

Reconfigure RWLs  
File: H\_CRP\_AOC\_6RCF.xls  
Author: dsalt-hp



## Procedure Summary

### Objectives

The objective of this Herschel ACMS contingency procedure is to enable reconfiguration of reaction wheels (RWLs).

The procedure involves the following activities:

- check ACMS mode
- check RWL health & status
- RWL switch ON, as necessary
- RWL switch OFF, as necessary
- verify new RWL configuration
- perform RWL bias in OCM, if necessary  
(calls H\_FCP\_AOC\_4R34)
- perform RWL biasing in SCM, if necessary  
(calls H\_FCP\_AOC\_4R20)

### Summary of Constraints

Procedure execution has been authorised by SOM

### Spacecraft Configuration

#### Start of Procedure

Spacecraft in OCM or SCM with incorrect RWLs switched ON

#### End of Procedure

Spacecraft in OCM or SCM with correct RWLs switched ON with appropriate bias applied

### Reference File(s)

#### Input Command Sequences

#### Output Command Sequences

HRA6RCFA  
HRA6RCFD  
HRA6RCFB  
HRA6RCFC  
HRA6RCFE  
HRA6RCFH  
HRA6RCFF  
HRA6RCFG

### Referenced Displays

ANDs	GRDs	SLDs
ZAA01999		
ZAA02999		
WALC3584		
ZAA00999		

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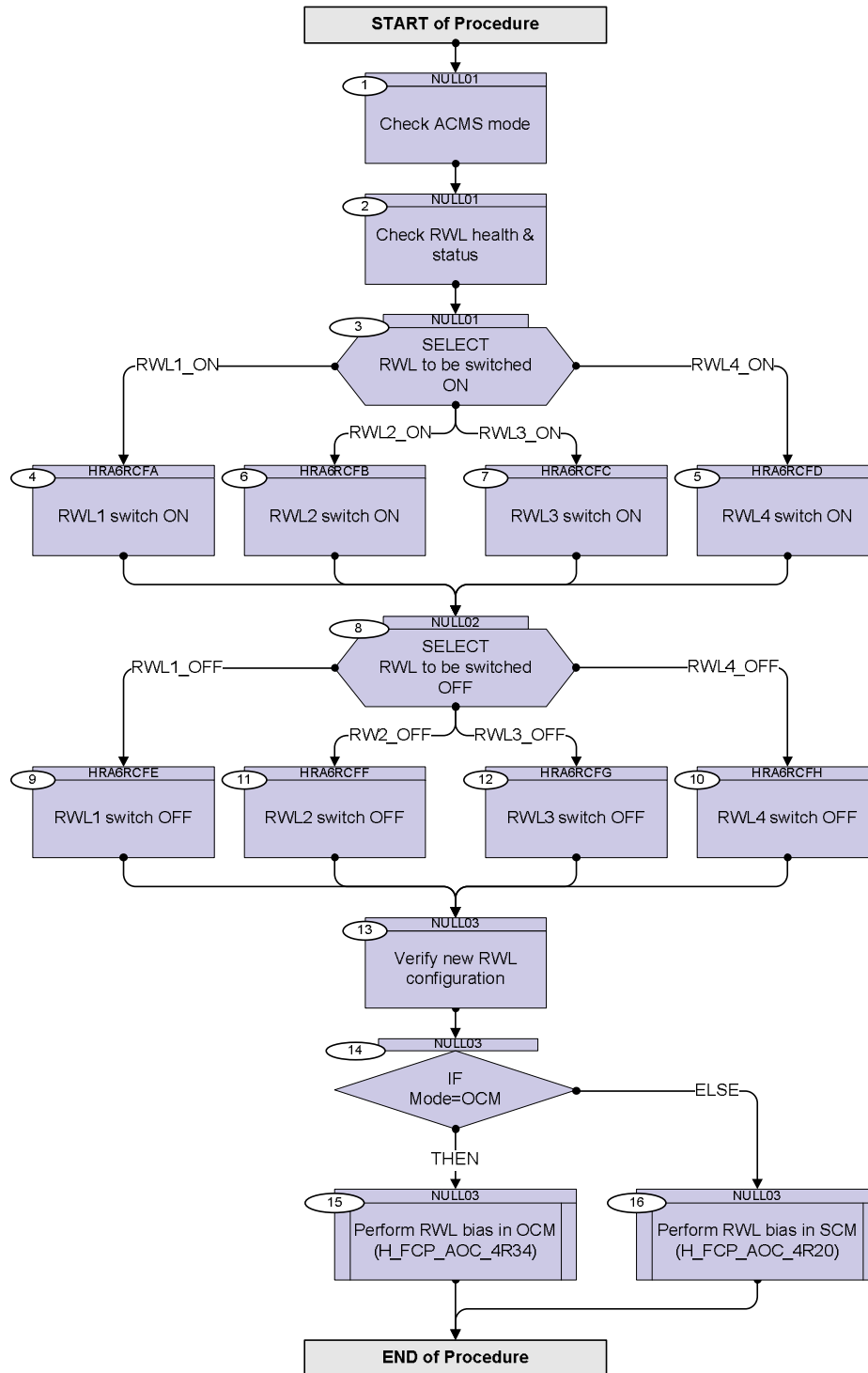
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
12/12/08	2	1	Created	dsalt-hp	

