



Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic:

Date:

Issue:

FOS Report for week 05, year 2017

from 30 JAN 2017 to 06 FEB 2017

1.0

1 General Comments

Activities scheduled for this week are those planned for the 05th calendar week of 2017:

30 JAN 2017 to 06 FEB 2017 (DOYs 030 to 037).

The following routine activities were planned this week (see Gantt chart on next page and CRF 636):

- One Warm NIR Calibration on 01 FEB 2017 (DOY 032) with ETO 02:51:13z (orbit 38103) and with the following expected calibration values:
 - B.T. = 3.6757°
 - R.M.S. = 0.0773
 - Sun Elevation = 9.9843°
 - Moon elevation = 51.4712°
 - R.A. = 38.88°
 - DEC. = -15.85°
- Two LONG Calibrations on 02 FEB 2017 (DOY 033), which encompassed two orbital periods starting at 15:54:00.0z (orbit 38125) and 17:34:00.0z (orbit 38126).
- Local Oscillator Calibrations every 10 minutes.
- X band Passes over ESAC and Svalbard.

2 Mission Planning Deviations

Due to the MIRAS CCU reset that happened on the 30th of January 2017, the following XBand passes were not acquired:

Type	Start time	Stop time	Duration(s)
Xband_ESAC	2017-01-30T06:42:30.457000	2017-01-30T06:48:52.188000	381
Xband_SVAL	2017-01-30T08:35:02.253000	2017-01-30T08:40:42.063000	339
Xband_SVAL	2017-01-30T10:17:31.074000	2017-01-30T10:21:13.383000	222
Xband_SVAL	2017-01-30T11:59:00.174000	2017-01-30T12:03:01.789000	241
Xband_SVAL	2017-01-30T13:39:19.497000	2017-01-30T13:45:32.639000	373



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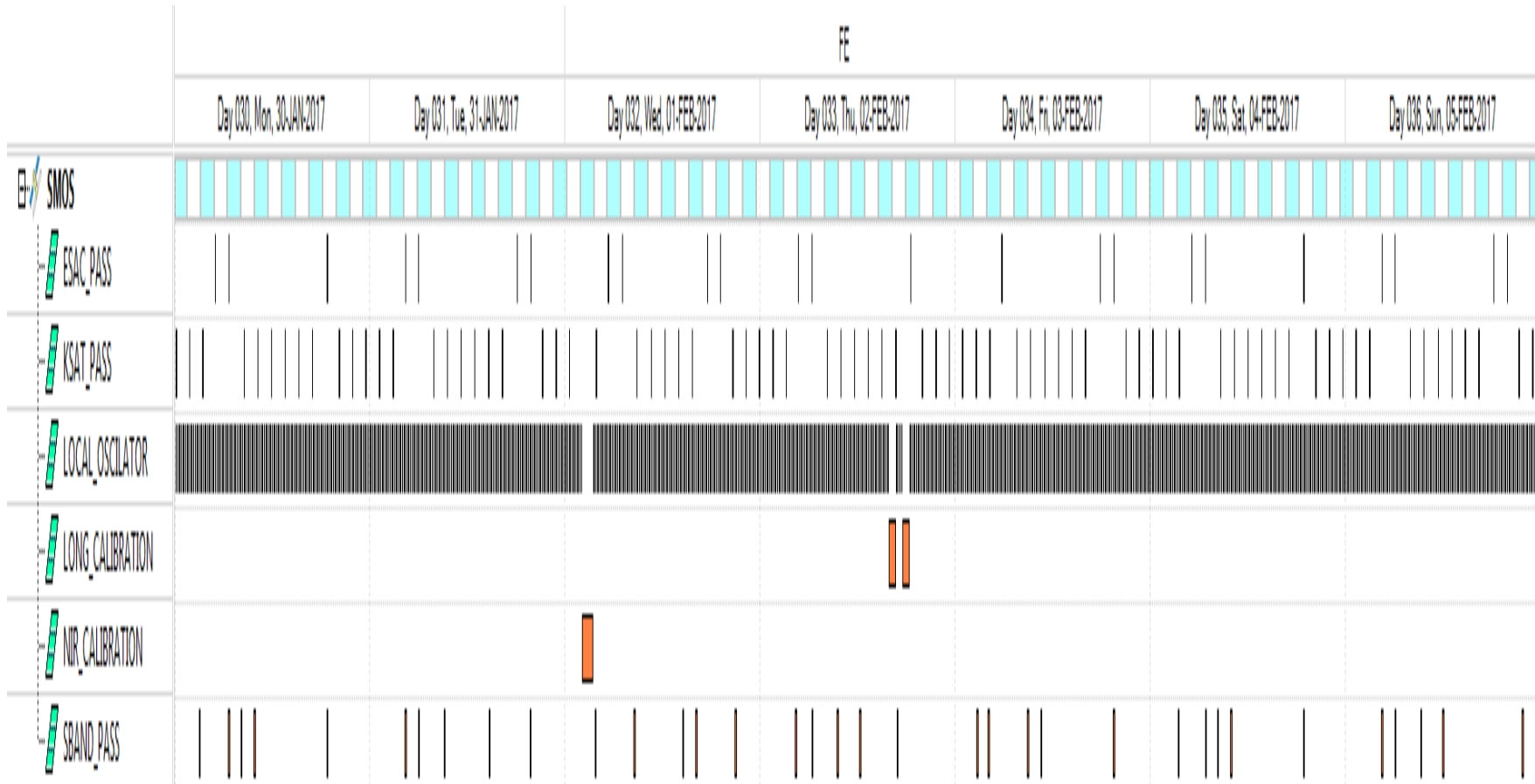
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3 TC Failures

None.

