Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic: **FOS Report for week 17, year 2016**

Date: from 25 APR 2016 to 02 MAY 2016

Issue: **1.0**

1   General Comments

Activities scheduled for this week are those planned for the 17th calendar week of 2016:

25 APR 2016 to 02 MAY 2016 (DoYs 116 to 123).

The following routine activities were planned this week (see Gantt chart on next page and CRF 564):

- One PMS Offset on 28 APR 2016 (DoY 119), including three Short Calibrations at 17:31:00.0z, 17:31:34.8z, and 17:32:09.6z (orbit 34097).
- Local Oscillator Calibrations every 10 minutes.
- *X* band Passes over ESAC and Svalbard.

2   Mission Planning Deviations

Due to a MIRAS CCU reset that happened on the 25/04/2016 the following list of XBand passes were not acquired on ground:

Station	Start Pass	End Pass	Duration
Xband_SVAL	2016-04-25T20:16:36.685000	2016-04-25T20:27:02.491000	625
Xband_SVAL	2016-04-25T21:55:29.806000	2016-04-25T22:05:47.504000	617
Xband_SVAL	2016-04-25T23:34:10.975000	2016-04-25T23:44:27.693000	616
Xband_SVAL	2016-04-26T01:12:53.696000	2016-04-26T01:23:18.272000	624
Xband_SVAL	2016-04-26T02:51:59.331000	2016-04-26T03:02:24.447000	625
Xband_SVAL	2016-04-26T04:32:12.560000	2016-04-26T04:41:45.218000	572
Xband_SVAL	2016-04-26T07:54:29.221000	2016-04-26T08:01:05.715000	396
Xband_SVAL	2016-04-26T09:36:58.858000	2016-04-26T09:41:18.075000	259
Xband_SVAL	2016-04-26T11:18:59.702000	2016-04-26T11:22:33.226000	213
Xband_SVAL	2016-04-26T12:59:41.209000	2016-04-26T13:04:57.688000	316

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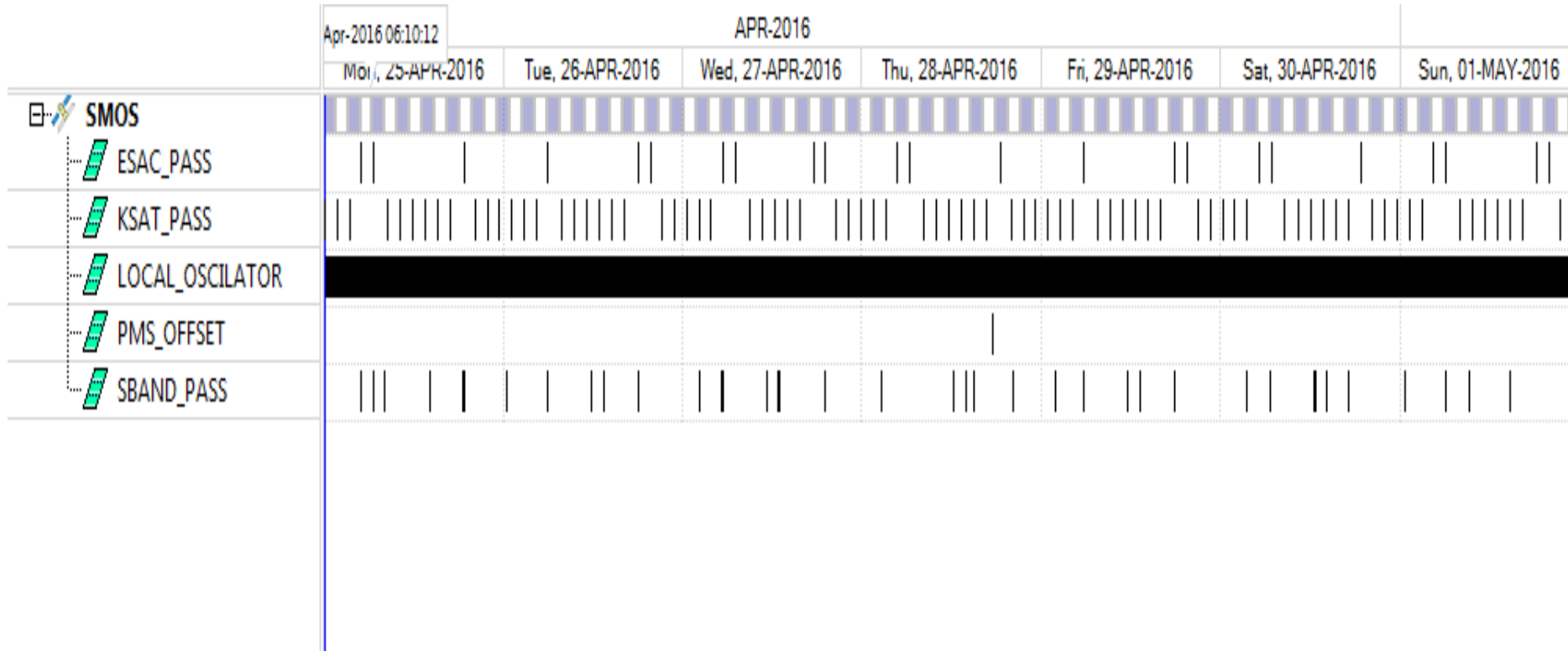
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SMOS

