

Hardware Description

The Radiation Source Capsule and Holder are designed to expose biological objects to a controlled amount of radiation inflight.

Radiation Source Capsule: The radioactive element, ^{85}Sr powder, is poured into a stainless steel capsule. Radioactive ^{85}Sr is produced by irradiation enriched $^{84}\text{Sr}(\text{NO}_3)_2$ with neutrons. The resulting powder is then poured into a stainless steel capsule. The powder is retained within the capsule volume by welding the base plug in place. Only the portion above the plug contains the powder. After loading with powder, the radiation source capsule is then inserted into the Radiation Source Holder.

Radiation Source Holder: The purpose of the radiation source holder is to shield the radiation source before and after the exposure period and shield the control experimental packages in the aft section of the Biosatellite capsule. It consists of an approximately hemispheric mass of sintered tungsten and associated drive mechanism. A wheel is mounted in the holder. A small section of the wheel projects above the top surface of the holder. When the wheel turns, the source is retracted and the intensity at the surface of the holder will not exceed 40 mr/hour. The drive mechanism, which rotates the source through the closed-open-closed cycle, is spring-driven with a solenoid-controlled latch mechanism. As a backup safety measure, the holder is designed to rotate to the safety position under the action of re-entry g forces, if the close command is not received.

Specifications

Dimensions: 0.5 in (diameter) x .805 in

Weight: 32 lbs (Source Holder)

Power: None

Data Acquisition

None

Related Ground-Based Hardware

None

Publications

- Hewitt, J.E.: Radiation Exposures During the Biosatellite II Flight. *Bioscience*, vol. 18, no. 6, June 1968, pp. 565-569.
- *Biosatellite Project Historical Summary Report*. J.W. Dyer, ed., NASA TM-X-72394, December 1969.

