

Copying content of a memory area to another
File: H_CRP_DHS_3026.xls
Author: S. Manganelli



Procedure Summary

Objectives

This procedure describes the steps needed to copy the memory contents between the following memories:

- # PM RAM to PM EEPROM;
- # PM EEPROM to PM RAM;
- # PM PROM to PM RAM;
- # SGM to PM RAM;
- # PM RAM to SGM;
- # MM to PM RAM;
- # PM RAM to MM.

Where PM RAM includes both CPU RAM and Communication RAM.

Note: A priori there is no need to copy contents from one memory area to another. Nevertheless this procedure can be used on a case-by-case basis for possible contingencies.

Summary of Constraints

Memories are copied through TC(8,4,1,1); this TC will be delayed when there is an ongoing:

- TC(6,2) Load Memory;
- TC(6,5) Dump Memory;
- TC(6,9) Check Memory;
- TC(8,4,1,1) Copy Memory;
- TC(8,4,2,1) Load Mass Memory;
- TC(8,4,2,2) Dump Mass Memory.

Moreover TC(8,4,1,1) will fail if there is, on the same MM board, an ongoing:

- TC(8,4,2,3) Check Mass Memory;
- TC(8,4,2,4) Map Mass Memory;
- TC(8,4,2,5) Turn Bank ON/OFF;
- TC(8,4,2,6) Initialise Mass Memory.

Note that if a bank of the MM is OFF, the address range will be treated as illegal addresses.

Spacecraft Configuration

Start of Procedure

n/a

End of Procedure

n/a

Reference File(s)

Input Command Sequences

Output Command Sequences

HRD3026B
HRD3026C
HRD3026D
HRD3026F
HRD3026G

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Referenced Displays

ANDs	GRDs	SLDs
ZAZAB999		(None)
ZAD22999		

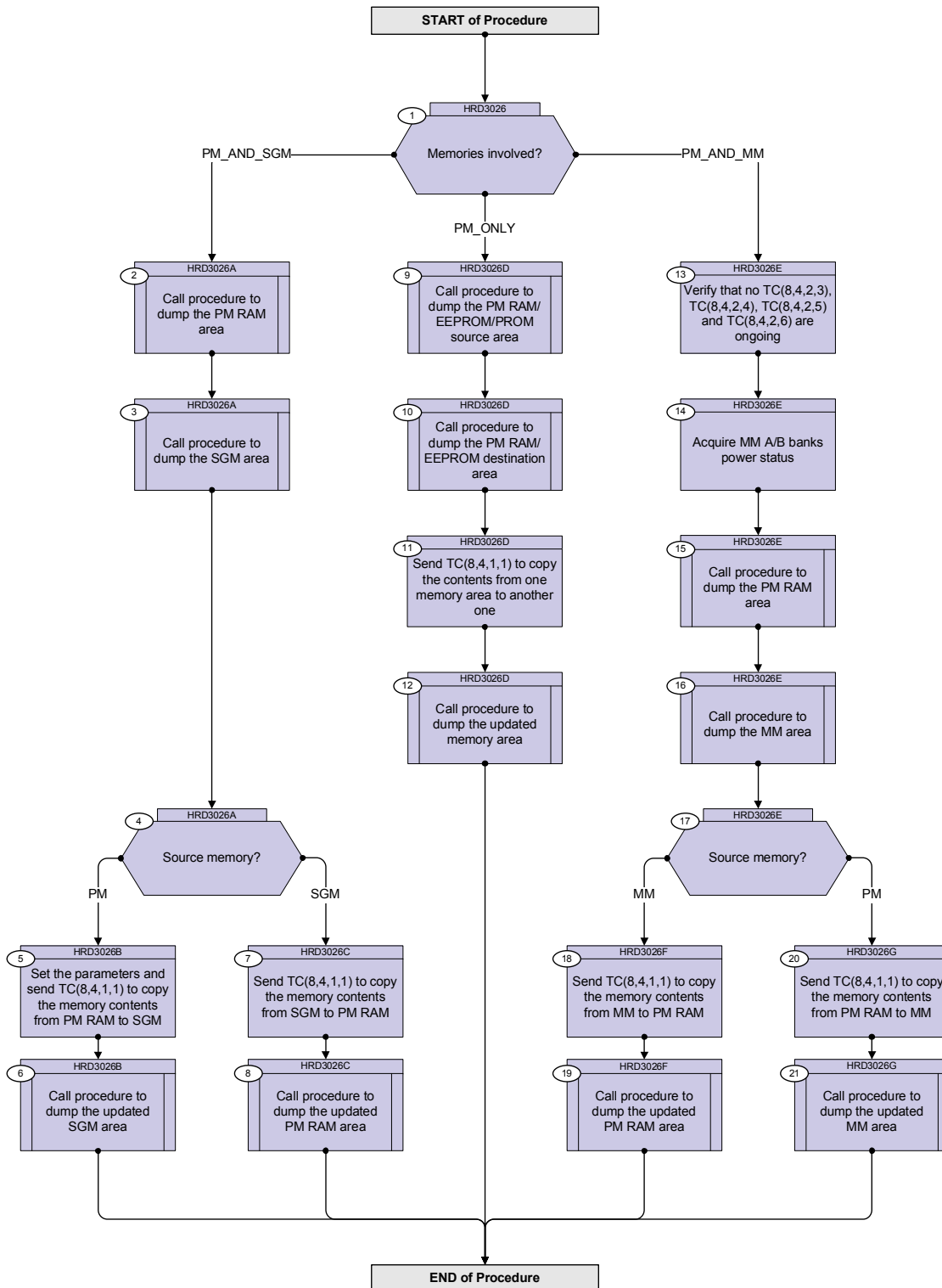
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
15/11/08		1	Created	S. Manganelli	
11/01/09	2	2	Updated following OBSW 3.8	S. Manganelli	

