	Operations Notes	Topic:	**FOS Report for week 40, year 2019**
	FOS Team @ ESAC	Date:	from 30 SEP 2019 to 07 OCT 2019
SMOS	*Reported by:*	Issue:	**1.0**
	J. Fauste/J.M. Castro Cerón		

1   General Comments

Activities scheduled for this week are those planned for the 40th calendar week of 2019:

```
30 SEP 2019 to 07 OCT 2019 (DOYs 273 to 280).
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The following routine activities were planned this week (see Gantt chart on next page and CRF 834).

- One PMS Offset on 03 OCT 2019 (DOY 276), including three Short Calibrations at 07:57:00.0z, 07:57:34.8z, and 07:58:09.6z (orbit 52121).
- 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:
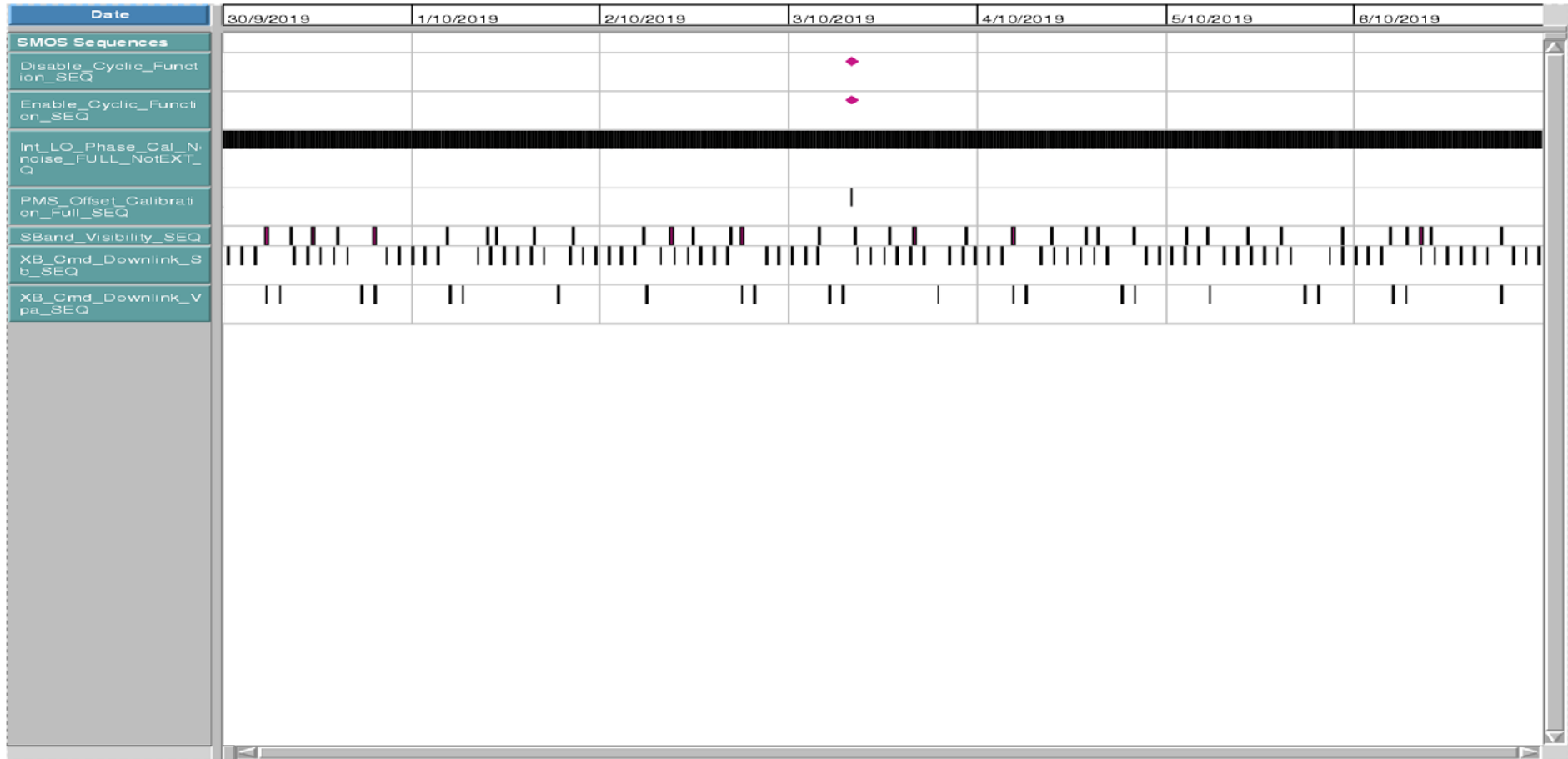
J. Fauste/J.M. Castro Cerón

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Schedule Name: 2019_w40_cr   ###   Display start: 30-09-2019 00:00:00.000   ###   Display end: 07-10-2019 00:00:00.000

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SMOS

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3 TC Failures

None.