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## Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
<b>Beginning of Procedure</b>				
TC Seq. Name : NULL01 (Null Sequence 01)				
TimeTag Type: Sub Schedule ID:  □				
1		Check ACMS mode		Next Step: 2
1.1		Check ACMS mode		□
		Check ACMS mode status		
		Verify Telemetry <b>AcmsMode</b> <b>AESMG002</b>	= OCM = SAM = SCM	AND=ZAA01999
		Verify Telemetry <b>AcmsSubstate</b> <b>AESMF002</b>	= OCM Pointing = SAM Sun Point = SCM Pointing	AND=ZAA01999
		Verify Telemetry <b>AcmsMain AID</b> <b>AESM3002</b>	= OCM pnt coarse = SAM pnt coarse = SCM Point Fine	AND=ZAA01999
2		Check RWL health & status		Next Step: 3
2.1		Check RWL usage & health		□
		Verify Telemetry <b>Curr RWLs use</b> <b>AES21002</b>	= RWL 1-2-3 = RWL 1-2-3-4 = RWL 1-2-4 = RWL 1-3-4 = RWL 2-3-4	AND=ZAA01999
		Verify Telemetry <b>RWL1 Health Sts</b> <b>AES45002</b>	= Healthy	AND=ZAA02999
		Verify Telemetry <b>RWL2 Health Sts</b> <b>AES46002</b>	= Healthy	AND=ZAA02999
		Verify Telemetry <b>RWL3 Health Sts</b> <b>AES47002</b>	= Healthy	AND=ZAA02999
		Verify Telemetry <b>RWL4 Health Sts</b> <b>AES48002</b>	= Healthy	AND=ZAA02999

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2.2		Verify status of wheel LCL's		<input type="checkbox"/>
		Verify Telemetry Rwl_1_L55_1S WM22F565	= ON	AND=WALC3584
		Verify Telemetry Rwl_1_L55_2S WM22L565	= ON	AND=WALC3584
		Verify Telemetry Rwl_2_L56_1S WM92F565	= ON	AND=WALC3584
		Verify Telemetry Rwl_2_L56_2S WM92L565	= ON	AND=WALC3584
		Verify Telemetry Rwl_3_L57_1S WM12F565	= ON	AND=WALC3584
		Verify Telemetry Rwl_3_L57_2S WM12K565	= ON	AND=WALC3584
		Verify Telemetry Rwl_4_L58_1S WMA2F565	= ON	AND=WALC3584
		Verify Telemetry Rwl_4_L58_2S WMA2K565	= ON	AND=WALC3584
3		SELECT RWL to be switched ON		Next Step: RWL1_ON 4 RWL4_ON 5 RWL2_ON 6 RWL3_ON 7
<p>TC Seq. Name :HRA6RCFA (RWL1 switch ON)</p> <p>TimeTag Type: N            Sub Schedule ID:  <input type="checkbox"/></p>				
4		RWL1 switch ON		Next Step: 8
		Execute Telecommand RWL-1 ON ACZ48109  Command Parameter(s) : UnitSw DF86 Cmd AH8P1001 Enable 86 UnitSw DD86 Cmd AH8P2001 Enable 86  TC Control Flags : GBM IL DSE --Y -- --  Subsch. ID : 20 Det. descr. : TC(8,1) Switch ACMS unit on/off - RWL-1 ON		

