	Operations Notes	Topic:	**FOS Report for week 23, year 2016**
	FOS Team @ ESAC	Date:	from 06 JUN 2016 to 13 JUN 2016
	Reported by:	Issue:	**1.0**
	J. Fauste/J.M. Castro Cerón		

1 General Comments

Activities scheduled for this week are those planned for the 23rd calendar week of 2016:

06 JUN 2016 to 13 JUN 2016 (DoYs 158 to 165).

The following routine activities were planned this week (see Gantt chart on next page and CRF 575):

- One PMS Offset on 09 JUN 2016 (DoY 161), including three Short Calibrations at 08:35:00.0z, 08:35:34.8z, and 08:36:09.6z (orbit 34696).
- Local Oscillator Calibrations every 10 minutes.
- *X* band Passes over ESAC and Svalbard.

2 Mission Planning Deviations

- The PMS offset calibration scheduled on the 9th of June was cancelled due to the CCU reset that happened on the same day.
- Due to the CCU reset that happened on the 9th of June at 02:44:03z the following XBand passes were not received on ground:

SVAL	*2016-06-09T04:19:28z*	*2016-06-09T04:29:04z*
SVAL	*2016-06-09T07:41:27z*	*2016-06-09T07:48:21z*
SVAL	*2016-06-09T09:23:54z*	*2016-06-09T09:28:28z*
SVAL	*2016-06-09T11:06:03z*	*2016-06-09T11:09:33z*
SVAL	*2016-06-09T12:46:54z*	*2016-06-09T12:51:52z*
SVAL	*2016-06-09T14:26:56z*	*2016-06-09T14:34:15z*

Operations Notes

FOS Team @ ESAC

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Topic: **FOS Report for week 23, year 2016**
Date: from 06 JUN 2016 to 13 JUN 2016
Issue: **1.0**

	JUN-2016						
	Mon, 06-JUN-2016	Tue, 07-JUN-2016	Wed, 08-JUN-2016	Thu, 09-JUN-2016	Fri, 10-JUN-2016	Sat, 11-JUN-2016	Sun, 12-JUN-2016

Operations Notes

FOS Team @ ESAC

SMOS

Reported by:
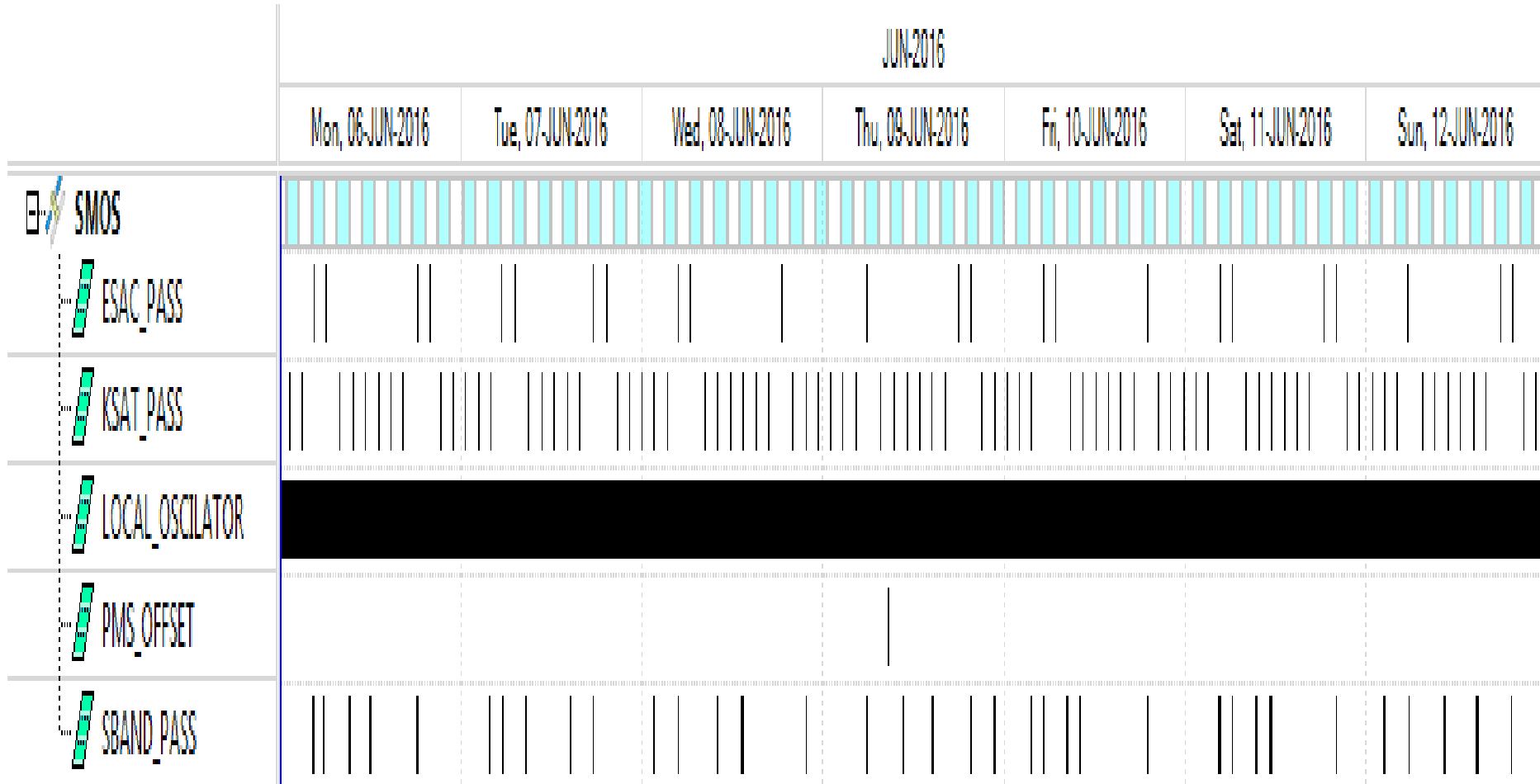
J. Fauste/J.M. Castro Cerón