4 On Board Anomalies

- MIRAS Mass Memory partition P1, latched up 2019-10-05T04:57:01.954z (DOY 278).

  The following parameters went out of limits in the PLPC system:
  2019.278.04.57.01.954z   DMASME11   LU Switch P1
  2019.278.04.57.01.954z   DMASME37   SDD LU Detected

  This anomaly was geolocated over Antarctica:
  $$Latitude \quad = \ -72.40°$$
  $$Longitude \quad = \ 168.36$$
  °

  There were no science data losses associated with this anomaly because it affected partition P1, while the Read and Write pointers were both on partition P2. Recovery took place 08 OCT 2019, at 05:30:00z (CRF 838).

  At the time of the anomaly the position of the MM pointers were as follows:
  $$READ \quad = \ 1081637 \ (partition \ P2)$$
  $$WRITE \quad = \ 1218213 \ (partition \ P2)$$

- The MIRAS CCU, reset on 2019-10-02T16:10:46.865z (DOY 275). The anomaly was detected by the CNES oncall Engineer upon reception of S-Band pass HBX-4 with AOS 2019-10-02T16:33:29z. Following that, FOS oncall Engineer was contacted by CNES at 17:33z and FOS called at 17:49z KSAT informing on the X-Band impact of this reset. The reset happened at the end of Svalbard X band GS pass with AOS at 16:07:17z. Last MIRAS TM packet received before the reset was time stamped at 2019-10-02T16:10:46.865z. As specified in the instrument boot report after the restart of the instrument, the reset was triggered by the standard "Task Overrun error". The corresponding replanning for weeks 40 and 41 was prepared by FOS in the morning of the 3rd of October (CRF-837) and uplinked by CNES, following the execution of PRO-CRP-100, during S band GS pass KUX-4 (AOS 2019-10-03T08:20:41z). As per this re-planning, nominal MIRAS X band GS dumps resumed on 2019-10-03T13:48:41z (Svalbard).

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Because of this reset, 231 seconds of science data were lost (from 2019-10-02T16:07:33z to 2019-10-02T16:11:24z), and the following X band GS passes were not acquired:

Station	AOS	LOS	Duration
ESAC	2019-10-02T19:38:04	2019-10-02T19:44:41	396
SVAL	2019-10-02T21:05:04	2019-10-02T21:15:26	621
SVAL	2019-10-02T22:43:51	2019-10-02T22:54:06	615
SVAL	2019-10-03T00:22:30	2019-10-03T00:32:50	620
SVAL	2019-10-03T02:01:21	2019-10-03T02:11:48	627
SVAL	2019-10-03T03:40:45	2019-10-03T03:51:02	616
ESAC	2019-10-03T05:12:07	2019-10-03T05:19:51	463
ESAC	2019-10-03T06:52:12	2019-10-03T06:57:51	339
SVAL	2019-10-03T08:44:36	2019-10-03T08:50:04	328
SVAL	2019-10-03T10:27:03	2019-10-03T10:30:41	217
SVAL	2019-10-03T12:08:25	2019-10-03T12:12:35	249

Also the PMS offset calibration foreseen between 2019-10-03T07:57:15z and 2019-10-03T07:58:59z was not executed due to this reset.

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

Generation time	Reception time	On board event
2019.275.16.07.11.195	2019.275.17.15.09.665	Xband Powered on
2019.275.16.07.35.195	2019.275.17.15.10.917	MM Full Dump Start

after this last event, the instrument reset just at the end of the X-Band pass. No alarms were issued prior to the reset. Immediately after the reset, the list of Out of Limits displayed in Appendix-A of this report appeared in the FOS PLPC system.

