



Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic:

Date:

Issue:

FOS Report for week 26, year 2020

from 22 JUN 2020 to 29 JUN 2020

1.0

1 General Comments

Activities scheduled for this week are those planned for the 26th calendar week of 2020:

22 JUN 2020 to 29 JUN 2020 (DOYs 174 to 181).

The following routine activities were planned this week (see Gantt chart on next page and CRF 8).

- One special HOT NIR Calibration on 27 JUN 2020 (DOY 179) with ETO 16:38:00z (orbit 55983; DESCENDING: thermally STABLE) and with the following expected calibration values:

B.T.	=	3.94°
R.M.S.	=	0.78
Sun elevation	=	14.83°
Moon elevation	=	5.29°
R.A.	=	266.74°
DEC.	=	81.40°
- Two LONG Calibrations on 28 JUN 2020 (DOY 180), which encompassed two ascending semi-orbital periods starting at 13:05:00z (orbit 55995) and 14:54:00z (orbit 55996).
- Local Oscillator Calibrations every 10 minutes.
- X band Passes over ESAC and Svalbard.

2 Mission Planning Deviations

Due to the OBSW load and verification activities performed during the 23rd and 24th of July, mission planning commands for this week, were uplinked together with the ones remaining for week-25 in the morning of the 24th of July after the commanded CCU reset on the 24th of July at 05:02:00z (see CRF-898)



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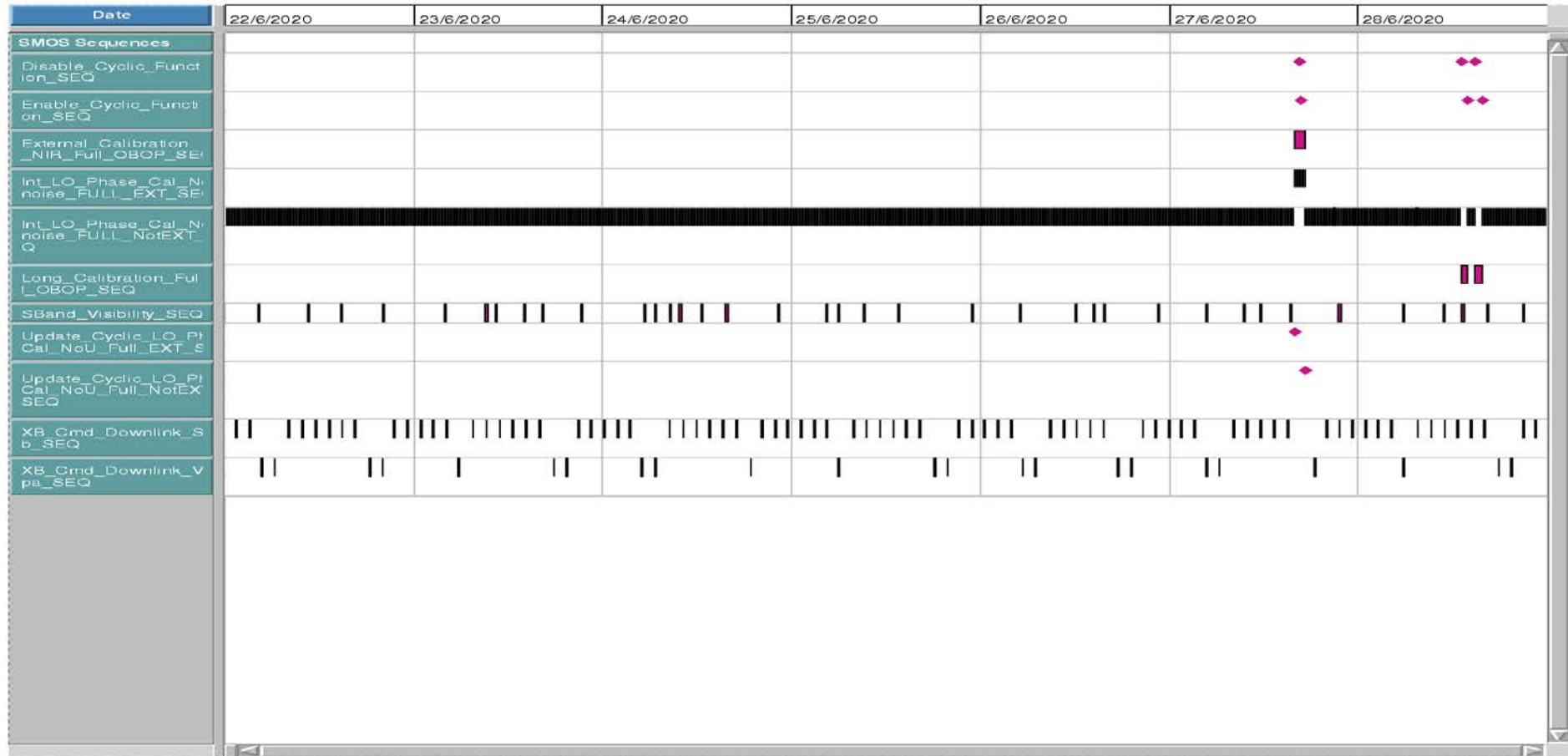
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Schedule Name: 2020_w26_cr ### Display start: 22-06-2020 00:00:00.000 ### Display end: 29-06-2020 00:00:00.000





