H-EPLM Commissioning Operations
File: H_COP_CCU_HPLM.xls
Author: E. Picallo

Procedure Summary

Objectives

This procedure describes the steps needed to perform the H-EPLM operations during Commissioning.

Summary of Constraints

This procedure is basically addressing the list of activities in H-EPLM commisioning providing a mapping between COP activities IDS and FO procedures IDs.

The order in the steps execution of this procedure is not constraining the H-EPLM COP activites, being their execution possibly reschedule according to the need.

Constrain on the different activities are reported in the dedicated procedures

Spacecraft Configuration

Start of Procedure

CDMU in default configuration;
Cryo vent-line big nozzles V504/505 Open;
Cryo Cover Close;

End of Procedure

CDMU in default configuration;
Cryo vent-line big nozzles V504/505 Close;
Cryo Cover Open;
H-EPLM (Cryostat and PLM) reach thermal stability.

Reference File(s)

Input Command Sequences

Output Command Sequences

Referenced Displays

ANDs **GRDs** **SLDs**
ZAZ9J999
ZAZ9N999

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
03/03/09	2.1	1	Created	E. Picallo	
19/03/09		2	References updated according to 090228 HCOP Timeline (1_0_00).mpp	E. Picallo	
23/03/09	2.2	3	Execution of this procedure is not constaining the H-PLM COP activites	E. Picallo	
16/04/09	2.3	4	Step to Stop decontamination (HTEL Heaters Switch OFF) added	E. Picallo	

Status : Version 4 - Unchanged
Last Checkin: 16/04/09

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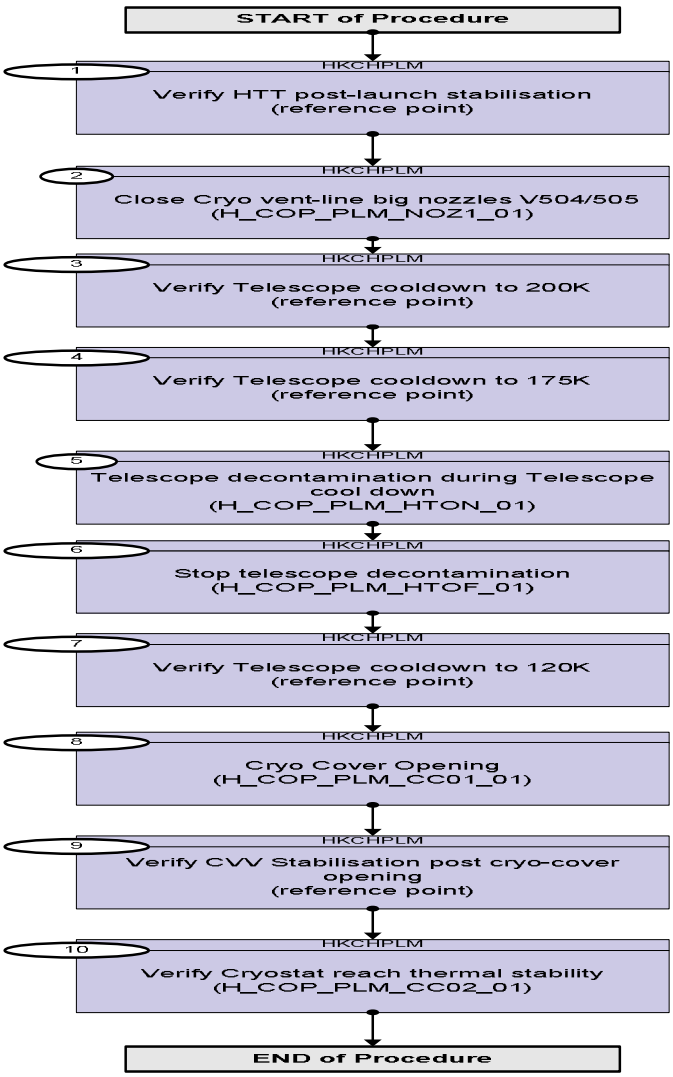
Procedure Flowchart Overview



