Command Peak-up
File: H_FCP_AOC_3S04.xls
Author: dsalt-hp

Procedure Summary

Objectives

The objective of this Herschel ACMS procedure is to commmand a Peak-Up.

The procedure involves the following activities:
- uplink the Peak-Up command
- execute SCM Fine Pointing (calls H_FCP_AOC_3S01)
- verify S/C behaviour & status
- perform next observation

The Peak-Up procedure is activated through a dedicated command TC_PERFORM_PEAK_UP. This contains the pitch and yaw corrections. The ACMS ASW calculates the correction quaternion, which is added to the control setpoint each cycle starting from the time of the receipt of the next observation TC.

NOTE:
This procedure is only foreseen for test purposes (i.e. to trigger from ground the peak-up manoeuver).

Nominaly it is the CDMS, on reception of the related instrument's event, which will automatically send the Peak-up telecommand to the ACMS.

Summary of Constraints

1. Some pre-requisites are assumed, namely:
   # The selection of the instrument which would generate the similar command;
   # The definition of the required Peak-up data, in terms of Pitch and Yaw.

2. The next observation command must be either a Fine Pointing or a Raster Pointing.

3. Only one Fine Pointing or Raster Pointing will be affected.

4. The SSO correction can be run at the same time as the Peak-up, the two correction quaternions will be effectively added up.

Spacecraft Configuration

Start of Procedure

ACMS mode SCM

End of Procedure

The next Fine Pointing or Raster Pointing will include a Peak-up manoeuvre.

Reference File(s)

Input Command Sequences

Output Command Sequences

AEPUP_00

Command Peak-up
File: H_FCP_AOC_3S04.xls
Author: dsalt-hp

Referenced Displays

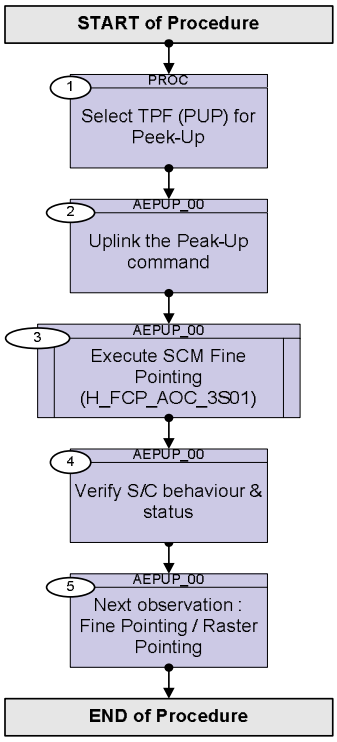
ANDs	GRDs	SLDs
ZAA01999		
ZAA00999		
ZAA54999		
ZAA55999		
ZAA03999		
ZAA04999		

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
03/08/08	1	1	Created	dsalt-hp	
21/05/09	2.5	2	All TCs now time-tagged	dsalt-hp	

Command Peak-up
File: H_FCP_AOC_3S04.xls
Author: dsalt-hp

Procedure Flowchart Overview



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Beginning of Procedure		
		PROC Procedure Properties *SSID :*		
1		*Select TPF (PUP) for Peek-Up*		Next Step: 2
		Check with Flight Dynamics the **exact name of the TPF instance** to be uplinked		
		TC Seq. Name :AEPUP_00 (Command Peak-up) *TimeTag Type: B* *Sub Schedule ID: 20*		
2		*Uplink the Peak-Up command*		Next Step: 3
		This command is nominally sent by the CDMS on reception of the related instrument's event. In principle there should be a check to verify if there is a BIAS_LONG_SLEW pending (peak-up will cancel another pending action). Considering that peak-up before a long slew seems fairly unlikely, the check has been skipped.		
2.1		*Send Peak-up TC*		
	ET=+00.00.00 UT=+	Execute Telecommand **Perform peak-up HIFI** *Command Parameter(s) :* **ASW Function ID XH319990** **PeakUp AID Cmd XH351990** **PeakUp DF86 Cmd XH353990** **PeakUp DD86 Cmd XH354990** **PeakUp Instr ID XH355990** **PeakUp PitchCor XH356990** **PeakUp YawCorr XH357990** *TC Control Flags :* **GBM IL DSE** **--Y -- ---**	**XC071990** **PeakUp** (Def) **PeakUpPending** (Def) **Enable 86** **Enable 86** **INST_ID** **PU_PITCH** **PU_YAW**	
		Subsch. ID : 20 Det. descr. : TC_PERFORM_PEAKUP		
2.2		*Check the TC has been accepted*		

