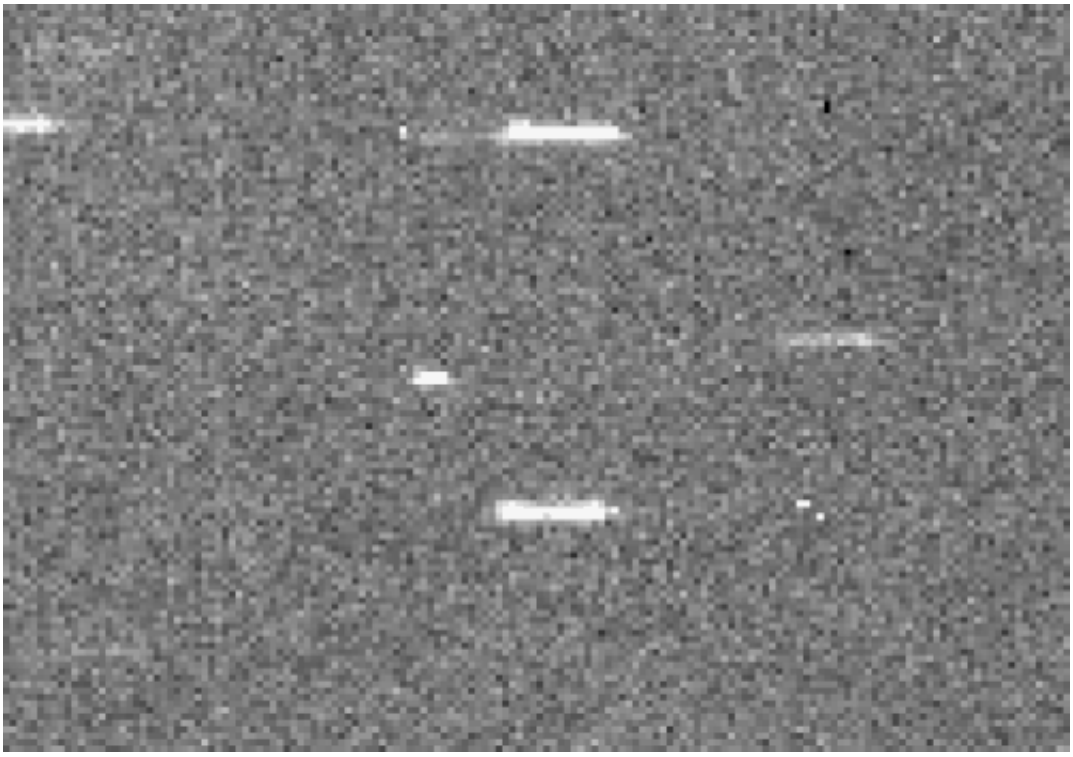
Artificial object in trans-lunar orbit to impact Earth on November 13

November 3 2015, by Bob King



WT1190F observed on October 9, 2015 with the University of Hawaii 2.2 meter telescope on Mauna Kea, Hawaii. The object moves from left to right across the center of the field. Credit: B. Bolin, R. Jedicke, M. Micheli

