Operations Notes	Topic:	**FOS Report for week 22, year 2016**
FOS Team @ ESAC	Date:	from 30 MAY 2016 to 06 JUN 2016
Reported by:	Issue:	**1.0**
J. Fauste/J.M. Castro Cerón		

1 General Comments

Activities scheduled for this week are those planned for the 22nd calendar week of 2016:

30 MAY 2016 to 06 JUN 2016 (DoYs 151 to 158).

The following routine activities were planned this week (see Gantt chart on next page and CRF 574):

- One Warm NIR Calibration on 01 JUN 2016 (DoY 153) with ETO 03:13:00z (orbit 34578) and with the following expected calibration values:

B.T.	= 3,4946°
R.M.S.	= 0,1018
Sun Elevation	= 08,0458°
Moon elevation	= -41,2111°
R.A.	= 166,48°
DEC.	= 38,21°

- One PMS Offset on 02 JUN 2016 (DoY 154), including three Short Calibrations at 08:08:00.0z, 08:08:34.8z, and 08:09:09.6z (orbit 34595).
- One Orbit Correction manoeuvre (OCM) 3 JUN 2016 at 23:39z. The affected time period for the manoeuvre went from 23:15:00z to 23:49:12z. Science data for that period was flagged as usual with an external APID.
- Local Oscillator Calibrations every 10 minutes.
- *X* band Passes over ESAC and Svalbard.

2 Mission Planning Deviations

- Due to the scheduled OCM on the 3rd of June, the Xband pass over Svalbard from 23:16:08z to 23:26:34z on that day was cancelled.
- Due to the CCU reset that happened on the 5th of June the following XBand passes were not received on ground:

ESAC	*2016-06-05T06:45:59*	*2016-06-05T06:52:04*	*365*
SVAL	*2016-06-05T08:38:28*	*2016-06-05T08:44:03*	*335*
SVAL	*2016-06-05T10:20:56*	*2016-06-05T10:24:36*	*220*
SVAL	*2016-06-05T12:02:23*	*2016-06-05T12:06:28*	*244*
SVAL	*2016-06-05T13:42:40*	*2016-06-05T13:48:58*	*377*
SVAL	*2016-06-05T15:22:30*	*2016-06-05T15:30:56*	*506*

Operations Notes
FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic: **FOS Report for week 22, year 2016**

Date: from 30 MAY 2016 to 06 JUN 2016

Issue: **1.0**

	Operations Notes	Topic:	**FOS Report for week 22, year 2016**
	FOS Team @ ESAC	Date:	from 30 MAY 2016 to 06 JUN 2016
	Reported by:	Issue:	**1.0**
	J. Fauste/J.M. Castro Cerón		

3 TC Failures

None.

4 Unforeseen Out of Limits (OOLs)

Several Out of limits were received at the time of the CCU reset anomaly on the 5th of June. (further details can be found in Appendix-A of this report)

5 On Board Anomalies

- A new MIRAS CCU reset happened on the 5th of June 2016, at 03:38:57z. The reset was initially noticed around 07:25z by the FOS on call engineer due to the low reception of XBand TM packets at the last ESAC pass (around four times less than normal)

  The reset was confirmed around 07:45z, at the time of reception of the SBand pass on the FOS on call phone. Following that the FOS oncall Engineer called the CNES oncall team to confirm the reset and its corresponding recovery.

  The CCU reset took place in the middle of a Svalbard X Band GS pass commencing on 2016-06-05T03:34.45z. Said pass was scheduled for a duration of 617 seconds and the reset occurred 192 seconds after the start of that pass and before the switch off of the X Band antenna, scheduled at 2016-06-05T03:45:03.
  The last TM packet before the reset was received on 2016-06-05T03:38:58.116z.

  The replanning TCs together with the execution of the CCU recovery procedure, PRO-CRP-100, were quickly uploaded by CNES during GS pass KUX-6 starting at 2016-06-05T08:15:30z.

  Nominal MIRAS Xband dumps were resumed at 2016-06-05T17:02:05z.

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

  2016-04-05T03:35:22.443z, XBand power on
  2016-04-05T03:35:46.443z, Mass Memory Full Dump Start
  2016-04-05T03:38:57.316z, Triggered_Task_Overrun
  2016-04-05T03:38:5,MM_Partition_Configuration_Acquisition_Fail
  2016-04-05T03:38:57.336z, MM_Science_Write_failure
  2016-04-05T03:38:57.356z, MM_Error_Counters_Acquisition_Failu
  2016-04-05T03:38:57.376z, MM_Scrub_Frequency_Acquisition_Fai

Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic:

Date:

Issue:

FOS Report for week 22, year 2016

from 30 MAY 2016 to 06 JUN 2016

1.0

2016-04-05T03:38:57.416z, MM_Address_Acquisition_Failure
2016-04-05T03:38:57.456z, MM_Science_Write_failure
2016-04-05T03:38:57.556z, MM_Science_Write_failure

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

Read   = 2470394   MM Partition P5
Write   = 2731145   MM Partition P6

The anomaly was geolocated over Arctic regions:
LONG. = 6.069360
LAT.   = +73.156707

It is worth to mention that the behaviour of the instrument for this CCU reset was different than in previous cases due to the following reasons or symptoms:

