCD1046 SWA-HIS Redundant = Off		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NCD2Z01D OBCA SWA-HIS Redundant = Off		AND=DIAA0007 PKT=YCS1Z154
		Switch On Relays		
		Set the following configuration: SWA-HIS Return_1 = RB1_5_ON SWA-HIS Return_2 = RB2_5_ON SWA-HIS Nominal = RB1_6_ON		
	+00.00.01	Execute Telecommand ZCS2Z09C RIU SHP SWA_HIS_Ret1Pos1 TC Control Flags: GBM IL DSE --Y NC ---		

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Step	Label/Time	Activity/Remarks/Branch	CK	Display
	+00.00.01	Execute Telecommand ZCS2Z09E RIU SHP SWA_HIS_Ret2Pos1 TC Control Flags: GBM IL DSE --Y NC ---		
	+00.00.01	Execute Telecommand ZCS2Z09K RIU SHP SWA_HIS_RedunOFF TC Control Flags: GBM IL DSE --Y NC ---		
	+00.00.01	Execute Telecommand ZCS2Z09G RIU SHP SWA_HIS_NominON TC Control Flags: GBM IL DSE --Y NC ---		
		Verify Relay Status		
		Both Relays in same position		
		Verify Telemetry NBCD0033 SWA-HIS Return_1 = Pos 1		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NBCD0043 SWA-HIS Return_2 = Pos 1		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NCD2Z010 OBCA SWA-HIS Return_1 = Pos 1		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NCD2Z01A OBCA SWA-HIS Return_2 = Pos 1		AND=DIAA0007 PKT=YCS1Z154
		HIS NOM Powered		
		Verify Telemetry NBCD0034 SWA-HIS Nominal = On		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NCD2Z011 OBCA SWA-HIS Nominal = On		AND=DIAA0007 PKT=YCS1Z154
		HIS REDUNDANT UNPOWERED		

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Step	Label/Time	Activity/Remarks/Branch	CK	Display
		Verify Telemetry NBCD1046 SWA-HIS Redundant = Off		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NCD2Z01D OBCA SWA-HIS Redundant = Off		AND=DIAA0007 PKT=YCS1Z154
		Power Relay Box LCL Both are always powered		
	+00.00.01	Execute Telecommand ZCS2Z09V Decont. HIS A LCL On TC Control Flags: GBM IL DSE --Y NC ---		
	+00.00.01	Execute Telecommand ZCS2Z09X Decont. HIS B LCL On TC Control Flags: GBM IL DSE --Y NC ---		
		Verify LCL & SSS status		
		Verify Telemetry NPWD0050 A_LCL3_09 Decon_HTR1 ST = ON		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NPWT0050 B_LCL3_09 Decon_HTR1 ST = ON		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NPWD0010 A_LCL1_09 Decon_HTR2 ST = ON		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NPWT0010 B_LCL1_09 Decon_HTR2 ST = ON		AND=DIAA0007 PKT=YCS1Z154
	+00.00.35	Execute Telecommand ZIA58931 SWA_TC_HIS_HK_INT TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : PIA59056 SID = BOOT_TREP PIA60361 INTERVAL = 1 <hex>		

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Step	Label/Time	Activity/Remarks/Branch	CK	Display
	+00.00.35	Execute Telecommand ZIA58917 SWA_TC_HIS_MODE TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : PIA59011 MODE = LVENG		
	+00.00.15	Execute Telecommand ZIA58917 SWA_TC_HIS_MODE TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : PIA59011 MODE = HVSTDBY		
	+00.00.01	Execute Telecommand ZIA58907 SWA_TC_HIS_HV_PWR TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : PIA59000 STATE = ENABLE (Def) PIA59006 SUPPLY = IRAP (Def)		
	+00.00.01	Execute Telecommand ZIA58908 SWA_TC_HIS_DAC_SET TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : PIA59050 DAC = MAIN PIA60354 TARGET = 66 <dec> PIA60353 STEP = 66 <dec> PIA60345 DWELL = 10 <dec> PIA59054 RANGE = NONE (Def)		
		Wait 90 seconds for HIS to boot		
		Verify Packet Reception YIA58601 SWA_E_HIS_BOOT_COMPLETE TM(5,1), APID 1591 (99/7) PI1=43801 PI2=0		
4		Enable HB Mon Next step(s): -> END		
		Enable DPU HIS heartbeat monitor		

