

Trigger TCS FDIR Level 2 Recovery
File: H_CRP_TCS_FDIR.xls
Author: E. Picallo



Procedure Summary

Objectives

This procedure describes the steps needed to Trigger TCS Loop failure FDIR 2 recovery for the related HPS which results in switching the redundant Heater group and marking the nominal Heater group as Failed.

Summary of Constraints

The TCs(8,4,116,49 to 57) are accepted only if the FDIR Management function is active.

In case the declared failed Heater group includes a HCS dedicated to the decontamination, the on-board reconfiguration does not switch the redundant HCSs ON. Thus it is up to Ground to resume decontamination if required.

Spacecraft Configuration

Start of Procedure

```
CDMU in default configuration;  
HPS [N] Switched ON;  
HPS[N] marked NOT_FAILED in UIU;  
HPS[N] marked ON in UIU;  
HPS [19 - N] Switched OFF;  
HPS[19-N] Mark OFF in UIU;  
EAT relevant to HPS[N] Enabled
```

End of Procedure

```
CDMU in default configuration;  
HPS [N] Switched OFF;  
HPS[N] marked FAILED in UIU;  
HPS[N] marked OFF in UIU;  
HPS [19 - N] Switched ON;  
HPS[19-N] Mark ON in UIU;  
EAT relevant to HPS[N] Disabled
```

Reference File(s)

Input Command Sequences

Output Command Sequences

```
HRTFDIR1  
HRTFDIR2  
HRTFDIR3  
HRTFDIR4  
HRTFDIR5  
HRTFDIR6  
HRTFDIR7  
HRTFDIR8  
HRTFDIR9
```

Referenced Displays

ANDs GRDs SLDs

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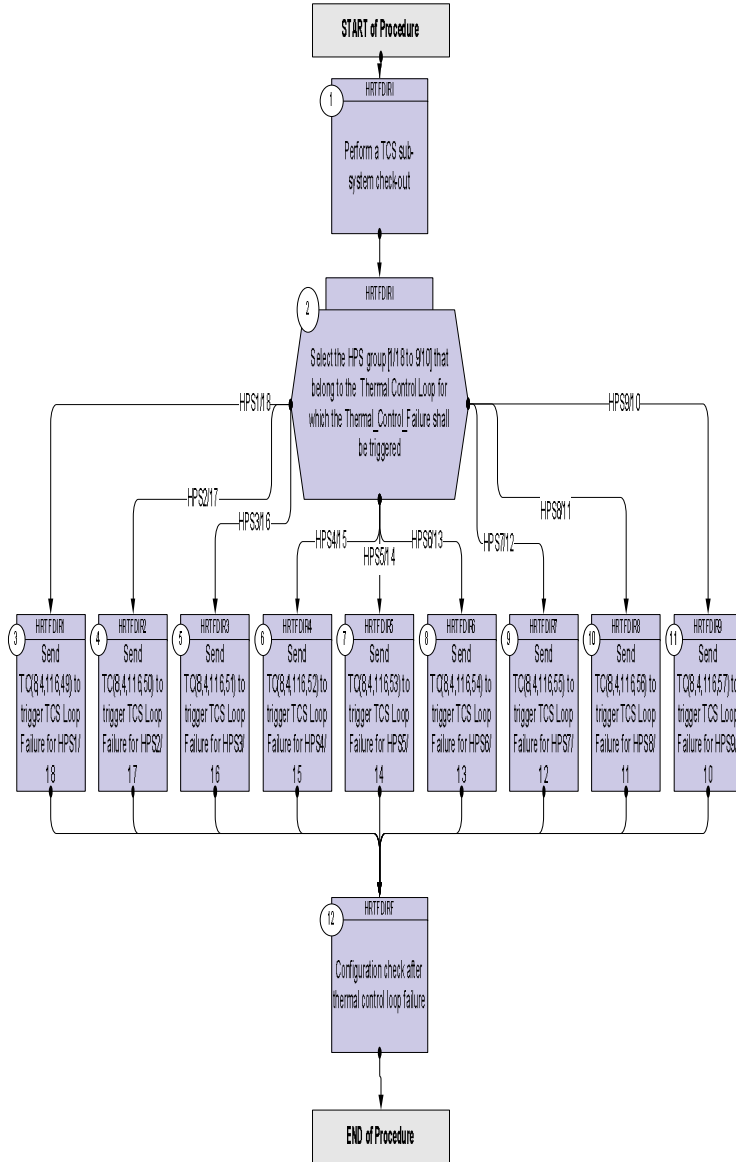
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
04/04/09	2.3	1	Created	E. Picallo	

