Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic:

Date:

Issue:

FOS Report for week 44 year 2017

from 30 OCT 2017 to 06 NOV 2017

1.0

1 General Comments

Activities scheduled for this week are those planned for the 44th calendar week of 2017:

```
30 OCT 2017 to 06 NOV 2017 (DOYs 303 to 310).
```

The following routine activities were planned this week (see Gantt chart on next page and CRF 693):

- One PMS Offset on 02 NOV 2017 (DOY 306), including three Short Calibrations at 08:45:30.0z, 08:46:04.8z, and 08:46:39.6z (orbit 42049).
- Local Oscillator Calibrations every 10 minutes.
- *X* band Passes over ESAC and Svalbard.

2 Mission Planning Deviations

Due to the CCU reset that took place on the 30th of October 2017, the following XBand passes were not acquired on ground:

Station	AOS	LOS	Dur. (seconds)
Xband_SVAL	2017-10-30T01:26:34	2017-10-30T01:36:59	625
Xband_SVAL	2017-10-30T03:05:44	2017-10-30T03:16:07	623
Xband_ESAC	2017-10-30T06:16:09	2017-10-30T06:23:57	467
Xband_SVAL	2017-10-30T08:08:36	2017-10-30T08:14:54	378
Xband_SVAL	2017-10-30T09:51:07	2017-10-30T09:55:12	245
Xband_SVAL	2017-10-30T11:32:58	2017-10-30T11:36:38	219
Xband_SVAL	2017-10-30T13:13:31	2017-10-30T13:19:06	334

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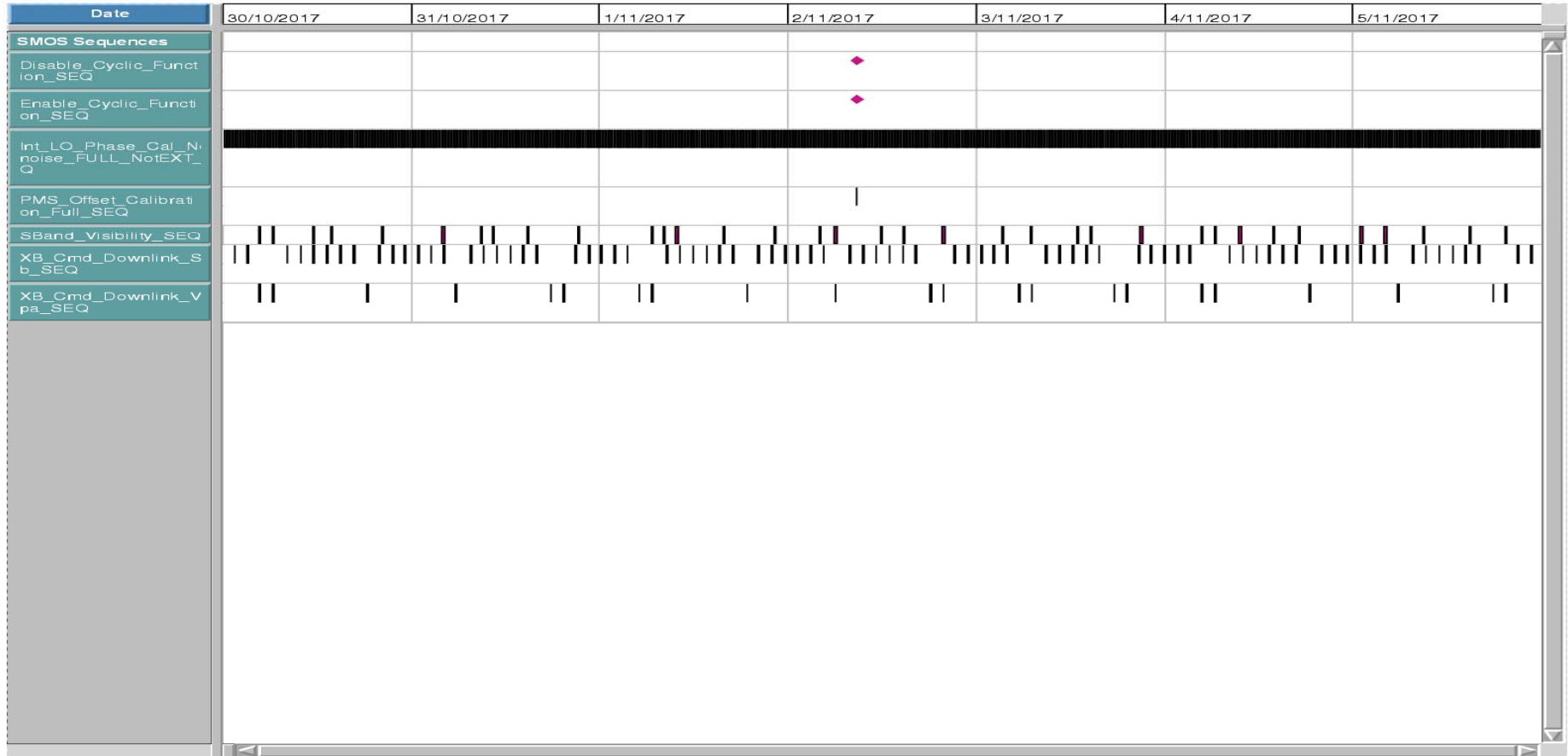
J. Fauste/J.M. Castro Cerón

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Schedule Name: 2017_w44_cr   ###   Display start: 30-10-2017 00:00:00.000   ###   Display end: 06-11-2017 00:00:00.000

Date	30/10/2017	31/10/2017	1/11/2017	2/11/2017	3/11/2017	4/11/2017	5/11/2017
SMOS Sequences							
Disable_Cyclic_Function_SEQ							
Enable_Cyclic_Function_SEQ							
Int_LO_Phase_Cal_Noise_FULL_NotEXT_Q							
PMS_Offset_Calibration_Full_SEQ							
SBand_Visibility_SEQ							
XB_Cmd_Downlink_Sb_SEQ							
XB_Cmd_Downlink_Vpa_SEQ							

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3 TC Failures

None.