Topic: **FOS Report for week 23, year 2016**
Date: from 06 JUN 2016 to 13 JUN 2016
Issue: **1.0**

3 TC Failures

- The foreseen MIRAS replanning after the CCU reset on the 9th of June 2016, failed due to a CNES ground station transmission problem. As consequence of that only 216 TCs of the total of 317 were uplinked to the spacecraft. As consequence of that some special operations were required to delete some onboard commands and re-uplink the remaining list of ITL commands (further details can be found in section 10 of this report)

4 Unforeseen Out of Limits (OOLs)

- Several Out of Limits were received at the time of the Mass Memory latch up of Partition P2 that happened on the 10th of June and the CCU reset and its recovery that happened on the 9th of June. (Further details can be found in Appendix-A)

5 On Board Anomalies

- A Mass Memory latch-up impacted partition P2 on 2016-06-10T08:18:55.438z. This anomaly was geolocated off the coast of Brazil. There was no science data losses associated with this anomaly because the Read pointer was on P0 and the Write pointer on P1. Recovery took place on 2016-06-11T11:00:00 via CRF No. 580.

- A new MIRAS CCU reset happened on 09 JUN 2016, at 02:44:02,788z. First indications of a possible CCU reset were initially triggered by the DPGS operator at 2016-06-09T06:50:00z, who noticed that the following X band GS pass over Svalbard was not received:

  from 2016-06-09T04:19:28z to 2016-06-09T04:29:04z

  The next X band GS pass over ESAC (from 2016-06-09T05:49:34,900z to 2016-06-09T05:57:52,139z) dumped an unusually low number (463772) of TM packets. At the reception of the S band GS pass AUS-11 (AoS=2016-06-09T05:47:45z; LoS=2016-06-09T06:02:12z) the FOS engineer on site confirmed the CCU reset.

  The reset befell in the middle of a Svalbard X band GS pass commencing on 2016-06-09T02:39:19,098z (transponder on). Said GS pass was scheduled for a duration of 626 seconds. The reset occurred 248,73 seconds after AoS, and before the switch off of the X band antenna, scheduled on 2016-06-

Operations Notes

FOS Team @ ESAC

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J. Fauste/J.M. Castro Cerón

Topic:

Date:

Issue:

FOS Report for week 23, year 2016

from 06 JUN 2016 to 13 JUN 2016

1.0

09T02:49:45,349z. The last TM packet received before the reset came on 2016-06-09T02:44:02,788z.

MIRAS re-planning was issued by FOS the same morning, via CRF No. 577, and was uploaded by CNES following the execution of PRO-CRP-100, during S band GS pass KUX-9 on 2016-06-09T10:38:18z.
As per this re-planning, nominal MIRAS X band GS dumps resumed on 2016-06-09T16:07:12,996z.

The sequence of events leading to the CCU reset was as follows:

> 2016-06-09T02:39:54,058z ==> XBand Powered On
> 2016-06-09T02:40:18,058z ==> MM Full Dump Start

As specified in the instrument boot report the reason for the reset was the usual Task Overrun problem (8012 HEX). No warnings or alarm packets were received prior to the reset event.

The values of the READ and WRITE pointers at the time of the reset were:
> Read = 2237189, MM Partition P5
> Write = 2497471, MM Partition P5

The anomaly was geolocated over Svalbard:
> LAT. = 75.687431?
> LONG. = 13.622673?

