

RESOURCES

Apollo 11 Seismic Experiment

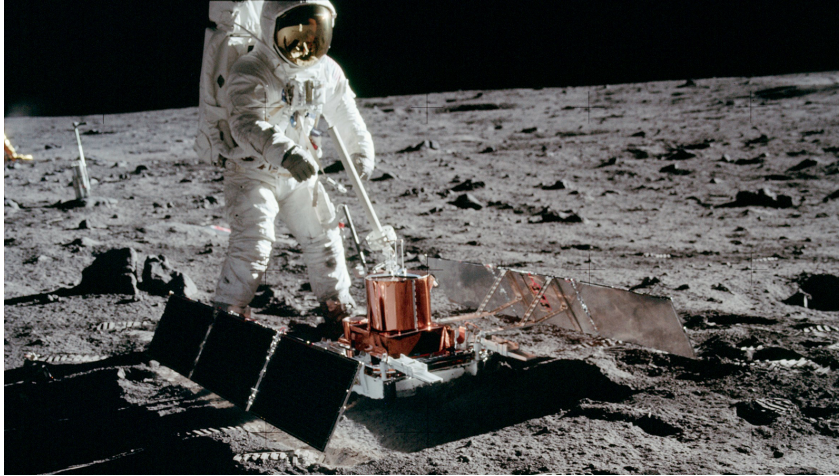


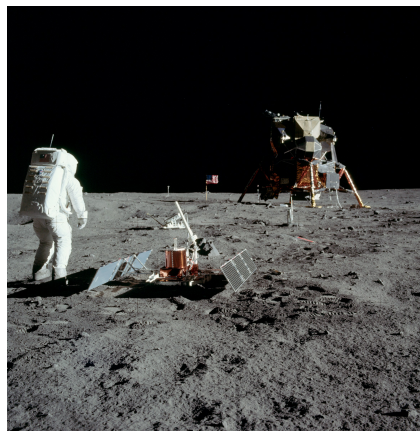
Image Credit: NASA

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The Passive Seismic Experiment was the first seismometer placed on the Moon's surface. It detected lunar "moonquakes" and provided information about the internal structure of the Moon.

This experiment studied the propagation of seismic waves through the Moon and provided the first detailed look at the Moon's internal structure.

This instrument contained four seismometers powered by two panels of solar cells, which converted solar energy into electricity.



Apollo 11 astronaut Buzz Aldrin with the seismic experiment. Solar panels have deployed on the left and right and the antenna is pointed at Earth. The laser reflector is beyond the antenna and, in the distance, the TV

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Instrument Diagram
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It used three long-
period seismometers
and one short- period
vertical seismometer

camera is silhouetted against the
black sky. The stereo close-up
camera is near the righthand
edge of this detail.

for measuring

meteorite impacts and moonquakes, recording about
100 to 200 hits by meteorites during its lifetime.

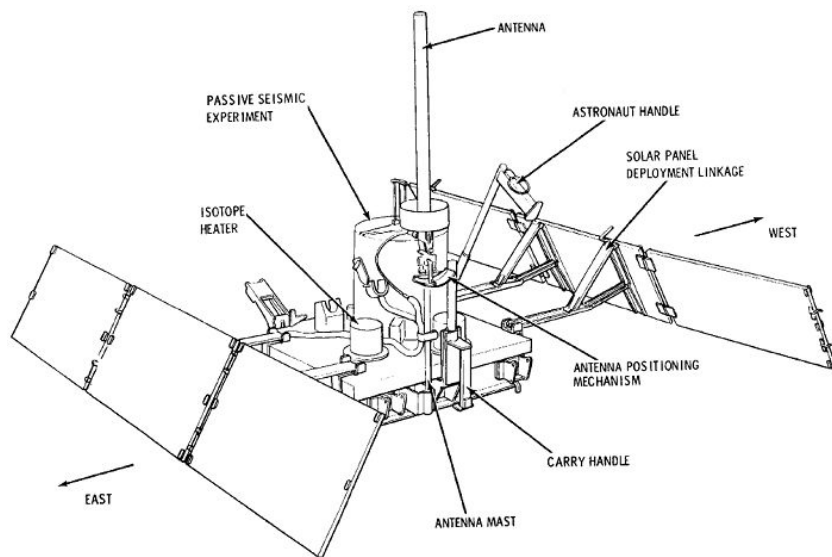
Data regarding the strength, duration, and approximate
direction of the seismic event were relayed to tracking
stations on Earth. Because it was only powered by solar
cells, the experiment only operated during the lunar
days.

During the 340 hour lunar night, when temperatures
can plummet to minus 170°C the instrument was kept to
a minimum of minus 54°C by a radioisotope heater, the
first major use of nuclear energy in a NASA manned
mission. Any temperature below this could damage the
instrument.

At the other end of the scale the scientists tried
controlling the daytime heat on the electronic
components by a series of power 'dumps', cutting off
the systems electrical power. Then, just before the
lunar night began, the seismometer automatically
shifted into stand-by mode, stopping transmission of all
data. The seismic instrument package stopped
responding to commands at 0400 UT August 25 1969,
probably from overheating from the hot midday sun. An
alternate design was flown on later missions.

The Apollo 11 seismometer returned data for just three
weeks but provided a useful first look at lunar
seismology. More advanced seismometers were
deployed at the Apollo 12, 14, 15, and 16 landing sites
and transmitted data to Earth until September 1977.

Each of these seismometers measured all three
components of ground displacement (up-down, north-
south, and east-west).



Apollo 11 Passive Seismic Experiment.

This site is maintained by the Public Engagement Team at
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