

Configuration check after HCS high dissipation detection
File: H_CRP_TCS_HCR.xls
Author: E. Picallo



Procedure Summary

Objectives

This procedure describes the checks to be performed after an onboard detection of HCSs high dissipation failure.

This failure occurs when the temperature measured for a given Heater Group exceeds its limit, typically 112degC. Consequently the monitoring defined in the on-board Monitoring Table, MOT, triggers an event.

In case the related action defined in the on-board Event Action Table, EAT, is enabled, it triggers the enabling of the thermal protection for this group. This ensures that in case the temperature continues to rise, the protection will force the HPS and HCS OFF. No other reconfiguration takes place such as reconfiguration to the redundant HPS.

In case the action is disabled, the event is triggered though no on-board action takes place.

Summary of Constraints

The on-board action only enables the thermal protection but does not actually reconfigure anything. The on-board configuration can thus be different, namely one of:

- the thermal protection was fired, as HCSs were OFF a thermal control loop failed and thus triggered the reconfiguration to the redundant group;
- the thermal protection was fired, though no control loop failure was detected, this results in both paired HPS being OFF;
- the thermal protection did not fire although the temperature is still Out Of Limits;
- the thermal protection did not fire as the temperature came back in range.

Spacecraft Configuration

Start of Procedure

CDMU in default configuration;
Thermal Control Management function active;
Reception of a MOT HCSs high dissipation failure event packet.

End of Procedure

CDMU in default configuration;
Thermal Control Management function active.

Reference File(s)

Input Command Sequences

Output Command Sequences

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Referenced Displays

ANDs **GRDs** **SLDs**
 WAHT1584
 WAHT2584
 WAHT3584

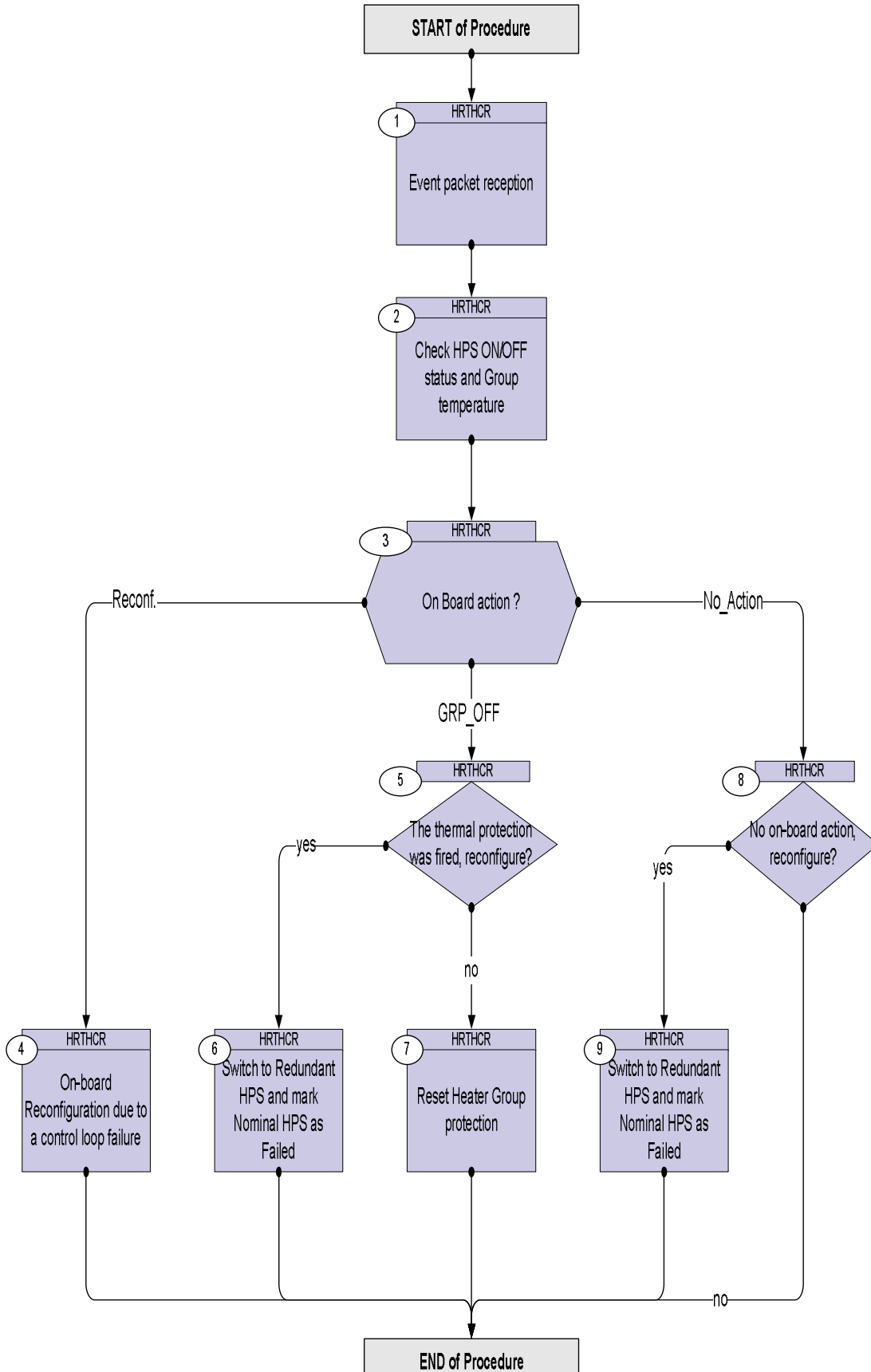
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
28/07/08	1	1	Created	E. Picallo	
08/12/08		2	database alignment	E. Picallo	
09/01/09	2	3	CDMU ASW V3.8 and BSW V2.4 alignment	E. Picallo	