Reconfigure RWLs  
 File: H\_CRP\_AOC\_6RCF.xls  
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		Execute Telecommand  <b>FireSwitchACMSunitONOFF</b>  <i>Command Parameter(s) :</i> <b>FireFun DF86Cmd                    AH8F1001</b> <b>FireFun DD86Cmd                    AH8F2001</b>  <i>TC Control Flags :</i>  <b>GBM IL DSE</b> <b>--Y -- ---</b>  <i>Subsch. ID : 20</i> Det. descr. : TC(8,4) Fire Command - FireSwitchACMSunitONOFF	ACZ1M109  Enable 86 Enable 86	
		Wait 30 seconds to allow wheel power status to be reflected in essential TM		
		Verify Telemetry  <b>RWL1 power                    AE4P3002</b>	= ON	AND=ZAA00999
		Verify Telemetry  <b>Rwl_1_L55_I                    WM211565</b>	> 0.1 < 0.2 A	AND=WALC3584
		LCL current should be consistent with steady state power consumption expected for the RWL's (between 0.1 and 0.2 A).		
TC Seq. Name :HRA6RCFD (RWL4 switch ON)  TimeTag Type: N Sub Schedule ID:  <input type="checkbox"/>				
5		RWL4 switch ON		Next Step: 8
		Execute Telecommand  <b>RWL-4 ON</b>  <i>Command Parameter(s) :</i> <b>UnitSw DF86 Cmd                    AH8P1001</b> <b>UnitSw DD86 Cmd                    AH8P2001</b>  <i>TC Control Flags :</i>  <b>GBM IL DSE</b> <b>--Y -- ---</b>  <i>Subsch. ID : 30</i> Det. descr. : TC(8,1) Switch ACMS unit on/off - RWL-4 ON	ACZ54109  Enable 86 Enable 86	

Reconfigure RWLs  
 File: H\_CRP\_AOC\_6RCF.xls  
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand  <b>FireSwitchACMSunitONOFF</b>  Command Parameter(s) : <b>FireFun DF86Cmd</b> <b>AH8F1001</b> <b>FireFun DD86Cmd</b> <b>AH8F2001</b>  TC Control Flags : <b>GBM IL DSE</b> <b>--Y -- ---</b>  Subsch. ID : 20 Det. descr. : TC(8,4) Fire Command - FireSwitchACMSunitONOFF	<b>ACZ1M109</b>  <b>Enable 86</b> <b>Enable 86</b>	
		Wait 30 seconds to allow wheel power status to be reflected in essential TM		
		Verify Telemetry  <b>RWL4 power</b> <b>AE4P6002</b>	<b>= ON</b>	AND=ZAA01999
		Verify Telemetry  <b>Rwl_4_L58_I</b> <b>WMA11565</b>	<b>&gt; 0.1</b> <b>&lt; 0.2 A</b>	AND=WALC3584
		LCL current should be consistent with steady state power consumption expected for the RWL's (between 0.1 and 0.2 A).		
TC Seq. Name :HRA6RCFB (RWL2 switch ON)  TimeTag Type: N Sub Schedule ID:  <input type="checkbox"/>				
6		RWL2 switch ON		Next Step: 8
		Execute Telecommand  <b>RWL-2 ON</b>  Command Parameter(s) : <b>UnitSw DF86 Cmd</b> <b>AH8P1001</b> <b>UnitSw DD86 Cmd</b> <b>AH8P2001</b>  TC Control Flags : <b>GBM IL DSE</b> <b>--Y -- ---</b>  Subsch. ID : 20 Det. descr. : TC(8,1) Switch ACMS unit on/off - RWL-2 ON	<b>ACZ50109</b>  <b>Enable 86</b> <b>Enable 86</b>	

