

Russian ASAT-Test Debris Threatens International Space Station and Escalates Global Tensions

THE ISSUE

On November 15, 2021, Russia fired a direct-ascent anti-satellite (ASAT) missile from Russian soil that destroyed Cosmos 1408, a Russian Satellite in low-earth orbit (LEO). The test generated more than 1,500 pieces of trackable orbital debris that immediately began to threaten the International Space Station (ISS), and the seven astronauts onboard were forced to take refuge in their Soyuz and Dragon vehicles that were docked to the ISS.

The potential for debris from the explosion to hit the ISS will recur every 90 minutes, a threat that will likely worsen as the debris field expands and descends in altitude over time. The ASAT test will significantly impede future LEO operations and may ultimately lead to the abandonment of the ISS and the early termination of its mission. While the international community has condemned the ASAT test, it must not view the test in isolation. Coupled with Russian aggression against Poland and Ukraine, it must receive a prompt and strategically stabilizing response from the Biden Administration.

ASAT TESTS AND EFFECTS

- On November 15, 2021, a Russian ASAT test destroyed a Russian satellite, Cosmos 1408.
- Cosmos 1408 had a mass of about 4,850 pounds and was in LEO at an altitude of about 300 miles.
- The explosion created a debris field in LEO that already threatens the ISS.
 - The field consists of 1,500 pieces of trackable (two inches or larger) orbital debris.
 - Smaller pieces of debris will likely number in the thousands, and the impact of even a BB-sized object moving at LEO speeds (17,500 mph) could be catastrophic.
 - The debris will remain in orbit for decades, putting satellites and space missions at risk.
- The ISS is in LEO at an altitude of 254 miles. Four Americans, one German, and two Russians onboard the ISS were forced to take shelter in two docked capsules following the test.
 - The crew sheltered for two hours and were forced to close and reopen hatches to the ISS's individual labs every orbit (90 minutes), as the ISS passed near the debris.
- A 2007 Chinese ASAT test created a 3,500-piece field of debris, most of which is still in orbit, and much of which has slowed and descended to the ISS's orbital altitude.
 - Two weeks ago, the ISS had to maneuver out of the way of trackable debris from that 2007 test.

This paper, in its entirety, can be found at <http://report.heritage.org/fs224>

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- In May, a tiny piece of debris, potentially from that test, punched a 5 mm hole in the ISS's robot arm. That fragment could just as easily have ripped through a space suit and killed an astronaut on a space walk.
- Four nations have so far conducted ASAT tests: [China \(2007\)](#), [the U.S. \(2008\)](#), [India \(2019\)](#), and [Russia \(2021\)](#).
 - The American and Indian tests targeted satellites at much lower altitudes, well below the ISS.
 - None of the trackable [debris created by the U.S. ASAT test is still in orbit](#).
 - Just one piece of trackable debris from the Indian ASAT test remains in orbit.

CONSEQUENCES

- The debris field created by the Russian test will significantly impact future operations and may ultimately lead to the abandonment of the ISS and the early termination of its mission.
- This test, coupled with Russian activities along the Polish and Ukrainian borders, show a pattern of aggressive activity that world leaders must view holistically, not in isolation.
- Russia and China have been emboldened by [U.S. geopolitical moves and missteps in 2021](#).
- The U.S. must respond in a timely and firm manner to dissuade Russia and China from further aggression, and to reassure allied-nation confidence in their strategic ties with the U.S.