4 Unforeseen Out of Limits (OOLs)

Several Out of Limits were issued by the PLPC system at the time of the CCU reset that happened on the 30th of January at 03:36:25z. Further details on this anomaly can be found on section 5 and Out of limits details in Appendix-A.

5 On Board Anomalies

- The MIRAS instrument CCU reset on 2017-01-30T03:36:25.837z (DOY 030). The problem was initially detected by the FOS oncall Engineer since the first XBand pass of the day over ESAC contained just few received packets 218 343. The reset was later confirmed upon reception of S band GS pass AUS-36 (AOS = 2017-01-30T06:41:45z). The reset befell at the end of a Svalbard X band GS pass commencing on 2017-01-30T03:32:48.964z (transponder on). Said GS pass was scheduled for a duration of 618 seconds. The reset occurred 216 seconds after AOS, and before the switch off of the X band antenna, scheduled on 2017-01-30T03:41:43z. The last TM packet received before the reset was time stamped at 2017-01-30T03:36:25.837z. MIRAS re-planning was issued by FOS during the morning of the 30th of January 2017 via CRF No. 638 and uploaded by CNES, following the execution of the CCU recovery procedure PRO-CRP-100, during the first two SBand passes of the day AOS=08:13z and AOS=09:50z respectively. As per this re-planning, nominal MIRAS X band GS dumps resumed on 2017-01-30T15:19:09z (Svalbard pass). Because of this reset 231 seconds of science data were lost from 2017-01-30T03:33:11 to 2017-01-30T03:37:02. The sequence of events leading to the CCU reset was as follows:

2017.030.03.32.48.964, EVENT, XBand Powered On
2017.030.03.33.12.964, ALARM, MM Full Dump Start
2017.030.03.36.25.007, ALARM, MM_Partition_Configuration_Acq_Fail
2017.030.03.36.25.027, ALARM, MM_Error_Counters_Acquisition_Fail
2017.030.03.36.25.037, ERROR, Triggered Task Overrun
2017.030.03.36.25.047, ALARM, MM_Scrub_Frequency_Acq_Failure
2017.030.03.36.25.087, ALARM, MM_Address_Acquisition_Failure
2017.030.03.36.25.087, EVENT, MM_Dump_Ended
2017.030.03.36.25.087, ALARM, MM_Science_Write_Failure

Immediately after it several Out of Limits were displayed on PLPC system (See Appendix-A for further details). The values of the READ and WRITE pointers at the time of the reset were:

Read= 1854254, MM Partition P4



Write= 2115460, MM Partition P4

6 On Board Events Telemetry

At the time of the CCU reset the following Alarm and Error packets were received on ground:

Event Description	Severity	Event Time
<i>MM_Partition_Conf_Acqu_Failure</i>	ALARM	2017.030.03.36.25.007
<i>MM_Error_Counters_Acq_Failure</i>	ALARM	2017.030.03.36.25.027
<i>Triggered Task Overrun</i>	ERROR	2017.030.03.36.25.037
<i>MM_Scrub_Frequency_Acq_Failure</i>	ALARM	2017.030.03.36.25.047
<i>MM_Address_Acquisition_Failure</i>	ALARM	2017.030.03.36.25.087
<i>MM_Science_Write_Failure</i>	ALARM	2017.030.03.36.25.2777

The following RAM Single Bit errors was issued just immediately after the CCU reset:

Event Description	Severity	Event Time	Parameters
<i>RAM single Bit Error</i>	WARN	2017.030.03.36.59.398	2199A34

7 FOS Systems Status

- On 02/02/2017, a new KVM (keyboard/monitor + 8 port switch) was installed on in the FOS rack, room A30A, offering console access to the following machines: *FOSVIRT01*, *FOSVIRT02*, *FOSVIRT03*, *FOSVIRT04*, *PLPCNAS* and *SMTA*.
- A dedicated test to swap PLPCEXT machines was performed on 02/02/20017 swapping from PLPCEXT1 to PLPCEXT2 machines. The change was performed following procedures FCP-GRD-120 and FCP-GRD-121 repectively. Three SBand passes during the day were used for that test:
AOS=09:33:34z, LOS=09:48:09z (to be received with PLPCEXT2)
AOS=12:16:26z, LOS=12:31:13z (to be received with PLPCEXT1)
AOS=16:52:11z, LOS=17:04:15z (to be received with PLPCEXT2)

