

126th SSWG, 14+ 15 January 2008

Report on Missions in Operation

(Gerhard Schwehm, 18/12/07)

General

The move of the Solar System Science Operations Division to ESAC, Spain, was completed in early December. The Science Operations Centres for all of ESA's operational Planetary Missions are at ESAC. The move of the Computer Infrastructure from ESTEC to ESAC was completed mid-September and the interfaces to the ESOC and the payload teams were updated accordingly.

Ulysses

Operations continue smoothly and all instruments are currently switched on and functioning nominally. The nutation operations are proceeding as planned. At its 120th meeting on 12-13 November, the SPC followed the recommendation by the SSWG and unanimously approved to extend Ulysses for a period of 12 months until 31 March 2009.

SOHO

Spacecraft and payload continue to operate nominally. Unmanned night operations started on 8 October after a intensive test period.

Cluster

The long eclipse season has been passed successively; the most critical period since the launch of Cluster. Out of 19 eclipses only 12 could be run nominally. For 4 eclipses a special decoder-only mode was developed where everything is switched off except the decoder. For the remaining 3, Cluster 1 had to be switched off totally. A pre-heating of the spacecraft helped to keep the temperature within design limits up to the end of the eclipses. The mid-term review held at ESOC on 15 November was successful. The Board concluded that the performance of all four spacecraft was very close to the forecast of 2004. The proposal to adopt the extension of the mission until 2009 will be submitted to the June SPC. The Executive decided to wait for the SPC discussion about how to handle mission extensions in future as this should be decided more competitively. This discussion has been scheduled for the 'Capri-type' meeting of the SPC in June.

On 30 October the perigee raising and constellation change manoeuvres were initiated, which were successfully completed early December. The Perigee was raised about 2500 km to decrease the number of eclipses in 2008 and 2009, which has as a side effect an extended orbital lifetime **of the Cluster spacecraft.**

Double Star

TC-1, the second Double Star spacecraft (where most of the European instruments are located) re-entered the Earth's atmosphere on 14 October. Formally the operations during the mission extension ended on 30 September.

Contact with TC2 (polar spacecraft), which was lost early August 2007 was successfully re-established in November.

The Chinese Project and the PIs have agreed to archive the data of the mission; it is being discussed to perform this activity under the umbrella of the Cluster Active Archive.

Mars Express

During the recent (closest so-far) Phobos flyby, a number of the HRSC observations were lost as they programmed a mode which overloaded the system. The data from MARSIS, for this close flyby, are being analyzed. The contracts for support from RAL and Astrium (combined contract with VEX) during the extension up to May 2009, are being finalized. Preparations for the 2008 eclipse season, once again almost coincident with aphelion and consequently powerwise very challenging, have started. First indications are that some power margin exists, but science operations will have to be severely restricted, if not fully stopped (like in 2006). The scientific impact is big as this covers a period where the planets surface during peri-center passages would be well illuminated. The planned Phoenix support will also take place during this eclipse season.

Venus Express

Activities relating to exit from the so-called "quadrature" period are continuing. One of these activities will be a spacecraft swap to allow for the use of the high-gain antenna again. VIRTIS operations that had to be stopped in September to analyze an increase in the current drawn by the Sterling Coolers were resumed on 4 November 2007. Data from the first measurements show the situation on the cryo-cooler motor current to actually slowly improve again. The scientific data are of the same quality as before.

Rosetta

The spacecraft and its subsystem continue to perform nominally. Until mid-September the spacecraft was in active cruise mode with high activity level due to the 6th Active Payload Checkout. On 18 October at 18:06 UTC a 42s trajectory correction manoeuvre was performed to 'fine tune' the approach trajectory to Earth for the 2nd Earth Flyby on 13 November. The manoeuvre was extremely accurate and none of the other scheduled small correction manoeuvres before the Earth flyby might be required. Rosetta passed the Earth on 13 November at 20:57:23 UTC at a distance of 5300 km over the South Pacific. The spacecraft and its subsystems worked very smoothly. The ground segment performed nominally. Additional DSN passes were

used after the flyby to download the science data from the Earth flyby as quickly as possible.

The Santiago Station was used exceptionally to cover the closest approach that could not be covered with ESA stations to have a complete data set available to record the possible anomalous acceleration that had been reported at earlier close Earth gravity assist manoeuvres. Nothing was detected this time.

Rosetta is now on course for the flyby of asteroid Steins on 5 September 2008.

Hinode

All three instruments (SOT, XRT, EIS) continue to produce high quality science data. Spacecraft operations are nominal. Support via the Svalbard ground station continues to be excellent.

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