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Beginning of Procedure		
		TC Seq. Name :HKCHPLM (H-EPLM COP OPS) H-EPLM operations during Commissioning *TimeTag Type: N* *Sub Schedule ID:*		
1		*Verify HTT post-launch stabilisation (reference point)*		Next Step: 2
		Execute Procedure: **H_FCP_CCU_MONS** **CCU Sensors monitoring**		
2		*Close Cryo vent-line big nozzles V504/505 (H_COP_PLM_NOZ1_01)*		Next Step: 3
		Execute Procedure: **H_CRP_CCU_VBN1** **Big Nozzle Close**		
		A transient phase due to nozzle switching will be observable on Instrument L1 temperatures.		
3		*Verify Telescope cooldown to 200K (reference point)*		Next Step: 4
3.1		*Verification telescope Temperatures*		
		Verify on telescope; M1 THA ; T21-5 (A) **PT1000_T331** **KD253302**		AND=ZAZ9J999
		Verify on telescope; M1 THA'' ; T16-5 (B) **PT1000_T332** **KD248303**		AND=ZAZ9J999
		Verify on telescope; M1 THA' ; T22-5 (A) **PT1000_T333** **KD254302**		AND=ZAZ9J999
		Verify on telescope; M1 THB ; T17-5 (B) **PT1000_T334** **KD249303**		AND=ZAZ9J999
		Verify on telescope; M1 THC ; T23-5 (A) **PT1000_T335** **KD255302**		AND=ZAZ9J999
		Verify on telescope; M1 THB' ; T18-5 (B) **PT1000_T336** **KD250303**		AND=ZAZ9J999

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify on telescope; M1 THC' ; T24-5 (A) **PT1000_T337** **KD256302**		AND=ZAZ9J999
		Verify on telescope; M1 THB'' ; T19-5 (B) **PT1000_T338** **KD251303**		AND=ZAZ9J999
		Verify on telescope; M2 THX ; T25-5 (A) **PT1000_T339** **KD257302**		AND=ZAZ9J999
		Verify on telescope; M1 THC'' ; T20-5 (B) **PT1000_T340** **KD252303**		AND=ZAZ9J999
		Verify on telescope; M2 THY ; T26-5 (A) **PT1000_T341** **KD258302**		AND=ZAZ9J999
		Verify on telescope; M2 THZ ; T30-5 (B) **PT1000_T342** **KD262303**		AND=ZAZ9J999
4		*Verify Telescope cooldown to 175K (reference point)*		Next Step: 5
4.1		*Verification telescope Temperatures*		
		Verify on telescope; M1 THA ; T21-5 (A) **PT1000_T331** **KD253302**		AND=ZAZ9J999
		Verify on telescope; M1 THA'' ; T16-5 (B) **PT1000_T332** **KD248303**		AND=ZAZ9J999
		Verify on telescope; M1 THA' ; T22-5 (A) **PT1000_T333** **KD254302**		AND=ZAZ9J999
		Verify on telescope; M1 THB ; T17-5 (B) **PT1000_T334** **KD249303**		AND=ZAZ9J999
		Verify on telescope; M1 THC ; T23-5 (A) **PT1000_T335** **KD255302**		AND=ZAZ9J999
		Verify on telescope; M1 THB' ; T18-5 (B) **PT1000_T336** **KD250303**		AND=ZAZ9J999
		Verify on telescope; M1 THC' ; T24-5 (A) **PT1000_T337** **KD256302**		AND=ZAZ9J999
		Verify on telescope; M1 THB'' ; T19-5 (B) **PT1000_T338** **KD251303**		AND=ZAZ9J999
		Verify on telescope; M2 THX ; T25-5 (A) **PT1000_T339** **KD257302**		AND=ZAZ9J999
		Verify on telescope; M1 THC'' ; T20-5 (B) **PT1000_T340** **KD252303**		AND=ZAZ9J999
		Verify on telescope; M2 THY ; T26-5 (A) **PT1000_T341** **KD258302**		AND=ZAZ9J999

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify on telescope; M2 THZ ; T30-5 (B) **PT1000_T342** **KD262303**		AND=ZAZ9J999
5		*Telescope decontamination during Telescope cool down (H_COP_PLM_HTON_01)*		Next Step: 6
		Execute Procedure: **H_COP_SYS_DEC2** **Telescope decontamination during Telescope cool down**		
6		*Stop telescope decontamination (H_COP_PLM_HTOF_01)*		Next Step: 7
		Execute Procedure: **H_COP_SYS_DEC0** **Stop Decontamination heating during Telescope cool down**		
7		*Verify Telescope cooldown to 120K (reference point)*		Next Step: 8
7.1		*Verification telescope Temperatures*		□
		Verify on telescope; M1 THA ; T21-5 (A) **PT1000_T331** **KD253302**		AND=ZAZ9J999
		Verify on telescope; M1 THA'' ; T16-5 (B) **PT1000_T332** **KD248303**		AND=ZAZ9J999
		Verify on telescope; M1 THA' ; T22-5 (A) **PT1000_T333** **KD254302**		AND=ZAZ9J999
		Verify on telescope; M1 THB ; T17-5 (B) **PT1000_T334** **KD249303**		AND=ZAZ9J999
		Verify on telescope; M1 THC ; T23-5 (A) **PT1000_T335** **KD255302**		AND=ZAZ9J999
		Verify on telescope; M1 THB' ; T18-5 (B) **PT1000_T336** **KD250303**		AND=ZAZ9J999
		Verify on telescope; M1 THC' ; T24-5 (A) **PT1000_T337** **KD256302**		AND=ZAZ9J999
		Verify on telescope; M1 THB'' ; T19-5 (B) **PT1000_T338** **KD251303**		AND=ZAZ9J999