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3 TC Failures

None.

4 On Board Anomalies

None.

5 On Board Events Telemetry

The following RAM Single Bit errors befell this week:

Event Description	Packet ID	Severity	Event Time	Parameters
RAM single Bit Error	730	WARN	2020-06-22T22:23:39	2030928
RAM single Bit Error	730	WARN	2020-06-26T10:58:51	231BB08

6 FOS Systems Status

All FOS systems nominal.

7 Data Reception from CNES

All S band passes were correctly received from CNES and successfully processed by the FOS PLPC system.

8 X Band Data Reception in PXMf

None, all S band passes successfully received and processed.

9 Exceptional Activities

Load and activation of new OBSW version 2.8.5.1:

As agreed between ESA and CNES, the new MIRAS OBSW version fixing the auto-downlink problem found in October 2018, was finally upload on the 23rd of June 2020 and activated after a commanded CCU reset on the 24th of June 2020 at 05:02:00z. The summary activities for these two separated operations are here below detailed.

OBSW upload activities (23rd of June 2020):

Time	Event	Description	Operational result
2020-06-23T09:06:34z	AOS S-Band Pass (IVK-20)	First S-Band morning pass to upload EEPROM Patch and dump activities CNES to upload CRF-893	<i>The patch was successfully uploaded by CNES.</i>
2020-06-23T09:19:21z	LOS S-Band Pass		<i>Upon reception of this pass at ESAC FOS correctly verified the upload of the OBSW patch by looking at the</i>



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			"PROTEUS TC History task"
2020-06-23T10:22:54z	AOS S-Band Pass (KUX-14)	Second S-Band backup pass to upload EEPROM Patch and dump activities. Not needed if uploaded on previous pass.	<i>This pass, although was executed nominally, it was not used by CNES to upload the OBSW patch since it was uploaded in the previous pass.</i>
2020-06-23T10:35:13z	LOS S-Band Pass		OK
2020-06-23T12:45:00	Start OBSW patch activity	At that time the spacecraft was flying over China/India area. Start on board execution of CRF-893	OK
2020-06-23T12:50:55	End OBSW patch activity	End on board execution CRF-893. CCU EEPROM Write Disable Flag (Time tagged Execution)	OK
2020-06-23T14:00:22z	AOS S-Band pass (IVK-21)	This S-Band pass was used by FOS to verify that all the patch/dump activities have been nominally executed	OK
2020-06-23T14:15:04z	LOS S-Band pass		OK
2020-06-23T14:35:04z	FOS S-Band TM reception LOS +00:20:00	Around 20 minutes after LOS TM data arrives to FOS. FOS to verify that TM dumps and EEPROM status are OK. Verify status according to steps in table-12	<i>FOS correctly verified the contents of the EEPROM dump.</i>
2020-06-23T14:45:04z	Go/no-go LOS +00:30:00	FOS to provide to CNES the go or no-go for the uplink of the manual CCU RESET. Uplink of PRO-CRP-500 "Commanded CCU Reset" and included in special CRF-894. CCU reset will take place at 2020-06-24T05:02:00z	<i>FOS provided the go ahead by phone to CNES at 14:45:00z</i>
2020-06-23T16:18:28z	AOS S-Band pass (HBX-15)	CNES to upload time-tagged execution of manual CCU reset at 2020-06-24T05:02:00z according to FOS CRF-894	OK
2020-06-23T16:32:46z	LOS S-Band pass (HBX-15)		OK
2020-06-23T16:52:46z	FOS S-Band TM reception LOS +00:20:00	FOS to verify correct uplink of manual CCU reset.	<i>Upon reception of the TM data from the pass, FOS correctly verified on the "PROTEUS TC history task" the upload of the CCU reset at 05:02:00z</i>



