



Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic:

Date:

Issue:

FOS Report for week 13, year 2016

from 28 MAR 2016 to 04 APR 2016

1.0

1 General Comments

Activities scheduled for this week are those planned for the 13th calendar week of 2016:

28 MAR 2016 to 04 APR 2016 (DoYs 088 to 095).

The following routine activities were planned this week (see Gantt chart on next page and CRF 559):

- One PMS Offset on 31 MAR 2016 (DoY 091), including three Short Calibrations at 15:41:00.0z, 15:41:34.8z, and 15:42:09.4z (orbit 33693).
- Local Oscillator Calibrations every 10 minutes.
- X band Passes over ESAC and Svalbard.

2 Mission Planning Deviations

- Due to the an unforeseen gyro calibration performed on the 31/03/2016, the onboard ITL was made disabled and the Svalbard XBand pass scheduled from 03:04:00z to 03:14:23z cancelled (see section 10 for further details)
- Due to a MIRAS CCU reset that happened on the 01/04/2016 the following list of XBand passes were not acquired on ground:

Type	Start time	Stop time	Duration(s)
Xband_SVAL	2016-04-01T15:52:36.026000	2016-04-01T16:01:32.728000	536
Xband_ESAC	2016-04-01T17:45:41.139000	2016-04-01T17:51:12.344000	331
Xband_SVAL	2016-04-01T20:50:29.231000	2016-04-01T21:00:52.372000	623
Xband_SVAL	2016-04-01T22:29:17.403000	2016-04-01T22:39:33.445000	616
Xband_SVAL	2016-04-02T00:07:57.062000	2016-04-02T00:18:15.996000	618
Xband_SVAL	2016-04-02T01:46:45.040000	2016-04-02T01:57:11.763000	626
Xband_SVAL	2016-04-02T03:26:03.677000	2016-04-02T03:36:23.189000	619
Xband_ESAC	2016-04-02T04:57:53.471000	2016-04-02T05:05:03.917000	430
Xband_SVAL	2016-04-02T08:29:32.059000	2016-04-02T08:35:19.581000	347
Xband_SVAL	2016-04-02T10:12:01.769000	2016-04-02T10:15:47.881000	226
Xband_SVAL	2016-04-02T11:53:35.436000	2016-04-02T11:57:31.943000	236
Xband_SVAL	2016-04-02T13:33:57.300000	2016-04-02T13:40:02.732000	365



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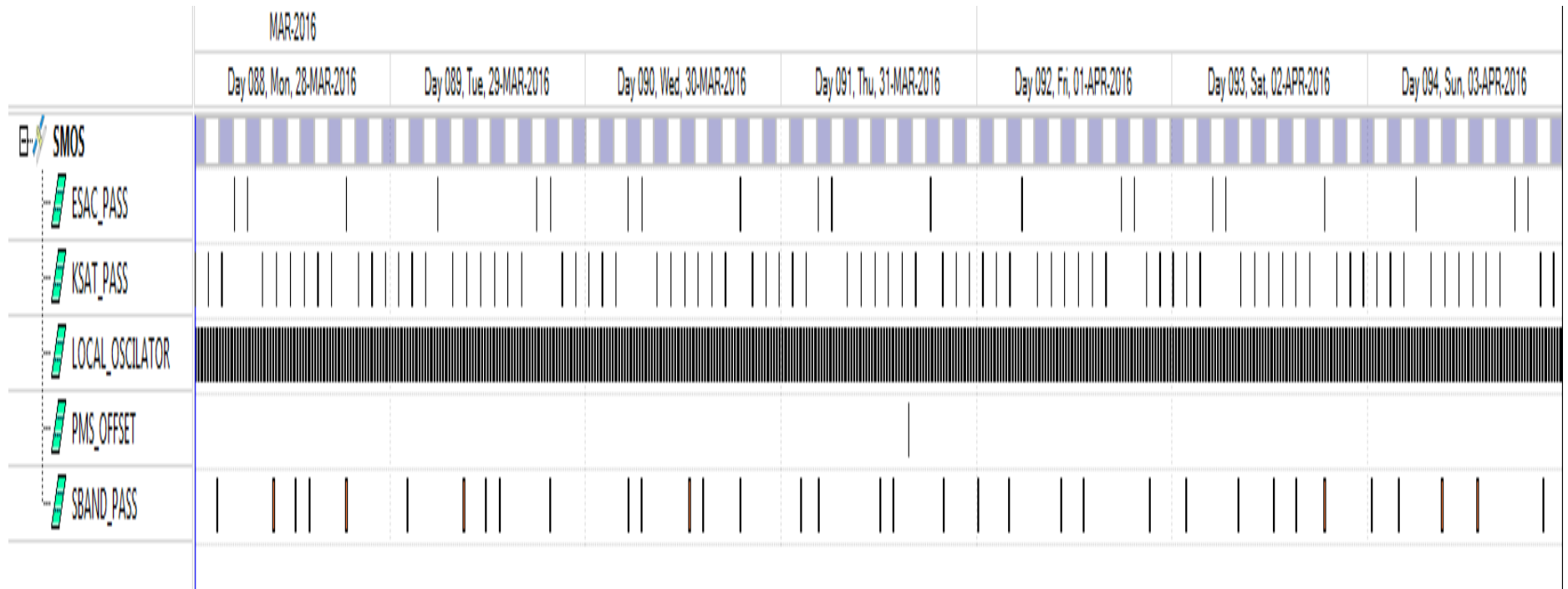
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3 TC Failures

