*Operations Notes*
*FOS Team @ ESAC*
*Reported by:*
*J. Fauste/J.M. Castro Cerón*

| | |
|---|---|
| Topic: | **FOS Report for week 07, year 2019** |
| Date: | from 11 FEB 2019 to 18 FEB 2019 |
| Issue: | **1.0** |

# 1 General Comments

Activities scheduled for this week are those planned for the 07th calendar week of 2019:

```
11 FEB 2019 to 18 FEB 2019 (DOYs 042 to 049).
```

The following routine activities were planned this week (see Gantt chart on next page and CRF 791).

- One Warm NIR Calibration on 13 FEB 2019 (DOY 044) with ETO 04:50:09z (orbit 48781; DESCENDING: thermally UNSTABLE) and with the following expected calibration values:

```
B.T.          =      3.70°
R.M.S.        =      0.11
Sun elevation =      9.97°
Moon elevation =    54.93°
R.A.          =     50.12°
DEC.          =    -18.80°
```

- Two LONG Calibrations on 14 FEB 2019 (DOY 045), which encompassed two ascending semi-orbital periods starting at 14:16:00z (orbit 48801) and 15:58:00z (orbit 48802). These two calibrations were cancelled due to the CCU reset that happened on the 14th of February.
- 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 14th of February 2019. the following X-Band passes were not executed as planned:

| STATION | AOS | LOS | DURATION |
|---|---|---|---|
| Xband_ESAC | 2019-02-14T06:43:44 | 2019-02-14T06:50:06 | 381 |
| Xband_SVAL | 2019-02-14T08:36:16 | 2019-02-14T08:41:56 | 339 |
| Xband_SVAL | 2019-02-14T10:18:45 | 2019-02-14T10:22:27 | 222 |
| Xband_SVAL | 2019-02-14T12:00:14 | 2019-02-14T12:04:16 | 241 |
| Xband_SVAL | 2019-02-14T13:40:33 | 2019-02-14T13:46:47 | 373 |
| Xband_SVAL | 2019-02-14T15:20:23 | 2019-02-14T15:28:46 | 502 |

Also the two Long Calibrations planned on the 14 of February were cancelled due to this on board anomaly.