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Procedure Flowchart Overview



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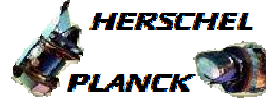
END OF PROCEDURE

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch																														
Beginning of Procedure																																		
<p><i>TC Seq. Name :HRTHCR (HCS high dissipation)</i> Configuration check after HCS high dissipation detection</p> <p><i>TimeTag Type: N</i> <i>Sub Schedule ID:</i></p> <p style="text-align: center;">□</p>																																		
1		Event packet reception		Next Step: 2																														
		<p>The event identifies the Monitoring ID, thus the Heater Group. The event packet also includes the failed parameter value, in this case the temperature. The 18 different events related to the 18 different groups have been referenced in the sub steps 2.1 to 2.18.</p>																																
		<table border="0"> <thead> <tr> <th>monitoring ID</th> <th>event ID</th> <th>Heater Group</th> </tr> </thead> <tbody> <tr><td>78</td><td>0x8101</td><td>GRP1</td></tr> <tr><td>79</td><td>0x8102</td><td>GRP2</td></tr> <tr><td>80</td><td>0x8103</td><td>GRP3</td></tr> <tr><td>81</td><td>0x8104</td><td>GRP4</td></tr> <tr><td>82</td><td>0x8105</td><td>GRP5</td></tr> <tr><td>83</td><td>0x8106</td><td>GRP6</td></tr> <tr><td>84</td><td>0x8107</td><td>GRP7</td></tr> <tr><td>85</td><td>0x8108</td><td>GRP8</td></tr> <tr><td>86</td><td>0x8109</td><td>GRP9</td></tr> </tbody> </table>	monitoring ID	event ID	Heater Group	78	0x8101	GRP1	79	0x8102	GRP2	80	0x8103	GRP3	81	0x8104	GRP4	82	0x8105	GRP5	83	0x8106	GRP6	84	0x8107	GRP7	85	0x8108	GRP8	86	0x8109	GRP9		
monitoring ID	event ID	Heater Group																																
78	0x8101	GRP1																																
79	0x8102	GRP2																																
80	0x8103	GRP3																																
81	0x8104	GRP4																																
82	0x8105	GRP5																																
83	0x8106	GRP6																																
84	0x8107	GRP7																																
85	0x8108	GRP8																																
86	0x8109	GRP9																																
		<table border="0"> <tbody> <tr><td>87</td><td>0x8110</td><td>GRP10</td></tr> <tr><td>88</td><td>0x8111</td><td>GRP11</td></tr> <tr><td>89</td><td>0x8112</td><td>GRP12</td></tr> <tr><td>90</td><td>0x8113</td><td>GRP13</td></tr> <tr><td>91</td><td>0x8114</td><td>GRP14</td></tr> <tr><td>92</td><td>0x8115</td><td>GRP15</td></tr> <tr><td>93</td><td>0x8116</td><td>GRP16</td></tr> <tr><td>94</td><td>0x8117</td><td>GRP17</td></tr> <tr><td>95</td><td>0x8118</td><td>GRP18</td></tr> </tbody> </table>	87	0x8110	GRP10	88	0x8111	GRP11	89	0x8112	GRP12	90	0x8113	GRP13	91	0x8114	GRP14	92	0x8115	GRP15	93	0x8116	GRP16	94	0x8117	GRP17	95	0x8118	GRP18					
87	0x8110	GRP10																																
88	0x8111	GRP11																																
89	0x8112	GRP12																																
90	0x8113	GRP13																																
91	0x8114	GRP14																																
92	0x8115	GRP15																																
93	0x8116	GRP16																																
94	0x8117	GRP17																																
95	0x8118	GRP18																																
1.1		Heater Group 1 failure		□																														
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8101 Packet Details: <table border="0" style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>5</td></tr> <tr><td>Subtype:</td><td>2</td></tr> <tr><td>PI1:</td><td>33025</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	5	Subtype:	2	PI1:	33025	PI2:	0	D_EvRpMo8101																					
APID:	16																																	
Type:	5																																	
Subtype:	2																																	
PI1:	33025																																	
PI2:	0																																	
		Verify Packet Telemetry (Pkt = D_EvRpMo8101) <table border="0" style="margin-left: 150px;"> <tr> <td>EventId</td> <td>DE068170</td> <td>= 8101 <hex></td> <td>(None)</td> </tr> </table>	EventId	DE068170	= 8101 <hex>	(None)																												
EventId	DE068170	= 8101 <hex>	(None)																															
		Verify Packet Telemetry (Pkt = D_EvRpMo8101) <table border="0" style="margin-left: 150px;"> <tr> <td>MonitorId</td> <td>DE055170</td> <td>= 78 <dec></td> <td>(None)</td> </tr> </table>	MonitorId	DE055170	= 78 <dec>	(None)																												
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry (Pkt = D_EvRpMo8101) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS1 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8101) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS1 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8101) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS1 temperature has been violated i.e. GRP1_THERM_TLM >112 °C (0x1000)		
1.2		Heater Group 2 failure		☐
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8102 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33026 PI2: 0	D_EvRpMo8102	
		Verify Packet Telemetry (Pkt = D_EvRpMo8102) EventId DE068170	= 8102 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8102) MonitorId DE055170	= 79 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8102) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS2 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8102) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS2 when the event was raised	(None)