None.

4 Unforeseen Out of Limits (OOLs)

Several Out of limits were received at the time of the CCU reset and its recovery on the first and second of April respectively. Also an OOL was received during the PROTEUS gyro calibration on the 31st of March (further details can be found in Appendix-A)

5 On Board Anomalies

- A new MIRAS CCU reset happened 1 of April 2016, at 14:17:59z. First symptom of the reset was the no reception of Svalbard XBand pass from 15:52:36z to 16:01:32z. After that the following short pass (331 seconds) over ESAC was also not received indicating that the instrument was most probably in autodownlink mode after a CCU reset. Sometime later the FOS oncall engineer contacted the CNES hotline support at 20:22z to communicate the possibility of having a CCU reset event. At 20:25z the FOS oncall engineer also contacted KSAT team to explain the situation and to let them know that the Xband down link activities would be resumed next day, 2 of April at 16:54:22z. The CCU reset confirmation finally came around 21:26z after reception of the first SBand pass following the CCU reset.

The CCU reset took place at the end of the Svalbard X Band GS pass commencing on 2016-04-01T14.13.51 (transponder on). Said pass was scheduled for duration of 420 seconds and the reset occurred 248 s after the start of that pass and before the switch off of the X Band antenna, scheduled at 2016-04-01T14.19.51. The last TM packet before the reset was received on 2016-04-01T14:17:26.210z. The replanning contingency files were generated by FOS team as part of the nominal planning and included in CRF No. 561. This replanning TCs together with the execution of the CCU recovery procedure, PRO-CRP-100, were uploaded the next day by CNES during GS pass over KUX-3 station on 2016-04-02T08:07:00. Since that pass was too short to upload all the replanning TCGROUPs only one of the two was uploaded at that time and the following one automatic uploaded during GS pass KER-3 at 12:27z. MIRAS Xband activities were resumed from 2016-04-02T16:54:22z onwards. The sequence of events leading to the CCU reset was as follows:

2016-04-01T14:13:49.351z ==> XBand power on



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2016-04-01T14:14:13.341z ==> Mass Memory Full Dump Start
 2016-04-01T14:14:15.511z ==> OBOP 29 started
 2016-04-01T14:14:19.161z ==> Mode change to Full Polarisation
 2016-04-01T14:14:20.351z ==> Mode change to Full Polarisation
 2016-04-01T14:14:21.511z ==> OBOP 29 completed

After that the following Alarm packets were then received:

2016-04-01T14:17:25.340 ==> MM_Error_Counters_Acquisition_Failure
 2016-04-01T14:17:25.360 ==> MM_Scrub_Frequency_Acquisition_Failure
 2016-04-01T14:17:25.400 ==> MM_Address_Acquisition_Failure
 2016-04-01T14:17:25.650 ==> MM_Science_Write_Failure

Just after that the CCU reset took place the list of OOL included in Appendix-A were received.

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

Read = 3481725 MM Partition P7
 Write = 3709979 MM Partition P8

The anomaly was geolocated over Arctic regions:

LONG. = 83.574695
 LAT. = +72.573991

The resize of the memory and disabling of chip 6 of partition 3 took place at 08:13:17z. At that time the MM write pointer was located in position 2674146 (Partition P6) above partition P3 therefore some data losses happened at the time of the CCU recovery.

