



Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic:

Date:

Issue:

FOS Report for week 34, year 2015

from 17 AUG 2015 to 24 AUG 2015

1.0

1 General Comments

Activities scheduled for this week are those planned for the 34th calendar week of 2015; 2015-08-17 to 2015-08-24 (DoYs 229 to 236).

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

- One Warm NIR Calibration on 2015-08-19 (DoY 231) with ETO 04:22:30z (orbit 30449) and with the following expected calibration values:
 - B.T. = 3.9179
 - R.M.S. = 0.2877
 - Sun Elevation = 3.8651 degrees
 - R.A. = 246.0555 degrees
 - DEC. = 046.4899 degrees
- One LONG Calibration on 2015-08-19 (DoY 231), which encompassed two orbital periods starting at 15:03:00.0z (orbit 30455) and 16:42:45.0z (orbit 30456).
- Local Oscillator Calibrations every 10 minutes.
- X band Passes over ESAC and Svalbard.

2 Mission Planning Deviations

- MIRAS suffered a CCU Reset on 2015-08-19T07:29:41.769z. A re-planning for week 34 was uploaded on 2015-08-19T13:03:21z (Pass KER-53). As consequence of this reset the following X Band Passes were lost:

Station	Start Pass	End Pass	Duration
Xband_SVAL	2015-08-19T09:06:41.835	2015-08-19T09:11:38.363	296
Xband_SVAL	2015-08-19T10:49:00.379	2015-08-19T10:52:30.011	209
Xband_SVAL	2015-08-19T12:30:03.637	2015-08-19T12:34:40.393	276
Xband_SVAL	2015-08-19T14:10:10.761	2015-08-19T14:17:07.381	416

- Nominal X Band Passes resumed 2015-08-19T15:00:00z onwards.
- MIRAS suffered a CCU Reset on 2015-08-22T17:31:38.563z. A re-planning for week 35 was uploaded on 2015-08-24T08:47:18z (Pass KUX-24). As consequence of this reset the following X Band Passes were lost:



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Station	Start Pass	End Pass	Duration
Xband_SVAL	2015-08-22T20:31:13.701	2015-08-22T20:41:38.458	624
Xband_SVAL	2015-08-22T22:10:04.619	2015-08-22T22:20:21.453	616
Xband_SVAL	2015-08-22T23:48:44.915	2015-08-22T23:59:02.464	617
Xband_SVAL	2015-08-23T01:27:29.578	2015-08-23T01:37:55.232	625
Xband_SVAL	2015-08-23T03:06:40.516	2015-08-23T03:17:03.700	623
Xband_SVAL	2015-08-23T08:09:35.812	2015-08-23T08:15:51.316	375
Xband_SVAL	2015-08-23T09:52:06.633	2015-08-23T09:56:09.886	243
Xband_SVAL	2015-08-23T11:33:56.350	2015-08-23T11:37:37.580	221
Xband_SVAL	2015-08-23T13:14:28.630	2015-08-23T13:20:06.077	337
Xband_SVAL	2015-08-23T14:54:23.619	2015-08-23T15:02:17.717	474
Xband_SVAL	2015-08-23T16:34:02.206	2015-08-23T16:43:32.991	570
Xband_SVAL	2015-08-23T19:52:40.812	2015-08-23T20:03:07.790	626
Xband_SVAL	2015-08-23T21:31:37.680	2015-08-23T21:41:57.177	619
Xband_SVAL	2015-08-23T23:10:20.901	2015-08-23T23:20:36.764	615
Xband_SVAL	2015-08-24T00:49:01.480	2015-08-24T00:59:24.001	622
Xband_SVAL	2015-08-24T02:27:59.477	2015-08-24T02:38:26.362	626
Xband_SVAL	2015-08-24T04:07:56.798	2015-08-24T04:17:43.822	587
Xband_SVAL	2015-08-24T07:29:47.789	2015-08-24T07:36:57.595	429
Xband_SVAL	2015-08-24T09:12:12.268	2015-08-24T09:17:01.608	289

- Nominal X Band Passes resumed 2015-08-24T10:55:00z onwards.



