NEWS

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LAGEOS PLANNED FOR 1976 LAUNCH

MARSHALL SPACE FLIGHT CENTER, Ala. -- The National Aeronautics and Space Administration is planning a 1976 launch of a Laser Geodynamic Satellite (LAGEOS) which, according to space agency officials, "will track the Earth relative to the satellite, in contrast to the traditional case of tracking a satellite relative to the Earth."

The LAGEOS is expected to provide important information regarding Earth motions and strain. These movements, within the surface of the Earth, are the fundamental cause of natural disasters such as Earthquakes.

The NASA-Marshall Space Flight Center has been assigned definition and development responsibility for the satellite. A LAGEOS Task Team, managed by Donald R. Bowden, has been established within the Program Development Directorate at the center. NASA's Office of Applications is sponsoring the project.

Robert Spencer of Marshall's Program Development directorate, who is helping to plan the LAGEOS development, explained: "The satellite will be placed in a nearly circular, polar orbit about 5,700 kilometers (3,420 miles) high. This will allow coverage of the entire Earth -- and we are hoping to get 50 to 100 years of use out of it.

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"The LAGEOS will be a solid sphere weighing approximately 380 kilograms (835 pounds) and measuring some 60 centimeters (2 feet) in diameter. Fitted to the satellite will be about 600 laser retroreflectors designed to permit accurate laser ranging from ground stations."

By using the satellite to accurately measure and pinpoint Earth motions, NASA hopes the likihood and magnitude of Earthquakes, and perhaps other disasters, will eventually be forecast. This will be accomplished, in part, by using mathematical models which accurately detail motions and stress on the Earth.

According to Spencer, the LAGEOS will allow measurements to be made which will be accurate to within two centimeters (three-quarters of an inch) of actual Earth movement. As he explained, "Although we do have some satellites now equipped with laser retroreflectors their orbital inaccuracies and uncertainties make them less desirable.

"Many Earth motions occur at a rate of about five centimeters (two inches) a year. Since measurements using present satellites are only accurate to within about one meter (three feet) of actual movement, it would take several years to ever distinguish the exact amount of movement."

The LAGEOS will be used in conjunction with ground-based tracking stations, some already existing and others to be built. Mobile tracking stations will also be used to measure motions in several adjacent locales and in remote regions of the world.

A laser beam from a ground station will be bounced off the LAGEOS by use of the reflectors and returned to the exact point of origin on Earth. By calculating

the time it takes for the beam to travel to and from the satellite, the exact movement of that point can be determined.

"The key to these extremely accurate measurements is the highly stable orbit of the satellite," stated Spencer. "We will always know the exact location of the LAGEOS and, therefore, we will be able to measure any movements of the Earth through a rather simple mathematical calculation."

The satellite will be launched by a Delta rocket from the Western Test Range.

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