A Perfect Space Station Contact

For the second time in 2 years, the High Desert Amateur Radio Club of New Mexico, NM5HD, worked with the Albuquerque Public Schools to sponsor an Amateur Radio on the International Space Station (ARISS) contact.

Jerry Aceto, K6LIE

On the morning of Thursday, October 18, 2018, a full house of about 400 students, school officials, and media personnel gathered in the Valley High School Performing Arts Center in Albuquerque, New Mexico, anticipating the International Space Station (ISS) coming over the horizon. At precisely 10:26 am, the radio set up by the High Desert Amateur Radio Club came to life with the voice of astronaut Dr. Serena Auñón-Chancellor, KG5TMT (using the ISS call NA1SS), calling us! Once the ISS got a few degrees above the horizon, the signal was loud and clear through the end of the contact. The students who had been waiting got all 15 of their questions asked and answered without a hitch. High Desert Amateur Radio Club member Bob Gilbert, N5YYF, helped the kids, adjusting the boom mic for them and generally putting them at ease.

Thanks to the Amateur Radio on the International Space Station (ARISS) program, these students had the opportunity — their second — to speak with astronauts on the ISS.

Practice Makes Perfect

The first ARISS contact that the club had facilitated at Valley High School, in April 2016, had issues. For some reason, we were able to make contact with the ISS for only about half of the satellite pass, and could not get all the students' questions in. That experience taught us to make sure everything was in order with our primary and backup stations, and to devote many hours to practice.

Prior to the October 2018 contact, the High Desert Amateur Radio Club team worked long and hard. Planning, building the stations and antenna assemblies, and working out details happened over a period of close to 1 year from deciding to do the project. All project work and practice was done using the

Making It Happen: Gear and Personnel

Our station is an example of what ARISS and NASA expect of organizations that hope to host an ARISS contact. The station (below) consisted of primary and backup Kenwood TS-2000s running 100 W output. The laptop is controlling antenna tracking. To the left of the laptop, the bottom unit sends the tracking info to the Yaesu rotor control, which tracks the antenna automatically. The black box on top of the rotor control unit is a switch assembly that allows the circular polarization of the antenna to be switched. A receive preamp at the antenna completes the system. The backup station used an eggbeater antenna and preamp. The antenna assemblies (right) were mounted on the roof of the school's performing arts building.

[Jerry Aceto, K6LIE, photos]

Our team consisted of Bill Kent, N5UJC; Terry Zipes, W4RCN; Jerry Aceto, K6LIE; Bob Gilbert, N5YYF; Bill Ripley, KY5Q; Alden Oyer, AG5S; Larry Elkin, NY5L; Dave Johnson, NØLVA; Bryan Neal, N5SCC; Elmer Delgado, W5SLG, and Charles Newman, KG5BFM, Master Sergeant, USAF Ret., Aerospace Science Instructor at Valley High School, who assisted ROTC students during the contact.

station equipment at the school over a period of about 4 months. Club members tracked satellites to make sure our tracking software was accurate, and that the antenna was precisely calibrated to true north.

Filling the House

We really did have a full house for the October ARISS contact. Students from three Albuquerque Public Schools — Valley High School, Mission Avenue Elementary School, and Chaparral Elementary School — filled the auditorium. ARISS contacts are unique in that only 13 schools in the first half of each year and 13 in the second half of each year are picked from hundreds of applicants worldwide. Thanks to Chaparral's Assistant Principal Alma Ripley having submitted a superb ARISS Education Proposal that involved two elementary schools *and* Valley High School, the high school was selected to host an ARISS contact for the second time in 2 years.

Mrs. Ripley also developed a program called STEM Trajectory Initiative, which involves students in launching high-altitude balloons, then tracking them using Amateur Radio APRS systems. Many students have also acquired their Amateur Radio license through this program. It was because of this program, along with submitting the education and equipment plan required by the ARISS application, and the fact that students from three different Albuquerque schools were invited to participate in this year's program that convinced AMSAT to allow a second contact at Valley High School.

The High Desert Amateur Radio Club, NM5HD, was again selected to facilitate the Amateur Radio aspects of the project because of our work with Mrs. Ripley on various STEM (science, technology, engineering, and math) day activities at various schools in the district. Watch a 12-minute video of the contact at **https://youtu.be/hKi1-sZ01is**.

Prior to the ARISS contact, retired astronaut Mike Mullane, a veteran of three space shuttle missions, gave an inspiring talk about how he dreamed of becoming an astronaut when he was younger, and what it took to finally become one. He also answered several questions from the students about his experience as an astronaut. [Debbie Hammack, KC5GPX, photo]

Jerry Aceto, K6LIE, was licensed as KN6LIE at age 12, then upgraded to his General- and Advanced-class licenses shortly after. He also holds a General Radiotelephone License. He is retired, after decades of work with telephones and communications, particularly regarding private line transmission services, VHF/UHF radio, microwave radio, and other analog and digital transmission systems. He also worked on broadcast video remotes for various radio and television stations in Los Angeles and Seattle.

Jerry's work before and after retirement allowed him to assist with broadcast telecom video transmission for the Olympics in Salt Lake City, Utah (2002); Athens, Greece (2004); Turin, Italy (2006); Beijing, China (2008); Vancouver, Canada (2010), and London, England (2012).

Jerry owns and operates the 224.480 MHz open repeater (IRLP node 3285) in Albuquerque, New Mexico. He can be reached at **jaaceto@gmail.com**.

For updates to this article, see the *QST* Feedback page at www.arrl.org/feedback.

About ARISS

The Amateur Radio on the International Space Station (ARISS) program, established in 1996, is the first educational outreach venture that was set up and operational on the ISS. ARISS is a collaborative effort of the Radio Amateur Satellite Corporation (AMSAT), ARRL, NASA, and other international space agencies and Amateur Radio organizations.

ARISS coordinates Amateur Radio contacts between ISS crew members and selected school and large education groups, with the help of experienced Amateur Radio volunteers from local clubs. During these contacts, astronauts give students first-hand knowledge about space exploration and technologies, as well as wireless radio communications and satellite communications, with the hope of inspiring students' interest in science, technology, engineering, and math (STEM) subjects and careers.

The International Space Station. [NASA photo]

For more information about ARISS proposals for your local school or group, ARISS contact, visit **www.ariss.org/submit-a-contact-proposal**.