Recovery after PCDU RT Error Flags on 1553 S/C bus
File: H_CRP_EPS_RTER.xls
Author: E. Picallo

Procedure Summary

Objectives

This procedure describes the steps needed to detect and recover from PCDU RT communication errors (flags set on 1553 S/C bus)

Summary of Constraints

The S/C bus DLL FDIR algorithm does not check the following error bits, so they should be checked by Ground in order to detect the related failures and perform the necessary recovery:
- RT message error bit
- RT busy bit
- RT subsystem flag bit
- RT terminal flag bit

Spacecraft Configuration

Start of Procedure CDMU in default configuration;

End of Procedure CDMU in default configuration;

Reference File(s)

Input Command Sequences

Output Command Sequences

Referenced Displays

ANDs **GRDs** **SLDs**
(None)

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
23/03/2009	2.2	1	Created	E. Picallo	
22/07/2010	3.1	2	PCDU A Response Status Words TM parameters corrected.	E. Picallo	

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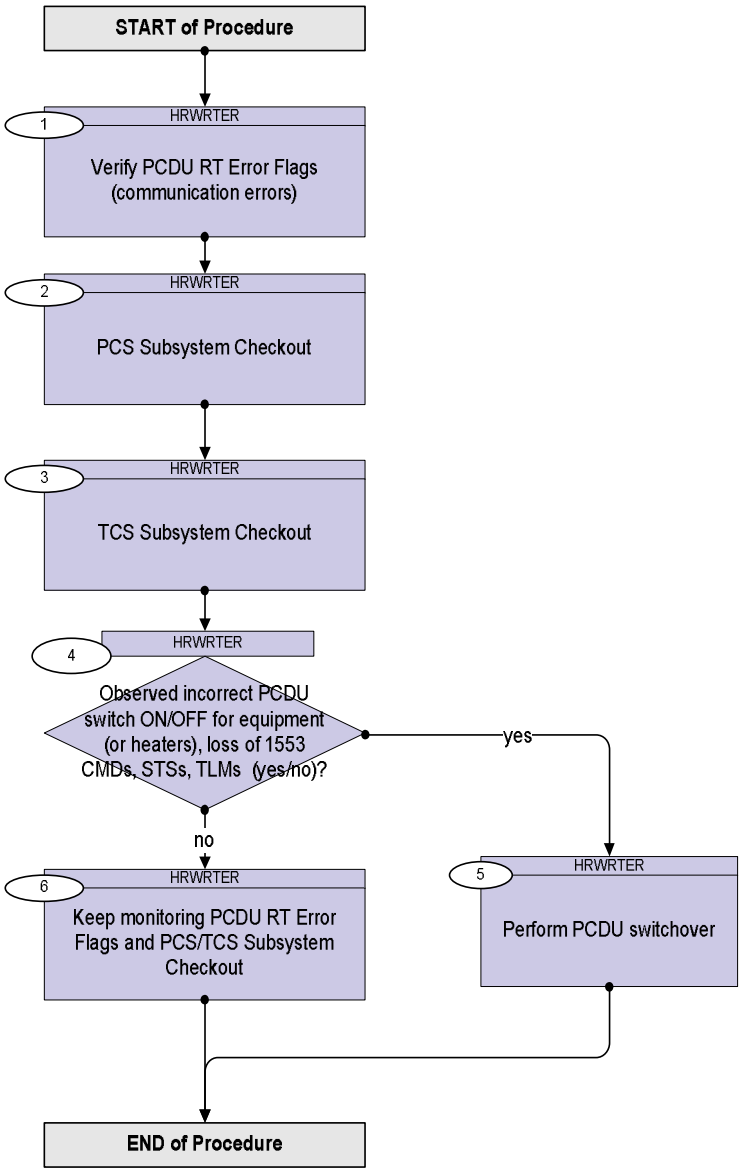
Procedure Flowchart Overview



