

[Home](#)[Letters to  
the editors](#)[Subscribe](#)[Research  
threads](#)[Guidelines for  
submissions](#)[Links](#)[Store](#)

## Anomalous Object Tracked Near Moon

A Report from the Lunascan Project

Francis Ridge ([slk@evansville.net](mailto:slk@evansville.net))

Lan Fleming ([LanFleming@aol.com](mailto:LanFleming@aol.com))

Lunascan Project

(<http://members.evansville.net/slklunascan.html>)

On Saturday, September 21, 1996, the Lunascan team conducted one of many ro of the lunar surface using a 16" f/4.5 Newtonian telescope (Figure 1). The sky w relatively clear in the early evening, with a little haze creating a slight halo arou moon. The telescope, equipped with a 400-line GBC 400 CCD camera, was viee moon in High-Power Scanning (HPS) mode at 400 X [1]. With a video recorder the scope/camera system was being panned to the limb of the moon, then, using rotation, was slowly scanning across the surface to the terminator. At this point t was manually pulled back to the limb for the next scan.

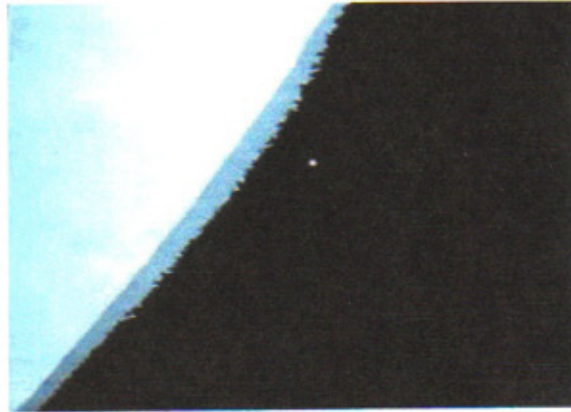


*Figure 1 16" Newtonian telescope mounted on Scope Transport Unit.*

At 7:26 local time (00:26 UTC [2]), several team members noticed that a bright suddenly appeared, and then disappeared, at a point below and to the right of the the video, the object (designated ULO-092196) is seen initially for about a secon lost as the camera scans past it. Six seconds later, the object is reacquired and ob another 13 seconds until the camera scans past it again. By the time the next scar is gone. The session was terminated at 10 PM that night as the weather began to



In HPS mode, the scope's field of view (FOV) is 0.06 degrees, which, at lunar range corresponds to a distance of 241 miles. The total time of observation is 20 seconds consists of about 400 video frames. Close examination of the video shows no apparent motion of the object relative to the moon over this period of time. Assuming the object is resolved, its size is about 2.06 arc seconds (0.00057 degrees), or about 2.4 miles in diameter at lunar range. The distance from the limb is 37 arc seconds (0.01 degrees). At lunar distance this is about 43 miles from the surface.



*Figure 2 One of the video frames showing object ULO-092196 near the limb of the Moon. The slight halo around the moon present that night is seen here as the thin blue arc of the limb.*

The following conventional explanations were initially considered:

- Low Earth Orbit (LEO) satellite -- The orbital period of LEO satellites is approximately 90 minutes, which is a geocentric angular velocity of 360 degrees / 1.5 hours or 0.075 degrees per second. In the 20 seconds the object was observed, if it were an LEO satellite, it should have moved about 1.5 degrees or three lunar diameters (the angular diameter of the moon as observed from the Earth is 0.5 degrees).
- Geosynchronous satellite -- A geosynchronous satellite would move 0.004 degrees per second relative to the fixed stars (360 degrees in 24 hours). In 20 seconds it would move 0.08 degrees. If the object were a geosynchronous satellite, it should have moved completely out of the FOV in 20 seconds.
- Star or planet -- The moon's orbital period causes it to move relative to the fixed stars (or planet) at a rate of 0.00015 degrees per second. In 20 seconds this is about 0.003 degrees, the width of the FOV, or about 1/3 of the distance from the object to the limb of the moon.
- Balloon -- A balloon drifting at 10 mph, 100 miles away would move 0.03 degrees in 20 seconds, or half the FOV.
- Meteor -- The lunar escape velocity of 5400 mph is the minimum velocity at which a meteoroid can approach the moon. (The majority of objects in the solar system approach the moon at much greater speeds.) In 20 seconds, an object at the lunar distance would move a distance about 10% of the FOV.



None of these explanations is plausible since no significant motion relative to the moon was detected in the video.

Two other possibilities were considered next:

- Asteroid -- The motion of an asteroid would be hard to detect over such a short period of time (over a 20 second period, an 8 arc second displacement would be typical, which is only about 3% of the FOV). However in checking with the Near-Earth Asteroid Tracking program [3] it was confirmed that ULO-092196 is not an asteroid.
- Object in lunar orbit -- If the object were in lunar orbit, there are two times in each orbit it would appear (to an Earth-based observer) to be stationary relative to the moon: one when the object is moving directly toward the Earth, and one when it is moving directly away. These two points would be close to the points on the moon's limb where the object is moving directly toward or away from the Earth, and are the only places where the object would likely be seen at all.

Assuming the object was at the apparent 45-mile altitude above the moon in the image and had a two-hour orbital period, there would only be a period of 11 minutes between when the object emerged from behind the moon and when it moved across the moon's disk where it would be lost in the direct moon light. Within that 11-minute span, the object might be visible for only a few seconds at its farthest distance from the moon's limb before it became lost in the halo (Figure 2). Such an object might then appear suddenly and disappear just as suddenly after the 20-second period that it was observed.

That the object was orbiting the moon seemed a possibility. The only problem with the orbiter hypothesis is that the chances of the moon capturing an asteroid are small because the moon's gravity makes captures rare, and orbits quickly degrade (within about a year) due to gravitational anomalies associated with mascons.

The ULO-092196 event occurred two years after the Clementine mission, and after the Lunar Prospector. No known man-made objects were in the vicinity of the moon during this period. More than five years later, the identity of this object remains a mystery.

---

[1] At 400 X the moon's surface appears as if it were about 600 miles away.

[2] Coordinated universal time. Signal provided by WWV at Fort Collins, Colorado.

[3] <http://neat.jpl.nasa.gov/>