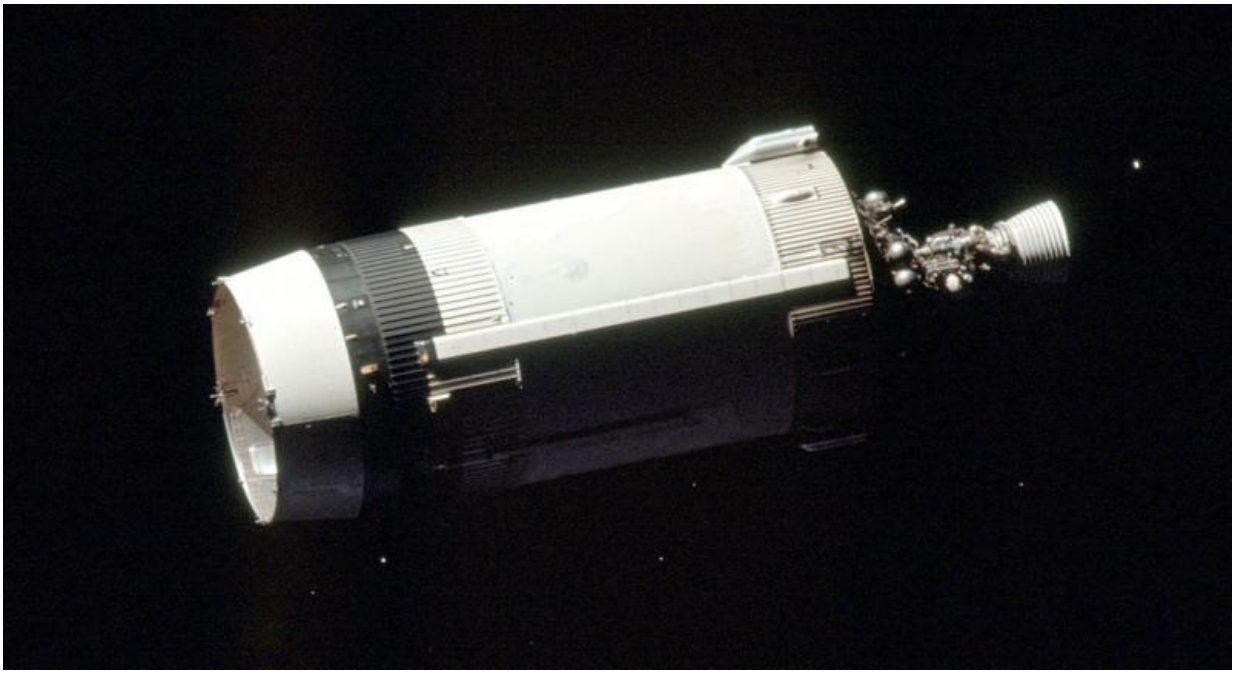
Get ready for a man-made fireball. A object discovered by the Catalina Sky Survey on Oct 3rd temporarily designated WT1190F is predicted to impact the Earth about 60 miles (100 km) of the southern coast of Sri Lanka around 6:20 Universal Time (12:20 a.m CST) on November 13.

The objects orbits Earth with a period of about three weeks. Because it was also observed twice in 2013 by the same survey team, astronomers have the data they need to model its orbit and trajectory, and as far anyone can tell, it's likely man-made.

Solar radiation pressure, the physical "push" exerted by photons of sunlight, is proportional to a space object's area-to-mass ratio. Small, lightweight objects get pushed around more easily than heavier, denser ones. Taking that factor into account in examining WT1190F's motion over two years, the survey team has indirectly measured WT1190F's density at about 10% that of water. This is too low to be a typical asteroid made of rock, but a good fit with a hollow shell, possibly the upper stage of a rocket.

It's also quite small, at most only about six feet or a couple of meters in diameter. Most or all of it is likely to burn up upon re-entry, creating a spectacular show for anyone near the scene. During the next week and a half, the European Space Agency's NEO (Near-Earth Object) Coordination Center is organizing observing campaigns to collect as much data as possible on the object, according to a posting on their website. The agency has two goals: to better understand satellite re-entries from high orbits and to use the opportunity to test our readiness for a possible future event involving a real asteroid. The latter happened once before when 2008 TC3 (a real asteroid) was spotted on October 6, 2008 and predicted to strike Earth the very next day. Incredibly, it did and peppered the Sudan with meteorites that were later recovered.

Assuming WT1190F is artificial, its trans-lunar orbit (orbit that carries it beyond the Moon) hints at several possibilities. Third stages from the Saturn-V rockets that launched the Apollo missions to the Moon are still out there. It could also be a stage from one of the old Russian or more recent Chinese lunar missions. Even rockets used to give interplanetary probes a final push are game.



