



European Space Agency

ESA Science & Technology

04-Nov-2005 14:11:09

No. 40 - Ongoing Lunar Operations

20 Jun 2005

Overall Status

During the period 17 May to 19 June 2005, SMART-1 activities were focused on three main tasks:

- Continuous Payload activities in Lunar orbit with all instruments performing nominally
- Selection of new optimised moon orbit for the mission extension based on available Xenon.
- Completion of improvements in the mission planning system.

With regard to the orbit selection for the mission extension, it has been decided to implement special procedures to use the Xenon beyond the operational limit of 2 kg. The amount of Xenon remaining has been estimated to be 6 kg, about 4 kg will be used during an orbit reboost planned for August. The use of another 1.3 kg will be attempted during September 2005 as a continuous operation by changing the Electric Propulsion settings progressively as the Xenon pressure gets reduced.

Future Activities

In the coming weeks mission activities will be focused in a number of areas including:

- Preparation work for the EP orbit re-boost in August/September
- Start preparatory work for next phase of ground automation activities.

Spacecraft Status

The spacecraft status is good with all functions working nominally.

Startracker Performance

The temperature of the startracker CCD are typical for SMART-1 in operational Moon orbit and within the operational range of the camera-heads. The possibility of heating by Lunar infrared radiation during MGA pointings is still be investigated.

Power

Over the reporting period the lunar eclipse lengths have steadily decreased from just under 51 minutes on 17 May to around 25 minutes on 16 June. The last eclipse season was on 20 June.

Orbital Information

SMART-1 OD327 – Close to Apolune 776
Epoch (UTC) 2005/06/20 10:21:37.1

Elements WRT Moon and its equator of date

Pericentre Distance (km)	2256.089706
Apocentre Distance (km)	4549.195998

Semi Major Axis (km)	3402.642852
Eccentricity	0.336960
Inclination (°)	90.232619
Ascending Node (°)	237.271888
Argument of Pericentre (°)	254.925593
True Anomaly (°)	180.019293
Osculating Orbital Period (h)	4.947432

The changes since apolune 606 are as follows:

- Semi-major axis: -1 km
- Perilune height: -35 km
- Apolune height: +34 km
- Orbital period: -0.15 min

For further information please contact: SciTech.editorial@esa.int

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