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## **STATUS OF PREPARATIONS FOR MSG-3 AND MSG-4**

This paper reports on the current MSG programme development status following the entry into service of MSG-1 in January 2004 and the launch of MSG-2 in December 2005. CGMS members are invited to take note.

## **STATUS OF PREPARATIONS FOR MSG-3 AND MSG-4**

### **1 INTRODUCTION**

This paper addresses the status of the remaining development work part of MSG Programme, namely the status of preparation of MSG-3 and MSG-4. The new launch schedule for MSG-3 and MSG-4 satellites is indicated, as agreed with EUMETSAT Council at its 59<sup>th</sup> meeting in July 2006.

### **2 SATELLITES**

#### **2.1 MSG-3 Satellite**

The satellite remained in storage in the clean room at the Prime contractor's premises in Cannes, after the Pre-storage Review (PSR) successfully took place in June/July 2004. Open items from the PSR could be addressed during the period, using the available resources at a time in which the preparation for launch of MSG-2 had to be rescheduled in view of the launcher readiness and taking benefit from some delay on MSG-4 integration and testing activities, as described here below in the text.

As result of the work done on MSG-3, the Intermediate Frequency Processors have re-integrated into the satellite, after some rework done at the supplier's (Norspace), the modified Solid State Power Amplifiers have also been re-integrated, and the redundancy scheme has also been changed to improve the robustness of the raw data transmission. Some spurious caused by the Telemetry command have been cured with dedicated harness change, and also EMC tests have been performed regarding the spurious in the DCP band showing this has also been cured.

Mechanical stability measurements and few tests (satellite reference axes and satellite reference test) remain to be done before long term storage. This is tentatively planned around end of the year, depending upon the parallel progress on MSG-4.

Concerning the Gauging Sensor Units, used to determine with high accuracy the residual propellant and fuel on board the satellites, work for defining a possible improved concept continues, both for MSG-3 and MSG-4, with a plan of exchanging the units at de-storage of the satellites.

Work is also on going to define the lifetime limit of SEVIRI in a Rapid Scan mode, with testing on going on the Mirror Support Bearings, which is the most critical element. The selected test approach is in two steps, first step to demonstrate the 7 years lifetime capability, second step to go until 10 years. This summer the test set up had to be modified, to be better representative of the in flight conditions. Results for the 7 years performance assessment will be available towards end of this year, and by early spring next year an assessment for the 10 years limit should be possible.

## **2.2 MSG-4**

The integration and tests activities of the satellite have well progressed, after acceptance activities for SEVIRI and for the Mission Communication Payload were completed at the beginning of February this year. After the mechanical test sequence has been completed, the preparation of Thermal Vacuum and Optical Vacuum tests is on going. The test execution will take place as soon as the testing facilities will be available, as they are currently occupied by telecom satellites which entered testing before MSG-4 and have matured some delay. The MSG-4 Pre Storage Review (PSR) currently remains in March 2007, in line with the MSG-4 contractual baseline, but a slight delay is possible. Noting that after PSR the satellite will enter into storage, a possible PSR delay is not an issue for EUMETSAT.

The technical and contractual framework for the continuation of the satellite activities after PSR needs to be established, as the Agreements in place between EUMETSAT and ESA for MSG-2/3 and MSG-4 are valid until PSR. In this respect, the plan is continue with ESA in their role of procurement Agency, and steps in this direction have been initiated to maintain the ESA support until successful commissioning of MSG-3 and MSG-4.

## **3 OTHER PROGRAMME ELEMENTS**

### **3.1 Geostationary Earth Radiation Budget (GERB)**

The GERB edition 1 climate products along with appropriate documentation and quality summaries have been made available in May this year to the Users via the GERB Ground Segment Processing System (GGSPS) at Rutherford Appleton Laboratory (RAL).

At Instrument level, concerning GERB-4, the production integration and testing activities had to be re-planned. The Quartz Filter Mechanism (QFM) was damaged during vibration test at Instrument level; it was dismantled and returned to the manufacturer for investigation of the anomaly. Some modification to the design has now been implemented, and the refurbished QFM should be back at RAL in October, to complete Assembly Integration and Test programme of the Instrument Optical Unit (IOU) before end of this year. In parallel, calibration of the FM#3 detector mounted on the Focal Plane Assembly (FPA) is underway. Some issues still remain with calibration at the shorter wavelengths for which different calibration sources are being looked at. The plan is to fit the FPA to the IOU, and confirm its alignment, before the QFM arrives at RAL.

### **3.2 MSG-4 Launch service and the service for the Launch and Early Orbit Phase (LEOP) for MSG-3 and MSG-4**

The Launch service for MSG-4 and the LEOP service for MSG-3 and MSG-4 have not been contracted yet. Concerning the LEOP for MSG-3/4, the procurement activities have been initiated in spring this year, with a target to conclude by the EUMETSAT Council in December 2006. Procurement activities of the launch service for MSG-4 are planned to take place in 2007, after preparatory done this year.

#### **4 LAUNCH DATES FOR MSG-3 AND MSG-4**

Following the successful Launch and LEOP phase of MSG-2, the plan of launches for MSG-3 and MSG-4 has been revisited, in view of the availability target of 90% agreed with EUMETSAT Council as criteria to be used for planning the new launch dates. Taking into account the outcome of the analyses done in this respect, the following plan has been agreed at the 59<sup>th</sup> EUMETSAT Council in July this year:

- to launch MSG-3 in January 2011;
- to plan the launch of MSG-4 in the time frame from mid 2012 to mid 2013, with the understanding that the MSG-4 launch date will be revisited at the time of the MSG-3 de-storage

In line with the above conclusions, launch dates of January 2011 for MSG-3, and January 2013 for MSG-4 are used by EUMETSAT for planning purpose.

Based on the MSG-3 launch date in January 2011 and with an MSG-4 launch date in January 2013, the 90% threshold availability of the MSG system is reached in April 2016. This also implies that the first MTG satellite has to be launched in 2015.

#### **5 CONCLUSIONS**

CGMS Members are invited to take note.