



## Operations Notes

FOS Team @ ESAC

Reported by:

*J. Fauste/J.M. Castro Cerón*

Topic:

Date:

Issue:

**FOS Report for week 12, year 2016**

from 21 MAR 2016 to 28 MAR 2016

**1.0**

## 1 General Comments

Activities scheduled for this week are those planned for the 12<sup>th</sup> calendar week of 2016:

21 MAR 2016 to 28 MAR 2016 (DoYs 081 to 088).

The following routine activities were planned this week (see Gantt chart on next page and CRF 558):

- One Warm NIR Calibration on 21 MAR 2016 (DoY 081) with ETO 02:00:59,6z (orbit 33541) and with the following expected calibration values:
  - B.T. = 3,8476°
  - R.M.S. = 0,4710
  - Sun elevation = 07,5248°
  - Moon elevation = -00,0998°
  - R.A. = 077,94°
  - DEC. = -52,04°
- Two LONG Calibrations on 21 MAR 2016 (DoY 081), which encompassed two orbital periods starting at 17:14:00,0z (orbit 33550) and 18:53:00,0z (orbit 33551).
- One PMS Offset on 24 MAR 2016 (DoY 084), including three Short Calibrations at 15:12:00,0z, 15:12:34,8z, and 15:13:09,4z (orbit 33592).
- Local Oscillator Calibrations every 10 minutes.
- X band Passes over ESAC and Svalbard.

## 2 Mission Planning Deviations

MIRAS suffered a CCU reset on 2016-03-21T21:24:18,461z. A re-planning for week 12 (CRF 559) was uploaded on 2016-03-22T10:12z (GS Pass KUX). As consequence of this anomaly the following X band passes were not acquired:

Station	Start Pass	End Pass	Duration
Xband_SVAL	2016-03-21T22:57:06,344	2016-03-21T23:07:22,031	615
Xband_SVAL	2016-03-22T00:35:46,261	2016-03-22T00:46:07,584	621
Xband_SVAL	2016-03-22T02:14:40,588	2016-03-22T02:25:07,809	627
Xband_SVAL	2016-03-22T03:54:11,722	2016-03-22T04:04:23,368	611
Xband_ESAC	2016-03-22T05:25:09,588	2016-03-22T05:33:15,988	486
Xband_ESAC	2016-03-22T07:06:33,426	2016-03-22T07:10:21,602	228
Xband_SVAL	2016-03-22T08:58:26,194	2016-03-22T09:03:33,741	307
Xband_SVAL	2016-03-22T10:40:48,273	2016-03-22T10:44:19,610	211
Xband_SVAL	2016-03-22T12:21:58,084	2016-03-22T12:26:24,867	266
Xband_SVAL	2016-03-22T14:02:08,030	2016-03-22T14:08:53,502	405



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- The nominal sequence of X band passes was resumed at 2016-03-22T15:43z.



