Big Nozzle Open
File: H_CRP_CCU_VBN0.xls
Author: E. Picallo

Procedure Summary

Objectives

Opening of cryostat big nozzle valves (V504/V505)

In case a High flow impedance is detected the cryo-valves Vent line big nozzle valves (V504/V505) shall be switched periodically in agreement with scientific instruments to decrease the temperature to the expected values

Summary of Constraints

Monitoring and arming can be simultaneous but in this case the performance of the monitoring sequence is not guaranteed. That is why it is recommended to stop the monitoring before the valves actuation, but not mandatory.

One arming mode can be reached when the CCU is not in another arming mode.This is only valid for valves which are on the same CCU side (i.e. it IS possible to get one armed status on CCU-A and another one on CCU-B).

Arming mode returns directly to Idle mode if corresponding Valve command is received too fast (<1 sec) or is not received within 180 seconds.

Spacecraft Configuration

Start of Procedure

CDMU in default configuration
The 1553 interface CDMS, CCU-A and CCU-B shall be enable
CCU monitoring function active
Valves V504/V505 closed

End of Procedure

CDMU in default configuration
The 1553 interface CDMS, CCU-A and CCU-B shall be enable
CCU monitoring function active
Valves V504/V505 opened

Reference File(s)

Input Command Sequences

Output Command Sequences

HRKVBN0

Referenced Displays

ANDs	GRDs	SLDs
ZAZ9K999		

Configuration Control Information

Status : Version 4 - Unchanged
Last Checkin: 22/04/09

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DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
30/07/08	1	1	Created	E. Picallo	
26/11/08	2	2	if monitoring has been stopped, restart it before checking the valves status	E. Picallo	
25/03/09	2.2	3	Summary of constraints updated: One arming mode can be reached when the CCU is not in another arming mode is only valid for valves which are on the same CCU side	E. Picallo	
22/04/09	2.3	4	cryostat temperature and pressures monitoring added	E. Picallo	