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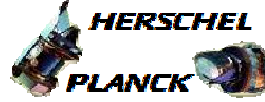
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry (Pkt = D_EvRpMo8102) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS2 temperature has been violated i.e.GRP2_THERM_TLM >112 °C (0x1000)		
1.3		Heater Group 3 failure		<input type="checkbox"/>
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8103 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33027 PI2: 0	D_EvRpMo8103	
		Verify Packet Telemetry (Pkt = D_EvRpMo8103) EventId DE068170	= 8103 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8103) MonitorId DE055170	= 80 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8103) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS3 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8103) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS3 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8103) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS3 temperature has been violated i.e. GRP3_THERM_TLM >112 °C (0x1000)		
1.4		Heater Group 4 failure		<input type="checkbox"/>

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		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8104 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33028 PI2: 0	D_EvRpMo8104	
		Verify Packet Telemetry (Pkt = D_EvRpMo8104) EventId DE068170	= 8104 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8104) MonitorId DE055170	= 81 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8104) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS4 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8104) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS4 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8104) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS4 temperature has been violated i.e. GRP4_THERM_TLM >112 °C (0x1000)		
1.5		Heater Group 5 failure		☐
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8105 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33029 PI2: 0	D_EvRpMo8105	
		Verify Packet Telemetry (Pkt = D_EvRpMo8105) EventId DE068170	= 8105 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8105) MonitorId DE055170	= 82 <dec>	(None)

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry (Pkt = D_EvRpMo8105) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS5 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8105) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS5 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8105) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS5 temperature has been violated i.e. GRP5_THERM_TLM >112 °C (0x1000)		
1.6		Heater Group 6 failure		□
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8106 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33030 PI2: 0	D_EvRpMo8106	
		Verify Packet Telemetry (Pkt = D_EvRpMo8106) EventId DE068170	= 8106 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8106) MonitorId DE055170	= 83 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8106) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS6 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8106) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS6 when the event was raised	(None)

