

5.15_V1.0 SWITCH FROM DEA B TO DEA A

Last Revised: May 6, 2015

Filename: switch_deab_a

BRIEF FUNCTIONAL DESCRIPTION:

This is a contingency procedure to switch from powering the DEA from the B-side of the PSMC to powering it from the A-side. After switching DEA input power and reestablishing control of the focal plane heaters, the magnetic relays that control pairs of video boards are thrown one at a time, and those two video boards are powered up separately, while verifying that the PSMC doesn't report a current overflow.

The sequence of actions will be:

- Power down the video boards (skip if not powered)
- Turn off and disable the DEA side B power supply (skip if not enabled and on)
- Verify that all DEA side A heaters are off and disabled
- Enable and turn on the DEA side A power supply
- Perform a soft BEP reboot
- Start DEA interface housekeeping
- Enable DEA-A to assume control of the focal plane temperature by commanding it to -122°C and then to -120°C
- Switch the video board relays one at a time, wait for PSMC telemetry verifiers to refresh, and verify that DEA-A hasn't powered down due to an overcurrent or overvoltage condition
- After switching each pair of video boards, power up each of the two boards, waiting for PSMC telemetry verifiers to refresh, and verifying that DEA-A hasn't powered down due to an overcurrent or overvoltage condition
- Power down all video boards
- Dump the system configuration table

ASSUMED INSTRUMENT STATE:

- Assumes that DPA A and/or DPA B is on and that the flight SW is running.

SPECIAL INITIAL CONDITIONS:

- Assumes that telemetry is in Format 1 or 2.
- Assumes that neither the bakeout heater nor the detector housing heater is being powered by DEA-A. If they are, switch them off and, if the procedure ends with the DEA powered from DEA-A, consider enabling and turning them on again on DEA-B.

CHANGE HISTORY:

Version 1.0

- initial version based on “switch_deaa_b”

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Table 1: SWITCH FROM DEA B TO DEA A(Page 1)

Step #	Title (Revision 5.15_V1.0)	Time (mins)	Command Description	Command Mnemonic	Cmd EGSE	Seq Key	Telemetry Description	Telemetry Mnemonic
1	Power Down Video Boards							
1.1	Power off video boards	1	changeConfigSetting	WSVIDALLDN				
2	Turn off DEA-B input power							
2.1	DEA Power B Off	1	DEA-B Power Off	1DEPSBOF			DEA +24 V B DEA Input V B DEA +6 V B DEA -6 V B DEA +15 V B DEA -15 V B DEA +28 V B	1DEPSB 1DEP2BVO 1DE28BVO 1DEP0BVO 1DEN0BVO 1DEP1BVO 1DEN1BVO 1DEP3BVO
2.2	Disable DEA PS A	1	DEA-A Power Disable	1DEPSADS			DEA B Dis	1DEPSBX
3	Verify that DEA-A heaters are off							
3.1	Verify heaters off	1					DEA A DH Htr Off DEA A DH Htr Dis DEA A Bakeout Off DEA A Bakeout Dis	1DAHTAON 1DAHTAEN 1DABOAON 1DABOAEN
4	Turn on DEA-A input power							
4.1	Enable DEA PS A	1	DEA-A Power Enable	1DEPSAEN			DEA A En	1DEPSAX
4.2	DEA Power A On	1	DEA-A Power On	1DEPSAON			DEA +24 V A DEA Input V A DEA Input I A DEA +6 V A DEA -6 V A DEA +15 V A DEA -15 V A DEA +28 V A	1DEPSA 1DEP2AVO 1DE28AVO 1DEICACU 1DEP0AVO 1DEN0AVO 1DEP1BAO 1DEN1BAO 1DEP3BAO
5	Reboot active BEP							
5.1	DPA Boot Modifier	1	DPA Boot Modifier	1BMMODIBM(0)				

Table 1: SWITCH FROM DEA B TO DEA A(Page 1)