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Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
Beginning of Procedure				
TC Seq. Name :HRTFDIRI (Trigger TCS FDIRInit) Trigger TCS FDIR Level 2 Recovery Init TimeTag Type: Sub Schedule ID: <input type="checkbox"/>				
1		Perform a TCS sub-system check-out		Next Step: 2
		Execute Procedure: H_FCP_TCS_CHECK TCS Subsystem Checkout		
2		Select the HPS group [1/18 to 9/10] that belong to the Thermal Control Loop for which the Thermal_Control_Failure shall be triggered		Next Step: HPS1/18 3 HPS2/17 4 HPS3/16 5 HPS4/15 6 HPS5/14 7 HPS6/13 8 HPS7/12 9 HPS8/11 10 HPS9/10 11
		FDIR Thermal Control Loop Failure actions summary: <ul style="list-style-type: none"> - Disable MOT entry relevant to the failed HPS[N]; - Disable EAT relevant to the failed HPS[N]; - Disable thermal loops of the 6 units protected by failed HPS [N]; - Switch HPS [N] OFF; - Mark HPS[N] FDIR status as FAILED in UIU Table*; - Mark HPS[N] status as OFF in the UIU Table; - Swich HPS [19 - N] ON to enable the redundant branch; - Mark HPS[19-N] status as ON in the UIU Table; - Re-enable MOT entry relevant to currently in use HPS[19-N]; - Enable thermal loops of the 6 units protected by HPS [19 - N]; - Following a HPS-2 to HPS-17 switchover (or vice versa), switch HCS 6. * this sets the currently in use HPS as the one Not Failed of the pair (HPS[N],HPS[19-N])		
2.1		Select HPS1/18 for control loops: XPND1 RCS piping #2 FCV C2B FCV A1B XPND2		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
2.2		Select HPS2/17 for control loops: FPDPU/FPSPU FCV C4B FCV A2B FCV C1B		<input type="checkbox"/>
2.3		Select HPS3/16 for control loops: GYRO CCU RCS piping #1 FPDECMEC CRS-1 FPBOLC		<input type="checkbox"/>
2.4		Select HPS4/15 for control loops: RCS piping # 7 FCV C2A&C2B FCV A1A&A1B RCS piping # 6 FHWOV		<input type="checkbox"/>
2.5		Select HPS5/14 for control loops: PT/LF/LV1/LV2 RCS piping #8 FCV C3B FHWEV/FHICU FHHRH CRS-2		<input type="checkbox"/>
2.6		Select HPS6/13 for control loops: RWL2 FHIFV RWL3 RWL1 RWL4		<input type="checkbox"/>
2.7		Select HPS7/12 for control loops: FCV A2A&A2B FCV C1A&C1B FHWEH FHWOH BATTERY STR's		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
2.8		Select HPS8/11 for control loops: FHLCU RCS piping #5 STR 2 Primary Baffle RCS piping #3 FCV C3A&C3B FHHRV		<input type="checkbox"/>
2.9		Select HPS9/10 for control loops: Tank +Y STR_1 Primary Baffle FHLSU FCV C4A&C4B Tank -Y		<input type="checkbox"/>
TC Seq. Name :HRTFDIR1 (HPS1 Trigger TCSFDIR) HPS1 Trigger TCS FDIR Level 2 Recovery TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
3		Send TC(8,4,116,49) to trigger TCS Loop Failure for HPS1/18		Next Step: 12
		Execute Telecommand TcsLoopFailHps1_18 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 10 Det. descr. : TCS Loop Failure for HPS1/18 - TC(8,4,116,49)	DCN49170	
TC Seq. Name :HRTFDIR2 (HPS2 Trigger TCSFDIR) HPS2 Trigger TCS FDIR Level 2 Recovery TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
4		Send TC(8,4,116,50) to trigger TCS Loop Failure for HPS2/17		Next Step: 12