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Step	Label/Time	Activity/Remarks/Branch	CK	Display
	+00.00.01	Execute Telecommand ZIA58063 SWA_TC_PARS_MON_EN TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : PIA60452 NUM_OF_MON_ID = 1 <hex> PIA60449 MON_ID = HISHEARTB_MI <hex>		
AIAF017A		End of Sequence		
		Beginning of Sequence		
	AIAF017B	SWA HIS-R ON SeqFlags [Crit/Plan/Stdalone/Sched] : NSYN Forced Subschedule : SWA (109) TimeTag type : B		
5		Power DPU/HIS Interface <i>Next step(s):</i> -> 6		
		Send DPU command to power on HIS		
	+00.00.00	Send SWA_TC_HIS_ON ZIA58729 SWA_TC_HIS_ON TC Control Flags: GBM IL DSE --Y NC ---		
		Wait 1 second for the DPU to enable HIS SpaceWire		
		Send DPU command to power on HIS		
	+00.00.01	Send SWA_TC_HIS_ON ZIA58729 SWA_TC_HIS_ON TC Control Flags: GBM IL DSE --Y NC ---		
		Wait 1 second for the DPU to enable HIS SpaceWire		
		The 2nd TC is expected to fail, unless the 1st TC was lost on the SpW bus. It is double commanded due to criticality.		

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Step	Label/Time	Activity/Remarks/Branch	CK	Display
		Verify Packet Reception YIA58019 SWA_TM_CMD_FACP_HIS_NPLAUS_TC TM(1,2), APID 1585 (99/1) PI1=43011 PI2=0		
6		Power Up HIS RED Next step(s): -> 7		
		Relay Box LCL must be off before switching		
	+00.00.01	Execute Telecommand ZCS2Z09W Decont. HIS A LCL Off TC Control Flags: GBM IL DSE --Y NC ---		
	+00.00.01	Execute Telecommand ZCS2Z09Y Decont. HIS B LCL Off TC Control Flags: GBM IL DSE --Y NC ---		
		Verify LCL & SSS status		
		Verify Telemetry NPWD0050 A_LCL3_09 Decon_HTR1 ST = OFF		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NPWT0050 B_LCL3_09 Decon_HTR1 ST = OFF		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NPWD0010 A_LCL1_09 Decon_HTR2 ST = OFF		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NPWT0010 B_LCL1_09 Decon_HTR2 ST = OFF		AND=DIAA0007 PKT=YCS1Z154
		Verify Relay Status		
		Both Relays in different position		
		Verify Telemetry NBCD0033 SWA-HIS Return_1 = Pos 2		AND=DIAA0008 PKT=YBC36997

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Step	Label/Time	Activity/Remarks/Branch	CK	Display
		Verify Telemetry NBCD0043 SWA-HIS Return_2 = Pos 1		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NCD2Z010 OBCA SWA-HIS Return_1 = Pos 2		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NCD2Z01A OBCA SWA-HIS Return_2 = Pos 1		AND=DIAA0007 PKT=YCS1Z154
		Both Nominal and Redundant OFF		
		Verify Telemetry NBCD0034 SWA-HIS Nominal = Off		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NCD2Z011 OBCA SWA-HIS Nominal = Off		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NBCD1046 SWA-HIS Redundant = Off		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NCD2Z01D OBCA SWA-HIS Redundant = Off		AND=DIAA0007 PKT=YCS1Z154
		Switch On Relays		
		Set the following configuration: SWA-HIS Return_1 = RB1_5_ON SWA-HIS Return_2 = RB2_5_ON SWA-HIS Nominal = RB1_6_ON		
	+00.00.01	Execute Telecommand ZCS2Z09C RIU SHP SWA_HIS_Ret1Pos1 TC Control Flags: GBM IL DSE --Y NC ---		
	+00.00.01	Execute Telecommand ZCS2Z09E RIU SHP SWA_HIS_Ret2Pos1 TC Control Flags: GBM IL DSE --Y NC ---		