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry (Pkt = D_EvRpMo8106) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS6 temperature has been violated i.e. GRP6_THERM_TLM >112 °C (0x1000)		
1.7		Heater Group 7 failure		<input type="checkbox"/>
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8107 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33031 PI2: 0	D_EvRpMo8107	
		Verify Packet Telemetry (Pkt = D_EvRpMo8107) EventId DE068170	= 8107 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8107) MonitorId DE055170	= 84 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8107) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS7 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8107) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS7 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8107) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS7 temperature has been violated i.e. GRP7_THERM_TLM >112 °C (0x1000)		
1.8		Heater Group 8 failure		<input type="checkbox"/>

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		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8108 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33032 PI2: 0	D_EvRpMo8108	
		Verify Packet Telemetry (Pkt = D_EvRpMo8108) EventId DE068170	= 8108 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8108) MonitorId DE055170	= 85 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8108) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS8 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8108) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS8 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8108) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS8 temperature has been violated i.e. GRP8_THERM_TLM >112 °C (0x1000)		
1.9		Heater Group 9 failure		☐
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8109 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33033 PI2: 0	D_EvRpMo8109	
		Verify Packet Telemetry (Pkt = D_EvRpMo8109) EventId DE068170	= 8109 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8109) MonitorId DE055170	= 86 <dec>	(None)

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		Verify Packet Telemetry (Pkt = D_EvRpMo8109) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS9 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8109) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS9 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8109) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS9 temperature has been violated i.e. GRP9_THERM_TLM >112 °C (0x1000)		
1.10		Heater Group 10 failure		<input type="checkbox"/>
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8110 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33040 PI2: 0	D_EvRpMo8110	
		Verify Packet Telemetry (Pkt = D_EvRpMo8110) EventId DE068170	= 8110 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8110) MonitorId DE055170	= 87 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8110) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS10 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8110) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS10 when the event was raised	(None)

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		Verify Packet Telemetry (Pkt = D_EvRpMo8110) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS10 temperature has been violated i.e. GRP10_THERM_TLM >112 °C (0x1000)		
1.11		Heater Group 11 failure		<input type="checkbox"/>
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8111 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33041 PI2: 0	D_EvRpMo8111	
		Verify Packet Telemetry (Pkt = D_EvRpMo8111) EventId DE068170	= 8111 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8111) MonitorId DE055170	= 88 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8111) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS11 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8111) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS11 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8111) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS11 temperature has been violated i.e. GRP11_THERM_TLM >112 °C (0x1000)		
1.12		Heater Group 12 failure		<input type="checkbox"/>

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		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8112 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33042 PI2: 0	D_EvRpMo8112	
		Verify Packet Telemetry (Pkt = D_EvRpMo8112) EventId DE068170	= 8112 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8112) MonitorId DE055170	= 89 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8112) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS12 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8112) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS12 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8112) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS12 temperature has been violated i.e. GRP12_THERM_TLM >112 °C (0x1000)		
1.13		Heater Group 13 failure		☐
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8113 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33043 PI2: 0	D_EvRpMo8113	
		Verify Packet Telemetry (Pkt = D_EvRpMo8113) EventId DE068170	= 8113 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8113) MonitorId DE055170	= 90 <dec>	(None)

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		Verify Packet Telemetry (Pkt = D_EvRpMo8113) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS13 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8113) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS13 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8113) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS13 temperature has been violated i.e. GRP13_THERM_TLM >112 °C (0x1000)		
1.14		Heater Group 14 failure		□
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8114 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33044 PI2: 0	D_EvRpMo8114	
		Verify Packet Telemetry (Pkt = D_EvRpMo8114) EventId DE068170	= 8114 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8114) MonitorId DE055170	= 91 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8114) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS14 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8114) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS14 when the event was raised	(None)