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand TcsLoopFailHps2_17 TC Control Flags : Subsch. ID : 10 Det. descr. : TCS Loop Failure for HPS2/17 - TC(8,4,116,50) GBM IL DSE --Y -- ---	DCN50170	
TC Seq. Name :HRTFDIR3 (HPS3 Trigger TCSFDIR) HPS3 Trigger TCS FDIR Level 2 Recovery TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
5		Send TC(8,4,116,51) to trigger TCS Loop Failure for HPS3/16		Next Step: 12
		Execute Telecommand TcsLoopFailHps3_16 TC Control Flags : Subsch. ID : 10 Det. descr. : TCS Loop Failure for HPS3/16 - TC(8,4,116,51) GBM IL DSE --Y -- ---	DCN51170	
TC Seq. Name :HRTFDIR4 (HPS4 Trigger TCSFDIR) HPS4 Trigger TCS FDIR Level 2 Recovery TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
6		Send TC(8,4,116,52) to trigger TCS Loop Failure for HPS4/15		Next Step: 12
		Execute Telecommand TcsLoopFailHps4_15 TC Control Flags : Subsch. ID : 10 Det. descr. : TCS Loop Failure for HPS4/15 - TC(8,4,116,52) GBM IL DSE --Y -- ---	DCN52170	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
TC Seq. Name : (HPS5 Trigger TCSFDIR) HPS5 Trigger TCS FDIR Level 2 Recovery TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
7		Send TC(8,4,116,53) to trigger TCS Loop Failure for HPS5/14		Next Step: 12
		Execute Telecommand <p style="text-align: right;">TcsLoopFailHps5_14</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 10 Det. descr. : TCS Loop Failure for HPS5/14 - TC(8,4,116,53)	DCN53170	
TC Seq. Name :HRTFDIR6 (HPS6 Trigger TCSFDIR) HPS6 Trigger TCS FDIR Level 2 Recovery TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
8		Send TC(8,4,116,54) to trigger TCS Loop Failure for HPS6/13		Next Step: 12
		Execute Telecommand <p style="text-align: right;">TcsLoopFailHps6_13</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 10 Det. descr. : TCS Loop Failure for HPS6/13 - TC(8,4,116,54)	DCN54170	
TC Seq. Name :HRTFDIR7 (HPS7 Trigger TCSFDIR) HPS7 Trigger TCS FDIR Level 2 Recovery TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
9		Send TC(8,4,116,55) to trigger TCS Loop Failure for HPS7/12		Next Step: 12

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">TcsLoopFailHps7_12</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 10 Det. descr. : TCS Loop Failure for HPS7/12 - TC(8,4,116,55)	DCN55170	
TC Seq. Name : HRTFDIR8 (HPS8 Trigger TCSFDIR) HPS8 Trigger TCS FDIR Level 2 Recovery TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
10		Send TC(8,4,116,56) to trigger TCS Loop Failure for HPS8/11		Next Step: 12
		Execute Telecommand <p style="text-align: right;">TcsLoopFailHps8_11</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 10 Det. descr. : TCS Loop Failure for HPS8/11 - TC(8,4,116,56)	DCN56170	
TC Seq. Name : HRTFDIR9 (HPS9 Trigger TCSFDIR) HPS9 Trigger TCS FDIR Level 2 Recovery TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
11		Send TC(8,4,116,57) to trigger TCS Loop Failure for HPS9/10		Next Step: 12
		Execute Telecommand <p style="text-align: right;">TcsLoopFailHps9_10</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 10 Det. descr. : TCS Loop Failure for HPS9/10 - TC(8,4,116,57)	DCN57170	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
<p><i>TC Seq. Name :HRTFDIRF (Trigger TCSFDIRFinal)</i> Trigger TCS FDIR Level 2 Recovery Final</p> <p><i>TimeTag Type:</i> <i>Sub Schedule ID:</i></p> <p>□</p>				
12		<i>Configuration check after thermal control loop failure</i>		Next Step: END
		Call procedure H_CRP_TCS_CLR Configuration check after thermal control loop failure		
		Execute Procedure: H_CRP_TCS_CLR Configuration check after thermal control loop failure		
End of Procedure				