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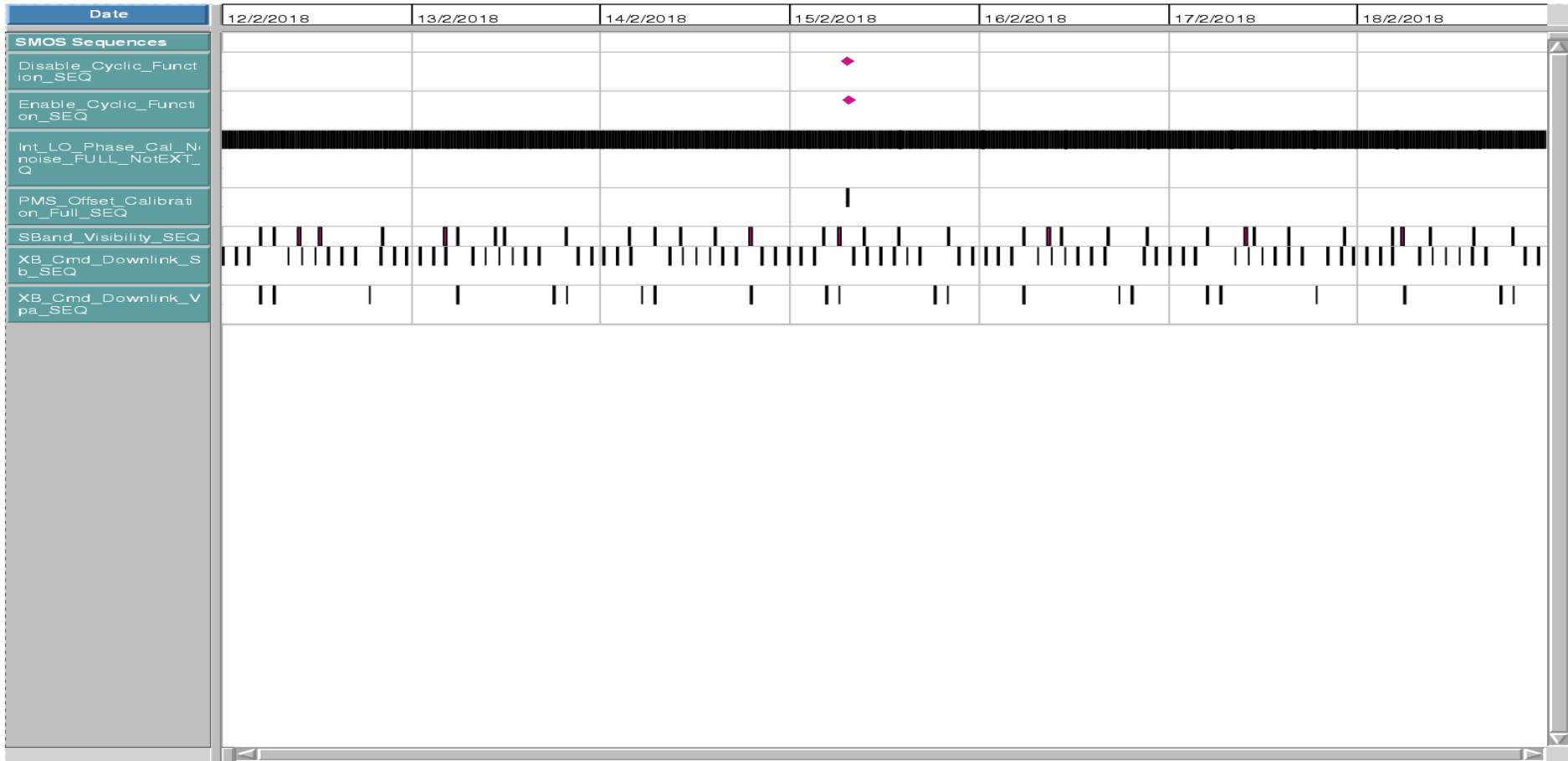
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Schedule Name: 2018_w07_cr    ###    Display start: 12-02-2018 00:00:00.000    ###    Display end: 19-02-2018 00:00:00.000

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# 3  TC Failures

None.

# 4  On Board Anomalies

- A new MIRAS CCU reset took place on 2019-02-14T05:06:53.645z (DOY 045). The FOS on call Engineer initially noticed the problem because of the reduced number of TM packets received during the first ESAC morning X Band pass. Also no telemetry was received for the second ESAC morning pass. In order to advance the MIRAS re-planning preparation, FOS alerted the CNES flight control team on the high possibility to have CCU reset. Later on the reset was confirmed by CNES on the real time telemetry received during S Band pass ASX-12 which coincide in time with the first X Band pass over ESAC.

  The reset happened in the middle of the first ESAC *X* band GS pass of the morning commencing on 2019-02-14T05:04:31z (transponder on). Said GS pass was scheduled for a duration of 445 seconds. The reset occurred 143 seconds after AOS, and before the switch off of the *X* band antenna, scheduled on 2019-02-14T05:11:42z. The last TM packet received before the reset was time stamped at 2019-02-14T05:06:53.645z. As detailed on the instrument Boot Report TM packet, the reset was triggered by the standard "Task Overrun" error.

  FOS team re-planned activities for both, the remainder of week 07 and week 08, on the same day, 14 FEB 2019. This replanning was included in CRF No. 794 and it was uploaded by CNES, following the execution of PRO-CRP-100, during *S* band GS pass KUX-14 on 2019-02-14T09:59:22z. As per that re-planning, nominal MIRAS *X* band GS dumps resumed on, 2019-02-14T17:00:13z.

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

  | | | | |
  |---|---|---|---|
  | *2019.045.05:04:31z* | *725* | *NORM* | *XBand Powered On* |
  | *2019.045.05.04.55z* | *695* | *NORM* | *MM Full Dump Star* |

  Few seconds later and without any previous alarm the CCU reset took place at 05:06:53.645z.

