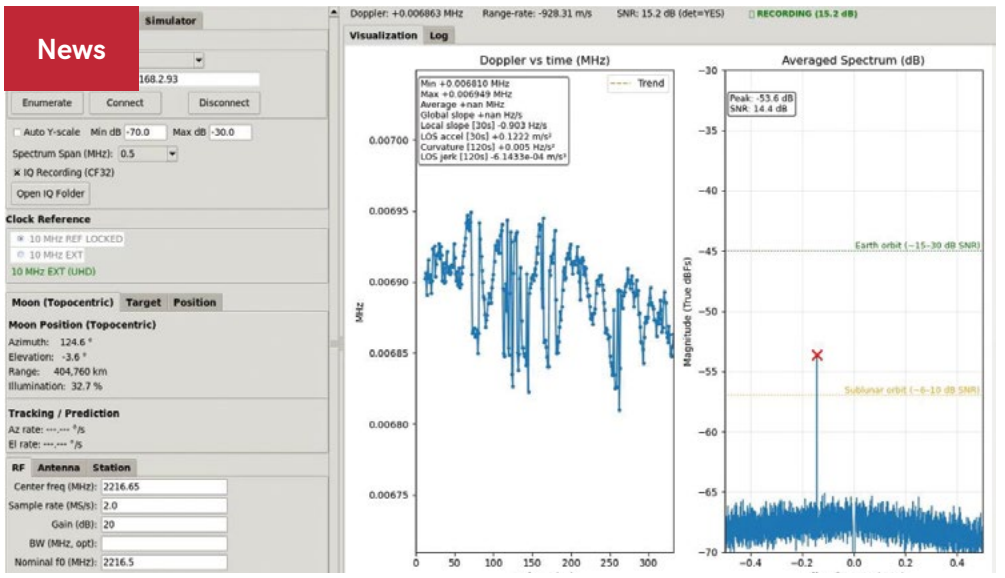
News



LOCAL VOLUNTEERS HELP TRACK NASA'S ARTEMIS II MOON MISSION

When NASA launched the Artemis II mission on April 1, 2026—sending astronauts on a journey around the Moon for the first time in more than 50 years—a spirited crew of Colorado volunteers was ready and waiting. The Deep Space Exploration Society (DSES), operating a 60-foot radio telescope on the high plains near Haswell, had been selected by NASA as one of 34 volunteer ground stations around the world to help track the Orion spacecraft throughout the mission. For the members of DSES, it was the opportunity of a lifetime.

What followed was a remarkable adventure—filled with late nights, creative problem-solving, unexpected setbacks, and genuine scientific achievement. Win or lose on any given night, the team came away with something invaluable: real experience doing real science.

POINTING A GIANT DISH AT THE MOON

The Orion capsule, named "Integrity," broadcasts a radio signal as it travels through space. DSES's job was to aim their large antenna at the spacecraft, capture that signal, and send recordings to NASA. It sounds straightforward—but tracking a fast-moving spacecraft hundreds of thousands of miles away, with a dish that must be steered precisely within less than half of a degree every few minutes, is anything but simple.

Adding to the challenge, the Orion capsule was only visible from the DSES site during overnight hours—roughly midnight until around 8:30 AM every night for over a week. That meant that every observation session was a "third shift" operation, with sleep deprived yet enthusiastic volunteers huddled around a control console while most of Colorado slept.

AN UNSTOPPABLE TEAM

What DSES lacked in sleep, it made up for in dedication. Volunteers came from across the region—and even called in from Hawaii—to keep the mission going. Among those who gave their time were the preparation, tracking and maintenance teams:

- Roger Oakey, Pat McDevitt, Myron Babcock, Ray Uberecken, Paul Sobon, Jeff Fladung who all worked to set up the site and systems for the mission.
- Bill Miller, Mario Biendarra, and Travis Lightsey, who fixed an early problem with the antenna feed and collected the first successful data on April 4th but experienced a dish azimuth failure on April 5th and were unable to receive data.
- Larry Stewart, Anne Haney, Richie Lary, Roger Oakey, and Tom Eggers, who worked later nights—manually steering the dish every couple of minutes to keep the spacecraft in the antenna's sights. Considerable data was logged using this method.
- Glenn Davis, Lewis Putnam, and Paul Sobon, who rushed to the site with spare parts when the dish's automatic azimuth rotation system failed and needed a replacement part.
- Richard Hambly and Alex Nersesian, who worked remotely recording the data and improving the data-recording software—releasing updated versions over the course of the mission.

Replacing parts failed to fix the automatic azimuth control of the dish so the tracking team leader, Roger Oakey came up with a ingenious system of toggling the control switches while watching the screen to manually track the spacecrafts position. Additionally, volunteer Anne Haney came up with a simple but effective idea to rotate pairs of people every two hours, so no one burned out. It worked beautifully. Richie Lary, with good humor, described the job of keeping the spacecraft centered in the antenna beam as "the world's most boring video game"—a badge the team wore proudly.

A REAL SCIENTIFIC ACHIEVEMENT

Despite the obstacles, the team successfully picked up the Orion spacecraft's signal on multiple nights and performed detailed analysis of what they received. Using the same principle as the change in pitch of a passing ambulance siren—but applied to radio waves from a spacecraft—the team measured how the signal's frequency shifted as Orion changed speed as it moved through space. They then compared their measurements to NASA predictions and found the two matched extraordinarily well. For a volunteer organization using inexpensive radio equipment, it was an impressive result.

The team also discovered and diagnosed a small, consistent error in their receiving system and adapted the software to compensate for it. Far from being a failure, this kind of discovery is exactly what good science looks like: finding a problem, understanding it, and knowing how to fix it the next time.

LEARNING BY DOING

The DSES team is refreshingly honest that not everything went according to plan. The fact that the spacecraft did not continuously transmit on the observed frequency and a combination of hardware hiccups, software issues, and the sheer difficulty of overnight manual operations, resulted in less than the goal of a continuous data set to submit to NASA. But the team sees this not as failure, rather as the natural cost of doing something genuinely hard for the first time.

Their lessons learned involve a number of improvements to the process:

- Test all software thoroughly well before mission day—and freeze the code early.
- Improve the reliability of automated dish-pointing, so the antenna can follow a spacecraft or object without manually tracking it.
- Plan data storage carefully when recording large volumes of raw signal data.
- Build partnerships with other global community groups who have faced the same challenges.

WHAT DSES IS ALL ABOUT

The Deep Space Exploration Society is a Colorado nonprofit whose purpose is to bring space exploration within reach of ordinary people—students, hobbyists, and curious members of the public alike. The Artemis II campaign embodied that mission perfectly. Volunteers who had never tracked a spacecraft before learned to do exactly that, under real conditions, while contributing to a genuine NASA program.

As the mission report puts it, member feedback has been overwhelmingly positive, and participation in programs like this is what keeps people interested and engaged. With a better-tested system, a seasoned team, and a clear roadmap for improvement, DSES is already looking forward to the next mission—and the next chance to point their dish at the sky and listen. ■