Present status of LUNAR-A mission

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The LUNAR-A mission is now suspended from future development as of February of 2004. The status of the LUNAR-A mission at present is described briefly.

The Scientific objective of the LUNAR-A mission is the exploration of the lunar interior by using the seismometry and heat flow measurements. These measurements will be made by two axes seismometers and thermal sensors on board of the penetrator probe. The seismic data are expected to provide the key information on the deep mantle structure of the moon, especially on the size of the core. The thermal data are expected to provide the important information on the thermal state and also the concentration of the radio-active elements in the interior of the moon.

The technical assessment of the LUNAR-A project was made at January of 2004 by the technical review board of ISAS (Institute of Space and Astronautical Science), in order to assess the launching readiness in summer season of 2004. The recommendation by the review board is that the status of the LUNAR-A mission is not ready to launch in summer of 2004. Further assessments were made by the independent assessment board in July of 2004 and by the Headquarters of JAXA (Japan Aerospace Exploration Agency) in November of 2004. The other assessment on the management of the LUNAR-A project was made in August to September of 2004 by the mission planing assessment board. The recommendations by these review borads and assessment boards are essentially as follows; (1) The importance of the scientific objective of the LUNAR-A mission is confirmed, (2) The LUNAR-A mission requires further development to increase the robustness of the system, especially on the improvement of several single failure points of the system. These should be taken into account on the system of the spacecraft and of the penetrator, reflecting the lessons learned by the past missions, (3) The system of the penetrator should be established first, and then the spacecraft should be constructed.

The LUNAR-A spacecraft system is now preserved in a container under the condition of N2 gas environment. Further development of the penetrator system for increasing the robustness is now planed. The improved penetrator system will be tested by the qualification test of the penetration into the lunar regolith simulant at a condition which is more severe than at the actual impact on the lunar regolith.