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify on telescope; M2 THX ; T25-5 (A) **PT1000_T339** **KD257302**		AND=ZAZ9J999
		Verify on telescope; M1 THC'' ; T20-5 (B) **PT1000_T340** **KD252303**		AND=ZAZ9J999
		Verify on telescope; M2 THY ; T26-5 (A) **PT1000_T341** **KD258302**		AND=ZAZ9J999
		Verify on telescope; M2 THZ ; T30-5 (B) **PT1000_T342** **KD262303**		AND=ZAZ9J999
8		*Cryo Cover Opening* *(H_COP_PLM_CC01_01)*		Next Step: 9
		Cryo Cover opening linked to known constraints from all 3 instruments, as well as H-EPLM thermal constraints. **Currently it is assumed Cryo-cover opening linked to Telescope cooldown to 120 K (TBC)**		
		Execute Procedure: **H_LEO_EPS_NCA** **NCA activation**		
9		*Verify CVV Stabilisation post cryo-cover opening (reference point)*		Next Step: 10
		It can be assumed that the thermal transient at instrument Level 1 lasts less than 1 day following cryo-cover opening, though there remains a residual long-term system stabilisation effect. Thus monitor cryo thermal stability during 1 day.		
		Each instrument team should make their own assessment of the impact of these transients (size, duration) . **This reference point (cryo cover opeening + 1 day minitoring) is used to avoid planning for instrument activities immediately after cover opening.** **Currenlty it is assumed for HIFI constraint of 12 hours after cryo-cover openning before CoP activites can be resumed.** **For PACS and SPIRE same constraint as HIFI assumed since no other info provided.**		
9.1		*Level 1 Temperatures*		
		Verify L1; on Ventline upstream cooling strap to "PACS Photometer Optics"; T4-2 (B) **C100_2_T231** **KD207303**		AND=ZAZ9N999

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify L1; on Ventline downstream cooling strap to "PACS Photometer Optics" ; T5-2 (A) **C100_2_T232** **KD208302**		AND=ZAZ9N999
		Verify L1; on cooling strap to "PACS Photometer Optics", on FPU Side ; T4-3 (A) **C100_3_T242** **KD212302**		AND=ZAZ9N999
		Verify L1; on Ventline downstream cooling strap to "PACS Collimator" ; T2-3 (B) **C100_3_T233** **KD210303**		AND=ZAZ9N999
		Verify L1; on Ventline downstream cooling strap to "PACS Spectrometer Housing" ; T2-3 (A) **C100_3_T234** **KD210302**		AND=ZAZ9N999
		Verify L1; on Ventline upstream cooling strap to "SPIRE Optical Bench" ; T3-3 (B) **C100_3_T235** **KD211303**		AND=ZAZ9N999
		Verify L1; on Ventline downstream cooling strap to "SPIRE Optical Bench" ; T3-3 (A) **C100_3_T236** **KD211302**		AND=ZAZ9N999
		Verify L1; on cooling strap to "SPIRE Optical Bench" , on FPU side ; T5-3 (B) **C100_3_T248** **KD213303**		AND=ZAZ9N999
		Verify L1; on Ventline downstream cooling strap to "HIFI L1" Interface ; T4-3 (B) **C100_3_T237** **KD212303**		AND=ZAZ9N999
		Verify L1, on cooling strap to "HIFI L1" Interface , on FPU side ; T5-3 (A) **C100_3_T244** **KD213302**		AND=ZAZ9N999
10		*Verify Cryostat reach thermal stability (H_COP_PLM_CC02_01)*		Next Step: END
		Execute Procedure: **H_FCP_CCU_MONS** **CCU Sensors monitoring**		

End of Procedure