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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 :HRD3026 (Dummy sequence) TimeTag Type: Sub Schedule ID: <input type="checkbox"/>				
1		Memories involved?		Next Step: PM_AND_SGM 2 PM_ONLY 9 PM_AND_MM 13
TC Seq. Name :HRD3026A (Dump PM and SGM RAM) TimeTag Type: Sub Schedule ID: Formal Parameter List : <dec> Length NrBytes=				
2		Call procedure to dump the PM RAM area		Next Step: 3
		Execute procedure H_CRP_DHS_3022.		
3		Call procedure to dump the SGM area		Next Step: 4
		Execute procedure H_CRP_DHS_3014.		
4		Source memory?		Next Step: PM 5 SGM 7
TC Seq. Name :HRD3026B (Copy from PM to SGM) TimeTag Type: N Sub Schedule ID: Formal Parameter List : Src_StartAddr S_ST_ADD= <hex> Dest_StartAddr D_ST_ADD= <hex> Length LENGTH= <dec>				
5		Set the parameters and send TC(8,4,1,1) to copy the memory contents from PM RAM to SGM		Next Step: 6
		WARNING: It is not allowed to perform a copying that spans over several types of memories.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>In the TC(8,4,1,1) it is necessary to set the following parameters:</p> <ul style="list-style-type: none"> - Source Start Address: logical address (48 bits). - Destination Start Address: logical address (48 bits). - Length: number of bytes to copy. 		
		<pre>Execute Telecommand CopyMemory DC800180 Command Parameter(s) : Src_StartAddr DH011180 S_ST_ADD Dest_StartAddr DH012180 D_ST_ADD Length DH013180 LENGTH TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 10 Det. descr. : Copy Memory</pre>		
6		Call procedure to dump the updated SGM area		Next Step: END
		<p>DestStartAddr is on 48 bits, though only the 32 LSBs of it are used when dumping the SGM. Therefore within the call procedure the 16 ISB are used to set the MemoryID and the 16 LSBs to set the StartAddr.</p>		
		Execute procedure H_CRP_DHS_3014.		
<p>TC Seq. Name :HRD3026C (Copy from SGM to PM)</p> <p>TimeTag Type: N Sub Schedule ID: Formal Parameter List : Src_StartAddr S_ST_ADD= <hex> Dest_StartAddr D_ST_ADD= <hex> Length LENGTH= <dec></p>				
7		Send TC(8,4,1,1) to copy the memory contents from SGM to PM RAM		Next Step: 8
		<p>WARNING: It is not allowed to perform a copying that spans over several types of memories.</p>		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch									
		<p>In the TC(8,4,1,1) it is necessary to set the following parameters:</p> <ul style="list-style-type: none"> - Source Start Address: logical address. - Destination Start Address: logical address. - Length: number of bytes to copy. 											
		<p>Execute Telecommand</p> <p style="text-align: right;">CopyMemory</p> <p>Command Parameter(s) :</p> <table style="width: 100%; border: none;"> <tr> <td style="padding-left: 40px;">Src_StartAddr</td> <td style="padding-left: 20px;">DH011180</td> <td style="padding-left: 20px;">S_ST_ADD</td> </tr> <tr> <td style="padding-left: 40px;">Dest_StartAddr</td> <td style="padding-left: 20px;">DH012180</td> <td style="padding-left: 20px;">D_ST_ADD</td> </tr> <tr> <td style="padding-left: 40px;">Length</td> <td style="padding-left: 20px;">DH013180</td> <td style="padding-left: 20px;">LENGTH</td> </tr> </table> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- --</p> <p>Subsch. ID : 10 Det. descr. : Copy Memory</p>	Src_StartAddr	DH011180	S_ST_ADD	Dest_StartAddr	DH012180	D_ST_ADD	Length	DH013180	LENGTH	DC800180	
Src_StartAddr	DH011180	S_ST_ADD											
Dest_StartAddr	DH012180	D_ST_ADD											
Length	DH013180	LENGTH											
8		Call procedure to dump the updated PM RAM area		Next Step: END									
		Execute procedure H_CRP_DHS_3022.											
<p>TC Seq. Name :HRD3026D (Copy PM memory area)</p> <p>TimeTag Type: N Sub Schedule ID: Formal Parameter List : Src_StartAddr S_ST_ADD= <hex> Dest_StartAddr D_ST_ADD= <hex> Length LENGTH= <dec></p>													
9		Call procedure to dump the PM RAM/EEPROM/PROM source area		Next Step: 10									
		Execute procedure H_CRP_DHS_3022.											
10		Call procedure to dump the PM RAM/EEPROM destination area		Next Step: 11									
		Execute procedure H_CRP_DHS_3022.											
11		Send TC(8,4,1,1) to copy the contents from one memory area to another one		Next Step: 12									