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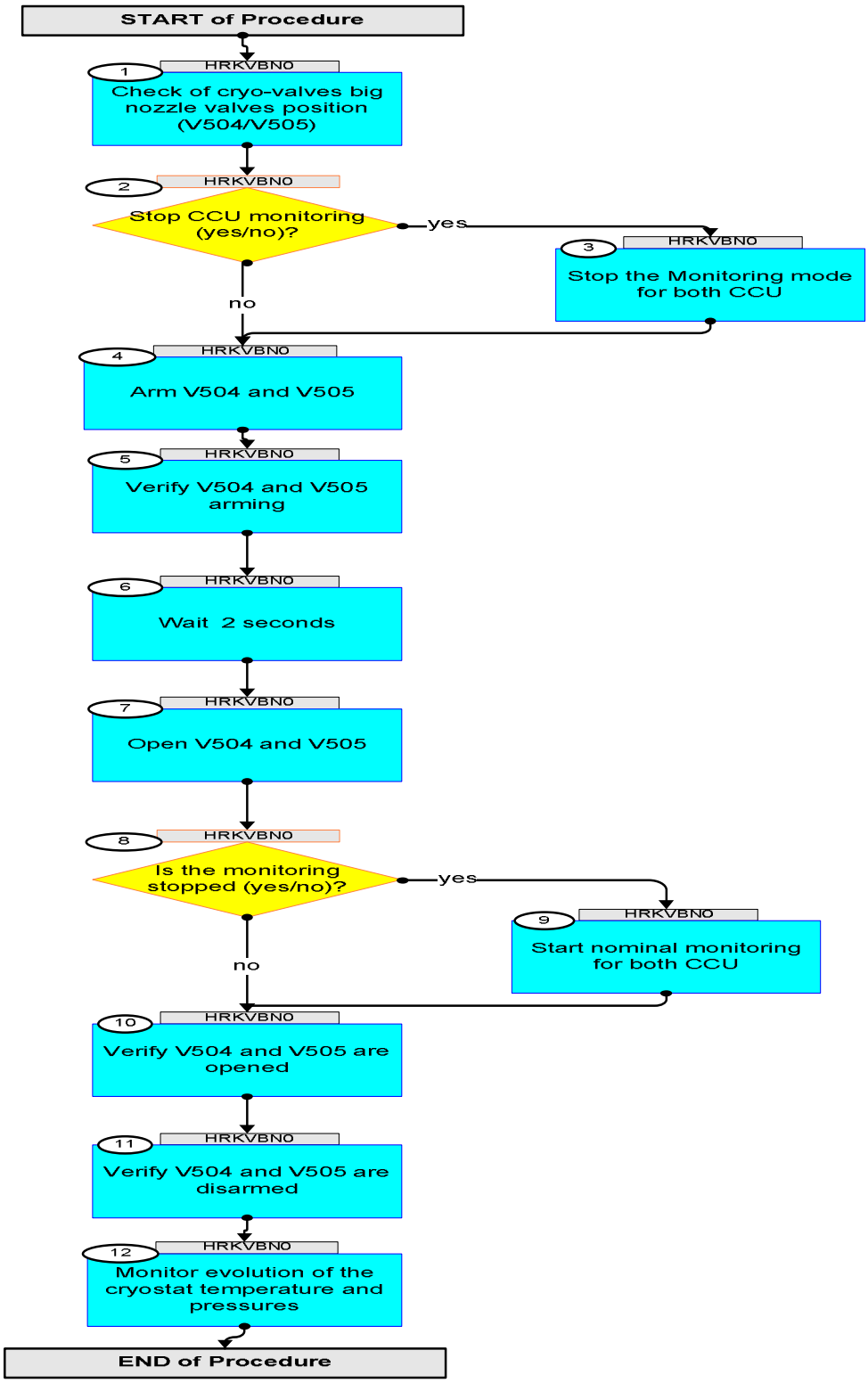
Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Beginning of Procedure		
		TC Seq. Name :HRKVBN0 (Big Nozzle Open) *TimeTag Type: N* *Sub Schedule ID:*		
1		*Check of cryo-valves big nozzle valves position (V504/V505)*		Next Step: 2
		Verify Telemetry **Valv_Stat_VS504 KM271302**	**= CLOSED**	AND=ZAZ9K999
		Verify Telemetry **Valv_Stat_VS505 KM271303**	**= CLOSED**	AND=ZAZ9K999
2		*Stop CCU monitoring (yes/no)?*		Next Step: yes 3 no 4
		Monitoring and arming can be simultaneous but in this case the performance of the monitoring sequence is not guaranteed. That is why it is recommended to stop the monitoring before the valves actuation, but not mandatory. **Note: the valve status telemetry is available only in monitoring mode.**		
3		*Stop the Monitoring mode for both CCU*		Next Step: 4
		Call procedure H_FCP_CCU_ACQP and select the option "Stop monitoring"		
		Execute Procedure: **H_FCP_CCU_ACQP** **CCU acquisition period update**		
4		*Arm V504 and V505*		Next Step: 5
		Execute Telecommand **CCUA_Arm_V504** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TC(8,4,8,1) for CCUA Valve V504 Arming	**ZC0Z7999**	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand **CCUB_Arm_V505** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TC(8,4,8,1) for CCUB Valve V505 Arming	**ZC0ZG999**	
5		*Verify V504 and V505 arming*		Next Step: 6
		Verify Telemetry **Arm_V504** **KM130300**	**= ARMED**	AND=ZAZ9K999
		Verify Telemetry **Arm_V505** **KM130301**	**= ARMED**	AND=ZAZ9K999
6		*Wait 2 seconds*		Next Step: 7
		There is a constrainst that the command to open or close the valves shall not be received less than one second before the arming execution time and 1 second on one hand, and not after the arming execution time and 180 seconds on the other hand.		
7		*Open V504 and V505*		Next Step: 8
		Execute Telecommand **CCUA_Open_V504** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TC(8,4,8,1) for CCUA Valve V504 Opening	**ZC0Z8999**	
		Execute Telecommand **CCUB_Open_V505** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TC(8,4,8,1) for CCUB Valve V505 Opening	**ZC0ZH999**	
8		*Is the monitoring stopped (yes/no)?*		Next Step: yes 9 no 10

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Warning: if the CCU monitoring have been stopped, it is necessary to restart it before checking the valves status, because these TM parameters are not CCU HK data but they are included in the CCU monitoring data.		
9		*Start nominal monitoring for both CCU*		Next Step: 10
		Call procedure H_FCP_CCU_ACQP and select "routine monitoring" (period 512 sec) or recycling/decontamination (period 8 sec)		
		Execute Procedure: **H_FCP_CCU_ACQP** **CCU acquisition period update**		
10		*Verify V504 and V505 are opened*		Next Step: 11
		Verify Telemetry **Valv_Stat_VS504** **KM271302**	**= OPEN**	AND=ZAZ9K999
		Verify Telemetry **Valv_Stat_VS505** **KM271303**	**= OPEN**	AND=ZAZ9K999
11		*Verify V504 and V505 are disarmed*		Next Step: 12
		Verify Telemetry **Arm_V504** **KM130300**	**= DISARMED**	AND=ZAZ9K999
		Verify Telemetry **Arm_V505** **KM130301**	**= DISARMED**	AND=ZAZ9K999
12		*Monitor evolution of the cryostat temperature and pressures*		Next Step: END
		The evolution of the cryostat temperature and pressures needs to be checked w.r.t. the prediction after this operation to confirm the temperatue decrease to the expected values		

End of Procedure