

Unearthing the moon

NASA launches mission Gravity Recovery and Interior Laboratory to probe the interior of the moon

FLORIDA More than 100 spacecraft have been to the moon, including six with US astronauts, but one key piece of information about Earth's natural satellite is still missing — what's inside.

Learning about the interior of the moon is the primary goal of a new NASA mission called Gravity Recovery and Interior Laboratory, or GRAIL, which is scheduled to launch Thursday at 8:37 am from Cape Canaveral Air Force Station.

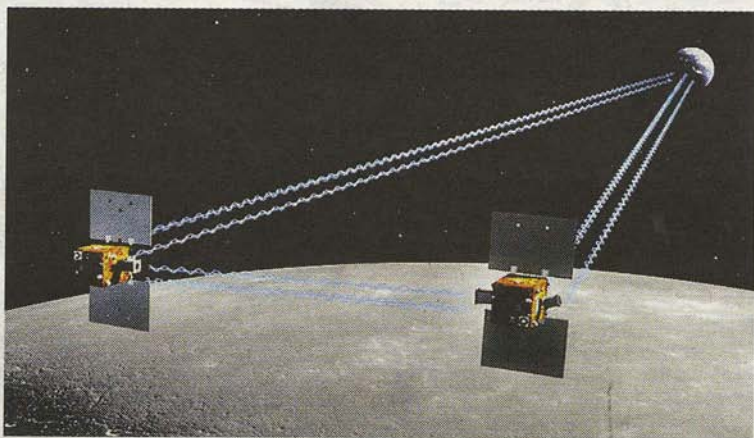
Aboard the United Launch Alliance Delta 2 rocket are two identical satellites designed to reveal dips and swells in the moon's gravity field, which will give scientists insight into the moon's core.

Gravity maps of lunar flatlands show unexplained pockets of extra heft, an indication of subterranean deposits or structures.

Learning the interior structure of the moon is considered critical to piecing together the story about what happened to the moon since its formation some 4.5 billion years ago.

The two spacecrafts will take a long, slow journey to the moon, arriving on Dec 31 and Jan 1. After a few months to maneuver into the proper orbit, the pair will spend 82 days flying over the lunar poles, linked by

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An artist's impression of GRAIL on NASA'S website

radio waves.

When one spacecraft flies over a region of higher gravity, it will speed up, momentarily changing the distance between itself and the second, sibling probe.

Less dense regions likewise will affect the satellites' positions. Using the radio waves as a ruler, changes as tiny as a micron — the width of a red blood cell — can be detected.

With gravity maps in hand, the scientists can then use computer mod-

els and data from other lunar missions to determine whether the moon's core is solid, liquid or a combination of the two, and what elements it might contain.

"I actually think in the next five years we're going to rewrite the books in our understanding of the rocky planets," Zuber said.

Rocket-maker United Space Alliance is a joint venture equally owned by the Boeing Co and Lockheed Martin Corp. **REUTERS**