Explorer

Contd From Page Three

six penetrations of one-mil stainless steel; one penetration of two-mil copper and one penetration of three-mil copper.
There were no penetrations of five-mil beryllium-copper or six-mil stainless steel.

One cadmium-sulfide cell was penetrated in such a way that it became saturated with sunlight and was no longer useful.

There were more than 15,000 meteoroid hits recorded by the microphone impact sensors which covered about one-tenth of the total exposed experiment surface. The sensors did not measure penetration.

The penetration hazard, as determined from Explorer XVI's actual measurements, has been compared with the best existing predictions of meteoroid densities in space. The direct, measured data are being used to refine prediction methods for estimating the penetration hazard and to provide design information for engineers who must select proper thicknesses of material for spacecraft skins.

The Explorer XVI is a joint effort of three NASA Centers under the direction of OART. In addition to the Langley Research Center, Lewis Research Center, Cleveland, Ohio, and the Goddard Space Flight Center, Greenbelt, Md., participated. The satellite was put in orbit by a Scout launch vehicle.

Interrogations of Explorer XVI will continue to determine if the satellite will return to normal operation. It was expected to function about a year. Cause of the telemetry loss is being analyzed. Officials were confident that meteoroid impacts were not the reason.

On May 29 there was a discontinuance of operation by one of two telemeters that resulted in the loss of data from one-half of the remaining unpenetrated segments of each experiment. The second telemeter ceased to function July 25.

The five types of meteoroid impact detectors on board the satellite were: (1) pressurized cells (beryllium-copper), (2) foil gages (stainless steel), (3) wire grids (copper), (4) cadmium-sulfide cells and (5) microphone impact sensors.

In its first seven months the satellite had responded to about 1,600 commands for experiment read-outs and had transmitted more than 26 hours of experimental data. A detailed report on all results through July 25 is being prepared.

Langley Research Center scientists and engineers who had a major part in the success of Explorer XVI include: Earl Hastings Jr., project manager; Hugh C. Halliday, project engineer; Walt C. Long, instrumentation project engineer; John L. Patterson, payload power supply; Hugh C. Halliday and Rufus K. Dull, payload design; Charles A. Gurtler, Langley pressurized cell detectors; A. G. Beswick, Langley piezoelectric impact detectors. Eugene D. Schult is head of the Scout Project Office which was responsible for the launch vehicle which placed Explorer XVI in orbit.

Meteoroids are particles of various sizes that travel through space at high velocities. They may be composed of iron, silicates, or other substances. They usually burn (become meteors) when they enter the earth's atmosphere. Those which reach the ground are commonly called meteories.

Another OART experiment will be launched by a Saturn vehicle. It will unfold and expose to meteoroid penetration a much larger area for experimental purposes.

Other NASA projects related to the study of meteoroids are the Harvard radio meteor project and the Smithsonian Astrophysical Observatory's photographic and recovery network. In the Harvard project six stations will send radar signals to bounce off meteors. The reflected signals are expected to shed light on the characteristics of meteors. There will be 16 stations in the Smithsonian network that will photograph meteors and attempt to recover meteorites. This latter project is monitored by NASA's Office of Space Sciences.