The first two stages of the Saturn V rockets used to send the seven Apollo missions to the Moon fell back to Earth, but the third stage (S-IVB), pictured here, propelled the spacecraft into a lunar trajectory. Could this be WT1190F? Credit: NASA

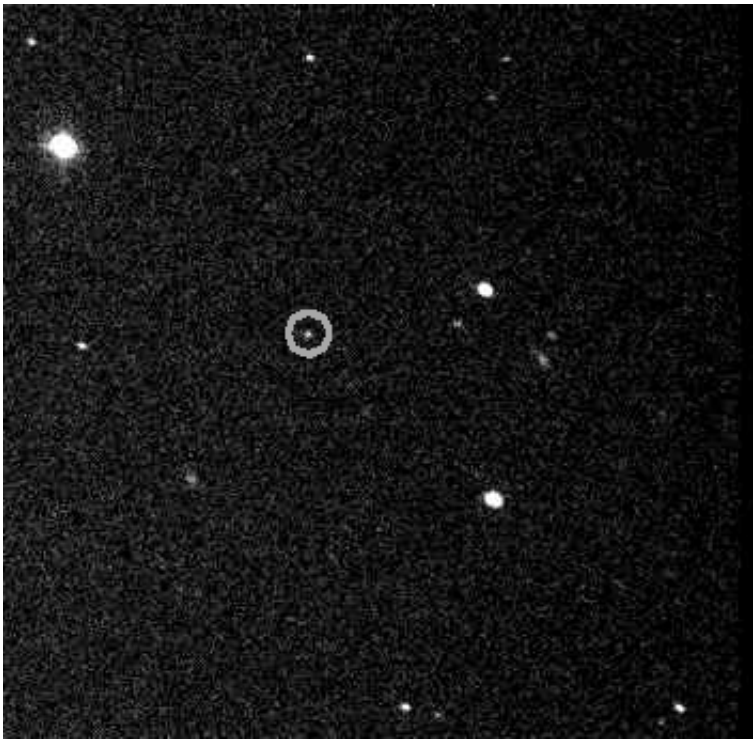
Case in point. What was thought initially to be a new asteroid discovered by amateur astronomer Bill Yeung on September 3, 2002 proved a much better fit with an Apollo 12 S-IVB (third) stage after University of Arizona astronomers found that spectra taken of the object strongly correlated with absorption features seen in a combination of man-made materials including white paint, black paint, and aluminum, all consistent with Saturn V rockets.

Apollo 13's booster was the first deliberately crashed into the Moon, where it blew out it a crisp, 98-foot-wide (30-meter) crater. Why do such a crazy thing? What better way to test the seismometers left by the

