Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic: **FOS Report for week 41, year 2023**

Date: from 09 OCT 2023 to 16 OCT 2023

Issue: **1.0**

1. General Comments

Activities scheduled for this week are those planned for the 41st calendar week of 2023:

```
09 OCT 2023 to 16 OCT 2023 (DoYs 282 to 289).
```

The following routine activities were planned this week (see Gantt chart on next page and CRF Nº 1153).

- One PMS Offset on 12 OCT 2023 (DoY 285), including three Short Calibrations at 05:56:00.0z, 05:56:34.8z, and 05:57:09.6z (orbit 73272).
- Local Oscillator Calibrations every 10 minutes.
- *X* band Passes over ESAC and Svalbard.
- On 14 OCT 2023 the following four solar eclipses by the Moon took place:
  14/10/2023 15:11:37z - 14/10/2023 15:23:36z
  14/10/2023 16:56:25z - 14/10/2023 17:09:42z
  14/10/2023 19:05:58z - 14/10/2023 19:23:35z
  14/10/2023 20:54:45z - 14/10/2023 21:02:07z

2. Mission Planning Deviations

None.

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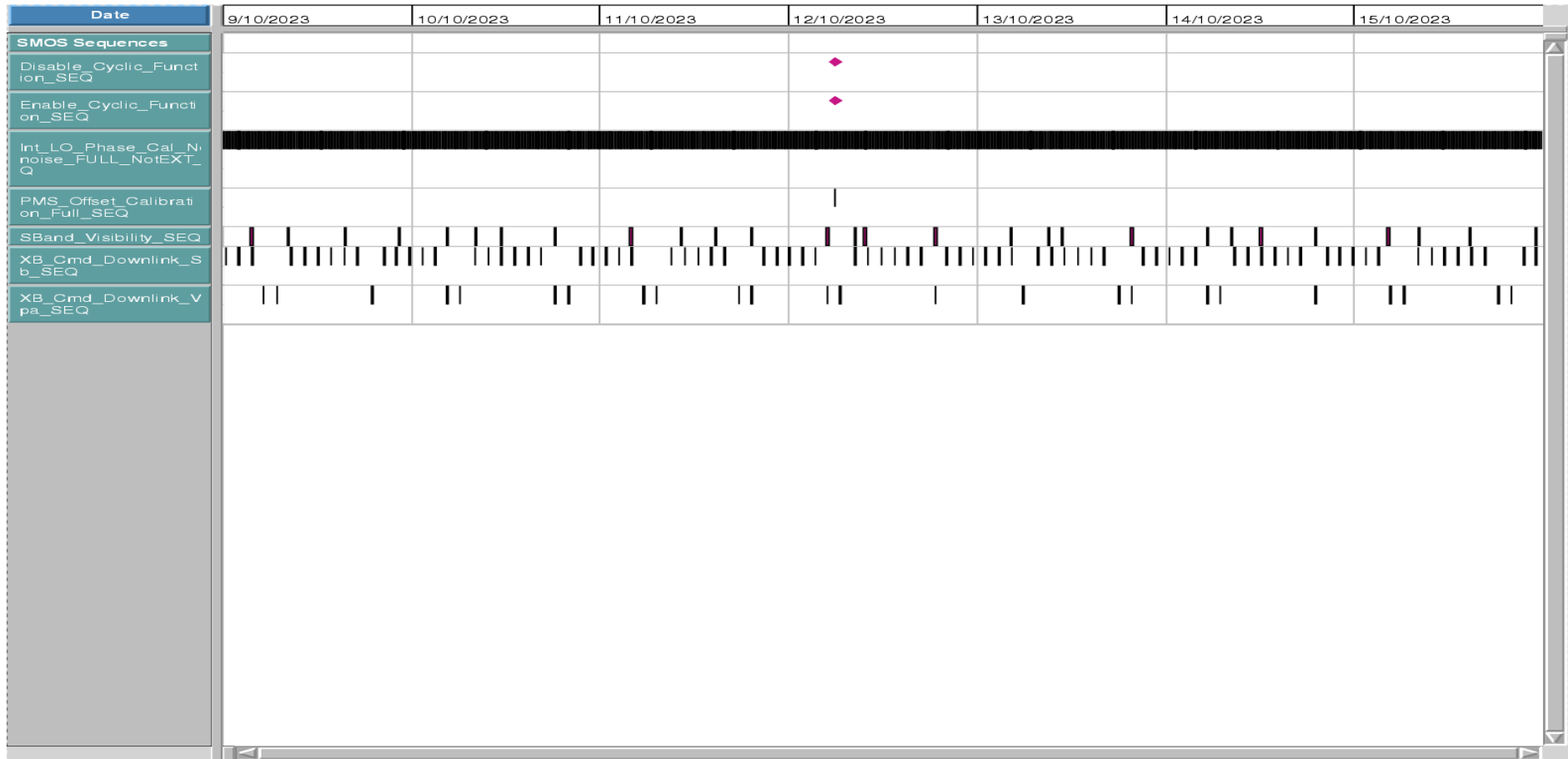*J. Fauste/J.M. Castro Cerón*

Topic:

Date:

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Schedule Name: 2023_w41_cr   ###   Display start: 09-10-2023 00:00:00.000   ###   Display end: 16-10-2023 00:00:00.000

Date	9/10/2023	10/10/2023	11/10/2023	12/10/2023	13/10/2023	14/10/2023	15/10/2023
SMOS Sequences							
Disable_Cyclic_Function_SEQ				◆			
Enable_Cyclic_Function_SEQ				◆			
Int_LO_Phase_Cal_Noise_FULL_NotEXT_Q							
PMS_Offset_Calibration_Full_SEQ							
SBand_Visibility_SEQ							
XB_Cmd_Downlink_Sb_SEQ							
XB_Cmd_Downlink_Vpa_SEQ							

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3. TC Failures

None.