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

  | | | | |
  |---|---|---|---|
  | *Read* | *=* | *64605* | *MM Partition P0* |
  | *Write* | *=* | *302577* | *MM Partition P0* |

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The anomaly was geolocated over the Mediterranean sea between Menorca and Sardinia islands

$$Latitude = 40.75°$$
$$Longitude = 6.14°$$

- The MIRAS instrument MM, partition P5, latched up on 2019-02-11T21:10:21.430z (DOY 042). The following parameters went out of limits in the PLPC system:

  *2019.042.21.10.21.430z    DMASME07    LU Switch P5*
  *2019.042.21.10.21.430z    DMASME37    SDD LU Detected*

This anomaly was geolocated over Parana state (Brazil):

$$Latitude = -24.45$$
$$Longitude = 308.89$$

There were no science data losses associated with this anomaly because it affected partition P5 and both Write and Read pointers were located in partition P8. Recovery took place on 13 FEB 2019, at 06:00:00z (CRF 792). At the time of the anomaly the position of the MM pointers were as follows:

$$READ = 3716783 \ (partition \ P8)$$
$$WRITE = 3804755 \ (partition \ P8)$$

## 5  On Board Events Telemetry

The following RAM Single Bit errors befell this week:

| Event Description | Packet ID | Severity | Event Time | Parameters |
|---|---|---|---|---|
| RAM single bit error | 730 | WARN | 2019-02-14T05:07:27.209z | 2030FA4 |

## 6  FOS Systems Status

All FOS systems nominal.

## 7  Data Reception from CNES

All *S* band passes were correctly received from CNES and successfully processed by the FOS PLPC system.

## 8  *X* Band Data Reception in PXMF

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

## 9  Exceptional Activities

None.

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## 10 AOB

None.

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## APPENDIX A: OOLs

As part of the execution of the CCU recovery procedure, the MIRAS onboard ITL is temporary made disable and the following OOL also temporary triggered on the FOS PLPC system.

| GS_TIME | OB_TIME | PARAMETER | DESCRIPTION | OOL Value | Check Value |
|---|---|---|---|---|---|
| 2019-02-14T14:43:03 | 2019-02-14T09:52:29 | NTLHK022 | ITL Ena State | Disabled | Enabled |

At the time of the CCU reset the following MIRAS TM parameters went out of limits on the FOS PLPC system:

| GS_TIME | OB_TIME | PARAMETER | DESCRIPTION | OOL Value | Check Value |
|---|---|---|---|---|---|
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPM22167 | C3 LO_Locking | UNLOCK | LOCK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPM21167 | C2 LO_Locking | UNLOCK | LOCK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPM20167 | C1 LO_Locking | UNLOCK | LOCK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPM19167 | B3 LO_Locking | UNLOCK | LOCK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPM18167 | B2 LO_Locking | UNLOCK | LOCK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPM17167 | B1 LO_Locking | UNLOCK | LOCK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPM16167 | A3 LO_Locking | UNLOCK | LOCK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPM15167 | A2 LO_Locking | UNLOCK | LOCK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPM14167 | A1 LO_Locking | UNLOCK | LOCK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPM13167 | H3 LO_Locking | UNLOCK | LOCK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPM12172 | H2 LO_locking | UNLOCK | LOCK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPM11167 | H1 LO_Locking | UNLOCK | LOCK |

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| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | SPC02106 | Instrument_Mode | Inst Init | Any |
|---|---|---|---|---|---|
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | XNIRABST | NIR AB VALID ST | NOT-OK | OK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | XNIRBCST | NIR BC VALID ST | NOT-OK | OK |
| 2019-02-14T10:19:19 | 2019-02-14T05:07:26 | XNIRCAST | NIR CA VALID ST | NOT-OK | OK |

The Mass Memory Latch up anomaly triggered the two following OOLs on the FOS PLPC systems

| GS_TIME | OB_TIME | PARAMETER | DESCRIPTION | OOL Value | Check Value |
|---|---|---|---|---|---|
| 2019-02-12T04:55:59 | 2019-02-11T21:10:21 | DMASME37 | SDD LU Detected | FALSE | TRUE |
| 2019-02-12T04:55:59 | 2019-02-11T21:10:21 | DMASME07 | LU Switch P5 | OFF | ON |