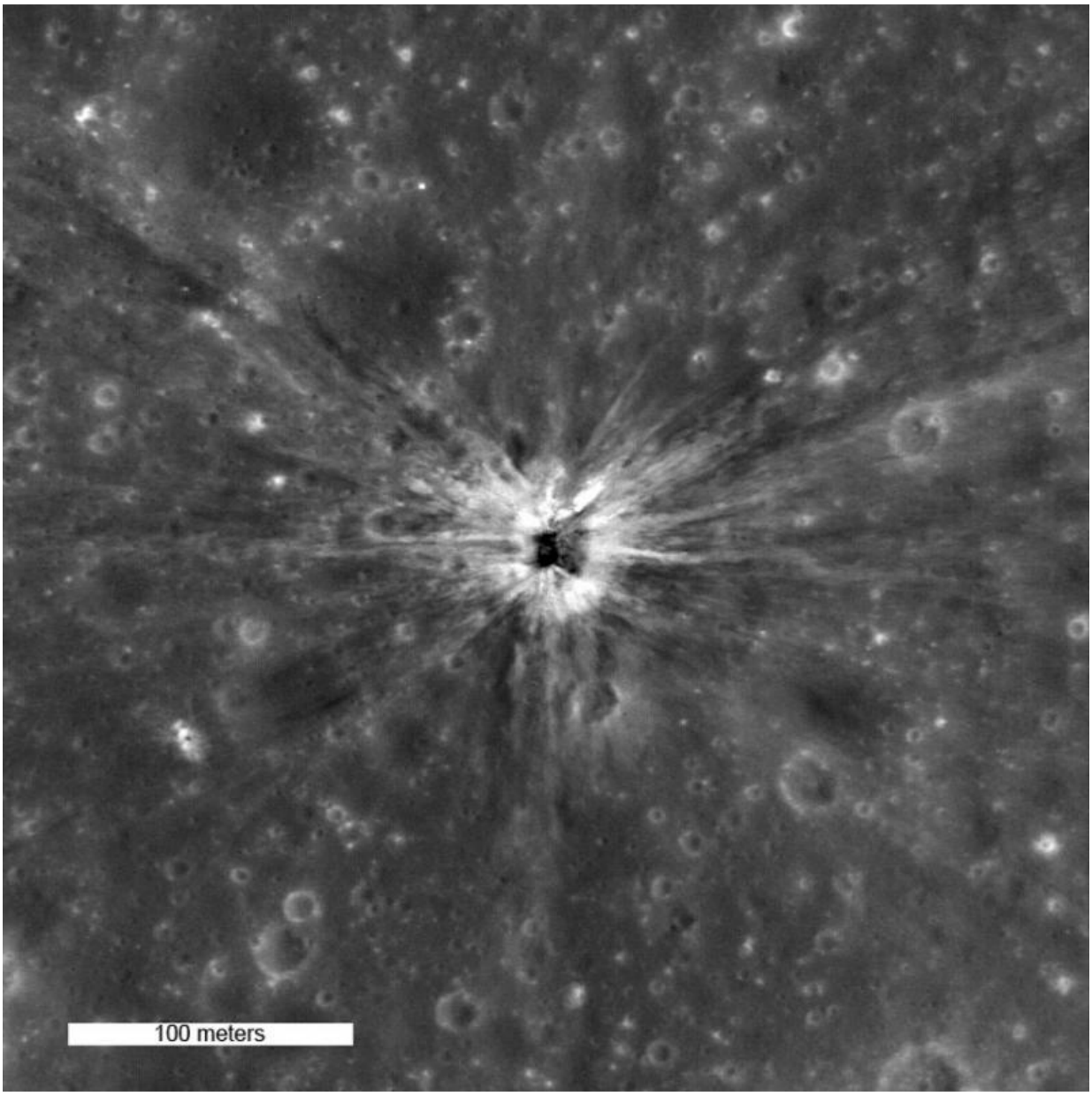
Apollo 12 crew? All subsequent boosters ended their lives similarly in the name of seismography. Third stages from earlier missions—Apollos 8, 10 and 11— entered orbit around the Sun, while Apollo 12, which orbiting Earth, briefly masqueraded as asteroid J002E3.

Bill Gray at Project Pluto has a page up about the November 13 impact of WT1190F with more information. Satellite and asteroid watchers are hoping to track the object before and right up until it burns up in the atmosphere. Currently, it's extremely faint and moving eastward in Orion. You can click here for an ephemeris giving its position at the JPL Horizons site. How exciting if we could see whatever's coming down before its demise on Friday the 13th!