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Beginning of Procedure		
		TC Seq. Name :HRWRTER (PCDU RT Error Flags) Recovery after PCDU RT Error Flags on 1553 S/C bus *TimeTag Type: N* *Sub Schedule ID:*		
1		*Verify PCDU RT Error Flags (communication errors)*		Next Step: 2
		The PCDU RT reports the following error flags in the Response Status Words via 1553 bus: **- RT message error bit: set by the RT upon detection of an error in the message or an illegal message identification.** **- RT busy bit: indicates that the RT or subsystem is unable to move data to or from the subsystem in compliance with the BC command.** **- RT subsystem flag bit: indicates a subsystem fault condition, and alert the BC to potentially invalid data.** **- RT terminal flag bit: indicates a RT fault condition.** **These RT error bits are not supported by DLL FDIR mechanisms. Thus, if a permanent error is reported on one of these bits, this could indicate a failure in the media bus or the PCDU.**		
		The following DIDs are available for PCDU: **DID_PCDU_SA01_RSP_STS_WORD** **DID_PCDU_SA11_RSP_STS_WORD** **DID_PCDU_SA12_RSP_STS_WORD** **DID_PCDU_SA13_RSP_STS_WORD** **DID_PCDU_SA14_RSP_STS_WORD** **DID_PCDU_SA15_RSP_STS_WORD** **DID_PCDU_SA16_RSP_STS_WORD** **DID_PCDU_SA17_RSP_STS_WORD** **DID_PCDU_SA18_RSP_STS_WORD** **DID_PCDU_SA19_RSP_STS_WORD** **DID_PCDU_SA20_RSP_STS_WORD** **DID_PCDU_SA21_RSP_STS_WORD** **DID_PCDU_SA30_RSP_STS_WORD**		
		The value of the error bits is kept in all the above mentioned DIDs. In case of <u>permanent failures</u> this means that, for example, if DID_PCDU_SA11_RSP_STS_WORD is indicating a subsystem error flag condition, the same error will be reported in all the other DIDs for response status words. **Then, it is enough to check only one of these Status Words. The parameters below correspond to:** **DID_PCDU_SA11_RSP_STS_WORD**		

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		The PCDMU TMTC SCHEDULER tasks is to transfer command and telemetry messages delivered by the CDMU BUS CONTROLLER to the Media Bus and to provide the corresponding response messages. **The SCHEDULER sends checksum reading messages in order to verify that the µSTs configuration.** **If an error appears due to the occurrence of a SEU or a failure, the SCHEDULER performs a new configuration phase for the concerned µST. In this case and if the CDMU BUS CONTROLLER initiate a transfer, the SCHEDULER returns a BUSY bit in the STATUS WORD to the CDMU BUS CONTROLLER.** **In case of failure of this new configuration due to hard failure of a µST, the SCHEDULER returns a CONFIGURATION ERROR bit in the STATUS WORD to the CDMU BUS CONTROLLER.**		
		Verify Telemetry **MsgErr** **DEXY2161**		(None)
		Verify Telemetry **Busy** **DEXY6161**		(None)
		Verify Telemetry **SubSys** **DEXY7161**		(None)
		Verify Telemetry **Term** **DEXY9161**		(None)
2		*PCS Subsystem Checkout*		Next Step: 3
		Execute Procedure: **H_FCP_EPS_CHECK** **PCS Subsystem Checkout**		
3		*TCS Subsystem Checkout*		Next Step: 4
		Execute Procedure: **H_FCP_TCS_CHECK** **TCS Subsystem Checkout**		
4		*Observed incorrect PCDU switch ON/OFF for equipment (or heaters), loss of 1553 CMDs, STSs, TLMs (yes/no)?*		Next Step: yes 5 no 6

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
5		*Perform PCDU switchover*		Next Step: END
		Execute Procedure: **H_CRP_EPS_FDIR** **Trigger PCS FDIR Level 1 Recovery**		
6		*Keep monitoring PCDU RT Error Flags and PCS/TCS Subsystem Checkout*		Next Step: END
		Go to step 1 of the procedure		

End of Procedure