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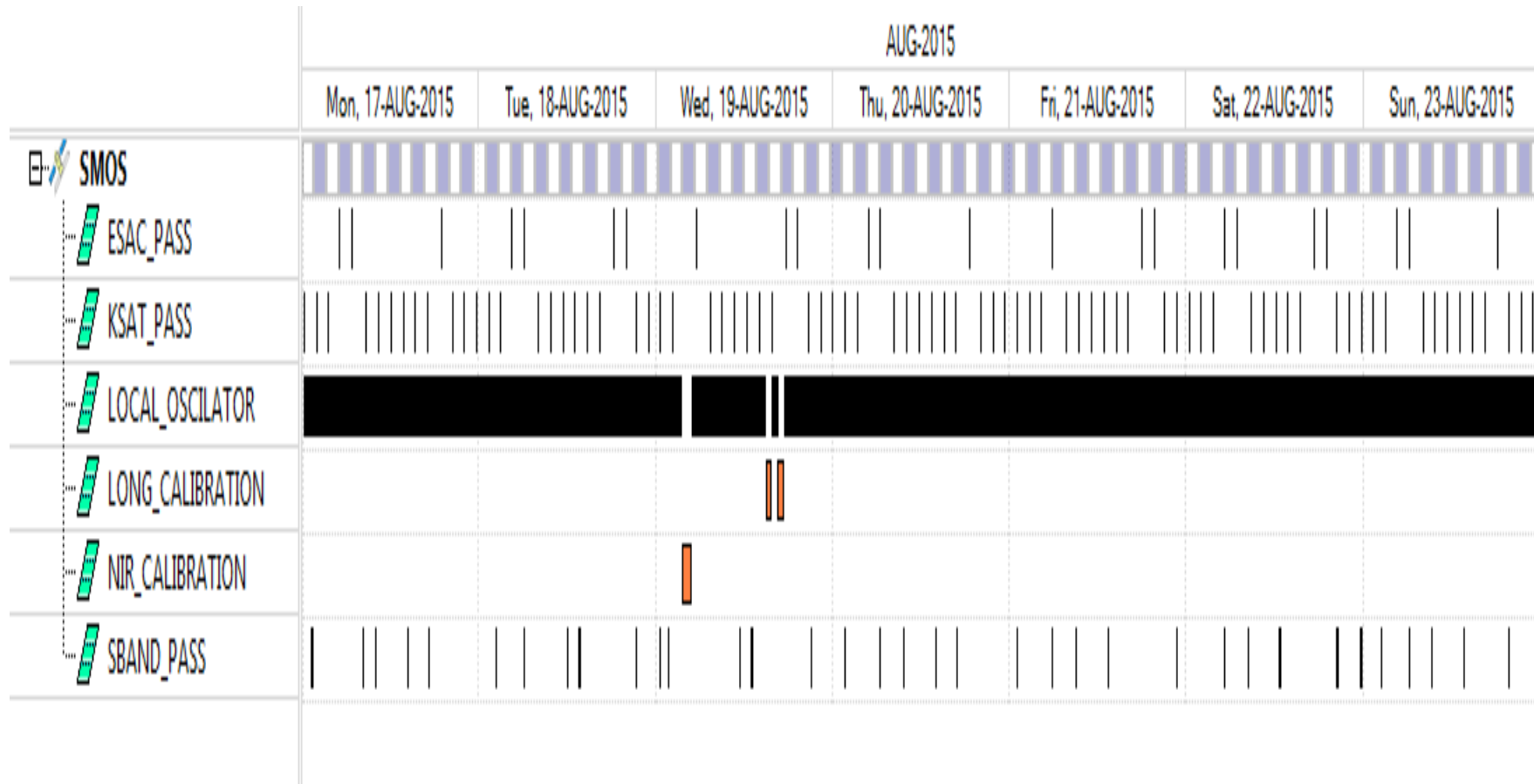
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3 TC Failures

None.

4 Unforeseen Out of Limits (OOLs)

Various OOLs triggered by the two CCU Resets on 19 and 22 of August. Details on these out of limits can be found in Appendix-A of this report.

5 On Board Anomalies

- MIRAS suffered a CCU Reset on 2015-08-19T07:29:41.769z. Notification to FOS came from K-SAT via email at 2015-08-19T09:55z. The reset befell during the 07:24:18.973z Svalbard X Band Pass. Said pass was scheduled for a duration of 436 s. The reset occurred 322.796 s after AoS, and before the switch off of the X Band Antenna, scheduled for 07:31:35.948z. Data download had terminated at 07:29:07.513z. The first MIRAS HK TM Packet after the reset was issued at 07:29:41.769z. CNES executed the CCU Recovery Procedure starting on 2015-08-19T13:03:21z during GS Pass KER-53. Re-planning was issued by FOS on 2015-08-19 via CRF No. 516 and uploaded by CNES during that same pass. An additional TC Pass was booked by CNES at 14:39z over the HBK Station.