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3 TC Failures

None.

4 Unforeseen Out of Limits (OOLs)

Due to the three MIRAS anomalies that happened during this week, two Mass Memory Latch ups and one CCU reset, several Out of Limits were received this week. Further details can be found in Appendix-A of this document.

5 On Board Anomalies

- A new Mass Memory latch-up impacted partition P8 on 2016-04-25T11:29:38.207z. At that time the following parameters went out of limits on the PLPC system:

    DMASME04   LU Switch P8
    DMASME37   SDD LU Detected

    This anomaly was geolocated off the coast of Peru at the following geographical coordinates:

    Longitude=280.187458
    Latitude=-17.032504

    There was no science data losses associated with this anomaly because the Read pointer was on P6 and the Write pointer on P7.

    The recovery would have been take place ton 2016-04-27T01:00:00 via CRF No. 565 but it was cancelled because the MIRAS instrument suffered a CCU reset few hours later (25 APR 2016 at 17:02:31z).

- A new MIRAS CCU reset happened on the 25 of April 2016, at 17:02:31z. The reset was initially seen by CNES on call team after reception of SBand pass on 2016-04-25T19:00:00z. Following that, FOS on call support was notified by CNES and then KSAT team called by the FOS on call engineer.

    The CCU reset took place in the middle of a Svalbard X Band GS pass commencing on 2016-04-25T16.58.04z (transponder on). Said pass was scheduled for duration of 586 seconds and the reset occurred 152 seconds after the start of that pass and before the switch off of the X Band antenna, scheduled at 2016-04-25T17.07.51. The last TM packet before the reset was received on 2016-04-25T17:01:57.598z. The replanning contingency files were generated in the morning of the following day by the FOS team and included in CRF No. 566. These replanning TCs together with the execution of the CCU recovery procedure, PRO-CRP-100, was

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uploaded by CNES during GS pass KER-48 starting at 2016-04-25T11:53:38z.

Nominal MIRAS Xband dumps were resumed from 2016-04-26T14:40:35z onwards. No MIRAS alarm packets were received at the time of the reset.

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

2016-04-25T16:59:00.326z ==> XBand power on
2016-04-01T16:59:24.326z ==> Mass Memory Full Dump Start
2016-04-01T17:02:32.133z ==> Mode change to Full Polarisation

The values of the READ and WRITE pointers at the time of the reset were:
       Read   = 3909713   MM Partition P8
       Write   = 165867   MM Partition P0

The anomaly was geolocated over Arctic regions:
       LONG.   = 52.790361
       LAT.   = +76.630461

- Another Mass Memory Latch up in partition P11 happened on 2016-04-27T22:56:45.733. At that time the following parameters went Out of limits on the PLPC system:
       DMASME37 "SDD LU Detected"
       DMASME01 "LU Switch P11"

There were no science data losses since the anomaly happened in one of the MM spare partitions. At the time of the anomaly the MM pointers were located as follows:
        Write=160800 (Partition P0)
        Read=69930 (Partition P0)

The geolocation of the event was close to coast of Chile at the following geographical coordinates:
       Longitude=279.909027
       Latitude=-34.871980

The anomaly was recovered by CRF-568 on 2016-04-28T14:30:00z

6 On Board Events Telemetry

The following RAM Single Bit errors befell this week:

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Event Description	Severity	Event Time	Parameters
RAM single Bit Error	WARN	2016.116.17.02.32.363	20D215C
RAM single Bit Error	WARN	2016.117.11.31.46.195	22151A4
RAM single Bit Error	WARN	2016.119.06.59.20.105	239AE5C
RAM single Bit Error	WARN	2016.121.20.00.17.422	214AF0C