Procedure to swap from PLPCEXT1 to PLPCEXT2, FCP-GRD-120, was successfully executed before the reception of the first SBand pass. Nevertheless it was seen that Telemetry files from CNES and for this first pass, did not arrive at the expected time to the PLPCEXT2 machine. CNES SOGS team was contacted by phone confirming that the connection from their side was not possible. As consequence of that it was decided to roll back to the previous



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configuration i.e. put PLPCEXT1 as operational machine. After this change, CNES was able again to connect to PLPCEXT and all the following passes were then received using that machine. It was not clear understood why the connection from CNES to PLPCEXT2 machine was not possible and several emails on this topic were interchanged between GMV and CNES SW team. The final conclusion was that the SSH key of the CNES machine, *operpggs@ps-g4-1*, was not installed on PLPCEXT2 machine. GMV took the immediate action to copy that SSH key into PLPCEXT2 machine.

Later on it was observed on the FOS Web page, that the SBand file was automatically updated into an older version. The reason for this wrong file processing was caused by an old SBand pass file that it was still present on PLPCEXT2 machine at the time this machine was setup as operational one. Since there is an automatic process on SMTA machine that checks every 30 minutes if there is a new SBand file ready to be processed, that wrong file was detected and then process it. Since the CNES source SBand file is also stored on SMTA and periodically retrieved from PLPC system using the Polling Tool task, the wrong file was also retrieved and stored on PLPC machine. This created a set cascade problems on PLPC and SMTA machines and the following applications stop working: *MUST Telemetry archiving*, *SPOC App* and *Check_passes*.

The reason for these problems was because the SBand pass file contained data on the past and confused the PLPC system since at the end of the pass it was producing PLPC past events and they were not interpreted correctly neither by the *check_passes* script and the SPOC App. In fact the SPOC App became full due the massive number of SBand passes retrieved by the application. The SPOC problem was fixed by GMV cleaning the internal database.

To avoid similar problem in the future, the script that periodically, 6 hours, copies files from the prime PLPCEXT machine to the backup one will not synchronize anymore the *outTray/SOGS/SBand* directory avoiding the possibility to automatically process obsolete SBand files.

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.



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10 Exceptional Activities

Due to the CCU reset on the 30th of January, a special CRF 638, was issued by FOS to perform the replanning of the operational week.

11 AOB

None.



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APPENDIX A: OOLs

The following Out of Limits were issued by the FOS PLPC system at the time of the CCU reset on the 30th of January:

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2017.030.07.10.31.776	2017.030.03.36.58.898	XNIRCAST	NIR CA VALID ST	NOT-OK	OK
2017.030.07.10.31.776	2017.030.03.36.58.898	XNIRBCST	NIR BC VALID ST	NOT-OK	OK
2017.030.07.10.31.776	2017.030.03.36.58.898	XNIRABST	NIR AB VALID ST	NOT-OK	OK
2017.030.07.10.31.776	2017.030.03.36.58.898	SPM13167	H3 LO_Locking	Unlock	Lock
2017.030.07.10.31.776	2017.030.03.36.58.898	SPM12172	H2 LO_locking	Unlock	Lock
2017.030.07.10.31.776	2017.030.03.36.58.898	SPM11167	H1 LO_Locking	Unlock	Lock
2017.030.07.10.31.776	2017.030.03.36.58.898	SPC02106	Instrument_Mode	Inst Init	Any Other
2017.030.07.10.31.776	2017.030.03.36.58.898	SPM17167	B1 LO_Locking	Unlock	Lock
2017.030.07.10.31.776	2017.030.03.36.58.898	SPM16167	A3 LO_Locking	Unlock	Lock
2017.030.07.10.31.776	2017.030.03.36.58.898	SPM15167	A2 LO_Locking	Unlock	Lock
2017.030.07.10.31.776	2017.030.03.36.58.898	SPM14167	A1 LO_Locking	Unlock	Lock
2017.030.07.10.31.776	2017.030.03.36.58.898	SPM20167	C1 LO_Locking	Unlock	Lock
2017.030.07.10.31.776	2017.030.03.36.58.898	SPM19167	B3 LO_Locking	Unlock	Lock
2017.030.07.10.31.776	2017.030.03.36.58.898	SPM18167	B2 LO_Locking	Unlock	Lock
2017.030.07.10.31.776	2017.030.03.36.58.898	SPM22167	C3 LO_Locking	Unlock	Lock
2017.030.07.10.31.776	2017.030.03.36.58.898	SPM21167	C2 LO_Locking	Unlock	Lock



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At the time of the Instrument CCU recovery, the following nominal OOL was issued by PLPC system indicating that the MIRAS ITL was stopped while a new planning was upload from ground:

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2017.030.10.20.09.136	2017.030.08.16.11.086	NTLHK022	ITL Ena State	Disable	Enable