Sequence of events prior to the CCU:

- 2015-08-19T07:25:27.040 = *X Band Transmitter on*
- 2015-08-19T07:25:51.040 = *Start of MM data*

No Event Error or Alarm packet was received prior to the CCU Reset.

Immediately following the *Start of MM data* Event the CCU Reset befell and a Boot Report Packet was received in the GS with the this cause for the SW Reset: `SLOT_SCH_TASK_OVERRUN` (identical to previous resets).

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

- Read = 2997188, MM Partition P6
- Write = 2706103, MM Partition P6

The geolocation of the event was due north of the Canadian arctic coastal line:

- LAT. = 080.832607



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- LONG. = 271.358264
- MIRAS suffered a CCU Reset on 2015-08-22T17:31:38.563z. Notification to FOS came from CNES via telephone call around 2015-08-22T21:15z. The reset befell during the 17:27:54.481z ESAC X Band Pass. Said pass was scheduled for a duration of 225 s. The reset occurred 224.082 s after AoS, and before the switch off of the X Band Antenna, scheduled for 17:31:39.874z. Data download had terminated at 17:31:38.563z. The first MIRAS HK TM Packet after the reset was issued at 17:32:11.622z. CNES executed the CCU Recovery Procedure starting on 2015-08-23T09:25:19z during GS Pass KUX-23. Re-planning was issued by FOS on 2015-08-23 via CRF No. 517 and uploaded by CNES starting on 2015-08-24T08:47:18z, during GS Pass KUX-24.

Sequence of events prior to the CCU:

- 2015-08-22T17:27:54.481 = X Band Transmitter on
- 2015-08-22T17:28:18.492 = Start of MM data

No Event Error or Alarm packet was received prior to the CCU Reset.

Immediately following the *Start of MM data* Event the CCU Reset befell and a Boot Report Packet was received in the GS with the this cause for the SW Reset: SLOT_SCH_TASK_OVERRUN (identical to previous resets).

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

- Read = 026939, MM Partition P0
- Write = 324046, MM Partition P0

The geolocation of the event was over North Africa:

- LAT. = 27.603662
- LONG. = 11.521620

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	2015.234.17.32.12.122	2164F80
RAM single Bit Error	WARN	2015.231.07.29.42.269	2164F80



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RAM single Bit Error WARN 2015.229.10.25.40.061 2164F80

7 FOS Systems Status

All FOS Systems behaved nominally with exception of:

- PLPC Time Correlation Task crashed on 2015-08-22T21:14:17z (PLPC System time). The problem was also seen at the PLPC Out of Limits display with OOL violation at 2015-08-22T17:32:12z and for system parameter TCO_FLAG with value NOT-OK.

As result of this anomaly all the telemetry packets with OBT stamp from 2015-08-22T17:51.51.239z to 2015-08-22T23:13:51.415z were archived under wrong Data Stream number 4.

The first symptom of the problem appeared on the SCOS Event Logger at 2015-08-22T21:14:17.718z with system error message "FATAL ERROR SOFTWARE pthread_create error" follow by another fatal message "SYSTEM CORBA: System Exception caught".

The problem was noticed by the FOS oncall Engineer on the night of the 22 of August by looking at the FOS Web telemetry reports and as part of the remote checks performed due to the CCU reset that happened few minutes before on that day.

The FOS oncall Engineer came to ESAC on Sunday morning and the problem was fixed by the restart of the Time Correlation task and execution of ground procedure FCP-GRD-040 on 2015-08-23T07:56z. From that point onwards all the telemetry still pending for PLPC processing started to be correctly time correlated and archived under the correct Data Stream 1.

In order to reestablish the correct order on the PLPC HFA file system, source telemetry data files for the SBand passes not correctly ingested by the system, passes KRX-7 and KRX-8, were again ingested on PLPC system. The lists of files ingested again in the system were:

SMO_PLM1_P_2015_08_22_20_34_34

SMO_PLM1_P_2015_08_22_20_36_46

SMO_PLM1_P_2015_08_22_23_50_05

Also all the telemetry wrongly archived on MUST-SMTA system from 2015-08-22T17:51.51.239z to 2015-08-23T08:04:16.000z were deleted and reingested again from PLPC system.



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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 exception of the two SBand passes KRX-7 and KRX-8, due to SCOS Time Correlation problem reported in section 7 of this report.