Step #	Expected Value	Units	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos	
1	Power Down Video Boards					Skip if video boards off						
1.1			Check cmdResult==OK commandEcho==1541		A			Y	1,2	60k		
2	Turn off DEA-B input power					Skip if DEA-A unpowered						
2.1	OFF					Ignore if DPA unpowered	SF 4.4.2	Y	1,2,4,6	60k		
	0.0 ± 0.5	V			1	Powers off DEA and board 11						
	25.0–34.0	V			2	Expect DEA-A power 0.0 W						
	0.0 ± 0.5	V			2							
	0.0 ± 0.5	V			2							
	0.0 ± 0.5	V			2							
	0.0 ± 0.5	V			2							
	0.0 ± 0.5	V			2							
2.2	DIS					Ignore if DPA unpowered	SF 4.4.1	Y	1,2,4,6	60k		
3	Verify that DEA-A heaters are off											
3.1	OFF				1	Verify housing heater is off			1,2,4,6	60k		
	DIS				2	Verify housing heater disabled						
	OFF				1	Verify bakeout heater is off						
	DIS				2	Verify bakeout heater disabled						
4	Turn on DEA-A input power											
4.1	ENB					Ignore if DPA unpowered		Y	1,2,4,6	60k		
4.2	ON					Ignore if DPA unpowered		Y	1,2,4,6	60k		
	24.0–26.0	V			1	Powers on DEA board 11						
	25.0–34.0	V			2							
	0.62–0.75	A			2	Expect DEA-A power 21±3 W						
	5.6–6.7	V			2							
	-7– -5.7	V			2							
	15.0–17.0	V			2							
	-17.0– -15.0	V			2							
	> 26.0	V			2							
5	Reboot active BEP											
5.1			Disable uplink boot					Y	1,2	60k		

Table 1: SWITCH FROM DEA B TO DEA A(Page 2)

Step #	Title (Revision 5.15_V1.0)	Time (mins)	Command Description	Command Mnemonic	Cmd EGSE	Seq Key	Telemetry Description	Telemetry Mnemonic
5.2	Set warm boot flag on	1	DPA Warm Boot	1WRMBTBSB(1)				
5.3	Halt BEP	1	DPA Command Reset	1RSETIRT(1)				
5.4	Restart BEP	1		1RSETIRT(0)				
5.5	Check BEP boot	2					bepStartupMessage swHousekeeping	
5.6	Check HW LEDs	2					BEP select BEP FIFO not full BEP FIFO not empty	1STAT4ST 1STAT6ST 1STAT7ST
5.7	Check SW LEDs	2					BEP initialization Watchdog boot Science run status	1STAT3ST 1STAT2ST 1STAT1ST 1STAT0ST
6	Start DEA Interface Housekeeping							
6.1	Load Board 11 DEA Hkp	1	loadDeaBlock	WD00001024				
6.2	Start DEA Hkp run	1	startDea	XDZ0000005				
7	Start FP temperature control							
7.1	set FP temp to -121°C	1	changeConfigSetting	WSFTNEG123				
7.2	set FP temp to -120°C	2	changeConfigSetting	WSFTNEG121				
8	Power video boards from DEA-A							
8.1a	Set I0,S0 relays to DEA-A	1	changeConfigSetting	WS_RELAY_0				
8.1b	Power up I0	1	changeConfigSetting	WSP0W00100				

Table 1: SWITCH FROM DEA B TO DEA A(Page 2)

