

# *A Dead Russian Satellite Broke Into More Than 100 Pieces in Space*

The cause of the incident, which added to a growing amount of dangerous space junk in low Earth orbit, remains unknown.

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By Katrina Miller

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A decommissioned Russian satellite fractured in space on Wednesday, creating a cloud of debris in low Earth orbit that prompted astronauts aboard the International Space Station to take protective measures.

The satellite, which was orbiting about 220 miles above the ground, broke apart into more than 100 shards, according to an announcement on Thursday by U.S. Space Command, a Defense Department agency that executes military operations in space. Space Command added in its statement that there were “no immediate threats,” and that assessments of the situation were ongoing.

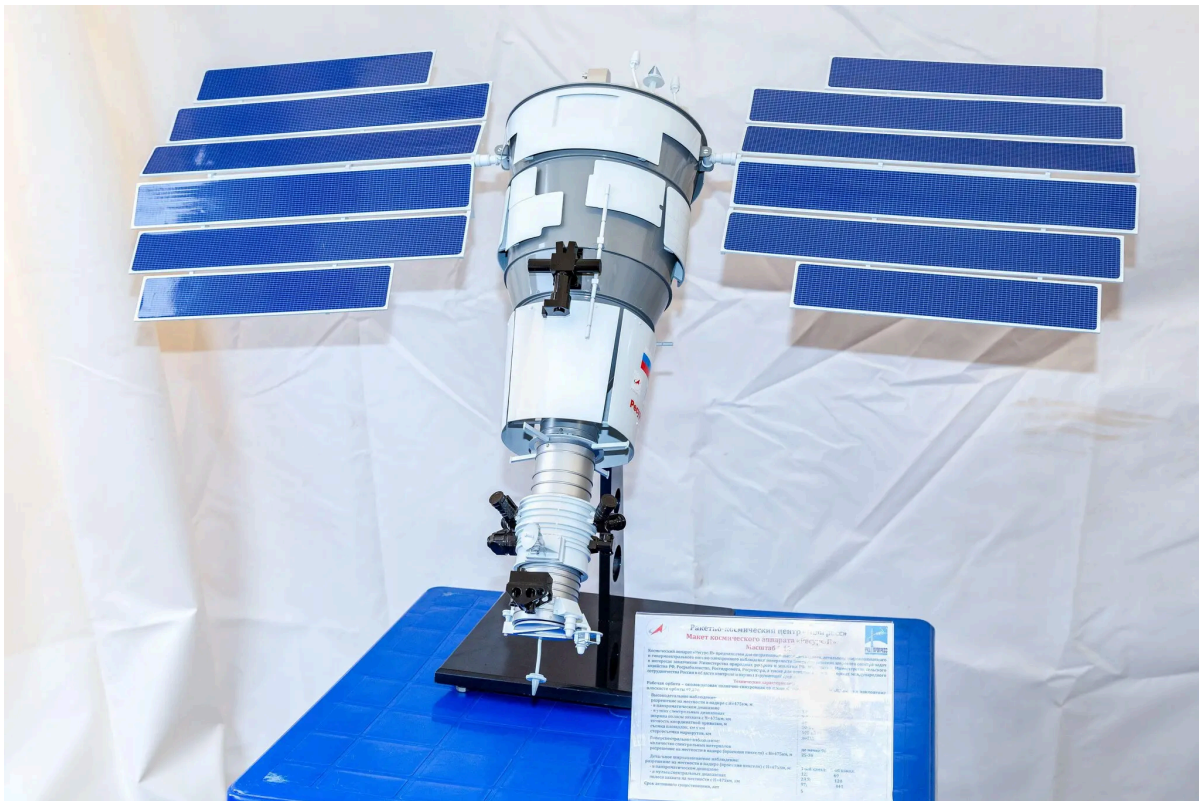
Known as Resurs P1, the satellite was launched in 2013 by Russia to observe Earth and produce imagery from space to assist with agriculture, meteorology, transportation and other purposes. Russia retired Resurs P1 in 2022. Since then, the satellite had slowly been losing altitude.

Roscosmos, the Russian space agency and the former operator of the defunct satellite, did not respond to a request for comment.

Resurs P1's destruction added to a growing amount of space junk — which includes dead satellites, lost tool bags and much more — around Earth. NASA estimates that more than 25,000 pieces of debris wider than four inches are currently in orbit, and the number grows to over 100 million when much smaller objects are counted. Experts see space debris accumulation as a risk to future space operations, and there are projects being developed to remove larger items from orbit.

The fragmenting of the Resurs P1 satellite was detected and announced on Wednesday by LeoLabs, an organization that tracks the safety of satellites orbiting Earth. But why the event occurred is still unknown.

“It’s very murky right now,” said Jonathan McDowell, an astronomer at the Harvard & Smithsonian Center for Astrophysics who maintains a public catalog of orbiting shrapnel in space. “We don’t have a clear understanding yet,” he added, saying there were “a wide range of possibilities.”



A model of the Resurs P1 satellite at an exhibition in Samara, Russia. Alexander Blinov/Alamy

Dr. McDowell said an internal explosion of a long-dead battery inside the satellite could be one explanation. Another worrisome possibility is that Resurs P1 collided with a piece of space junk that was orbiting Earth.

The U.S. Space Force keeps a catalog of sizable orbital debris to prevent unexpected collisions like this. But it is possible that the colliding piece was too small to be tracked.

“It’s getting crowded out there,” Dr. McDowell said.

A third, and the most concerning, possibility is that the event was deliberate. In 2021, Russia intentionally fired a missile at one of its own defunct satellites in orbit. China and India have also conducted antisatellite missile tests, as has the United States, which committed itself to a ban of such tests in 2022.

But there are reasons to doubt it was a deliberate explosion, Dr. McDowell said. Russia issued an advance notice to air personnel before the 2021 test so that flight operators could avoid the air above the launch site. (Dr. McDowell has not heard any word of a similar notice given this time.) And at around 13,000 pounds, Resurs P1 is a fairly large satellite — which makes it less than ideal for missile testing because of all the scraps it would create.

Still, the satellite did pass over a Russian launch site that could be used to fire missiles during the window of time that the event was said to have occurred, according to Dr. McDowell.

“So I can’t rule it out at this point,” he said, “but I also can’t rule in.”

Resurs P1’s fracture may have moved some of its debris into an orbit high enough to endanger the thousands of Starlink internet satellites operated by SpaceX, or even the International Space Station.

Just after 9 p.m. Eastern time, NASA ordered the nine astronauts aboard the International Space Station to move to safe areas as “a standard precautionary measure,” according to a post on X. After an hour, the crew members resumed their

normal activities.

The U.S. Space Force will work to catalog the debris from Resurs P1, though it could take a few months. Until then, “it’s literally Russian roulette,” Dr. McDowell said. Untracked space junk presents a risk to other spacecraft in orbit, and before it is properly recorded in warning systems used by satellite operators, they will not be able to avoid collisions.

In the worst case scenario, the break up of Resurs P1 could create a domino effect: Debris from one satellite smashes into another, which then collides with another — a reaction that is costly and disruptive, Dr. McDowell said, though in this case seems unlikely.

Alina Lobzina contributed reporting.

**Katrina Miller** is a science reporter for The Times based in Chicago. She earned a Ph.D. in physics from the University of Chicago. [More about Katrina Miller](#)