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		Verify Packet Telemetry (Pkt = D_EvRpMo8114) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS14 temperature has been violated i.e. GRP14_THERM_TLM >112 °C (0x1000)		
1.15		Heater Group 15 failure		<input type="checkbox"/>
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8115 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33045 PI2: 0	D_EvRpMo8115	
		Verify Packet Telemetry (Pkt = D_EvRpMo8115) EventId DE068170	= 8115 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8115) MonitorId DE055170	= 92 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8115) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS15 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8115) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS15 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8115) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS15 temperature has been violated i.e. GRP15_THERM_TLM >112 °C (0x1000)		
1.16		Heater Group 16 failure		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8116 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33046 PI2: 0	D_EvRpMo8116	
		Verify Packet Telemetry (Pkt = D_EvRpMo8116) EventId DE068170	= 8116 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8116) MonitorId DE055170	= 93 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8116) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS16 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8116) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS16 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8116) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS16 temperature has been violated i.e. GRP16_THERM_TLM >112 °C (0x1000)		
1.17		Heater Group 17 failure		☐
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8117 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33047 PI2: 0	D_EvRpMo8117	
		Verify Packet Telemetry (Pkt = D_EvRpMo8117) EventId DE068170	= 8117 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8117) MonitorId DE055170	= 94 <dec>	(None)

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry (Pkt = D_EvRpMo8117) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS17 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8117) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS17 when the event was raised	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8117) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS17 temperature has been violated i.e. GRP17_THERM_TLM >112 °C (0x1000)		
1.18		Heater Group 18 failure		☐
		Verify Packet Reception CdmuAsw Event 5-2 Evt_Mot_Exc_Id_0x8118 Packet Details: APID: 16 Type: 5 Subtype: 2 PI1: 33048 PI2: 0	D_EvRpMo8118	
		Verify Packet Telemetry (Pkt = D_EvRpMo8118) EventId DE068170	= 8118 <hex>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8118) MonitorId DE055170	= 95 <dec>	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8118) FirstMaskParVal DE070170	the 8 MSB identify the temp. of the failed HPS18 when first detected	(None)
		Verify Packet Telemetry (Pkt = D_EvRpMo8118) RepThMaskParVal DE071170	the 8 MSB identify the temp. of the failed HPS18 when the event was raised	(None)

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry (Pkt = D_EvRpMo8118) CheckValue DE059170	the 8 MSB identify the temp. threshold to raise the event	(None)
		This event is raised if the the HPS18 temperature has been violated i.e. GRP18_THERM_TLM >112 °C (0x1000)		
2		Check HPS ON/OFF status and Group temperature		Next Step: 3
		Depending to which event occurred, check the related group status and temperature.		
		Refer to Checkform WAHT1584 at the back of this document		ANDCK
		Refer to Checkform WAHT2584 at the back of this document		ANDCK
		Refer to Checkform WAHT3584 at the back of this document		ANDCK
3		On Board action ?		Next Step: Reconf. 4 GRP_OFF 5 No_Action 8
		In the following it is assumed that the event was related to Heater Group x.		
		Reconf.: The thermal protection was fired, as HCSs were OFF a thermal control loop failed and thus triggered the reconfiguration to the redundant group : - GRP x _HPS_STS = OFF - GRP19- x _HPS_STS = ON		
		GRP_OFF: The thermal protection was fired, though no control loop failure was detected, this results in both paired HPS being OFF. - GRP x _HPS_STS = OFF - GRP19- x _HPS_STS = GRP x _HPS_STS		
		No_Action: The thermal protection did not fire. The temperature is still Out Of Limits (protection is defective/disabled). - GRP x _HPS_STS = ON - GRP19- x _HPS_STS = OFF		
4		On-board Reconfiguration due to a control loop failure		Next Step: END

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		The configuration check and diagnosis is the same as the one performed after reception of the control loop failure event.		
		Execute Procedure: H_CRP_TCS_CLR Configuration check after thermal control loop failure		
5		<i>The thermal protection was fired, reconfigure?</i>		Next Step: yes 6 no 7
		The HPS was switched OFF though no control loop failure have yet been detected on-board. The on-board configuration requires one of the paired HPS to be switched ON so that the thermal control can resume. Either operations are resumed with the Heater Group where the error occurred or the Group is deemed as Failed and reconfiguration to the redundant one is triggered.		
6		<i>Switch to Redundant HPS and mark Nominal HPS as Failed</i>		Next Step: END
		This Heater Group is no more to be used, thus needs to be flagged as Failed and the Redundant switched ON.		
		Execute Procedure: H_CRP_TCS_HCNR Heater Group reconfiguration after failure of the Nominal one		
7		<i>Reset Heater Group protection</i>		Next Step: END
		The thermal protection having fired, needs to be reset it by switching it first switch the related HPS OFF and then back ON		
		Execute Procedure: H_CRP_TCS_HCPR Reset Heater Group protection		
8		<i>No on-board action, reconfigure?</i>		Next Step: yes 9 no END

