

Rs 425-cr Chandrayaan-2 mission gets a final shape

In 13, power-packed payloads to dig deeper into moon

Arun Ram & Srinivas Laxman | TNN

Chennai/Mumbai: India's second mission to the moon, Chandrayaan-2, a Rs 425-crore project, took a definite shape with ISRO on Monday announcing details of payloads or scientific instruments to be flown on the orbiter and the rover. Chandrayaan-2 will be launched in 2013 from Sriharikota.

Hovering 100km above the moon, Chandrayaan-1 had confirmed water ice last year. Chandrayaan-2, equipped with an array of payloads, will probe closer and deeper for several things on the lunar surface including water.

A series of meetings of experts chaired by UR Rao, chairman of the advisory committee on space sciences, last week decided that the mission would carry five payloads on the orbiter that goes around the moon and two scientific payloads on the rover, which will travel on the moon's surface. Three of the payloads are new, while two others are improved versions of those flown on Chandrayaan-1 orbiter.

A geosynchronous satellite launch vehicle (GSLV) will blast off sometime in early 2013 from the Sriharikota spaceport carrying the orbiter, the lander and the rover to the moon, about 3.8 lakh km away. While Russia will provide the lander, ISRO will make the orbiter and rover. Chandrayaan-1 made observations of the moon from a distance. Chandrayaan-2 will actually get there and probe further.

The previous mission found evidence of water in the polar region of the moon. We haven't decided on which part of the moon the lander carrying the rover would land, but it will be to look for water, among other things, said ISRO spokesperson S. Satish.

Unlike the lunar probe of Chandrayaan-1 which plunged into the moon, the Russian-designed lander will make a soft touchdown and release the rover, which will travel a few metres to collect lunar rocks and other materials. The scientific payloads on the rover will analyze surface elements on the moon and send the data to the orbiter, which eventually sends them to the earth station. But why a moon mission more than half a century after the Soviet Union landed Luna 2 on the lunar surface in 1959 and 41 years after the US put the first man on the moon in 1969

The last moon mission was in the 1970s and we don't have access to much of that data. The dozens of moon missions by other countries could not find water on the moon, which Chandrayaan-1 did. So we can rightfully expect some new findings, said Satish. Chandrayaan-2 spacecraft weighs about 2,650kg, including the 1,400-kg orbiter and the 1,250kg lander. Development of the subsystems of the orbiter and the rover is in progress at ISRO centres in Bangalore, Thiruvananthapuram and Ahmedabad. The mission will cost Rs 425 crore.

GADGETS ON LUNARCRAFT

Large area soft x-ray spectrometer (CLASS) and solar x-ray monitor for mapping major elements on lunar surface L and S band synthetic aperture radar for probing the presence of different constituents including water ice Imaging IR spectrometer for the study of minerals, water molecules and hydroxyl Neutral mass spectrometer to study the lunar exosphere Terrain mapping camera-2 for 3D map Laser induced breakdown spectroscopy and alpha particle induced x-ray spectroscopy to carry out elemental analysis of the lunar surface near the landing site



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