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Step	Label/Time	Activity/Remarks/Branch	CK	Display
	+00.00.01	Execute Telecommand ZCS2Z09H RIU SHP SWA_HIS_NominOFF TC Control Flags: GBM IL DSE --Y NC ---		
	+00.00.01	Execute Telecommand ZCS2Z09J RIU SHP SWA_HIS_RedunON TC Control Flags: GBM IL DSE --Y NC ---		
		Verify Relay Status		
		Both Relays in same position		
		Verify Telemetry NBCD0033 SWA-HIS Return_1 = Pos 1		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NBCD0043 SWA-HIS Return_2 = Pos 1		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NCD2Z010 OBCA SWA-HIS Return_1 = Pos 1		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NCD2Z01A OBCA SWA-HIS Return_2 = Pos 1		AND=DIAA0007 PKT=YCS1Z154
		HIS NOM UNPOWERED		
		Verify Telemetry NBCD0034 SWA-HIS Nominal = Off		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NCD2Z011 OBCA SWA-HIS Nominal = Off		AND=DIAA0007 PKT=YCS1Z154
		HIS REDUNDANT POWERED		
		Verify Telemetry NBCD1046 SWA-HIS Redundant = On		AND=DIAA0008 PKT=YBC36997
		Verify Telemetry NCD2Z01D OBCA SWA-HIS Redundant = On		AND=DIAA0007 PKT=YCS1Z154

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Step	Label/Time	Activity/Remarks/Branch	CK	Display
		Power Relay Box LCL Both are always powered		
	+00.00.01	Execute Telecommand ZCS2Z09V Decont. HIS A LCL On TC Control Flags: GBM IL DSE --Y NC ---		
	+00.00.01	Execute Telecommand ZCS2Z09X Decont. HIS B LCL On TC Control Flags: GBM IL DSE --Y NC ---		
		Verify LCL & SSS status		
		Verify Telemetry NPWD0050 A_LCL3_09 Decon_HTR1 ST = ON		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NPWT0050 B_LCL3_09 Decon_HTR1 ST = ON		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NPWD0010 A_LCL1_09 Decon_HTR2 ST = ON		AND=DIAA0007 PKT=YCS1Z154
		Verify Telemetry NPWT0010 B_LCL1_09 Decon_HTR2 ST = ON		AND=DIAA0007 PKT=YCS1Z154
	+00.00.35	Execute Telecommand ZIA58931 SWA_TC_HIS_HK_INT TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : PIA59056 SID = BOOT_TREP PIA60361 INTERVAL = 1 <hex>		
	+00.00.35	Execute Telecommand ZIA58917 SWA_TC_HIS_MODE TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : PIA59011 MODE = LVENG		

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Step	Label/Time	Activity/Remarks/Branch	CK	Display
	+00.00.15	Execute Telecommand ZIA58917 SWA_TC_HIS_MODE TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : PIA59011 MODE = HVSTDBY		
	+00.00.01	Execute Telecommand ZIA58907 SWA_TC_HIS_HV_PWR TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : PIA59000 STATE = ENABLE (Def) PIA59006 SUPPLY = IRAP (Def)		
	+00.00.01	Execute Telecommand ZIA58908 SWA_TC_HIS_DAC_SET TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : PIA59050 DAC = MAIN PIA60354 TARGET = 66 <dec> PIA60353 STEP = 66 <dec> PIA60345 DWELL = 10 <dec> PIA59054 RANGE = NONE (Def)		
		Wait 90 seconds for HIS to boot		
		Verify Packet Reception YIA58601 SWA_E_HIS_BOOT_COMPLETE TM(5,1), APID 1591 (99/7) PI1=43801 PI2=0		
7		Enable HB Mon Next step(s): -> END		
		Enable DPU HIS heartbeat monitor		
	+00.00.01	Execute Telecommand ZIA58063 SWA_TC_PARS_MON_EN TC Control Flags: GBM IL DSE --Y NC --- Command Parameters : PIA60452 NUM_OF_MON_ID = 1 <hex> PIA60449 MON_ID = HISHEARTB_MI <hex>		

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Step	Label/Time	Activity/Remarks/Branch	CK	Display
	AIAF017B	End of Sequence		
End of Procedure				