

Strange Shuttle Sights: Unearthly and Mundane

By Jim Oberg

Special to *SPACE.com*

posted: 07:34 pm ET

13 December 1999

http://www.space.com/sciencefiction/phenomena/shuttle_ufos_991213.html

When the astronauts of STS 103 finally blast off for their Hubble Repair Mission, they will be extremely busy the entire flight. But there will be interludes when they can gaze out the windows, or play their TV cameras across the emptiness of surrounding space. And if past space flights are any indication, there will be moments of surprise when strange dots of light cross their view.

Since the first piloted U.S. space flights 40 years ago, astronauts and their cameras have been "seeing things" outside their space vehicles. Obviously they are unearthly -- it's why we leave Earth. They also are obviously extraterrestrial -- they come from beyond the known world. But what are they really?

Astronauts on a moon mission joked about flashing lights pacing their spacecraft, and concluded, "Well, we'll assume they're friendly." Gemini astronauts reported a "wingman" on one flight, and a "bogey" on another. Shuttle exterior TV cameras have shown white blips maneuvering nearby, occasionally [zigzagging](#) in a way reminiscent of intelligently piloted craft.

"Anomalies" are relative

In outer space, even "ordinary" things seem so alien that

STS 41-D (1984) has views of the meter-long "space icicle" that had to be knocked loose from the shuttle's water dump port. The footage also shows a deployed payload firing its engine, a bright glare that crosses from the earth background into space. Because of a common video focusing problem, even the stars appear as tiny donuts even though the rocket flies through the easily-recognizable constellation Orion.

STS 75 (1996) has great views of the broken tether that led to the loss of a satellite, but the weirdest sequence shows a cloud of ice crystals floating ahead of and below the shuttle in the dark, flickering randomly in the moonlight.

Earthlings back home can get their minds blown by what veteran space voyagers find routine and boring. So we have to acquire a thorough knowledge of what is ordinary -- in terms of space flight -- so that the genuinely extraordinary can be

filtered out.

And that's been the problem with so many false alarms and blind alleys in the quest to identify truly alien phenomena viewed by Earth's emissaries into the universe. Sightings, photographs, descriptions and videos of space phenomena can be found in hundreds of magazines, books and websites -- but what, if anything, do they really signify?

People back on Earth must remember that the first principle of space travel is that objects coming off a vehicle tend to fly along with it. They appear to move in straight lines unless they encounter some force, such as the atmosphere or an exhaust plume from a rocket thruster. They don't need propulsion or power sources, just natural inertia.

The second poorly-appreciated principle of space travel is that things are always coming off -- or out of -- a piloted space vehicle.

Space missions dump excess propellant from engines after the vehicle reaches orbit.

Unused propellant may leak past a hundred different valves in small steering rockets. When the jets fire, bits of propellant can get caught in the exhaust and shoot off at great speeds, while other pieces floating nearby are blasted away by expanding rocket plumes.

Another common culprit is ice. Some vehicles discard waste heat by evaporating water against coolant panels, resulting in blizzards of ice crystals. (These were John Glenn's "fireflies" on his first flight.) Piloted missions periodically purge both liquid waste ("the constellation Orion," astronauts joked) and surplus water from fuel cells. These valves can leak or get stopped up with ice which later flakes away.

Insulation blankets may shed fragments, or lose buttons and clips. Latex-based "gap filler," inserted between shuttle tiles, sometimes peels loose in long strips. There's also junk carelessly left behind in the shuttle's payload bay -- washers, clipped wires, dust covers and the like. When payloads separate from their launch platforms, it often is by means of small explosive charges that leave fragments, metal shavings and even entire straps tumbling violently through space.

The moon pigeons

From stray particles, to snowflakes, to meter-long icicles -- all of this "space dandruff" can fill spacecraft windows and TV fields-of-view.

Some are flat, some are round, some are long and curved. Some catch the light, flickering as they tumble, others don't.