6 On Board Events Telemetry

Just immediately before the CCU reset that happened on the 1st of April the following alarm packets were received:

Event Description	Severity	Event Time	Parameters
MM_Error_Counters_Acquisition_Failure	ALARM	2016-04-01T14:17:25.340	No response
MM_Scrub_Frequency_Acquisition_Failure	ALARM	2016-04-01T14:17:25.360	No response
MM_Address_Acquisition_Failure	ALARM	2016-04-01T14:17:25.400	No response
MM_Science_Write_Failure	ALARM	2016-04-01T14:17:25.650	No response

The following RAM Single Bit Errors befell also this week:

Event Description	Severity	Event Time	Parameters
RAM single Bit Error	WARN	2016.092.14.17.59.780	20548A4



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RAM single Bit Error	WARN	2016.093.21.40.18.852	209FBC8
RAM single Bit Error	WARN	2016.094.06.39.46.772	232504C

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, with the following exception:

- The two following PUS Telemetry gaps were found in GS pass AUS-43 (AOS 2016-03-30T05:12:04z, LOS 2016-03-30T05:26:45z)
from 2016-03-30T04:25:27z to 2016-03-30T04:26:03z
from 2016-03-30T04.26.11z to 2016-03-30T04.30.20z

MIRAS PUS Telemetry gaps were filled on MUST-SMTA system using the PXMF system.

9 X Band Data Reception in PXMF

- Because an issue with the receiving station, S band GS pass AUS-43 (AoS = 2016-03-30T05:12:04z; LoS = 2016-03-30T05:26:45z) had two PUS TM gaps. To achieve completion MIRAS PUS TM was recovered from the X Band PXMF System and ingested into the MUST-SMTA System on 30 MAR 2016.

10 Exceptional Activities

- An unexpected gyro calibration (not communicated from CNES to FOS) took place on the 31/03/2016 from 02:05:42.954z to 03:46:53.815z. During that period the MIRAS ITL became disabled and just before the Svalbard XBand pass from 03:42:47z to 03:53:03z. During the calibration time, science data was marked with external APID which means that 6069 seconds of science data was degraded.

11 AOB

None.



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APPENDIX A: OOLs

At the time of the CCU recovery on the 2016-04-02 the following OOL was received indicating that the onboard ITL was disabled.

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.093.13.04.43.225	2016.093.08.10.32.293	NTLHK022	ITL Ena State	Disabled	Enabled

When the MIRAS CCU reset happened the following OOLs were received:

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.092.21.48.38.955	2016.092.14.17.59.280	XNIRCAST	NIR CA VALID ST	NOT-OK	OK
2016.092.21.48.38.955	2016.092.14.17.59.280	XNIRBCST	NIR BC VALID ST	NOT-OK	OK
2016.092.21.48.38.955	2016.092.14.17.59.280	XNIRABST	NIR AB VALID ST	NOT-OK	OK
2016.092.21.48.38.952	2016.092.14.17.59.280	SPM12172	H2 LO_locking	UNLOCK	LOCK
2016.092.21.48.38.952	2016.092.14.17.59.280	SPM11167	H1 LO_Locking	UNLOCK	LOCK
2016.092.21.48.38.952	2016.092.14.17.59.280	SPC02106	Instrument_Mode	Inst Init	Calibration Dual Pol Full Pol Test
2016.092.21.48.38.951	2016.092.14.17.59.280	SPM15167	A2 LO_Locking	UNLOCK	LOCK
2016.092.21.48.38.951	2016.092.14.17.59.280	SPM14167	A1 LO_Locking	UNLOCK	LOCK
2016.092.21.48.38.951	2016.092.14.17.59.280	SPM13167	H3 LO_Locking	UNLOCK	LOCK
2016.092.21.48.38.950	2016.092.14.17.59.280	SPM19167	B3 LO_Locking	UNLOCK	LOCK



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2016.092.21.48.38.950	2016.092.14.17.59.280	SPM18167	B2 LO_Locking	UNLOCK	LOCK
2016.092.21.48.38.950	2016.092.14.17.59.280	SPM17167	B1 LO_Locking	UNLOCK	LOCK
2016.092.21.48.38.950	2016.092.14.17.59.280	SPM16167	A3 LO_Locking	UNLOCK	LOCK
2016.092.21.48.38.949	2016.092.14.17.59.280	SPM22167	C3 LO_Locking	UNLOCK	LOCK
2016.092.21.48.38.949	2016.092.14.17.59.280	SPM21167	C2 LO_Locking	UNLOCK	LOCK
2016.092.21.48.38.949	2016.092.14.17.59.280	SPM20167	C1 LO_Locking	UNLOCK	LOCK

At the time of the Gyro calibration, the following OOL was received at the time when the onboard ITL was made disabled:

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.091.03.30.11.856	2016.091.02.05.42.954	NTLHK022	ITL Ena State	Disabled	Enabled