Start LOU Baffle Decontamination
File: H_FCP_SYS_LOU1.xls
Author: E. Picallo

Procedure Summary

Objectives

This procedure describes the steps needed to start the decontamination of the LOU Baffle in case they would be covered with ice and that would blur the path between the LOU and HIFI FPU

Summary of Constraints

By default the Lou Baffle Management function is running but the LOU Baffle controlling is disabled.

The LOU Baffle Management function shall be running before enable the LOU Baffle control.

The criteria to switch ON or OFF the LOU decontamination shall be determined by HIFI.

The maximum number and duration of ON cycles is limited by the following:
- never more than 20 hours of continuous operation
- at least 48 hours between two consecutive operations
- not more than 20 operations during in-orbit life

The required power for the decontamination is ~200W.
Before starting it, the ground shall verify if there is enough available power regarding the power already used.

Never more than two heater lines shall be switched ON simultaneously

It is required to enable the TCS Diagnostic Packet in order to monitor the LOU median temperature parameter

Spacecraft Configuration

Start of Procedure

LOU Baffle Management function started
LOU Baffle Decontamination control disabled

End of Procedure

LOU Baffle Management function started
LOU Baffle Decontamination control enabled

Reference File(s)

Input Command Sequences

Output Command Sequences

HFYLOU1

Referenced Displays

ANDs **GRDs** **SLDs**

ZAZ9I999

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Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
04/08/08	1	1	Created	E. Picallo	
04/09/08		2	enabling of TCS diagnostic packet added. Updated with HPSDB v.7	E. Picallo	
26/11/08		3	LOU Baffle management status verifiied before function report	E. Picallo	
08/01/09	2	4	LOU baffle heating thresholds updated to [220K,230K] according to H-P-2-ASP-ID-1418 issue 4	E. Picallo	
24/02/09	2.1	5	Power constrain added	E. Picallo	