Step #	Expected Value	Units	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
5.2			Warm boot active BEP					Y	1,2	60k	
5.3			Hold active BEP reset line					Y	1,2	60k	
5.4			Release BEP reset line					Y	1,2	60k	
5.5			version> 11 warmbootFlag=1 version> 11								
5.6	0				2	0 indicates BEP-A is selected		Y	1,2	60k	
	1				2	1meansFIFOnotfull		Y	1,2	60k	
	0				2	1meansFIFOnotempty		Y	1,2	60k	
5.7	0				1	0 means BEP sw is running		Y	1,2	60k	
	1				2	1 means no watchdog reboot		Y	1,2	60k	
	1				2	1 means science idle		Y	1,2	60k	
	0 or 1				2	this bit toggles to indicate BEP running		Y	1,2	60k	
6	Start DEA Interface Housekeeping										
6.1			Check cmdResult==OK commandEcho==225		B	Monitor FP temp and DEA voltages		Y	1,2	60k	
6.2			Check cmdResult==OK commandEcho==18		B	If Hkp running, cmdResult==CLOBBERED		Y	1,2	60k	
7	Start FP temperature control										
7.1			Check cmdResult==OK commandEcho==6369		A			Y	1,2	60k	
7.2			Check cmdResult==OK commandEcho==1220		A			Y	1,2	60k	
8	Power video boards from DEA-A					Abort if DEA-A heaters on or 1DEPSA=ON					
8.1a			Check cmdResult==OK commandEcho==14429	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.1b			Check cmdResult==OK commandEcho==14439	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	

Table 1: SWITCH FROM DEA B TO DEA A(Page 3)

Step #	Title (Revision 5.15_V1.0)	Time (mins)	Command Description	Command Mnemonic	Cmd EGSE	Seq Key	Telemetry Description	Telemetry Mnemonic
8.1c	Power up S0	1	changeConfigSetting	WSPOW01100				
8.2a	Set I1,S1 relays to DEA-A	1	changeConfigSetting	WS_RELAY_1				
8.2b	Power up I1	1	changeConfigSetting	WSPOW01300				
8.2c	Power up S1	1	changeConfigSetting	WSPOW03300				
8.3a	Set I2,S3 relays to DEA-A	1	changeConfigSetting	WS_RELAY_2				
8.3b	Power up I2	1	changeConfigSetting	WSPOW03700				
8.3c	Power up S3	1	changeConfigSetting	WSPOW0B700				
8.4a	Set I3,S2 relays to DEA-A	1	changeConfigSetting	WS_RELAY_3				
8.4b	Power up I3	1	changeConfigSetting	WSPOW0BF00				
8.4c	Power up S2	1	changeConfigSetting	WSPOW0FF00				
8.5a	Set S4,S5 relays to DEA-A	1	changeConfigSetting	WS_RELAY_4				
8.5b	Power up S4	1	changeConfigSetting	WSPOW1FF00				
8.5c	Power up S5	1	changeConfigSetting	WSPOW3FF00				
9	Power down video boards							
9.1	Power off video boards	1	changeConfigSetting	WSVIDALLDN				
9.2	Dump System Config.	1	dumpSysConfig	RS_0000001				
	Total Time	38						

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Table 1: SWITCH FROM DEA B TO DEA A(Page 3)

Step #	Expected Value	Units	Telemetry EGSE	Other Verifier	Crit	Description	Notes	RT Con	Tlm Fmt	Min Alt	SIM Pos
8.1c			Check cmdResult==OK commandEcho==14440	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.2a			Check cmdResult==OK commandEcho==14430	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.2b			Check cmdResult==OK commandEcho==14443	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.2c			Check cmdResult==OK commandEcho==14445	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.3a			Check cmdResult==OK commandEcho==14433	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.3b			Check cmdResult==OK commandEcho==14446	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.3c			Check cmdResult==OK commandEcho==14448	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.4a			Check cmdResult==OK commandEcho==14434	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.4b			Check cmdResult==OK commandEcho==14451	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.4c			Check cmdResult==OK commandEcho==14453	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.5a			Check cmdResult==OK commandEcho==14436	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.5b			Check cmdResult==OK commandEcho==14454	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
8.5c			Check cmdResult==OK commandEcho==14457	1DEPSA	A	Wait 60 secs, then check that 1DEPSA=ON		Y	1,2	60k	
9	Power down video boards										
9.1			Check cmdResult==OK commandEcho==1541		A			Y	1,2	60k	
9.2			Check cmdResult==OK commandEcho==66		B			Y	1,2	60k	

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