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>The thermal protection was enabled though it did not fired.</p> <p>Temperature is still out of limits but the protection is defective. Verify Group x temperature</p> <p>if GRPx_Therm_TLM >112 °C then reconfig.</p>		
9		<p><i>Switch to Redundant HPS and mark Nominal HPS as Failed</i></p>		Next Step: END
		<p>This Heater Group is no more to be used, thus needs to be flagged as Failed and the Redundant switched ON.</p>		
		<p>Execute Procedure: H_CRP_TCS_HCNR Heater Group reconfiguration after failure of the Nominal one</p>		
End of Procedure				

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ID	DESCRIPTION	VALUE	UNIT	ID	DESCRIPTION	VALUE	UNIT
WM12G565	GRP1_HPS_STS			WM32G565	GRP4_HPS_STS		
WM112565	GRP1_HPS_ITLM			WM312565	GRP4_HPS_ITLM		
WM104565	GRP1_Therm_TLM			WM304565	GRP4_Therm_TLM		
WM11A565	Decon1_G1H1_S			WM31A565	Decon5_G4H1_S		
WM11B565	Xpnd2_G1H2_S			WM31B565	FHWOV_G4H2_S		
WM11C565	FcvA1B_G1H3_S			WM31C565	RCSpip_G4H3_S		
WM11D565	FcvC2B_G1H4_S			WM31D565	FcvA1A_G4H4_S		
WM11E565	RCSpipG1H5_S			WM31E565	FcvC2A_G4H5_S		
WM11F565	Xpnd1_G1H6_S			WM31F565	RCSpipG4H6_S		
WM22G565	GRP2_HPS_STS			WM32H565	GRP5_HPS_STS		
WM212565	GRP2_HPS_ITLM			WM313565	GRP5_HPS_ITLM		
WM204565	GRP2_Therm_TLM			WM305565	GRP5_Therm_TLM		
WM21A565	Decon3_G2H1_S			WM31G565	CRS2_G5H1_S		
WM21B565	FcvC1B_G2H2_S			WM31H565	FHHRH_G5H2_S		
WM21C565	FcvA2B_G2H3_S			WM31J565	FhWevlcuG5H3_S		
WM21D565	FcvC4B_G2H4_S			WM31K565	FcvC3B_G5H4_S		
WM21E565	FpdFps_G2H5_S			WM31L565	RCSpipG5H5_S		
WM21F565	tanks_G2H6_S			WM31M565	PtLflv12_G5H6_S		
WM22H565	GRP3_HPS_STS			WM42G565	GRP6_HPS_STS		
WM213565	GRP3_HPS_ITLM			WM412565	GRP6_HPS_ITLM		
WM205565	GRP3_Therm_TLM			WM404565	GRP6_Therm_TLM		
WM21G565	FPBOLC_G3H1_S			WM41A565	Decon7_G6H1_S		
WM21H565	CRS1_G3H2_S			WM41B565	RWA4_G6H2_S		
WM21J565	FPMECDEC_G3H3_S			WM41C565	RWA1_G6H3_S		
WM21K565	RCSpipG3H4_S			WM41D565	RWA3_G6H4_S		
WM21L565	CcuHsdHsfG3H5_S			WM41E565	FHWIV_G6H5_S		
WM21M565	GYRO_G3H6_S			WM41F565	RWA2_G6H6_S		