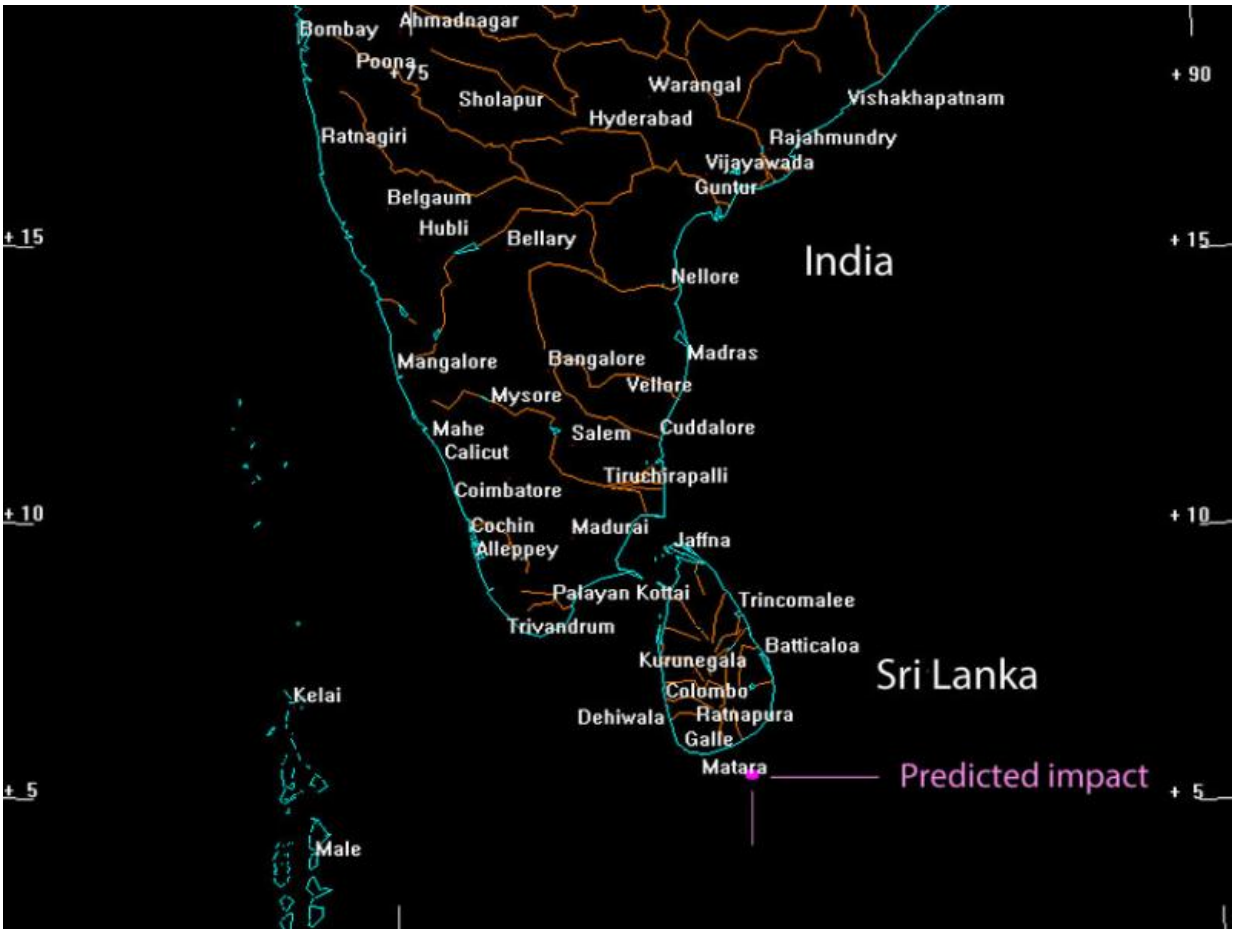
Spectacular re-entry of the Jules Verne ATV-1 cargo ship over the Pacific Ocean on September 29, 2008. Still image from a TV camera operated by Jessie Carpenter and Bill Moede of NASA Ames Research Center. A similar spectacle is expected on November 13 south of Sri Lanka.



Near-Earth object J002E3 discovery images taken by Bill Yeung on September 3, 2002. The 16th magnitude object was tentatively identified as the Apollo 12 third stage rocket. Credit: Bob Denny.



On April 14th 1970, the Apollo 13 Saturn IVB upper stage impacted the moon north of Mare Cognitum. The impact crater, which is roughly 30 meters in diameter, is clearly visible in this photo taken by the Lunar Reconnaissance Orbiter. Credit: NASA/Goddard/Arizona State University



The nominal impact point is located about 60 miles south of the island nation Sri Lanka. Given the object's small size and mass, it will likely be completely incinerated during re-entry. Credit: Bill Gray at Project Pluto

Source: Universe Today