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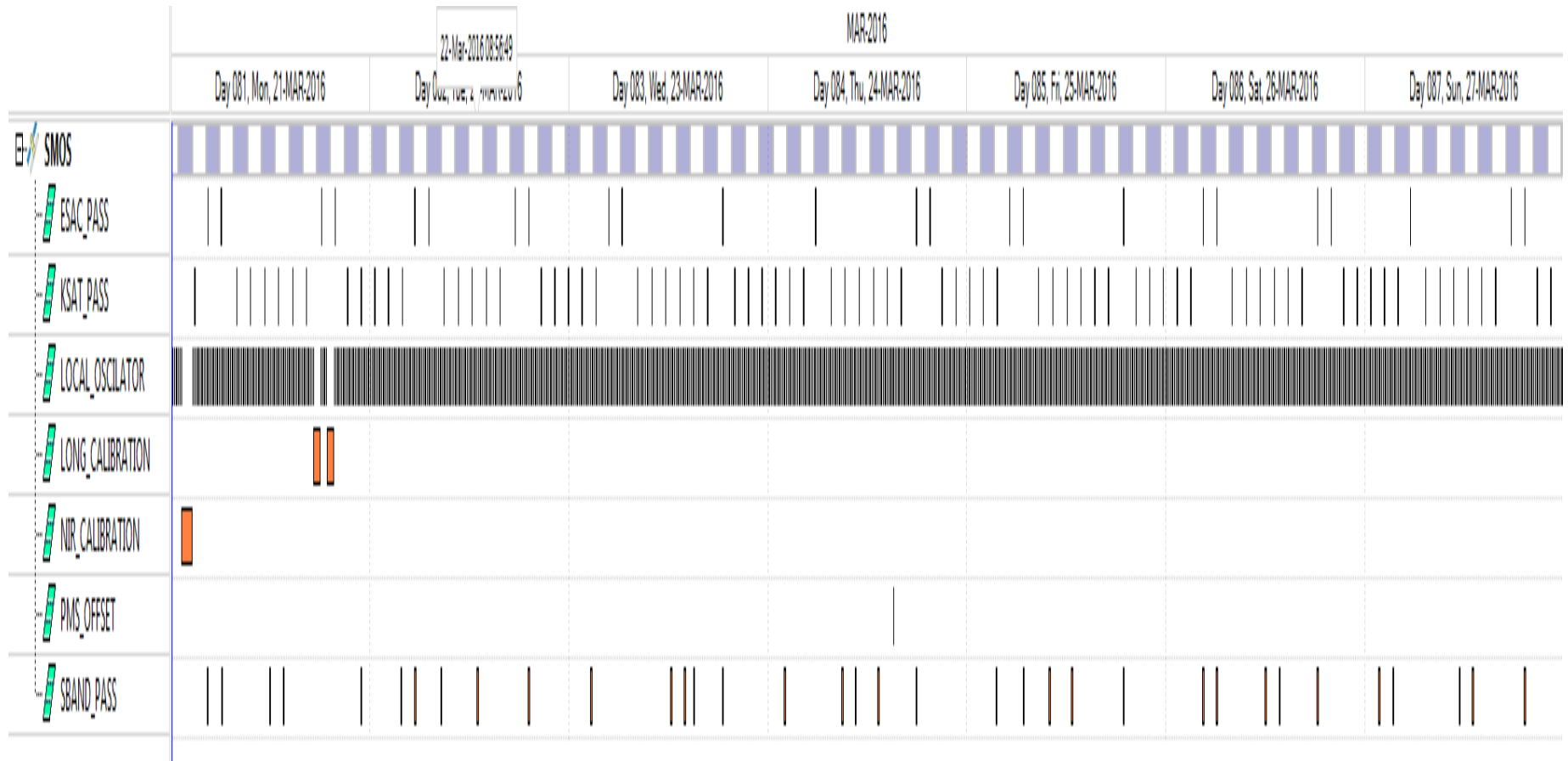
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### 3 TC Failures

None.

### 4 Unforeseen Out of Limits (OOLs)

Several MIRAS OOLs, related to the CCU reset of 21 MAR 2016 and the recovery of the instrument, were received on the PLPC system. Further details can be found in Appendix-A of this report.

### 5 On Board Anomalies

MIRAS suffered a CCU reset on 2016-03-21T21:24:18,461z. First indications of a possible CCU reset were initially triggered around 2016-03-22T06:00z by the FOS on-call engineer due to no reception of the following X band passes:

2016-03-21T22:57:06,344z	2016-03-21T23:07:22,031z	(Svalbard)
2016-03-22T00:35:46,261z	2016-03-22T00:46:07,584z	(Svalbard)
2016-03-22T02:14:40,588z	2016-03-22T02:25:07,809z	(Svalbard)
2016-03-22T03:54:11,722z	2016-03-22T04:04:23,368z	(Svalbard)

KSAT phoned the on-call engineer around 2016-03-22T06:30z, confirming no X band data reception at ground station level. Communication with the CNES on-call team took place around 2016-03-21T07:30z. At that time an extra S band pass (10:12z) was requested by FOS and kindly accepted by CNES.

