	Operations Notes	Topic:	**FOS Report for week 11, year 2020**
SMOS	*FOS Team @ ESAC*	Date:	from 09 MAR 2020 to 16 MAR 2020
	Reported by:	Issue:	**1.0**
	J. Fauste/J.M. Castro Cerón		

1   General Comments

Activities scheduled for this week are those planned for the 11th calendar week of 2020:

```
09 MAR 2020 to 16 MAR 2020 (DOYs 069 to 076).
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The following routine activities were planned this week (see Gantt chart on next page and CRF 871).

- One PMS Offset on 12 MAR 2020 (DOY 072), including three Short Calibrations at 06:50:00.0z, 06:50:34.8z, and 06:51:09.6z (orbit 54437).
- Local Oscillator Calibrations every 10 minutes.
- *X* band Passes over ESAC and Svalbard.

2   Mission Planning Deviations

None.

Operations Notes

FOS Team @ ESAC

Reported by:

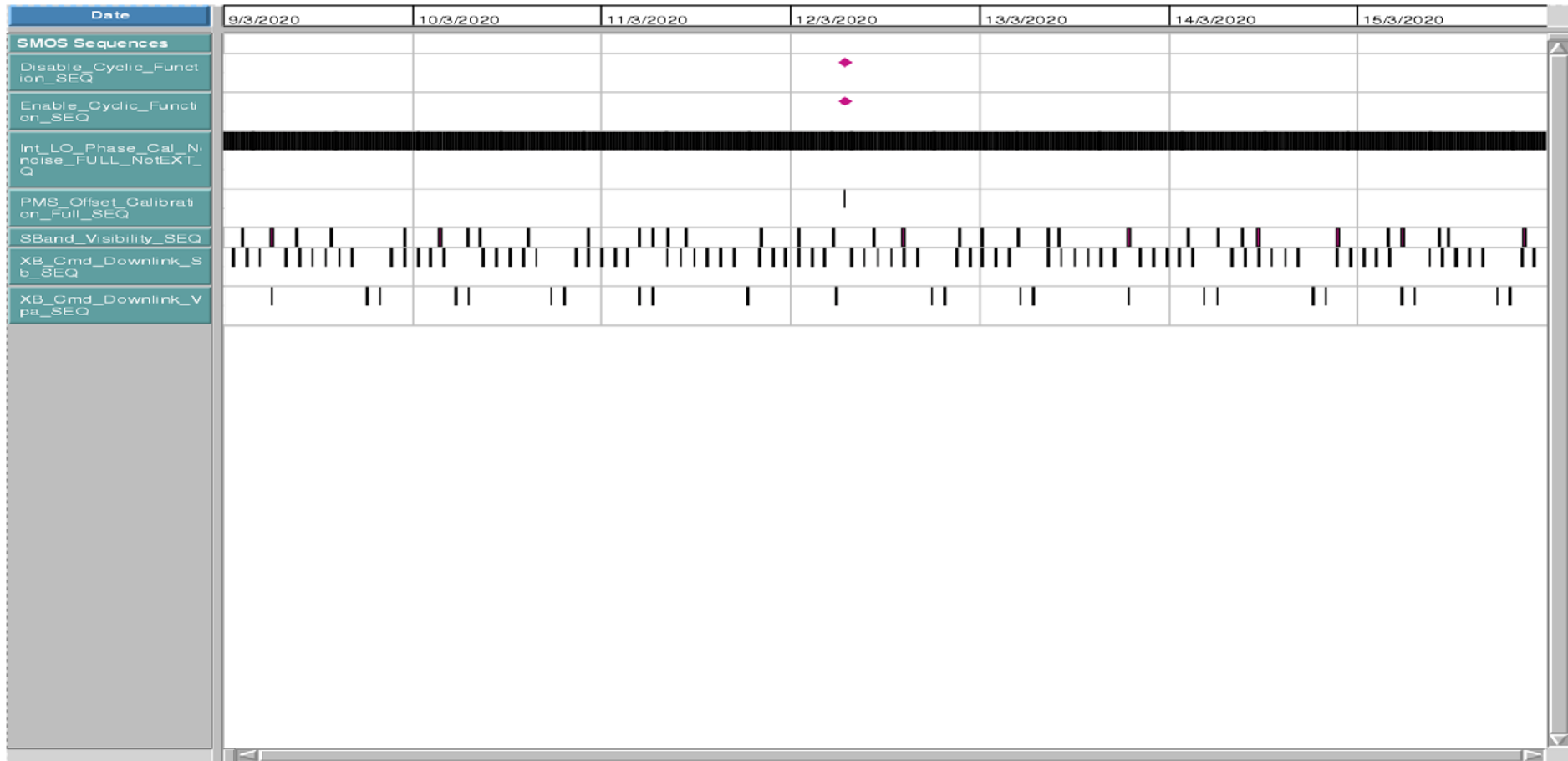*J. Fauste/J.M. Castro Cerón*

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Schedule Name: 2020_w11_cr   ###   Display start: 09-03-2020 00:00:00.000   ###   Display end: 16-03-2020 00:00:00.000

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3 TC Failures

None.