- The first error packet Error Packet (Triggered_Task_Overrun), is usually the final consequence of the reset but in general that packet does not appear as first symptom of the error
- The PPS signal gave an error at the time of the reset (this is not happening in other resets)
- The PLPC system was not able to put the correct OBT time stamp for the received Out of limits because the Time Correlation task could not correlate the OBT and GS times because of the PPS signal problem (In fact PLPC system shows an error of that kind at 03:39:32z)
- Apparently the instrument took a little bit longer to recover than usual (first synchronizes packet arrived 34 seconds after the reset)
- Just immediately after the reset, two other alarm packets appear in the system:
  Time Correlator_Unexpected_UTC at 2016-06-05T07:11:22.363 (Ground Segment time)
  Time Correlator_Unexpected_PPS at 2016-06-05T07:11:22.364 (Ground Segment time)

Also three other packets that are normally received after the reset with their correct OBT this time were not correlated with its correct OBT:
MIRAS HK PAcket SID2
Mode Change to Full Polarization
RAM Single Bit Error

Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic:
Date:
Issue:

FOS Report for week 22, year 2016
from 30 MAY 2016 to 06 JUN 2016
1.0

All these symptoms seem to indicate that the PPS signal was not correctly processed by the instrument immediately before and after the CCU reset which is not the nominal case in other resets.

6 On Board Events Telemetry

At the time of the CUU reset the following Alarm packets were received

Event Description	Severity	Event Time
MM_Partition_Configuration_Acquisition_Failure	Error	2016.157.03.38.57
MM_Science_Write_failure	Error	2016.157.03.38.57
MM_Scrub_Frequency_Acquisition_Failure	Error	2016.157.03.38.57
MM_Address_Acquisition_Failure	Error	2016.157.03.38.57
MM_Science_Write_failure	Error	2016.157.03.38.57
MM_Science_Write_failure	Error	2016.157.03.38.57

And also the following Error packets were also received around that time:

Event Description	Severity	Event Time
Triggered_Task_Overrun	Error	2016.157.03.38.57

The following RAM Single Bit errors befell this week:

Event Description	Severity	Event Time	Parameters
RAM single Bit Error	WARN	2016.157.07.11.22.454	23CEF0C
RAM single Bit Error	WARN	2016.155.22.11.57.570	23CEF0C

7 FOS Systems Status

All FOS systems nominal.

8 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:

9 *X* Band Data Reception in PXMF

None, all *S* band passes were successfully received and processed by the FOS PLPC system.

10 Exceptional Activities

None.

Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic:

Date:

Issue:

FOS Report for week 22, year 2016

from 30 MAY 2016 to 06 JUN 2016

1.0

11 AOB

None.

Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic: **FOS Report for week 22, year 2016**

Date: from 30 MAY 2016 to 06 JUN 2016

Issue: **1.0**

APPENDIX A: OOLs

At the time of the OCM the following OOL was received when the ITL was made disabled as part of the manoeuvre configuration procedure

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.156.04.43.39.954	2016.155.23.15.01.918	NTLHK022	ITL Ena State	Disabled	Enabled

At the time of the CCU reset the following Out of Limits were received on the PLPC system

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.157.07.11.28.458	2016.157.07.11.22.453	XNIRCAST	NIR CA VALID ST	NOT-OK	OK
2016.157.07.11.28.458	2016.157.07.11.22.453	XNIRBCST	NIR BC VALID ST	NOT-OK	OK
2016.157.07.11.28.457	2016.157.07.11.22.453	XNIRABST	NIR AB VALID ST	NOT-OK	OK
2016.157.07.11.28.453	2016.157.07.11.22.453	SPC10107	PPS_ERROR_FLAG	Unexpect PPS	Valid
2016.157.07.11.28.453	2016.157.07.11.22.453	SPC02106	Instrument_Mode	Inst Init	Calibration Dual Pol Full Pol Test
2016.157.07.11.28.452	2016.157.07.11.22.453	SPM14167	A1 LO_Locking	Unlock	Lock
2016.157.07.11.28.452	2016.157.07.11.22.453	SPM13167	H3 LO_Locking	Unlock	Lock
2016.157.07.11.28.452	2016.157.07.11.22.453	SPM12172	H2 LO_locking	Unlock	Lock
2016.157.07.11.28.452	2016.157.07.11.22.453	SPM11167	H1 LO_Locking	Unlock	Lock
2016.157.07.11.28.451	2016.157.07.11.22.453	SPM17167	B1 LO_Locking	Unlock	Lock

Operations Notes

FOS Team @ ESAC

Reported by:

J. Fauste/J.M. Castro Cerón

Topic:

Date:

Issue:

FOS Report for week 22, year 2016

from 30 MAY 2016 to 06 JUN 2016

1.0

2016.157.07.11.28.451	2016.157.07.11.22.453	SPM16167	A3 LO_Locking	Unlock	Lock
2016.157.07.11.28.451	2016.157.07.11.22.453	SPM15167	A2 LO_Locking	Unlock	Lock
2016.157.07.11.28.450	2016.157.07.11.22.453	SPM21167	C2 LO_Locking	Unlock	Lock
2016.157.07.11.28.450	2016.157.07.11.22.453	SPM20167	C1 LO_Locking	Unlock	Lock
2016.157.07.11.28.450	2016.157.07.11.22.453	SPM19167	B3 LO_Locking	Unlock	Lock
2016.157.07.11.28.450	2016.157.07.11.22.453	SPM18167	B2 LO_Locking	Unlock	Lock
2016.157.07.11.28.449	2016.157.07.11.22.453	SPM22167	C3 LO_Locking	Unlock	Lock

Finally at the time of the CCU recovery procedure and when the ITL was made disable the following OOL was received:

GS_TIME	OBTIME	PARAMETER	DESCRIPTION	OOL Value	Check Value
2016.157.14.52.09.706	2016.157.08.17.51.756	NTLHK022	ITL Ena State	Disabled	Enabled