



## Operations Notes

FOS Team @ ESAC

Reported by:

*J. Fauste/J.M. Castro Cerón*

Topic:

Date:

Issue:

**FOS Report for week 39, year 2016**

from 26 SEP 2016 to 03 OCT 2016

**1.0**

## 1 General Comments

Activities scheduled for this week are those planned for the 39<sup>th</sup> calendar week of 2016:

26 SEP 2016 to 03 OCT 2016 (DOYs 270 to 277).

The following routine activities were planned this week (see Gantt chart on next page and CRF 606):

- One PMS Offset on 29 SEP 2016 (DOY 273), including three Short Calibrations at 04:16:00.0z, 04:16:34.8z, and 04:17:09.6z (orbit 36305).
- Local Oscillator Calibrations every 10 minutes.
- X band Passes over ESAC and Svalbard.

## 2 Mission Planning Deviations

Due to the CCU reset that happened on the 29<sup>th</sup> of September, the following XBand passes were not performed.

GS	Start GS Pass	End GS Pass	Duration
SVAL	2016-09-29T20:05:18.751000	2016-09-29T20:15:45.210000	626
SVAL	2016-09-29T21:44:13.624000	2016-09-29T21:54:32.120000	618
SVAL	2016-09-29T23:22:55.672000	2016-09-29T23:33:11.903000	616
SVAL	2016-09-30T01:01:37.226000	2016-09-30T01:12:00.862000	623
SVAL	2016-09-30T02:40:39.090000	2016-09-30T02:51:05.243000	626
SVAL	2016-09-30T04:20:49.137000	2016-09-30T04:30:24.467000	575
SVAL	2016-09-30T07:42:49.311000	2016-09-30T07:49:41.730000	412
SVAL	2016-09-30T09:25:16.971000	2016-09-30T09:29:49.895000	272
SVAL	2016-09-30T11:07:25.470000	2016-09-30T11:10:55.609000	210
SVAL	2016-09-30T12:48:14.893000	2016-09-30T12:53:15.563000	300



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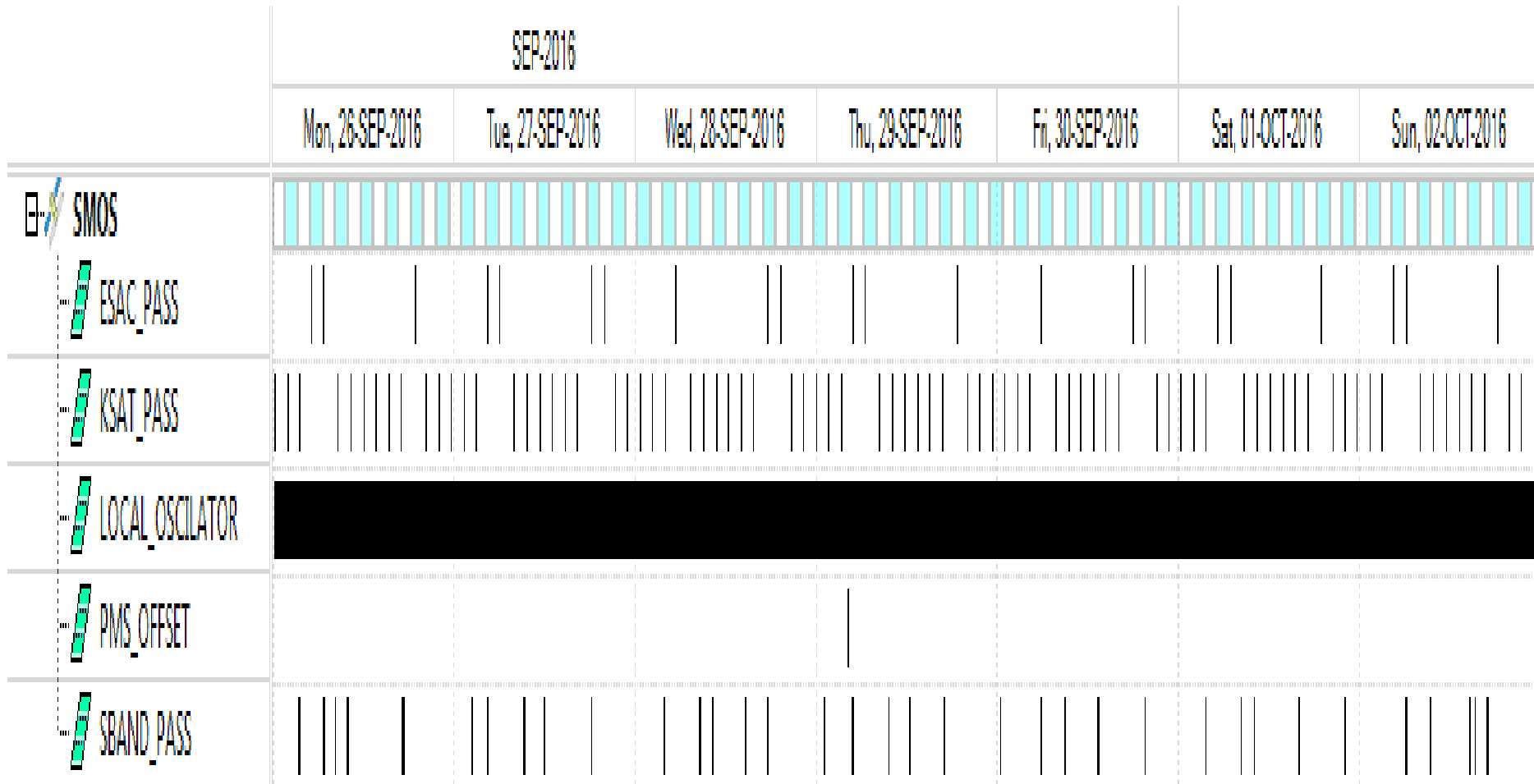
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### 3 TC Failures