Reconfigure RWLs  
 File: H\_CRP\_AOC\_6RCF.xls  
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand  <b>FireSwitchACMSunitONOFF</b>  Command Parameter(s) : <b>FireFun DF86Cmd</b> <b>AH8F1001</b> <b>FireFun DD86Cmd</b> <b>AH8F2001</b>  TC Control Flags : <b>GBM IL DSE</b> <b>--Y -- ---</b>  Subsch. ID : 20 Det. descr. : TC(8,4) Fire Command - FireSwitchACMSunitONOFF	<b>ACZ1M109</b>  <b>Enable 86</b> <b>Enable 86</b>	
		Wait 30 seconds to allow wheel power status to be reflected in essential TM		
		Verify Telemetry  <b>RWL2 power</b> <b>AE4P4002</b>	<b>= ON</b>	AND=ZAA01999
		Verify Telemetry  <b>Rwl_2_L56_I</b> <b>WM911565</b>	<b>&gt; 0.1</b> <b>&lt; 0.2 A</b>	AND=WALC3584
		LCL current should be consistent with steady state power consumption expected for the RWL's (between 0.1 and 0.2 A).		
TC Seq. Name :HRA6RCFC (RWL3 switch ON)  TimeTag Type: N Sub Schedule ID:  <input type="checkbox"/>				
7		RWL3 switch ON		Next Step: 8
		Execute Telecommand  <b>RWL-3 ON</b>  Command Parameter(s) : <b>UnitSw DF86 Cmd</b> <b>AH8P1001</b> <b>UnitSw DD86 Cmd</b> <b>AH8P2001</b>  TC Control Flags : <b>GBM IL DSE</b> <b>--Y -- ---</b>  Subsch. ID : 20 Det. descr. : TC(8,1) Switch ACMS unit on/off - RWL-3 ON	<b>ACZ52109</b>  <b>Enable 86</b> <b>Enable 86</b>	



Reconfigure RWLs  
 File: H\_CRP\_AOC\_6RCF.xls  
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand  <b>FireSwitchACMSunitONOFF</b>  Command Parameter(s) : <b>FireFun DF86Cmd</b> <b>AH8F1001</b> <b>FireFun DD86Cmd</b> <b>AH8F2001</b>  TC Control Flags : <b>GBM IL DSE</b> <b>--Y -- ---</b>  Subsch. ID : 20 Det. descr. : TC(8,4) Fire Command - FireSwitchACMSunitONOFF	<b>ACZ1M109</b>  <b>Enable 86</b> <b>Enable 86</b>	
		Wait 30 seconds to allow wheel power status to be reflected in essential TM		
		Verify Telemetry  <b>RWL3 power</b> <b>AE4P5002</b>	<b>= ON</b>	AND=ZAA01999
		Verify Telemetry  <b>Rwl_3_L57_I</b> <b>WM111565</b>	<b>&gt; 0.1</b> <b>&lt; 0.2 A</b>	AND=WALC3584
		LCL current should be consistent with steady state power consumption expected for the RWL's (between 0.1 and 0.2 A).		
TC Seq. Name :NULL02 (Null Sequence 02)  TimeTag Type: Sub Schedule ID:  <input type="checkbox"/>				
8		<b>SELECT</b> <b>RWL to be switched OFF</b>		Next Step: RWL1_OFF 9 RWL4_OFF 10 RW2_OFF 11 RWL3_OFF 12
TC Seq. Name :HRA6RCFE (RWL1 switch OFF)  TimeTag Type: N Sub Schedule ID:  <input type="checkbox"/>				
9		<b>RWL1 switch OFF</b>		Next Step: 13

Reconfigure RWLs  
 File: H\_CRP\_AOC\_6RCF.xls  
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand  RWL-1 OFF  <i>Command Parameter(s) :</i> UnitSw DF86 Cmd           AH8P1001 UnitSw DD86 Cmd           AH8P2001  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 20</i> Det. descr. : TC(8,1) Switch ACMS unit on/off - RWL-1 OFF	ACZ49109  Enable 86 Enable 86	
		Execute Telecommand  FireSwitchACMSunitONOFF  <i>Command Parameter(s) :</i> FireFun DF86Cmd           AH8F1001 FireFun DD86Cmd           AH8F2001  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 20</i> Det. descr. : TC(8,4) Fire Command - FireSwitchACMSunitONOFF	ACZ1M109  Enable 86 Enable 86	
		Wait 30 seconds to allow wheel power status to be reflected in essential TM		
		Verify Telemetry  RWL1 power                   AE4P3002	= OFF	AND=ZAA00999
		Verify Telemetry  Rwl_1_L55_I                   WM211565	= 0 A	AND=WALC3584
TC Seq. Name :HRA6RCFH (RWL4 switch OFF)  TimeTag Type: N Sub Schedule ID:  <input type="checkbox"/>				
10		RWL4 switch OFF		Next Step: 13

