

SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration - Part 1 (2A)

Author: Prof. Bernard Foing
European Space Agency (ESA/ESTEC), The Netherlands, Bernard.Foing@esa.int

SMART-1 RESULTS AND LESSONS FOR FUTURE LUNAR EXPLORATION

Abstract

We shall present the synthesis from SMART-1's science and technology payload, and lessons for future lunar exploration. SMART-1 has permitted science but also to prepare future international lunar exploration, in collaboration with upcoming missions.

SMART-1 was the first ESA mission that reached the Moon. It has fulfilled its technology objectives to demonstrate Solar Electric Primary Propulsion (SEP) and to test new technologies for spacecraft and instruments. The spacecraft has been launched on 27 Sept. 2003, as Ariane-5 auxiliary passenger. SMART-1 has spiralled out towards lunar capture on 15 November 2004, and then towards lunar science orbit reached on 1 March 2005. After a 15-month cruise with primary SEP and successful technology demonstration, the SMART-1 science and exploration phase, provided first lunar orbit results. The mission has been extended one year and ended with an impact on 3 September 2006.

We shall describe some analysis based on SMART-1 and other data related to the selection, characterization of landing sites, and surface operational scenarios for future robotic and human missions.