The reset befell during the 2016-03-21T21:18:21,695z Svalbard X band GS pass. Said pass was scheduled for a duration of 620 s. The reset occurred 217,46 s after AoS, and before the switch off of the X band antenna, scheduled for 2016-03-21T21:28:42,334z. The last TM packet before the reset was received at 2016-03-21T21:24:18,461z. Re-planning was issued by FOS on 22 MAR 2016 via CRF No. 559 and uploaded by CNES starting on 2016-03-22T10:12z, during GS Pass KUX.

The sequence of events prior to the CCU reset was:

- 2016-03-21T21:20:16,929z = X band power on
- 2016-03-21T21:20:40,929z = MM full dump start
- 2016-03-21T21:24:18,461z = CCU reset
  
- 2016-03-21T21:24:18,731z = Mode change to Full Pol, boot report issued

No alarm packets were received before the reset.



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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:

- LAT. = +78,777701
- LONG. = 357,029653

MM chip 6, partition 3 was to be written 11 h 20 m 08 s after the reset. The resize of the MM and disabling of chip 6, partition 3, took place at 2016-03-22T08:39:22z. At that time the MM write pointer was located in position 1678721, slight before the location of chip 6 at 1691819, therefore no data losses were incurred at the time of the CCU recovery.

## 6 On Board Events Telemetry

The following RAM Single Bit errors befell this week:

Event Description	Severity	Event Time	Parameters
RAM single Bit Error	WARN	2016.084.23.21.17.949	20548A4
RAM single Bit Error	WARN	2016.082.10.24.43.406	22CB048
RAM single Bit Error	WARN	2016.081.21.24.18.961	2354AE0

## 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

A replanning, caused by the CCU reset, was issued on 22 MAR 2016.

## 11 AOB

None.



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## APPENDIX A: OOLs

The list of Out of Limits here below corresponds to the CCU reset suffered by MIRAS on 2016-03-21T21:24:18,461z.

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.081.23.51.42,600	2016.081.21.24.18,461	XNIRCAST	NIR CA VALID ST	NOT-OK	OK
2016.081.23.51.42,600	2016.081.21.24.18,461	XNIRBCST	NIR BC VALID ST	NOT-OK	OK
2016.081.23.51.42,600	2016.081.21.24.18,461	XNIRABST	NIR AB VALID ST	NOT-OK	OK
2016.081.23.51.42,597	2016.081.21.24.18,461	SPM12172	H2 LO_locking	UNLOCK	LOCK
2016.081.23.51.42,597	2016.081.21.24.18,461	SPM11167	H1 LO_Locking	UNLOCK	LOCK
2016.081.23.51.42,597	2016.081.21.24.18,461	SPC02106	Instrument_Mode	Inst Init	Calibration Dual Pol Full Pol Test
2016.081.23.51.42,596	2016.081.21.24.18,461	SPM16167	A3 LO_Locking	UNLOCK	LOCK
2016.081.23.51.42,596	2016.081.21.24.18,461	SPM15167	A2 LO_Locking	UNLOCK	LOCK
2016.081.23.51.42,596	2016.081.21.24.18,461	SPM14167	A1 LO_Locking	UNLOCK	LOCK
2016.081.23.51.42,596	2016.081.21.24.18,461	SPM13167	H3 LO_Locking	UNLOCK	LOCK
2016.081.23.51.42,595	2016.081.21.24.18,461	SPM19167	B3 LO_Locking	UNLOCK	LOCK
2016.081.23.51.42,595	2016.081.21.24.18,461	SPM18167	B2 LO_Locking	UNLOCK	LOCK
2016.081.23.51.42,595	2016.081.21.24.18,461	SPM17167	B1 LO_Locking	UNLOCK	LOCK
2016.081.23.51.42,594	2016.081.21.24.18,461	SPM22167	C3 LO_Locking	UNLOCK	LOCK
2016.081.23.51.42,594	2016.081.21.24.18,461	SPM21167	C2 LO_Locking	UNLOCK	LOCK
2016.081.23.51.42,594	2016.081.21.24.18,461	SPM20167	C1 LO_Locking	UNLOCK	LOCK