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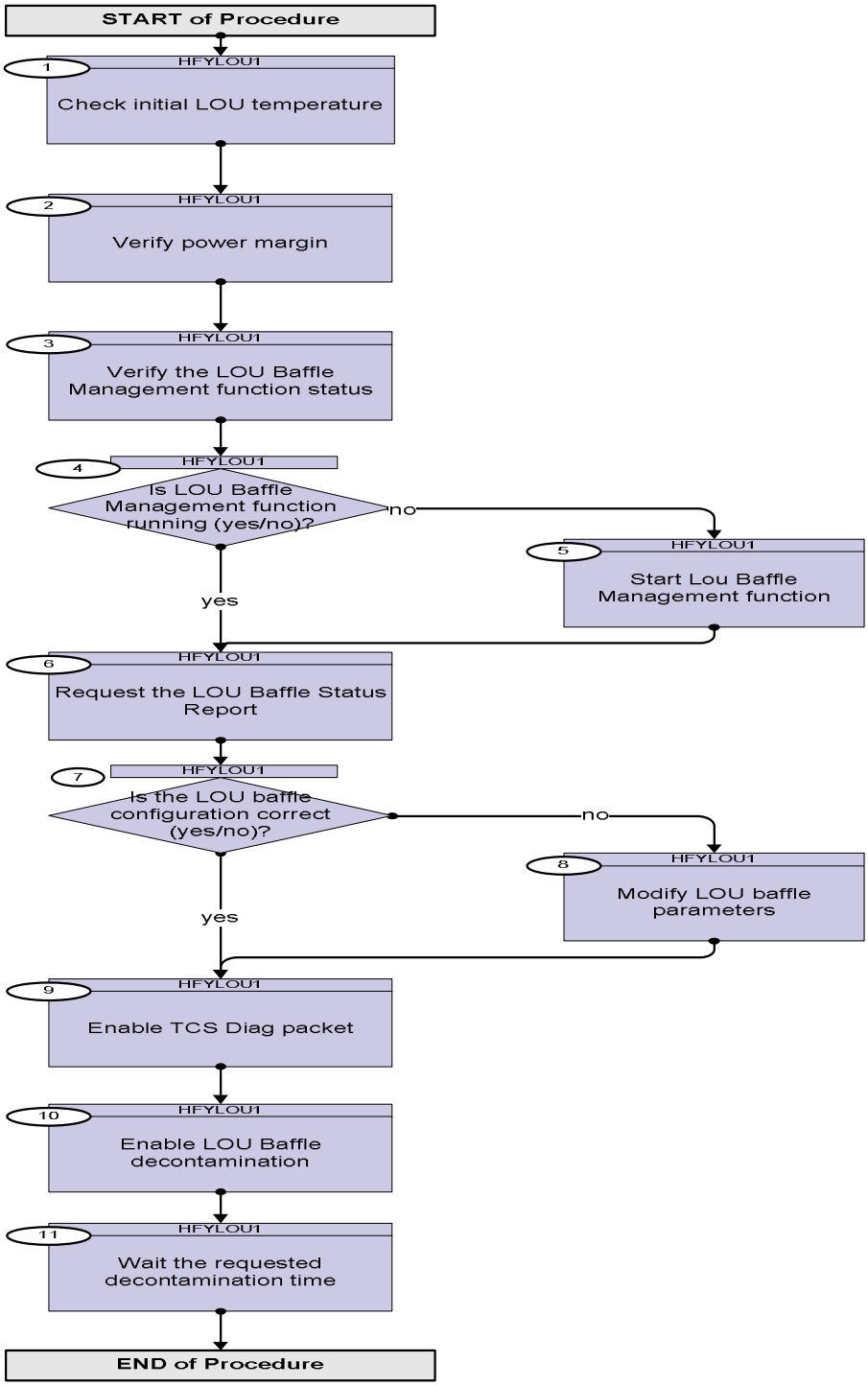
Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Beginning of Procedure		
		TC Seq. Name :HFYLOU1 (Start Lou Baffle Dec) Start LOU Baffle Decontamination *TimeTag Type: N* *Sub Schedule ID:*		
1		*Check initial LOU temperature*		Next Step: 2
		At the beginning of the decontamination process, the initial LOU temperature should be in the range [130ºK - 140ºK]		
		Verify LOU THERMISTOR 1 Telemetry **LouBaffleTemp1 ZMP17999**	**<= -133.15 degC** **>= -143.15 degC**	AND=ZAZ9I999
		Verify LOU THERMISTOR 2 Telemetry **LouBaffleTemp2 ZMP18999**	**<= -133.15 degC** **>= -143.15 degC**	AND=ZAZ9I999
		Verify LOU THERMISTOR 3 Telemetry **LouBaffleTemp3 ZMP19999**	**<= -133.15 degC** **>= -143.15 degC**	AND=ZAZ9I999
2		*Verify power margin*		Next Step: 3
		The required power for the decontamination is ~200W. Before starting it, the ground shall verify if there is enough available power regarding the power already used.		
		Warning: Required S/C preconditions are TBW		
3		*Verify the LOU Baffle Management function status*		Next Step: 4
		By default, the LOU Baffle management function should be always enabled.		
		Verify LOU Baffle Management function status Telemetry **LbSts DEN66170**	**= Running**	AND=ZAZ9I999
4		*Is LOU Baffle Management function running (yes/no)?*		Next Step: no 5 yes 6
5		*Start Lou Baffle Management function*		Next Step: 6

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Call Procedure H_CRP_SYS_LOUM to Start the LOU Baffle management function		
		Execute Procedure: **H_CRP_SYS_LOUM** **Start/Stop Lou Baffle Management function**		
6		*Request the LOU Baffle Status Report*		Next Step: 7
		Call procedure H_FCP_SYS_LOUS to request the LOU Baffle Status Report		
		Execute Procedure: **H_FCP_SYS_LOUS** **Lou Baffle Management Status Report**		
7		*Is the LOU baffle configuration correct (yes/no)?*		Next Step: no 8 yes 9
		Check that the LOU baffle parameters, contained in the LOU Baffle Status Report, determined by HIFI, are correctly configured. **The default parameter values are:** **- Low temperature Threshold : 220K = -53.15 C = 8480 RAW** **- High temperature Threshold : 230K = -43.15 C = 8816 RAW** **- Heater lines to be used are: LCL59&61**		
		Verify Telemetry **LouBafCtrlSts DEZA3170**	**= LouBCtrlStoppd**	AND=ZAZ9I999
		The initial LOU control status must be disabled (by enabling it, the LOU decontamination will start)		
8		*Modify LOU baffle parameters*		Next Step: 9
		If another configuration is required, call to: H_CRP_SYS_LOUP to change the parameter values.		
		Execute Procedure: **H_CRP_SYS_LOUP** **LOU Baffle Parameters Update**		
9		*Enable TCS Diag packet*		Next Step: 10