4 Unforeseen Out of Limits (OOLs)

The only relevant Out of limits received this week were the ones related with the CCU reset and its recovery procedure on the 30th of October 2017. (See section 5 and Appendix-A of this document for further details)

5 On Board Anomalies

* The MIRAS instrument CCU, reset on 2017-10-30T00:49:32.696 (DOY 303). Exceptionally this reset was not linked to any XBand pass and it happened while the instrument was performing nominal science operations i.e. no Xband activity or data download was performed at that time. This can be considered an exceptional CCU reset since only one case similar to this was previously recorded before (CCU reset on the 3 of March 2015 where the reset happened 11 minutes and 26 seconds after the end of the previous Svalbard pass). In this particular case, the reset took place 2 hours 37 minutes and 1 second after the end of the previous pass. Nevertheless all the instrument symptoms before and after the reset can be considered "nominal" and perfectly in line with all previous resets. After the reset the instrument also recovered nominally.

    No clear reason for the reset has been found so far but it could be linked to a possible double bit memory corruption of the RAM memory due to high radiation environment (the spacecraft was flying over polar areas). As consequence of this particular reset, a significant amount of science data, 2 hours, 40 minutes and 12 seconds, have been lost.

    First symptoms of the reset were noticed by the KSAT operator that called FOS on call Engineer at 03:15z notifying the failure of the two first two passes scheduled on the 30th of October. Later on the CCU reset was confirmed to FOS by the CNES on call team and upon the reception of the first S band morning pass (STC-10, AOS=04:34:38z, LOS=04:48:45). The last TM packet received before the reset was time stamped at 2017-10-30T00:49:32. As detailed on the instrument boot report packet, issued immediately after the reset, the cause of the anomaly was, as in all previous cases, a *Task Overrun error*.

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MIRAS re-planning was prepared by FOS in the morning of the 30th of October and included as part of CRF-694. That replanning together with the CCU recovery procedure, was uploaded by CNES during SBand pass (IVK-1, AOS=11:23:26z, LOS=11:37:22z). As per this re-planning, nominal MIRAS X band GS dumps were resumed on 2017-10-30, at 14:53:19z (Svalbard XBand pass).

The values of the READ and WRITE pointers at the time of the reset were:

Read=   971737,   MM Partition P2
Write=   565187,   MM Partition P1

The anomaly was geolocated over Antartica at the following geographical coordinates:

Latitude= -67.88°
Longitude= 99.20°

6   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	2017-10-30T00:49:33	21E11C8

7   FOS Systems Status

All FOS systems nominal.

8   Data Reception from CNES

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

9   *X* Band Data Reception in PXMF

None, all *S* band passes successfully received and processed.

10 Exceptional Activities

None.

11 AOB

None.

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APPENDIX A: OOLs

During the execution of the recovery procedure on the 30th of October, the following expected OOL was issued by FOS PLPC system at the time the instrument ITL was temporary made disabled.

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2017-10-30T14:19:33	2017-10-30T11:25:40	NTLHK022	ITL Ena State	Disabled	Enabled

At the time of the CCU reset the following OOLs were issued by the FOS PLPC system:

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2017-10-30T05:11:41	2017-10-30T00:49:32	SPM22167	C3 LO_Locking	UNLOCK	LOCK
2017-10-30T05:11:41	2017-10-30T00:49:32	SPM21167	C2 LO_Locking	UNLOCK	LOCK
2017-10-30T05:11:41	2017-10-30T00:49:32	SPM20167	C1 LO_Locking	UNLOCK	LOCK
2017-10-30T05:11:41	2017-10-30T00:49:32	SPM19167	B3 LO_Locking	UNLOCK	LOCK
2017-10-30T05:11:41	2017-10-30T00:49:32	SPM18167	B2 LO_Locking	UNLOCK	LOCK
2017-10-30T05:11:41	2017-10-30T00:49:32	SPM17167	B1 LO_Locking	UNLOCK	LOCK
2017-10-30T05:11:41	2017-10-30T00:49:32	SPM16167	A3 LO_Locking	UNLOCK	LOCK
2017-10-30T05:11:41	2017-10-30T00:49:32	SPM15167	A2 LO_Locking	UNLOCK	LOCK
2017-10-30T05:11:41	2017-10-30T00:49:32	SPM14167	A1 LO_Locking	UNLOCK	LOCK
2017-10-30T05:11:41	2017-10-30T00:49:32	SPM13167	H3 LO_Locking	UNLOCK	LOCK
2017-10-30T05:11:41	2017-10-30T00:49:32	SPM12172	H2 LO_locking	UNLOCK	LOCK

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2017-10-30T05:11:41	2017-10-30T00:49:32	SPM11167	H1 LO_Locking	UNLOCK	LOCK
2017-10-30T05:11:41	2017-10-30T00:49:32	SPC02106	Instrument_Mode	Inst Init	Any other
2017-10-30T05:11:41	2017-10-30T00:49:32	XNIRABST	NIR AB VALID ST	NOT-OK	OK
2017-10-30T05:11:41	2017-10-30T00:49:32	XNIRBCST	NIR BC VALID ST	NOT-OK	OK
2017-10-30T05:11:41	2017-10-30T00:49:32	XNIRCAST	NIR CA VALID ST	NOT-OK	OK