Reconfigure RWLs  
 File: H\_CRP\_AOC\_6RCF.xls  
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand  RWL-4 OFF  <i>Command Parameter(s) :</i> UnitSw DF86 Cmd            AH8P1001 UnitSw DD86 Cmd            AH8P2001  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 20</i> Det. descr. : TC(8,1) Switch ACMS unit on/off - RWL-4 OFF	ACZ55109  Enable 86 Enable 86	
		Execute Telecommand  FireSwitchACMSunitONOFF  <i>Command Parameter(s) :</i> FireFun DF86Cmd            AH8F1001 FireFun DD86Cmd            AH8F2001  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 20</i> Det. descr. : TC(8,4) Fire Command - FireSwitchACMSunitONOFF	ACZ1M109  Enable 86 Enable 86	
		Wait 30 seconds to allow wheel power status to be reflected in essential TM		
		Verify Telemetry  RWL4 power                    AE4P6002	= OFF	AND=ZAA01999
		Verify Telemetry  Rwl_4_L58_I                   WMA11565	= 0 A	AND=WALC3584
TC Seq. Name :HRA6RCFF (RWL2 switch OFF)  TimeTag Type: N Sub Schedule ID:  □				
11		RWL2 switch OFF		Next Step: 13

Reconfigure RWLs  
 File: H\_CRP\_AOC\_6RCF.xls  
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand  RWL-2 OFF  <i>Command Parameter(s) :</i> UnitSw DF86 Cmd           AH8P1001 UnitSw DD86 Cmd           AH8P2001  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 20</i> Det. descr. : TC(8,1) Switch ACMS unit on/off - RWL-2 OFF	ACZ51109  Enable 86 Enable 86	
		Execute Telecommand  FireSwitchACMSunitONOFF  <i>Command Parameter(s) :</i> FireFun DF86Cmd            AH8F1001 FireFun DD86Cmd            AH8F2001  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 20</i> Det. descr. : TC(8,4) Fire Command - FireSwitchACMSunitONOFF	ACZ1M109  Enable 86 Enable 86	
		Wait 30 seconds to allow wheel power status to be reflected in essential TM		
		Verify Telemetry  RWL2 power                    AE4P4002	= OFF	AND=ZAA01999
		Verify Telemetry  Rwl_2_L56_I                   WM911565	= 0 A	AND=WALC3584
TC Seq. Name :HRA6RCFG (RWL3 switch OFF)  TimeTag Type: N Sub Schedule ID:  <input type="checkbox"/>				
12		RWL3 switch OFF		Next Step: 13

Reconfigure RWLs  
 File: H\_CRP\_AOC\_6RCF.xls  
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand  RWL-3 OFF  <i>Command Parameter(s) :</i> UnitSw DF86 Cmd            AH8P1001        Enable 86 UnitSw DD86 Cmd            AH8P2001        Enable 86  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 20</i> Det. descr. : TC(8,1) Switch ACMS unit on/off - RWL-3 OFF	ACZ53109	
		Execute Telecommand  FireSwitchACMSunitONOFF  <i>Command Parameter(s) :</i> FireFun DF86Cmd            AH8F1001        Enable 86 FireFun DD86Cmd            AH8F2001        Enable 86  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 20</i> Det. descr. : TC(8,4) Fire Command - FireSwitchACMSunitONOFF	ACZ1M109	
		Wait 30 seconds to allow wheel power status to be reflected in essential TM		
		Verify Telemetry  RWL3 power                    AE4P5002        = OFF		AND=ZAA01999
		Verify Telemetry  Rwl_3_L57_I                   WM111565        = 0 A		AND=WALC3584
TC Seq. Name :NULL03 (Null Sequence 03)  TimeTag Type: Sub Schedule ID:  <input type="checkbox"/>				
13		Verify new RWL configuration		Next Step: 14
		Verify Telemetry  Curr RWLs use                AES21002        = RWL 1-2-3 = RWL 1-2-3-4 = RWL 1-2-4 = RWL 1-3-4 = RWL 2-3-4		AND=ZAA01999
14		IF Mode=OCM		Next Step: THEN 15 ELSE 16

Reconfigure RWLs  
 File: H\_CRP\_AOC\_6RCF.xls  
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15		<i>Perform RWL bias in OCM (H_FCP_AOC_4R34)</i>		Next Step: END
		Execute Procedure: <b>H_FCP_AOC_4R34</b> <b>Perform RWL bias in OCM</b>		
16		<i>Perform RWL bias in SCM (H_FCP_AOC_4R20)</i>		Next Step: END
		Execute Procedure: <b>H_FCP_AOC_4R20</b> <b>Perform RWL biasing in SCM</b>		
<b>End of Procedure</b>				