Because of the anomaly described above, the PMS Offset short calibration scheduled from 2016-06-16T07:23:00,0 to 2016-06-16T07:24:44,4 was not executed.

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	2016.157.07.11.22.454	23CEF0C
RAM single Bit Error	WARN	2016.158.23.36.33.236	2288D1C
RAM single Bit Error	WARN	2016.161.02.44.03.288	2288D1C
RAM single Bit Error	WARN	2016.161.22.18.44.772	20545AC

7 FOS Systems Status

All FOS systems nominal.

Operations Notes

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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 exceptions:

9   *X* Band Data Reception in PXMF

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

10 Exceptional Activities

- The foreseen MIRAS re-planning after the CCU reset that happened on the 9th of June 2016 did fail due to a CNES ground station transmission problem. As result of that, FOS sent firstly to CNES CRF-578 to perform the following operations:

  First delete all the MIRAS ITL TCs from 2016-06-10T13:00:00z to 2016-06-20T00:00:00z leaving the following three XBand passes onboard for their execution:

2016-06-10T08:43:58z	2016-06-10T08:49:26z
2016-06-10T10:26:25z	2016-06-10T10:30:02z
2016-06-10T12:07:47z	2016-06-10T12:11:54z

  These passes were the following ones after the second SBand pass (KUX-11   AoS 2016-06-10T09:58:20z) allocated as backup uplink pass for CRF-578

  Second to upload the remaining MIRAS planning from 2016-06-10T13:48:37z to 2016-06-20T00:00:00z.

  A final review of this CRF was performed in the morning of the 10th of June and as result of that awaiting safety margin of 10 seconds added between the two passes above described.
  As consequence of that CRF-579 was sent to supersede previous CRF-578.

11 AOB

None.

Operations Notes

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APPENDIX A: OOLs

The following two Out of limits were received at the time of the Mass Memory Latch up in partition P2 on the 10th of June 2016.

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.162.08.59.05.869	2016.162.08.18.55.43	DMASME10	LU Switch P2	OFF	ON
2016.162.08.59.05.868	2016.162.08.18.55.438	DMASME37	SDD LU Detected	TRUE	FALSE

The following Out of Limits were received at the time of the CCU reset on the 9th of June 2016:

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.161.06.45.03.713	2016.161.02.44.02.788	XNIRCAST	NIR CA VALID ST	NOT-OK	OK
2016.161.06.45.03.713	2016.161.02.44.02.788	XNIRBCST	NIR BC VALID ST	NOT-OK	OK
2016.161.06.45.03.713	2016.161.02.44.02.788	XNIRABST	NIR AB VALID ST	NOT-OK	OK
2016.161.06.45.03.713	2016.161.02.44.02.788	SPC02106	Instrument_Mode	Inst Init	Calibration Dual Pol Full Pol Test
2016.161.06.45.03.713	2016.161.02.44.02.788	SPM14167	A1 LO_Locking	Unlock	Lock
2016.161.06.45.03.713	2016.161.02.44.02.788	SPM13167	H3 LO_Locking	Unlock	Lock
2016.161.06.45.03.713	2016.161.02.44.02.788	SPM12172	H2 LO_locking	Unlock	Lock
2016.161.06.45.03.713	2016.161.02.44.02.788	SPM11167	H1 LO_Locking	Unlock	Lock

Operations Notes

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FOS Report for week 23, year 2016

from 06 JUN 2016 to 13 JUN 2016

1.0

2016.161.06.45.03.713	2016.161.02.44.02.788	SPM17167	B1 LO_Locking	Unlock	Lock
2016.161.06.45.03.713	2016.161.02.44.02.788	SPM16167	A3 LO_Locking	Unlock	Lock
2016.161.06.45.03.713	2016.161.02.44.02.788	SPM15167	A2 LO_Locking	Unlock	Lock
2016.161.06.45.03.713	2016.161.02.44.02.788	SPM21167	C2 LO_Locking	Unlock	Lock
2016.161.06.45.03.713	2016.161.02.44.02.788	SPM20167	C1 LO_Locking	Unlock	Lock
2016.161.06.45.03.713	2016.161.02.44.02.788	SPM19167	B3 LO_Locking	Unlock	Lock
2016.161.06.45.03.713	2016.161.02.44.02.788	SPM18167	B2 LO_Locking	Unlock	Lock
2016.161.06.45.03.713	2016.161.02.44.02.788	SPM22167	C3 LO_Locking	Unlock	Lock

Finally at the time of the CCU recovery procedure and when the ITL was made disable the following OOL was received:

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.161.14.55.03.717	2016.161.10.40.58.271	NTLHK022	ITL Ena State	Disabled	Enabled