7 FOS Systems Status

- Because it was not in use any longer (had been substituted by the PLPCNAS server mounted via NFS), the PLPC SCSI array had been permanently disconnected from the PLPC PRM/BKP servers and powered down.
On 27 APR 2016, during the second part of the weekly Planning, it was discovered that scripts *tcenabled.sh* and *tcdisabled.sh* had been left inadvertently in the PLPC SCSI array, so it was decided to power it up and connect it to the PLPCPRM server. Apparently the re-connection of the SCSI array caused a mismatch in the PLPCPRM server between the disk configuration and the NVRAM. Under the guidance of GMV a re-connection of the SCSI array was attempted to the PLPCBKP with the same results. The SCSI array was then disconnected from all servers and powered down again. Scripts *tcenabled.sh* and *tcdisabled.sh* were then successfully recovered from tape. After that both servers, PLPC PRM/BKP, were left powered up and operating nominally, but their PERC controllers were beeping because they cannot find the SCSI array. Nevertheless that anomaly in both machines was recovered by the DPGS Analyst on the 29th of April APR 2.016

8 Data Reception from CNES

All S Band Passes were correctly received from CNES and successfully processed by the FOS PLPC System,

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

At the time of the first Mass Memory Latch up on 2016-04-25T11:29:38.207z, the following Out of Limits were received on PLPC system:

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.116.14.58.08.393	2016.116.11.29.38.207	DMASME04	LU Switch P8	OFF	ON
2016.116.14.58.08.385	2016.116.11.29.38.207	DMASME37	SDD LU Detected	TRUE	FALSE

and for the second Latch up on 2016-04-27T22:56:45.733z, the list of OOLs were:

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.119.03.32.00.659	2016.118.22.56.45.733	DMASME01	LU Switch P11	OFF	ON
2016.119.03.32.00.657	2016.118.22.56.45.733	DMASME37	SDD LU Detected	TRUE	FALSE

At the time of the CCU recovery on the 2016-04-26 the following OOL was received indicating that the onboard ITL was disabled.

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.117.15.00.42.190	2016.117.11.55.54.105	NTLHK022	ITL Ena State	Disabled	Enabled

When the MIRAS CCU reset happened the following OOLs were received:

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GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.116.19.23.37.328	2016.116.17.02.31.863	XNIRCAST	NIR CA VALID ST	NOT-OK	OK
2016.116.19.23.37.328	2016.116.17.02.31.863	XNIRBCST	NIR BC VALID ST	NOT-OK	OK
2016.116.19.23.37.328	2016.116.17.02.31.863	XNIRABST	NIR AB VALID ST	NOT-OK	OK
2016.116.19.23.37.328	2016.116.17.02.31.863	SPM12172	H2 LO_locking	UNLOCK	LOCK
2016.116.19.23.37.328	2016.116.17.02.31.863	SPM11167	H1 LO_Locking	UNLOCK	LOCK
2016.116.19.23.37.328	2016.116.17.02.31.863	SPC02106	Instrument_Mode	Inst Init	Calibration Dual Pol Full Pol Test
2016.116.19.23.37.328	2016.116.17.02.31.863	SPM15167	A2 LO_Locking	UNLOCK	LOCK
2016.116.19.23.37.328	2016.116.17.02.31.863	SPM14167	A1 LO_Locking	UNLOCK	LOCK
2016.116.19.23.37.328	2016.116.17.02.31.863	SPM13167	H3 LO_Locking	UNLOCK	LOCK
2016.116.19.23.37.328	2016.116.17.02.31.863	SPM19167	B3 LO_Locking	UNLOCK	LOCK
2016.116.19.23.37.328	2016.116.17.02.31.863	SPM18167	B2 LO_Locking	UNLOCK	LOCK
2016.116.19.23.37.328	2016.116.17.02.31.863	SPM17167	B1 LO_Locking	UNLOCK	LOCK
2016.116.19.23.37.328	2016.116.17.02.31.863	SPM16167	A3 LO_Locking	UNLOCK	LOCK
2016.116.19.23.37.328	2016.116.17.02.31.863	SPM22167	C3 LO_Locking	UNLOCK	LOCK
2016.116.19.23.37.328	2016.116.17.02.31.863	SPM21167	C2 LO_Locking	UNLOCK	LOCK
2016.116.19.23.37.328	2016.116.17.02.31.863	SPM20167	C1 LO_Locking	UNLOCK	LOCK