Command Peak-up
File: H_FCP_AOC_3S04.xls
Author: dsalt-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Reception **TM_8_6 for PeakUp - PeakUpPending** **A86PEAPND002** *Packet Details:* **APID: 512** **Type: 8** **Subtype: 6** **PI1: 26509** **PI2: 0**		
		Verify Packet Telemetry (Pkt = A86PEAPND002) **PeakUp Instr ID** **AEHP2002**	**= INST_ID**	AND=ZAAL5999
		Verify Packet Telemetry (Pkt = A86PEAPND002) **PeakUp PitchCor** **AEHP3002**	**= PU_PITCH**	AND=ZAAL5999
		Verify Packet Telemetry (Pkt = A86PEAPND002) **PeakUp YawCorr** **AEHP4002**	**= PU_YAW**	AND=ZAAL5999
		Verify Telemetry **Peak-upPending** **AESM2002**	**= TRUE**	AND=ZAA01999
3		*Execute SCM Fine Pointing (H_FCP_AOC_3S01)*		Next Step: 4
		Execute Procedure: **H_FCP_AOC_3S01** **Perform SCM Fine Pointing**		
		NOTE: *As the Peek-Up is only applied during the next pointing manoeuvre, this must now be commanded in order to observe its effect.*		
4		*Verify S/C behaviour & status*		Next Step: 5
4.1		*Verify attitude evolution according to commanded maneouvre*		
		Verify Telemetry **Cur Target Q1** **AEHT6002**	**Coherent with what commanded.**	AND=ZAA00999
		Verify Telemetry **Cur Target Q2** **AEHT7002**	**Coherent with what commanded.**	AND=ZAA00999
		Verify Telemetry **Cur Target Q3** **AEHT8002**	**Coherent with what commanded.**	AND=ZAA00999
		Verify Telemetry **Cur Target Q4** **AEHT9002**	**Coherent with what commanded.**	AND=ZAA00999

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry **Est Attitude Q1 AESA6001**	**According to commanded maneouvre.**	AND=ZAA54999
		Verify Telemetry **Est Attitude Q2 AESA7001**	**According to commanded maneouvre.**	AND=ZAA54999
		Verify Telemetry **Est Attitude Q3 AESA8001**	**According to commanded maneouvre.**	AND=ZAA54999
		Verify Telemetry **Est Attitude Q4 AESA9001**	**According to commanded maneouvre.**	AND=ZAA54999
4.2		*Verify STR measurements*		
		Verify Telemetry **STRM Att Q1 AEXA1001**	**according to the commanded maneouvre**	AND=ZAA54999
		Verify Telemetry **STRM Att Q2 AEXA2001**	**according to the commanded maneouvre**	AND=ZAA54999
		Verify Telemetry **STRM Att Q3 AEXA3001**	**according to the commanded maneouvre**	AND=ZAA54999
		Verify Telemetry **STRM Att Q4 AEXA4001**	**according to the commanded maneouvre**	AND=ZAA54999
		Verify Telemetry **STRM IL sts AEXJ1002**	**as commanded**	AND=ZAA55999
		Verify Telemetry **STRM new stars AEXJ4002**		AND=ZAA55999
		Verify Telemetry **STRM same stars AEXJ5002**		AND=ZAA55999
		Verify Telemetry **STRM Att qual AEXMY001**		AND=ZAA55999
4.3		*Verify rate evolution according to commanded maneouvre*		