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ID	DESCRIPTION	VALUE	UNIT	ID	DESCRIPTION	VALUE	UNIT
WM42H565	GRP7_HPS_STS			WM62G565	GRP10_HPS_STS		
WM413565	GRP7_HPS_ITLM			WM612565	GRP10_HPS_ITLM		
WM405565	GRP7_Therm_TLM			WM604565	GRP10_Therm_TLM		
WM41G565	STR_G7H1_S			WM61A565	Decon2_G10H1_S		
WM41H565	BATTconG7H2_S			WM61B565	tank-Y_G10H2_S		
WM41J565	FHWOH_G7H3_S			WM61C565	FcvC4A_G10H3_S		
WM41K565	FHWEH_G7H4_S			WM61D565	FHLSU_G10H4_S		
WM41L565	FcvC1A_G7H5_S			WM61E565	STR1baffG10H5_S		
WM41M565	FcvA2A_G7H6_S			WM61F565	tank+Y_G10H6_S		
WM52G565	GRP8_HPS_STS			WM62H565	GRP11_HPS_STS		
WM512565	GRP8_HPS_ITLM			WM613565	GRP11_HPS_ITLM		
WM504565	GRP8_Therm_TLM			WM605565	GRP11_Therm_TLM		
WM51A565	FHHRV_G8H1_S			WM61G565	FHHRV_G11H1_S		
WM51B565	FcvC3A_G8H2_S			WM61H565	FcvC3A_G11H2_S		
WM51C565	RCSpipG8H3_S			WM61J565	RCSpipG11H3_S		
WM51D565	STR2baffG8H4_S			WM61K565	STR2baffG11H4_S		
WM51E565	RCSpipG8H5_S			WM61L565	RCSpipG11H5_S		
WM51F565	FHLCU_G8H6_S			WM61M565	FHLCU_G11H6_S		
WM52H565	GRP9_HPS_STS			WM72G565	GRP12_HPS_STS		
WM513565	GRP9_HPS_ITLM			WM712565	GRP12_HPS_ITLM		
WM505565	GRP9_Therm_TLM			WM704565	GRP12_Therm_TLM		
WM51G565	Decon8_G9H1_S			WM71A565	STR_G12H1_S		
WM51H565	tank-Y_G9H2_S			WM71B565	BATTconG12H2_S		
WM51J565	FcvC4A_G9H3_S			WM71C565	FHWOH_G12H3_S		
WM51K565	FHLSU_G9H4_S			WM71D565	FHWEH_G12H4_S		
WM51L565	STR1baffG9H5_S			WM71E565	FcvC1A_G12H5_S		
WM51M565	tank+Y_G9H6_S			WM71F565	FcvA2A_G12H6_S		

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ID	DESCRIPTION	VALUE	UNIT	ID	DESCRIPTION	VALUE	UNIT
WM72H565	GRP13_HPS_STS			WM92G565	GRP16_HPS_STS		
WM713565	GRP13_HPS_ITLM			WM912565	GRP16_HPS_ITLM		
WM705565	GRP13_Therm_TLM			WM904565	GRP16_Therm_TLM		
WM71G565	Grp13Heat1_S			WM91A565	FPBOLC_G16H1_S		
WM71H565	RWA4_G13H2_S			WM91B565	CRS1_G16H2_S		
WM71J565	RWA1_G13H3_S			WM91C565	FPMECDEC_G16H3s		
WM71K565	RWA3_G13H4_S			WM91D565	RCSpipG16H4_S		
WM71L565	FHWIV_G13H5_S			WM91E565	CcuHdHf_G16H5_S		
WM71M565	RWA2_G13H6_S			WM91F565	GYRO_G16H6_S		
WM82G565	GRP14_HPS_STS			WM92H565	GRP17_HPS_STS		
WM812565	GRP14_HPS_ITLM			WM913565	GRP17_HPS_ITLM		
WM804565	GRP14_Therm_TLM			WM905565	GRP17_Therm_TLM		
WM81A565	CRS2_G14H1_S			WM91G565	Decon4_G17H1_S		
WM81B565	FHHRH_G14H2_S			WM91H565	FcvC1B_G17H2_S		
WM81C565	FhWevlcuG14H3_S			WM91J565	FcvA2B_G17H3_S		
WM81D565	FcvC3B_G14H4_S			WM91K565	FcvC4B_G17H4_S		
WM81E565	RCSpipG14H5_S			WM91L565	FpdFps_G17H5_S		
WM81F565	PLFLv12G14H6_S			WM91M565	tanks_G17H6_S		
WM82H565	GRP15_HPS_STS			WMA2G565	GRP18_HPS_STS		
WM813565	GRP15_HPS_ITLM			WMA12565	GRP18_HPS_ITLM		
WM805565	GRP15_Therm_TLM			WMA04565	GRP18_Therm_TLM		
WM81G565	Decon6_G15H1_S			WMA1A565	Decon9_G18H1_S		
WM81H565	FHWOV_G15H2_S			WMA1B565	XPND2_G18H2_S		
WM81J565	RCSpipG15H3_S			WMA1C565	FcvA1B_G18H3_S		
WM81K565	FcvA1A_G15H4_S			WMA1D565	FcvC2B_G18H4_S		
WM81L565	FcvC2A_G15H5_S			WMA1E565	RCSpipG18H5_S		
WM81M565	RCSpipG15H6_S			WMA1F565	XPND1_G18H6_S		