NASA's Boeing 747 Telescope Finds Water On The Moon

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A jumbo jet soaring 45,000 feet above the earth's surface has helped NASA confirm the existence of water on the moon's sunlit surface. NASA has long believed there was frozen water at the polar craters that never see sunlight. Now, NASA scientists have discovered water molecules in Clavius Crater, located in theMoon's southern hemisphere. As NASA notes, the discovery raises questions about resources relevant for future deep space exploration.

NASA has confirmed the existence of water on the moon using its Boeing 747SP. Photo: NASA"*We had indications that H2O, the familiar water we know, might be present on the sunlit side of the moon,*" said Paul Hertz, director of the Astrophysics Division in the Science Mission Directorate at NASA in a statement."*Now, we know it is there.*"

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Key to the discovery was the use of NASA's modified Boeing 747SP (registration N747NA). This 43-year-old jumbo jet was picked up by NASA in 1997 and converted into an airborne observatory and science lab.

The jumbojet's official name is the Stratospheric Observatory for Infrared Astronomy, but it is better known as SOFIA.*" SOFIA offered a new means of looking at the Moon"* says NASA is a statement provided to Simple Flying.

The plane flies at altitudes of up to 45,000 feet. Onboard is a 106-inch diameter telescope that can reach above 99% of the water vapour inEarth's atmosphere to get a clearer view of the infrared universe. SOFIA found the wavelength unique to water molecules using its faint object infrared camera in the SOFIA telescope. That wavelength was 6.1 microns. NASA says it is a"relatively surprising concentration" of water.*"Water is a valuable resource, for both scientific purposes and for use by our explorers"* said Jacob Bleacher, a chief exploration scientist at NASA.*"If we can use the resources on the moon, then we can carry less water and more equipment to help enable new scientific discoveries."*

SOFIA first flew in 1977 for PanAm. At PanAm, the plane was registered as N536PA. In 1986, the plane went to United Airlines, where it flew for a further 11 years as N145UA. In 1997, NASA picked up the jumbo jet from United and set to work converting it.

NASA modified the design of the 747-100 by removing sections of the fuselage and heavily modifying other parts of the plane to reduce weight. This allowed the 747SP to fly higher, faster, and farther non-stop than any other 747 at the time.

The most visible modification was the installation of the telescope. That involved cutting a 5.5 meter tall by 4.1-meter wide door in the aft left side of the plane's fuselage. The telescope is positioned at the aft end of the fuselage behind a pressurised bulkhead. The telescope operators typically use a guide camera to track stars,

keeping the telescope locked steadily on its observing target.NASA's modified Boeing 747SP, better known as SOFIA. Photo

SOFIA doesn't usually study the moon. The moon is too close and bright, filling the guide camera's entire field of view. But on nights when no stars are visible, the telescope operators sometimes turn the telescope's focus onto objects other than stars." *It was, in fact, the first time SOFIA has looked at the moon, and we weren't even* completely *sure if we would get reliable data, but questions about the moon's water compelled us to try"* said a NASA scientist.*"Now that we know we can do this, we're planning more flights to do more observation".*