4 On Board Anomalies

- The MIRAS CMN, unit H1, unlocked 2020-03-12T07:11:53,338z (DOY 072). This anomaly was geolocated over Micronesia:

  Latitude   =   7.45°
  Longitude = 163.45°

  Both parameters, output power SPM11162 and locking status SPM11167, went out of limits in the FOS PLPC system. The anomaly recovered in four Epochs.

- The MIRAS CMN, unit H3, unlocked 2019-03-09T21:53:25.716z (DOY 069). This anomaly was geolocated over Córdoba province (Argentina)

  Latitude = -31.22°
  Longitude   = 296.89°

  Only locking status SPM13167, went out of limits in the FOS PLPC system. The anomaly recovered in 4 Epochs.

- A MIRAS CCU reset happened on 2020-03-09T12:59:33.062z. The reset took place at the start of XBand Svalbard pass with AOS=12:58:22z. The FOS XBand Data Model Tool (XDM), initially detected the possible anomaly, since upon reception of XBand data for that pass the number of received packets was significantly less than the expected ones. Following this alert, FOS called CNES Ops team in order to alert of that possible reset. The anomaly was finally confirmed by CNES upon reception on ground of Sband pass with AOS=13:30:43z

  The last TM packet before the reset was received on 2020-03-09T12:59:33.062z. Upon FOS request, CNES Ops team booked an extra pass in the afternoon of the 9 of March in order to upload as soon as possible MIRAS replanning for the present operational week (week 11) The corresponding replanning was included in CRF-872 and MIRAS X-band downlink activities successfully resumed at 2020-03-10T00:33:09z.

  Because of this reset, the following X band GS passes were not acquired:

  SVAL 2020-03-09T14:38:21   2020-03-09T14:45:53   452

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SVAL 2020-03-09T16:18:02   2020-03-09T16:27:19   557
ESAC 2020-03-09T18:09:32   2020-03-09T18:17:16   463
ESAC 2020-03-09T19:49:02   2020-03-09T19:54:51   349
SVAL 2020-03-09T21:15:45   2020-03-09T21:26:06   620

The sequence of events including alarm and event packets leading to the CCU reset was as follows:

Event Description	Pkt ID	Severity	Event Time	Parame
MM_Scrub_Frequency_Acquisition_Fail	690	ALARM	2020-03-09T12:59:32	No
MM_Address_Acquistion_Failure	684	ALARM	2020-03-09T12:59:32	No
MM_Science_Write_Failure	692	ALARM	2020-03-09T12:59:32	Link
MM_Science_Write_Failure	692	ALARM	2020-03-09T12:59:32	Link
MM_Science_Write_Failure	692	ALARM	2020-03-09T12:59:32	Link

and immediately after the instrument reset. After the reset the two following uncorrelated TM error packets were issued by the instrument indicating a slow time synchronization of the payload with PROTEUS (error already seen in some other resets)

Event Description	Pkt ID	Severity	Event Time	Parame
Time_Correlator_Unexpected_UTC	652	ERROR	2020-03-09T14:07:19	PPS
Time_Correlator_Unexpected_PPS	653	ERROR	2020-03-09T14:07:19	Idle

As in previous occasions, the instrument boot report packet indicated as reason for the anomaly reset the usual Task Overrun error

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

Read   = 413985   MM Partition P0
Write   = 781043   MM Partition P1

The anomaly was geolocated over Artic regions:
Latitude   = 81.45°
Longitude   = 154.82°

5 On Board Events Telemetry

The following Alarm packets were received immediately before the CCU reset that happened on the 9[th] of March:

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Event Description	Pkt ID	Severity	Event Time	Parame
MM_Scrub_Frequency_Acquisition_Fail	690	ALARM	2020-03-09T12:59:32	No
MM_Address_Acquistion_Failure	684	ALARM	2020-03-09T12:59:32	No
MM_Science_Write_Failure	692	ALARM	2020-03-09T12:59:32	Link
MM_Science_Write_Failure	692	ALARM	2020-03-09T12:59:32	Link
MM_Science_Write_Failure	692	ALARM	2020-03-09T12:59:32	Link

The two following Error packets were received immediately after the CCU reset that happened on the 9th of March.