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry **Est ang rate X AESR7001**	**According to commanded maneouvre.**	AND=ZAA54999
		Verify Telemetry **Est ang rate Y AESR8001**	**According to commanded maneouvre.**	AND=ZAA54999
		Verify Telemetry **Est ang rate Z AESR9001**	**According to commanded maneouvre.**	AND=ZAA54999
4.4		*Verify Gyro basic HK status*		
		Verify Telemetry **GYR A rsntrtemp AEGTA002**		AND=ZAA03999
		Verify Telemetry **GYR B rsntrtemp AEGTB002**		AND=ZAA03999
		Verify Telemetry **GYR C rsntrtemp AEGTC002**		AND=ZAA03999
		Verify Telemetry **GYR D rsntrtemp AEGTD002**		AND=ZAA04999
4.5		*Verify evolution of total angular momentum*		
		Verify Telemetry **Est total H X AESHX001**	**According to commanded maneouvre.**	AND=ZAA01999
		Verify Telemetry **Est total H Y AESHY001**	**According to commanded maneouvre.**	AND=ZAA01999
		Verify Telemetry **Est total H Z AESHZ001**	**According to commanded maneouvre.**	AND=ZAA01999
4.6		*Verify maneouvre convergence - Minimization of control error*		
		Verify Telemetry **Attitude err X AESBX002**	**Within pointing performance requirements. Trend: Decreasing**	AND=ZAA54999

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry **Attitude err Y** **AESBY002**	**Within pointing performance requirements. Trend: Decreasing**	AND=ZAA54999
		Verify Telemetry **Attitude err Z** **AESBZ002**	**Within pointing performance requirements. Trend: Decreasing**	AND=ZAA54999
		Verify Telemetry **Velocity err X** **AESWX002**	**Within pointing performance requirements. Trend: Decreasing**	AND=ZAA54999
		Verify Telemetry **Velocity err Y** **AESWY002**	**Within pointing performance requirements. Trend: Decreasing**	AND=ZAA54999
		Verify Telemetry **Velocity err Z** **AESWZ002**	**Within pointing performance requirements. Trend: Decreasing**	AND=ZAA54999
4.7		*Verify current load on RWA system*		
		Verify Telemetry **RWL1 wheel spd** **AEWS1002**	**According to the momentum correspondent to the manoeuvre commanded.**	AND=ZAA54999
		Verify Telemetry **RWL2 wheel spd** **AEWS2002**	**According to the momentum correspondent to the manoeuvre commanded.**	AND=ZAA54999
		Verify Telemetry **RWL3 wheel spd** **AEWS3002**	**According to the momentum correspondent to the manoeuvre commanded.**	AND=ZAA54999

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry **RWL4 wheel spd AEWS4002**	**According to the momentum correspondent to the manoeuvre commanded.**	AND=ZAA54999
		Verify Telemetry **RWL1 tacho spd AEW1A002**	**Coherent with corresponding wheel speed/sign**	AND=ZAA54999
		Verify Telemetry **RWL2 tacho spd AEW2A002**	**Coherent with corresponding wheel speed/sign**	AND=ZAA54999
		Verify Telemetry **RWL3 tacho spd AEW3A002**	**Coherent with corresponding wheel speed/sign**	AND=ZAA54999
		Verify Telemetry **RWL4 tacho spd AEW4A002**	**Coherent with corresponding wheel speed/sign**	AND=ZAA54999
		Verify Telemetry **RWL1 tacho Sign AEW1B002**	**Coherent with corresponding wheel speed/sign**	AND=ZAA54999
		Verify Telemetry **RWL2 tacho Sign AEW2B002**	**Coherent with corresponding wheel speed/sign**	AND=ZAA54999
		Verify Telemetry **RWL3 tacho Sign AEW3B002**	**Coherent with corresponding wheel speed/sign**	AND=ZAA54999
		Verify Telemetry **RWL4 tacho Sign AEW4B002**	**Coherent with corresponding wheel speed/sign**	AND=ZAA54999
		Verify Telemetry **RWL1 tacho ovr AEW1C002**	**= NO OVERFLOW**	AND=ZAA54999
		Verify Telemetry **RWL2 tacho ovr AEW2C002**	**= NO OVERFLOW**	AND=ZAA54999
		Verify Telemetry **RWL3 tacho ovr AEW3C002**	**= NO OVERFLOW**	AND=ZAA54999
		Verify Telemetry **RWL3 tacho ovr AEW3C002**	**= NO OVERFLOW**	AND=ZAA54999

Command Peak-up
File: H_FCP_AOC_3S04.xls
Author: dsalt-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
5		*Next observation :* *Fine Pointing / Raster Pointing*		Next Step: END
		NOTE: *As this Peek-Up command is only applied once, all subsequent pointing maneouvres will be unaffected by this activity.*		
End of Procedure				