

# New Antenna for ASF Ground Station

## A New Antenna for ASF Ground Station

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To the casual observer, replacing the blue antenna on the roof of UAF's Elvey Building over the course of four days in March may have seemed like a piece of cake. But for the team that pulled off the feat, making the job look easy was no simple matter.



*A 250-foot crane lifts the original antenna off the top of the Elvey Building, framed by an outdoor rocket display, part of the Geophysical Institute.*

After many weeks of meticulous planning, local and visiting engineers and contractors first worked in subzero temperatures (down to minus 30°F) to dislodge the original, 40,000-pound, 10-meter system. As the first antenna for ASF's Satellite Tracking Ground Station(<https://www.asf.alaska.edu/ground-station/>), the antenna had been in place for more than 25 years.

The team's efforts included using chisels, pry bars, and solvents to cut through glue-like corrosion that adhered the antenna components to the roof. Then, to hoist the antenna off the eight-story building, they used a 250-foot crane. Finally, they used the crane to lift and install the new 80,000-pound, 9-meter system.

Over the next three weeks, engineers calibrated and tested the new antenna. On April 6, it successfully tracked four NASA satellites: AQUA, AURA, SMAP, and JASON2.

Along with two 11-meter NASA antennas located on pedestals in the woods to the west of the Elvey Building, the new dish is part of ASF's Satellite Tracking Ground Station — the only university-based member of the global Near Earth Network (NEN). Managed by NASA Goddard Space Flight Center, NEN's 14 stations worldwide provide telemetry, commanding, ground-based tracking, data, and communications services to a wide range of customers.

The new antenna helps build the station's capacity for receiving data and uplinking commands from and to current and future missions—particularly NISAR(<https://www.asf.alaska.edu/news-notes/2016-fall/nisar-sentinel-news/>), the collaborative U.S.-India mission scheduled for launch in 2021.

“The previous antenna could only receive data,” explains NEN Project Manager David Carter. “This new antenna will be able to send commands up to the satellite as well as receive data. Now any one of the three antennas at the university could support various NASA missions.”

Back in 1991, when the original antenna started receiving data from the ERS-1 satellite, the expected data volume for the new ground station was about 10 minutes a day on a single channel from a single satellite. Today, ASF handles approximately 200 minutes per day from 10 or more missions that each may have multiple channels.

The satellites, orbiting Earth about 400 miles overhead, transmit data to the Alaska Satellite Facility during the 15 minutes or so when they have a direct line of sight to the dishes. In a single day, technicians receive information on Earth’s winds, gravity fields, noctilucent clouds, the atmosphere, water, and many other features.

Says NEN’s David Carter, “NASA has an outstanding working relationship with ASF and we look forward to many more years of collaboration.”



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*ASF Director Nettie La Belle-Hamer and NEN Project Director David Carter tour the new antenna system shortly after installation.*



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