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		It is required to enable the TCS Diagnostic Packet in order to monitor the LOU median temperature parameter.		
		Call procedure "Enable or disable the generation of an housekeeping or diagnostic packet" H_FCP_DHS_3033 **1) Acquire the list of the current enabled TM packets** **2) Verify if the TCS Diagnostic packet is enabled:** **TCS -> subtype=26, packet-ID=100** **3) If it is disabled, enable it**		
		Execute Procedure: **H_FCP_DHS_3033** **Enable or disable the generation of an housekeeping or diagnostic packet**		
10		*Enable LOU Baffle decontamination*		Next Step: 11
		Send TC(8,4,118,1) Enable Lou Baffle Control to start the Lou Baffle controlling.		
		Execute Telecommand **EnableLouBaffleCtrl** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : Enable Lou Baffle control TC(8,4,118,1)	**DCP03170**	
10.1		*Acquire the Lou Baffle Management Status Report*		□
		Call H_FCP_SYS_LOUS and verify that the Lou Baffle Control is enabled.		
		Execute Procedure: **H_FCP_SYS_LOUS** **Lou Baffle Management Status Report**		
		Verify Telemetry **LouBafCtrlSts DEZA3170**	**= LouBCtrlStartd**	AND=ZAZ9I999
11		*Wait the requested decontamination time*		Next Step: END
		The duration of the decontamination cycle shall be determined by HIFI.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		During the LOU decontamination cycle, monitor the LOU average temperature, the heating status ON/OFF, and the status and current of the heaters LCLs **-> when the LOU average temperature is lower than the Low Threshold, the two selected heaters are switched ON.** **-> when the LOU average temperature is greater than the High Threshold, the two selected heaters are switched OFF.**		
11.1		*Verify the LOU temperature*		
		Verify LOU THERMISTOR 1 Telemetry **LouBaffleTemp1 ZMP17999**		AND=ZAZ9I999
		Verify LOU THERMISTOR 2 Telemetry **LouBaffleTemp2 ZMP18999**		AND=ZAZ9I999
		Verify LOU THERMISTOR 3 Telemetry **LouBaffleTemp3 ZMP19999**		AND=ZAZ9I999
		Verify LOU median temperature Telemetry **LouBaffleMed DE81C171**		
11.2		*Verify reception of LOU Baffle Heating TM packets*		
		Verify reception of TM packets: **TM(5,1,118,1) -> generated when the LOU Baffle Heating is switched ON** **TM(5,1,118,2) -> generated when the LOU Baffle Heating is switched OFF**		
		Verify Packet Reception **CdmuAsw Event 5-1 Lou Baffle Heating On** *Packet Details:* **APID:** **Type:** **Subtype:** **PI1:** **PI2:**	**D_EvRp1_0308** **16** **5** **1** **30209** **0**	
		Verify Packet Reception **CdmuAsw Event 5-1 Lou Baffle Heating Off** *Packet Details:* **APID:** **Type:** **Subtype:** **PI1:** **PI2:**	**D_EvRp1_0309** **16** **5** **1** **30210** **0**	
11.3		*Verify the status and current of the LOU heaters in order to detect any anomaly*		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		WARNING: if any heater anomaly is detected, a recovery action shall be taken to modify the pair of heaters used for decontamination, calling the contingency procedure H_CRP_SYS_LOUR (Recovery from a LOU heater failure).		
		Nominally, the two heaters used in the LOU Baffle decontamination are the corresponding to the LCL59 and LCL61		
		Verify Telemetry **LouDecH1_L59_1S WM42F565**		AND=ZAZ9I999
		Verify Telemetry **LouDecH1_L59_I WM411565**		AND=ZAZ9I999
		Verify Telemetry **LouDecH2_L61_1S WM72F565**		AND=ZAZ9I999
		Verify Telemetry **LouDecH2_L61_I WM711565**		AND=ZAZ9I999
		If the heater corresponding to LCL66 is used instead check:		
		Verify Telemetry **LouDecH3_L66_1S WM52F565**		AND=ZAZ9I999
		Verify Telemetry **LouDecH3_L66_I WM511565**		AND=ZAZ9I999
		End of Procedure		