Some appear suddenly as they drift out of the spacecraft's shadow into the bright sun. It is a visual kaleidoscope of unearthly -- but to experienced spacefarers, entirely prosaic -- apparitions.

NASA has always been interested in understanding how such objects are created because they might be dangerous. Apollo astronauts called them "[moon pigeons](#)" in their post-flight debriefings, and regularly described seeing them during their radio conversations with Earth.

On-board viewing methods changed over the decades. Gemini astronauts literally sat by their windows because their cabin was too small to move away. The Apollo era saw larger vehicles in which busy astronauts spent less time actually looking out windows.

"Unexplainable" shuttle sights

By the time the space shuttles came along, their magnificent windows were frequently used for astronaut sightseeing. But the craft also sported an impressive array of television cameras in their payload bays and on their robot arms.

Once nearly-continuous communications coverage was established in 1989, via relay satellites in 24-hour orbits, these cameras were usually left on continuously, providing material for the live broadcasts of NASA TV.

Many clearly unusual scenes of moving objects from these broadcasts have become famous, particularly sequences from STS 48 (1992) and STS 80 (1996). White dots crisscross the earth, horizon and star-filled sky. Some appear out of nowhere, or abruptly change direction. Investigators with more enthusiasm than expertise have deemed these apparitions "unexplainable in earthly terms," and indeed they are.

The notorious STS 48 and STS 80 videos, for example, share some common factors not known to amateur investigators, and these factors provide convincing proof of their routine nature. In both cases, the shuttle has just emerged from Earth's shadow and the camera is peering backwards toward the still-dark Earth to spot lightning bursts.

The shuttle is bathed in bright sunlight, but since it's in vacuum, this light is invisible except as it illuminates nearby particles. Some particles that happen to be closer to the camera drift away and pass out of the shuttle's shadow, making them suddenly visible.

Even bigger pieces of "space junk" can appear mysterious. On the STS 61 (December 1993) mission to service the Hubble Space Telescope, there's a flashing object off to the side of the telescope as the shuttle pulls away. Although some enthusiasts

proclaim this is an alien observer, it's actually just a worn-out solar panel that was manually jettisoned a few days earlier.

Check the sources

In investigating any claims of genuinely anomalous sightings on space missions, the first and most obvious step is to interview the primary witnesses -- the astronaut crew and their Mission Control support teams. They are under no legal or professional constraints on these subjects, and can be expected to provide crucial supportive testimony in understanding what actually was seen.

Next, an investigator must understand the physical parameters of the sighting, such as which way the camera was facing and where the local illumination was coming from. These questions require knowledge of which camera or window was involved, where it was facing and where the shuttle was in its orbit relative to the sun. Again, this information is readily available if sought.

Last, technical details of the timing of the sighting need to be correlated with other spacecraft activities. The crew's work activities, as spelled out in a time line (new ones are faxed up before every working day and are handed out in the NASA press center in Houston), can be compared to the "anomalous" events, while telemetry records reveal thruster firings and other debris-generating shuttle activities.

All too often, investigators and enthusiasts fail to take these critical steps. The result has been an avalanche of "crying wolf" that raises the danger that any genuinely anomalous sighting will either not be recognized or will be championed by those already discredited from too many previous false alarms.

Earthside enthusiasts can take constructive steps to familiarize themselves with ["routine" visual phenomena](#) so as to help isolate truly unusual sightings when they occur.

They can tape live video feeds from ongoing shuttle missions. NASA includes some truly unearthly, strikingly beautiful scenes in the regular post-flight press conferences every shuttle crew holds, and NASA loans out tapes of these events to anyone who asks.

Viewing these and other spaceship "home movies" can help researchers understand what is "ordinary" and "normal" for space travel, arguably the most extraordinary and abnormal activity human beings have ever embarked upon.

And with this background, they'll be prepared for that sure-to-come encounter -- on the next flight, or the next generation, or the next millennium -- when something genuinely unusual shows up to prove that we're not alone in the universe.