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		WARNING: It is not allowed to perform a copying that spans over several types of memories.		
		In the TC(8,4,1,1) it is necessary to set the following parameters: - <u>Source Start Address</u> : logical address. - <u>Destination Start Address</u> : logical address. - <u>Length</u> : number of bytes to copy.		
		Execute Telecommand CopyMemory Command Parameter(s) : Src_StartAddr DH011180 S_ST_ADD Dest_StartAddr DH012180 D_ST_ADD Length DH013180 LENGTH TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 10 Det. descr. : Copy Memory	DC800180	
12		Call procedure to dump the updated memory area		Next Step: END
		Execute procedure H_CRP_DHS_3022.		
TC Seq. Name :HRD3026E (Dump PM and MM area) TimeTag Type: Sub Schedule ID: <input type="checkbox"/>				
13		Verify that no TC(8,4,2,3), TC(8,4,2,4), TC(8,4,2,5) and TC(8,4,2,6) are ongoing		Next Step: 14
		Verify Telemetry TC_8-4-2-3_x DEE0J161 = FALSE		AND=ZAD22999
		Verify Telemetry TC_8-4-2-4_x DEE0K161 = FALSE		AND=ZAD22999
		Verify Telemetry TC_8-4-2-5_x DEE0L161 = FALSE		AND=ZAD22999
		Verify Telemetry TC_8-4-2-6_x DEE0M161 = FALSE		AND=ZAD22999
14		Acquire MM A/B banks power status		Next Step: 15

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry PWR_Sts_BankA0 DEECG160		AND=ZAZAB999
		Verify Telemetry PWR_Sts_BankA1 DEECH160		AND=ZAZAB999
		Verify Telemetry PWR_Sts_BankA2 DEECZ160		AND=ZAZAB999
		Verify Telemetry PWR_Sts_BankA3 DEECJ160		AND=ZAZAB999
		Verify Telemetry PWR_Sts_BankB0 DEECK160		AND=ZAZAB999
		Verify Telemetry PWR_Sts_BankB1 DEECL160		AND=ZAZAB999
		Verify Telemetry PWR_Sts_BankB2 DEECM160		AND=ZAZAB999
		Verify Telemetry PWR_Sts_BankB3 DEECN160		AND=ZAZAB999
15		Call procedure to dump the PM RAM area		Next Step: 16
		Execute procedure H_CRP_DHS_3022.		
16		Call procedure to dump the MM area		Next Step: 17
		Execute procedure H_CRP_DHS_3025.		
17		Source memory?		Next Step: MM 18 PM 20
<p>TC Seq. Name :HRD3026F (Copy from MM to PM R)</p> <p>TimeTag Type: N Sub Schedule ID: Formal Parameter List : Src_StartAddr S_ST_ADD= <hex> Dest_StartAddr D_ST_ADD= <hex> Length LENGTH= <dec></p>				
18		Send TC(8,4,1,1) to copy the memory contents from MM to PM RAM		Next Step: 19