None.

### 4 Unforeseen Out of Limits (OOLs)

Two sets of different Out of Limits were received at the time of the CCU reset on the 29<sup>th</sup> of September and the Mass Memory Latch-up on the 2<sup>sd</sup> of October. Further details on these OOLs can be found in Appendix-A of this report.

### 5 On Board Anomalies

- A new Mass Memory latch-up in partition P3 took place on day 2016-10-02T09:22:22.246. Because at the time of the anomaly the MM Read pointer was located in partition P3 while the Write pointer was in P4, 3526 seconds of science data got lost. The anomaly happened on the east side of Brazil and it was recovered via CRF-609 on 2016-10-04T08:00:00z. The geolocation of the anomaly was a the following coordinates:

Longitude = 311°.430040

Latitude = -13°.412147

- A new CCU reset happened on 2016-09-29T16:52:07.987z (DOY 273). The reset was detected by CNES upon reception of S band GS pass AUS-28 (AOS= 2016-09-29T16:56:30z). Following that, a phone call from CNES to the FOS hotline on 29 SEP 2016, late evening, alerted about the anomaly.

The reset befell in the middle of a Svalbard X band GS pass commencing on 2016-09-29T16:47:58.062z (transponder on). Said GS pass was scheduled for a duration of 579 seconds. The reset occurred 317 seconds after AOS, and before the switch off of the X band antenna, scheduled on 2016-09-29T16:56:23.124z. The last TM packet received before the reset was time stamped at 2016-09-29T16:51:34.925z.

MIRAS re-planning was issued by FOS the following morning (30 SEP 2016) via CRF No. 608 and uploaded by CNES, following the execution of PRO-CRP-100, during S band GS pass KUX-42 on 2016-09-30T08:59:40z. As per this re-planning, nominal MIRAS X band GS dumps resumed on 2016-09-30T14:29:30.188z.

Because of this reset, 233 seconds of science data were lost (from 2016-09-29T16:48:19z to 2016-09-29T16:52:12Z)

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

*2016.273.16.47.58.062 ==> XBand Powered On*



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2016.273.16.48.22.062 ==> MM Full Dump Star  
 2016.273.16.49.30.223 ==> LO Cal NoUN FULL NoEXT OBOP 29 Started  
 2016.273.16.49.33.873 ==> Mode Change To Full Polarisation  
 2016.273.16.49.35.073 ==> Mode Change To Full Polarisation  
 2016.273.16.49.36.223 ==> LO Cal NoUN FULL NoEXT OBOP 29 Completed  
 2016.273.16.51.34.055 ==> MM\_Error\_Counters\_Acquisition\_Failure  
 2016.273.16.51.34.075==> MM\_Scrub\_Frequency\_Acquisition\_Failure  
 2016.273.16.51.34.115 ==> MM\_Address\_Acquisition\_Failure  
 2016.273.16.51.34.115 ==> MM Dump Ended  
 2016.273.16.51.34.365 ==> MM\_Science\_Write\_Failure

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

Read= 1849847, MM Partition P4  
 Write= 2111077, MM Partition P4

The anomaly was geolocated over Svalbard:

Latitude = 73°.590596  
 Longitude = 47°.067871

## 6 On Board Events Telemetry

The following Alarm packets were received at the time of the CCU reset on the 29 SEP 2016:

Event Description	Severity	Event Time
MM_Error_Counters_Acquisition_Failure	ALARM	2016.273.16.51.34,055
MM_Scrub_Frequency_Acquisition_Failure	ALARM	2016.273.16.51.34,075
MM_Address_Acquisition_Failure	ALARM	2016.273.16.51.34,115
MM_Science_Write_Failure	ALARM	2016.273.16.51.34,365

The following RAM Single Bit errors befell this week:

Event Description	Severity	Event Time	Parameters
RAM single Bit Error	WARN	2016.272.22.24.10,771	21DC888
RAM single Bit Error	WARN	2016.273.16.52.08,487	21DC888
RAM single Bit Error	WARN	2016.274.12.28.43,958	2065260

## 7 FOS Systems Status

All FOS systems behaved nominal with exception of:

- On the 27<sup>th</sup> of September a new hard disk was installed on the SMTA machine to substitute the one that was failing from the 19<sup>th</sup> of September.
- A backup of the SMOS Virtual machines, PLPCDEV2, MIRASIM2 and SPGF3 was performed on the 29<sup>th</sup> of September.



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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.

### **9 X Band Data Reception in PXMF**

None, all S band passes successfully received and processed.

### **10 Exceptional Activities**

On the 30<sup>th</sup> of September the execution of CCU recovery procedure PRO-CRP-100 (see section 5 of this report)

### **11 AOB**

None.



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### APPENDIX A: OOLs

At the time of the Mass Memory latch-up on the 2<sup>nd</sup> of September the following Out of Limits were received on PLPC system.

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOl Value	CHECK Value
2016.276.10.02.48.653	2016.276.09.22.22.246	DMASME09	LU Switch P3		
2016.276.10.02.48.652	2016.276.09.22.22.246	DMASME37	SDD LU Detected		

When the CCU recovery procedure was executed the following OOL was received to indicate that the onboard ITL was temporary disabled:

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOl Value	CHECK Value
2016.274.13.56.33.151	2016.274.09.01.50.549	NTLHK022	ITL Ena State	Disabled	Enabled

At the time of the CCU reset the following parameters went out of limit on PLPC system:

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOl Value	Check Value
2016.273.17.39.11.612	2016.273.16.52.07.987	XNIRCAST	NIR CA VALID ST	NOT-OK	OK
2016.273.17.39.11.612	2016.273.16.52.07.987	XNIRBCST	NIR BC VALID ST	NOT-OK	OK
2016.273.17.39.11.612	2016.273.16.52.07.987	XNIRABST	NIR AB VALID ST	NOT-OK	OK
2016.273.17.39.11.608	2016.273.16.52.07.987	SPM13167	H3 LO_Locking	Unlock	Lock
2016.273.17.39.11.608	2016.273.16.52.07.987	SPM12172	H2 LO_locking	Unlock	Lock
2016.273.17.39.11.608	2016.273.16.52.07.987	SPM11167	H1 LO_Locking	Unlock	Lock
2016.273.17.39.11.609	2016.273.16.52.07.987	SPC02106	Instrument_Mode	Inst Init	Any Other



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2016.273.17.39.11.607	2016.273.16.52.07.987	SPM17167	B1 LO_Locking	Unlock	Lock
2016.273.17.39.11.607	2016.273.16.52.07.987	SPM16167	A3 LO_Locking	Unlock	Lock
2016.273.17.39.11.607	2016.273.16.52.07.987	SPM15167	A2 LO_Locking	Unlock	Lock
2016.273.17.39.11.608	2016.273.16.52.07.987	SPM14167	A1 LO_Locking	Unlock	Lock
2016.273.17.39.11.607	2016.273.16.52.07.987	SPM20167	C1 LO_Locking	Unlock	Lock
2016.273.17.39.11.606	2016.273.16.52.07.987	SPM19167	B3 LO_Locking	Unlock	Lock
2016.273.17.39.11.606	2016.273.16.52.07.987	SPM18167	B2 LO_Locking	Unlock	Lock
2016.273.17.39.11.606	2016.273.16.52.07.987	SPM22167	C3 LO_Locking	Unlock	Lock
2016.273.17.39.11.606	2016.273.16.52.07.987	SPM21167	C2 LO_Locking	Unlock	Lock