9 X Band Data Reception in PXMF

None, all S Band Passes successfully received and processed.

10 Exceptional Activities

None.

11 AOB

None.



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APPENDIX A: OOLs

The list of Out of Limits included in Table-1 here below, corresponds to the MIRAS CCU reset that happened on 2015-08-19T07:29:41.769z. The first OOL in this table reflects the moment when the MIRAS ITL was disabled at the time of the instrument CCU recover procedure.

GS_TIME	OBTIME	PARAMETER	DESCRIPTION
2015.231.13.40.04.201	2015.231.13.05.27.553	NTLHK022	ITL Ena State
2015.231.12.32.51.841	2015.231.07.29.41.769	XNIRCAST	NIR CA VALID ST
2015.231.12.32.51.839	2015.231.07.29.41.769	XNIRBCST	NIR BC VALID ST
2015.231.12.32.51.838	2015.231.07.29.41.769	XNIRABST	NIR AB VALID ST
2015.231.12.32.51.833	2015.231.07.29.41.769	SPC02106	Instrument_Mode
2015.231.12.32.51.832	2015.231.07.29.41.769	SPM11167	H1 LO_Locking
2015.231.12.32.51.830	2015.231.07.29.41.769	SPM12172	H2 LO_locking
2015.231.12.32.51.829	2015.231.07.29.41.769	SPM13167	H3 LO_Locking
2015.231.12.32.51.827	2015.231.07.29.41.769	SPM14167	A1 LO_Locking
2015.231.12.32.51.825	2015.231.07.29.41.769	SPM15167	A2 LO_Locking
2015.231.12.32.51.822	2015.231.07.29.41.769	SPM16167	A3 LO_Locking
2015.231.12.32.51.820	2015.231.07.29.41.769	SPM17167	B1 LO_Locking
2015.231.12.32.51.818	2015.231.07.29.41.769	SPM18167	B2 LO_Locking
2015.231.12.32.51.817	2015.231.07.29.41.769	SPM19167	B3 LO_Locking
2015.231.12.32.51.815	2015.231.07.29.41.769	SPM20167	C1 LO_Locking
2015.231.12.32.51.813	2015.231.07.29.41.769	SPM21167	C2 LO_Locking



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2015.231.12.32.51.811	2015.231.07.29.41.769	SPM22167	C3 LO_Locking
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Table-1

The list of Out of Limits included in Table-2 here below, corresponds to the MIRAS CCU reset that happened on 2015-08-22T17:32:12.122z. The first OOL in this table reflects the moment when the MIRAS ITL was disabled at the time of the instrument CCU recover procedure

GS_TIME	OBTIME	PARAMETER	DESCRIPTION
2015.235.14.20.13.231	2015.235.09.27.42.167	NTLHK022	ITL Ena State
2015.234.21.26.30.086	2015.234.17.32.11.622	XNIRCAST	NIR CA VALID ST
2015.234.21.26.30.086	2015.234.17.32.11.622	XNIRBCST	NIR BC VALID ST
2015.234.21.26.30.085	2015.234.17.32.11.622	XNIRABST	NIR AB VALID ST
2015.234.21.26.30.072	2015.234.17.32.11.622	SPM12172	H2 LO_locking
2015.234.21.26.30.072	2015.234.17.32.11.622	SPM11167	H1 LO_Locking
2015.234.21.26.30.072	2015.234.17.32.11.622	SPC02106	Instrument_Mode
2015.234.21.26.30.071	2015.234.17.32.11.622	SPM16167	A3 LO_Locking
2015.234.21.26.30.071	2015.234.17.32.11.622	SPM15167	A2 LO_Locking
2015.234.21.26.30.071	2015.234.17.32.11.622	SPM14167	A1 LO_Locking
2015.234.21.26.30.071	2015.234.17.32.11.622	SPM13167	H3 LO_Locking
2015.234.21.26.30.070	2015.234.17.32.11.622	SPM20167	C1 LO_Locking
2015.234.21.26.30.070	2015.234.17.32.11.622	SPM19167	B3 LO_Locking
2015.234.21.26.30.070	2015.234.17.32.11.622	SPM18167	B2 LO_Locking



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2015.234.21.26.30.070	2015.234.17.32.11.622	SPM17167	B1 LO_Locking
2015.234.21.26.30.069	2015.234.17.32.11.622	SPM22167	C3 LO_Locking
2015.234.21.26.30.069	2015.234.17.32.11.622	SPM21167	C2 LO_Locking

Table-2