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch															
		<p>WARNING:</p> <p>- It is not allowed to perform a copying that spans over several types of memories.</p> <p>- If a bank of the MM has been turned OFF, this address range will be treated as illegal addresses.</p>																	
		<p>In the TC(8,4,1,1) it is necessary to set the following parameters:</p> <p>- Source Start Address: logical address.</p> <p>- Destination Start Address: logical address.</p> <p>- Length: number of bytes to copy.</p>																	
		<p>Execute Telecommand</p> <p style="text-align: right;">CopyMemory</p> <p>Command Parameter(s) :</p> <table style="width: 100%; border: none;"> <tr> <td style="padding-left: 40px;">Src_StartAddr</td> <td style="padding-left: 20px;">DH011180</td> <td style="padding-left: 20px;">S_ST_ADD</td> </tr> <tr> <td style="padding-left: 40px;">Dest_StartAddr</td> <td style="padding-left: 20px;">DH012180</td> <td style="padding-left: 20px;">D_ST_ADD</td> </tr> <tr> <td style="padding-left: 40px;">Length</td> <td style="padding-left: 20px;">DH013180</td> <td style="padding-left: 20px;">LENGTH</td> </tr> </table> <p>TC Control Flags :</p> <table style="width: 100%; border: none;"> <tr> <td style="padding-left: 40px;">GBM</td> <td style="padding-left: 20px;">IL</td> <td style="padding-left: 20px;">DSE</td> </tr> <tr> <td style="padding-left: 40px;">--</td> <td style="padding-left: 20px;">Y</td> <td style="padding-left: 20px;">--</td> </tr> </table> <p>Subsch. ID : 10 Det. descr. : Copy Memory</p>	Src_StartAddr	DH011180	S_ST_ADD	Dest_StartAddr	DH012180	D_ST_ADD	Length	DH013180	LENGTH	GBM	IL	DSE	--	Y	--	DC800180	
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Dest_StartAddr	DH012180	D_ST_ADD																	
Length	DH013180	LENGTH																	
GBM	IL	DSE																	
--	Y	--																	
19		Call procedure to dump the updated PM RAM area		Next Step: END															
		Execute procedure H_CRP_DHS_3022.																	
<p>TC Seq. Name :HRD3026G (Copy from PM to MM R)</p> <p>TimeTag Type: N Sub Schedule ID: Formal Parameter List :</p> <table style="width: 100%; border: none;"> <tr> <td style="padding-left: 40px;">Src_StartAddr</td> <td style="padding-left: 20px;">S_ST_ADD=</td> <td style="padding-left: 20px;"><hex></td> </tr> <tr> <td style="padding-left: 40px;">Dest_StartAddr</td> <td style="padding-left: 20px;">D_ST_ADD=</td> <td style="padding-left: 20px;"><hex></td> </tr> <tr> <td style="padding-left: 40px;">Length</td> <td style="padding-left: 20px;">LENGTH=</td> <td style="padding-left: 20px;"><dec></td> </tr> </table>					Src_StartAddr	S_ST_ADD=	<hex>	Dest_StartAddr	D_ST_ADD=	<hex>	Length	LENGTH=	<dec>						
Src_StartAddr	S_ST_ADD=	<hex>																	
Dest_StartAddr	D_ST_ADD=	<hex>																	
Length	LENGTH=	<dec>																	
20		Send TC(8,4,1,1) to copy the memory contents from PM RAM to MM		Next Step: 21															
		<p>WARNING:</p> <p>- It is not allowed to perform a copying that spans over several types of memories.</p> <p>- If a bank of the MM has been turned OFF, this address range will be treated as illegal addresses.</p>																	

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		<p>Execute Telecommand</p> <p style="text-align: right;">CopyMemory</p> <p>Command Parameter(s) :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Src_StartAddr</td> <td style="text-align: left;">DH011180</td> <td style="text-align: right;">S_ST_ADD</td> </tr> <tr> <td style="text-align: right;">Dest_StartAddr</td> <td style="text-align: left;">DH012180</td> <td style="text-align: right;">D_ST_ADD</td> </tr> <tr> <td style="text-align: right;">Length</td> <td style="text-align: left;">DH013180</td> <td style="text-align: right;">LENGTH</td> </tr> </table> <p>TC Control Flags :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">GBM IL DSE</td> <td style="text-align: left;">--Y -- ---</td> </tr> </table> <p>Subsch. ID : 10 Det. descr. : Copy Memory</p>	Src_StartAddr	DH011180	S_ST_ADD	Dest_StartAddr	DH012180	D_ST_ADD	Length	DH013180	LENGTH	GBM IL DSE	--Y -- ---	DC800180	
Src_StartAddr	DH011180	S_ST_ADD													
Dest_StartAddr	DH012180	D_ST_ADD													
Length	DH013180	LENGTH													
GBM IL DSE	--Y -- ---														
21		Call procedure to dump the updated MM area		Next Step: END											
		Execute procedure H_CRP_DHS_3025.													
End of Procedure															