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

Read = 3073833, MM Partition P6
Write = 3385330, MM Partition P7

The anomaly was geolocated over Artic Ocean at the following greographical coordinates:

Latitude = 78.68°
Longitude = 75.20°

- A MM double bit error impacted partition P6 on 2019-09-30T21:43:45,181z. The following parameters went out of limits in the PLPC system:

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2019.273.21.43.45,181   DMASME45   DB Err In P6

This anomaly was geolocated just off the coast of Antarctica, due south of Australia:

Latitude = -63.31°
Longitude   = 141.48°

At the time of the anomaly, the position of the MM pointers were as follows:

READ   = 711750 (partition P1)
WRITE   = 864982 (partition P1)

There were no science data losses associated with this anomaly because it affected P6 while both, Read and Write, pointers were on P1 (i.e. the data in the affected partition had already been downloaded to ground during an earlier X band GS pass and not yet rewritten).

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	2019-10-02T16:11:20	2157378
RAM single Bit Error	730	WARN	2019-09-30T21:42:37	2157378

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.

10 AOB

None.

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APPENDIX A: OOLs

At the time of the MM Latch-up of partition P1, the following two telemetry parameters went out of limits on the FOS PLPC system.

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2019-10-05T05:46:09	2019-10-05T04:57:01	DMASME37	SDD LU Detected	FALSE	TRUE
2019-10-05T05:46:09	2019-10-05T04:57:01	DMASME11	LU Switch P1	OFF	ON

During the execution of the MIRAS CCU recovery the following expected out of limit was generated on the FOS PLPC system indicating that the MIRAS ITL was made disabled.

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2019-10-03T13:13:00	2019-10-03T08:23:10	NTLHK022	ITL Ena State	Disabled	Enabled

The MIRAS CCU reset generated the following list of out of limits on the FOS PLPC system

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2019-10-02T17:15:20	2019-10-02T16:11:19	SPM22167	C3 LO_Locking	UNLOCK	LOCK
2019-10-02T17:15:20	2019-10-02T16:11:19	SPM21167	C2 LO_Locking	UNLOCK	LOCK
2019-10-02T17:15:20	2019-10-02T16:11:19	SPM20167	C1 LO_Locking	UNLOCK	LOCK
2019-10-02T17:15:20	2019-10-02T16:11:19	SPM19167	B3 LO_Locking	UNLOCK	LOCK
2019-10-02T17:15:20	2019-10-02T16:11:19	SPM18167	B2 LO_Locking	UNLOCK	LOCK
2019-10-02T17:15:20	2019-10-02T16:11:19	SPM17167	B1 LO_Locking	UNLOCK	LOCK
2019-10-02T17:15:20	2019-10-02T16:11:19	SPM16167	A3 LO_Locking	UNLOCK	LOCK

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2019-10-02T17:15:20	2019-10-02T16:11:19	SPM15167	A2 LO_Locking	UNLOCK	LOCK
2019-10-02T17:15:20	2019-10-02T16:11:19	SPM14167	A1 LO_Locking	UNLOCK	LOCK
2019-10-02T17:15:20	2019-10-02T16:11:19	SPM13167	H3 LO_Locking	UNLOCK	LOCK
2019-10-02T17:15:20	2019-10-02T16:11:19	SPM12172	H2 LO_locking	UNLOCK	LOCK
2019-10-02T17:15:20	2019-10-02T16:11:19	SPM11167	H1 LO_Locking	UNLOCK	LOCK
2019-10-02T17:15:20	2019-10-02T16:11:19	SPC02106	Instrument_Mode	Inst Init	Any other
2019-10-02T17:15:20	2019-10-02T16:11:19	XNIRABST	NIR AB VALID ST	NOT-OK	OK
2019-10-02T17:15:20	2019-10-02T16:11:19	XNIRBCST	NIR BC VALID ST	NOT-OK	OK
2019-10-02T17:15:20	2019-10-02T16:11:19	XNIRCAST	NIR CA VALID ST	NOT-OK	OK

The Mm double bit memory error generated the following temporary out of limit on the FOS PLPC system.

GS_TIME	OB_TIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2019-10-01T05:05:17	2019-09-30T21:43:45	DMASME45	DB Err In P6	FALSE	TRUE