4. On Board Anomalies

- The MIRAS CMN, unit H3, unlocked 2023-10-12T22:51:56,891z (DoY 285). This anomaly was geolocated just south of the coast of Western Australia:

```
LAT.  = -40.31°
LONG. = 114.49°
```

Both parameters, output power SPM13162 and locking status SPM13167, went out of limits in the FOS PLPC system. The anomaly recovered in 11 epochs.

- MIRAS instrument MM, partition P4, latched up 2023-10-14T09:32:08z (DOY 287). The following parameters went out of limits in the PLPC system:

```
2023.287.09:32:08z      DMASME08      LU Switch P4
2023.287.09:32:08z      DMASME37      SDD LU Detected
```

This anomaly was geolocated over South Pole:

```
LAT.  = -60.60°
LONG. = 112.11°
```

There were no science data losses associated with this anomaly because it affected partition P4 while the Read and Write pointers were both in partition P8. Recovery took place on 16 OCT 2023 at 15:54:45z (CRF n° 1156).

As we already had another 2 latch ups (P0 and P11), the decision of advance recovery time was taken and the recovery took place 16 OCT 2023, at 10:54:00z (CRF 1156). Loss of data during recovery was produced because the recovery took place after a saturated pass and at a time not precised. (see event with reference ID 7225).

At the time of the anomaly the position of the MM pointers was as follows:

```
READ  = 3690635 (partition P8)
WRITE = 3809871 (partition P8)
```

- MIRAS instrument MM, partition P0, latched up 2023-10-14T22:46:34z (DOY 287). The following parameters went out of limits in the PLPC system:

```
2023.287.22:46:34z      DMASME12      LU Switch P0
2023.287.22:46:34z      DMASME37      SDD LU Detected
```

This anomaly was geolocated over Southern Coast of Chile:

```
LAT.  = -39.11°
LONG. = 281.80°
```

There were no science data losses associated with this anomaly because it affected partition P0 while the Read and Write pointers were in partition P3 and P4, respectively. Recovery took place on 16 OCT 2023 at 15:54:45z (CRF nº 1156). It is expected loss of data during recovery as Latch up was in P0 (see event with reference ID 7225).

As we already had another 2 latch ups (P11 and P4), the decision of advance recovery time was taken and the recovery took place 16 OCT 2023, at 10:54:00z (CRF 1156). Loss of data during recovery was produced because the recovery took place after a saturated pass and at a time not precised.

At the time of the anomaly the position of the MM pointers was as follows:

```
READ  = 1726023 (partition P3)
WRITE = 1829121 (partition P4)
```

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	09/10/2023 22:49	205537C
RAM single Bit Error	730	WARN	10/10/2023 09:27	223AB10
RAM single Bit Error	730	WARN	10/10/2023 10:07	239FC6C

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, with the following exceptions:

- S band GS pass:

```
STATION   PASS  AoS                   LoS
 ----------------------------------------------------
 STC       17   2023-10-11T03:48:59z  2023-10-11T04:01:09z
```

This S band GS pass STC-17 contained 1 HKTM gap because of an issue with the receiving station.

The gap went:
from 2023-10-10T21:06:41,607z to 2023-10-10T21:06:45,207z; 5 packets lost.

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8. X Band Data Reception in PXMF

None, as only a total of 5 packets were lost in the S band GS pass STC-17. Given the small size of this gap no TM was recovered from the X band PXMF system and ingested into the MUST-SMTA system.

9. Exceptional Activities

None.

10. AOB

None.

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APPENDIX A: OOLs

The following OOLs befell at the time the **MIRAS CMN, unit H3,** unlocked 2023-10-12T22:51:56,891z (DoY 285):

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2023-10-13T04:39:24	2023-10-12T22:51:56	SPM13162	H3 LO_Out_Power	NOT-OK	OK
2023-10-13T04:39:24	2023-10-12T22:52:00	SPM13167	H3 LO_Locking	UNLOCK	LOCK

The following OOLs befell at the time the **MIRAS instrument MM, partition P4**, latched up 2023-10-14T09:32:08z (DOY 287):

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2023-10-14T12:22:03	2023-10-14T09:32:08	DMASME37	SDD LU Detected	FALSE	TRUE
2023-10-14T12:22:03	2023-10-14T09:32:08	DMASME08	LU Switch P4	OFF	ON

The following OOLs befell at the time the **MIRAS instrument MM, partition P0**, latched up 2023-10-14T22:46:34z (DOY 287):

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2023-10-15T04:42:07	2023-10-14T22:46:34	DMASME37	SDD LU Detected	FALSE	TRUE
2023-10-15T04:42:07	2023-10-14T22:46:34	DMASME12	LU Switch P0	OFF	ON