Event Description	Pkt ID	Severity	Event Time	Parame
Time_Correlator_Unexpected_UTC	652	ERROR	2020-03-09T14:07:19	PPS
Time_Correlator_Unexpected_PPS	653	ERROR	2020-03-09T14:07:19	Idle

The following RAM Single Bit errors befell this week:

Event Description	Packet ID	Severity	Event Time	Parameters
RAM single Bit Error	730	WARN	2020-03-11T11:26:03	23A5AAC
RAM single Bit Error	730	WARN	2020-03-09T14:07:19	23F6D20

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:

- Because of an issue with the receiving station, S band GS pass HBX-11 (AOS = 2020-03-13T04:43:27z; LOS = 2020-03-13T04:57:53z) was not delivered to FOS. The gap went:

  from 2020-03-13T00:15:32.464z to 2020-03-13T04:45:03.865z.

  To achieve completion MIRAS PUS HKTM was recovered from the X band PXMF system and ingested into the MUST-SMTA system on 13 MAR 2020. The corresponding E HKTM was lost:

  from 2020-03-13T00:15:11z to 2020-03-13T04:45:35z.

- Because of an anomaly with the pass, TM for S band GS pass KER-14 (AOS = 2020-03-11T10:36:59z; LOS = 2020-03-11T10:48:23z) was not delivered to FOS. The gap went:

  from 2020-03-11T08:17:30.780z to 2020-03-11T10:39:06.864z.

  To achieve completion MIRAS PUS HKTM was recovered from the X band PXMF system and ingested into the MUST-SMTA system on 12 MAR 2020. The corresponding E HKTM was lost:

  from 2020-03-11T08:17:16z to 2020-03-11T10:39:08z.

8 *X* Band Data Reception in PXMF

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

9 Exceptional Activities

None.

10 AOB

None.

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APPENDIX A: OOLs

The CMN unlock of H1 unit generated two following temporal out of limits on the FOS PLPC system.

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2020-03-12T10:59:37	2020-03-12T07:11:53	SPM11162	H1 LO_Out_Power	NOT-OK	OK
2020-03-12T10:59:37	2020-03-12T07:11:54	SPM11167	H1 LO_Locking	UNLOCK	LOCK

The CMN unlock of H3 unit generate the following single out of limit on FOS PLPC system.

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2020-03-09T23:41:09	2020-03-09T21:53:25	SPM13167	H3 LO_Locking	UNLOCK	LOCK

At the time of the instrument recovery after the CCU reset, the following TM parameter went temporary out of limit indicating that the MIRAS ITL was disabled.

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2020-03-09T23:21:33	2020-03-09T15:09:55	NTLHK022	ITL Ena State	Disabled	Enabled

The MIRAS CCU reset that took place on the 9[th] of March generated the following list of TM parameter to go temporary out of limits on the FOS PLPC system.

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2020-03-09T14:07:20	2020-03-09T13:00:07	TCO_FLAG	TCO Restart flag	NOT-OK	OK
2020-03-09T14:07:20	2020-03-09T14:07:19	SPM22167	C3 LO_Locking	UNLOCK	LOCK
2020-03-09T14:07:20	2020-03-09T14:07:19	SPM21167	C2 LO_Locking	UNLOCK	LOCK

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2020-03-09T14:07:20	2020-03-09T14:07:19	SPM20167	C1 LO_Locking	UNLOCK	LOCK
2020-03-09T14:07:20	2020-03-09T14:07:19	SPM19167	B3 LO_Locking	UNLOCK	LOCK
2020-03-09T14:07:20	2020-03-09T14:07:19	SPM18167	B2 LO_Locking	UNLOCK	LOCK
2020-03-09T14:07:20	2020-03-09T14:07:19	SPM17167	B1 LO_Locking	UNLOCK	LOCK
2020-03-09T14:07:20	2020-03-09T14:07:19	SPM16167	A3 LO_Locking	UNLOCK	LOCK
2020-03-09T14:07:20	2020-03-09T14:07:19	SPM15167	A2 LO_Locking	UNLOCK	LOCK
2020-03-09T14:07:20	2020-03-09T14:07:19	SPM14167	A1 LO_Locking	UNLOCK	LOCK
2020-03-09T14:07:20	2020-03-09T14:07:19	SPM13167	H3 LO_Locking	UNLOCK	LOCK
2020-03-09T14:07:20	2020-03-09T14:07:19	SPM12172	H2 LO_locking	UNLOCK	LOCK
2020-03-09T14:07:20	2020-03-09T14:07:19	SPM11167	H1 LO_Locking	UNLOCK	LOCK
2020-03-09T14:07:20	2020-03-09T14:07:19	SPC10107	PPS_ERROR_FLAG	Unexp PPS	valid
2020-03-09T14:07:20	2020-03-09T14:07:19	SPC02106	Instrument_Mode	Inst Init	Any other
2020-03-09T14:07:20	2020-03-09T14:07:19	XNIRABST	NIR AB VALID ST	NOT-OK	OK
2020-03-09T14:07:20	2020-03-09T14:07:19	XNIRBCST	NIR BC VALID ST	NOT-OK	OK
2020-03-09T14:07:20	2020-03-09T14:07:19	XNIRCAST	NIR CA VALID ST	NOT-OK	OK