after more than 900 million miles of continuous travel. On June 29, 1969, SNAP-3's sixth anniversary in space, it had orbited the earth over 42,000 times. It also holds the record as the oldest operating U.S. satellite.

We have already developed several additional successful SNAP devices and have more under development, including the SNAP-27 (Figure 3), which powers the Apollo Lunar Surface Experiments Package left on the moon by the Apollo 12 astronauts. One of the advantages of SNAP isotopic power becomes clear if we note that the SNAP-27 unit in this experimental package weighs about 45 pounds, whereas batteries to supply the same 50 watts day and night for one year would weigh 4,000 pounds.

In the field of SNAP reactors, which provide more power than the isotopic devices, our first orbital system was the SNAP-10A developed by Atomics International. This 500-watt system was launched from Vandenberg Air Force Base in April 1965. In orbit it operated at full power for 43 days before a failure in the satellite's automatic control system—not the reactor system—caused a shutdown of the whole satellite. Had this failure not occurred, the chances are that SNAP-10A would still be operating today. An exact copy of this orbital unit completed over one year of uninterrupted operation on the ground at the Santa Susana, Calif., test site. This, incidentally, is the longest uninterrupted operation of any nuclear reactor in the world to date.

Nuclear energy fits space needs

Let us turn to some of the projected uses of nuclear systems in space and see why they will be so important to our total space effort. Let us take another look into the future. Consider the further exploration of the moon.

Two men have spent several hours exploring a limited area on the lunar surface. They were restricted in their ability to move around, to excavate, and to bring back specimens. Their choice of landing site was limited to a small band along the moon's equator. There is a strong desire to have scientific specialists there to do the exploration; this will require larger parties of astronauts in which specialization can be accommodated and therefore larger lunar vehicles for transportation there and back.