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OBSW verification activities (24th of June 2020):

Time	Event	Description	Implementation Status
2020-06-24T04:57:54z	AOS X-Band ESAC pass		<i>Carrier signal is received on XBAS FEP at 04:57:55z</i>
2020-06-24T05:04:39z	Expected LOS X-Band ESAC pass	This is the theoretical LOS X-Band pass. Based on the FOS X-Band data model expected LOS will be at 2020-06-24T05:01:47z	<i>End of X-Band transmission is detected on ground, XBAS FEP, at 05:01:48z</i>
2020-06-24T05:02:00z	CCU reset	CCU reset +00:00:13 after computed on board LOS	OK
2020-06-24T05:02:36z	New AOS X-Band ESAC pass (Event not initially foreseen)	After the CCU reset and while the spacecraft is still flying at some high elevation, 29.1 degrees, the autodownlink function is restarted autonomously and detects the GS pass activating the X-Band antenna	<i>DPGS and FOS sees on the XBAS FEP screen the second XBand pass after the instrument restart. The duration of this pass goes until 05:03:24z</i>
2020-06-24T05:11:53z	AOS S-Band pass (IVK-22)		OK
2020-06-24T05:26:23z	LOS S-Band pass	CNES to verify correct execution of CCU reset	<i>CNES confirms on the phone that the CCU has been executed and the instrument has recovery from the reset without any problem.</i>
2020-06-24T05:46:23z	FOS S-Band TM reception LOS +00:20:00	FOS to crosscheck that the instrument is recovered after CCU reset. Verify that auto-downlink function is working (see TM verification in section 10.3)	<i>FOS verifies that the CCU reset went fine and the autodownlink algorithm started to work nominally. The second XBand pass inside the first one and triggered by the autodownlink function is also confirmed in telemetry. FOS provides to CNES the go ahead to upload the instrument replanning and recovery during S-Band pass IVK-23</i>
2020-06-24T06:34:41z	AOS S-Band Pass (STC-13)		OK



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2020-06-24T06:36:51z	AOS X-Band ESAC pass	Expected AOS at station theoretical start of auto-downlink AOS+00:00:21=06:37:12z	<i>No signal is seen on the X-BAS FEP unit. The pass does not take place. This is partially unexpected since in previous occasions during the mission two long consecutive passes are not triggered by the auto-downlink function.</i>
2020-06-24T06:37:12z	Start Auto-downlink over ESAC	It is assumed to be the theoretical time for the start of the auto-downlink (AOS+antenna pointing at 15 degrees elevation)	NOK
2020-06-24T06:43:24z	LOS X-Band ESAC pass		NOK
2020-06-24T06:47:27z	LOS S-Band pass	If not verified in previous pass, CNES to check correct execution and instrument recovery after CCU reset	OK
2020-06-24T06:53:10z	Auto-downlink confirmation LOS ESAC X-Band pass +00:10:00	DPGS/FOS to confirm correct reception of X-Band telemetry data at ESAC.	<i>FOS confirms in Telemetry that the auto-downlink function is working nominally although it has not triggered the execution of previous ESAC X-Band pass</i>
2020-06-24T07:07:27z	FOS S-Band TM reception LOS +00:20:00	If not verified in previous pass, FOS to crosscheck that the instrument is recovered after CCU reset. Verify that auto-downlink function is working (see section 10.3)	OK
2020-06-24T07:17:27z	Go/no-go LOS STC-12+00:30:00	FOS to perform final auto-downlink check. FOS to provide to CNES the go or no-go for the uplink of the MIRAS CCU recovery and planning	<i>Since auto-downlink function works nominally and no any other anomaly has been seen after the reset, FOS corroborates the go ahead to upload the instrument recovery and replanning.</i>
2020-06-24T08:28:35z	AOS S-Band pass (IVK-23)	CNES to upload MIRAS CCU recovery procedure and replanning	OK
2020-06-24T08:28:52z	AOS X-Band Svalbard pass	This pass will not be received since the previous CCU reset deleted all the passes from the on board timeline	OK



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		FOS shall communicate to KSAT in advance that this pass will not be executed.	
2020-06-24T08:34:43z	LOS X-Band Svalbard pass		OK
2020-06-24T08:41:23z	LOS S-Band pass		OK
2020-06-24T09:01:00z	FOS S-Band TM reception +00:20:00	FOS to verify execution of first part of instrument recovery.	<i>FOS verified the correct upload of the recovery and replanning procedure</i>
2020-06-24T09:43:27z	AOS S-Band pass (KUX-16)	Backup pass to upload MIRAS CCU recovery and replanning	OK
2020-06-24T09:57:50z	LOS S-Band pass		OK
2020-06-24T10:13:50z	FOS S-Band TM reception +00:20:00	FOS to verify execution of second and last part of instrument recovery.	OK
<i>End of auto-downlink verification activities</i>			

10 AOB

None.



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APPENDIX A: OOLs

During the execution of the CCU recovery procedure on the 24th of June, the following TM parameter went nominally and temporary out of limits on the FOS PLPC system.

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2020-06-24T10:08:14	2020-06-24T08:30:59	NTLHK022	ITL Ena State	Disabled	Enabled

The following expected list of TM parameters went out of limits at the time of the commanded CCU reset on the 24th of June at 05:02:00.

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2020-06-24T06:02:25	2020-06-24T05:02:32	SPM22167	C3 LO_Locking	UNLOCK	LOCK
2020-06-24T06:02:25	2020-06-24T05:02:32	SPM21167	C2 LO_Locking	UNLOCK	LOCK
2020-06-24T06:02:25	2020-06-24T05:02:32	SPM20167	C1 LO_Locking	UNLOCK	LOCK
2020-06-24T06:02:25	2020-06-24T05:02:32	SPM19167	B3 LO_Locking	UNLOCK	LOCK
2020-06-24T06:02:25	2020-06-24T05:02:32	SPM18167	B2 LO_Locking	UNLOCK	LOCK
2020-06-24T06:02:25	2020-06-24T05:02:32	SPM17167	B1 LO_Locking	UNLOCK	LOCK
2020-06-24T06:02:25	2020-06-24T05:02:32	SPM16167	A3 LO_Locking	UNLOCK	LOCK
2020-06-24T06:02:25	2020-06-24T05:02:32	SPM15167	A2 LO_Locking	UNLOCK	LOCK
2020-06-24T06:02:25	2020-06-24T05:02:32	SPM14167	A1 LO_Locking	UNLOCK	LOCK
2020-06-24T06:02:25	2020-06-24T05:02:32	SPM13167	H3 LO_Locking	UNLOCK	LOCK
2020-06-24T06:02:25	2020-06-24T05:02:32	SPM12172	H2 LO_locking	UNLOCK	LOCK



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2020-06-24T06:02:25	2020-06-24T05:02:32	SPM11167	H1 LO_Locking	UNLOCK	LOCK
2020-06-24T06:02:25	2020-06-24T05:02:32	SPC02106	Instrument_Mode	Inst Init	Any
2020-06-24T06:02:25	2020-06-24T05:02:32	XNIRABST	NIR AB VALID ST	NOT-OK	OK
2020-06-24T06:02:25	2020-06-24T05:02:32	XNIRBCST	NIR BC VALID ST	NOT-OK	OK
2020-06-24T06:02:25	2020-06-24T05:02:32	XNIRCAST	NIR CA VALID ST	NOT-OK	OK