

Response to ARRL Club Spotlight Qs
Dec 29, 2025

Disclaimer: The opinions in this submission are those of the author and not necessarily the official policy or position of the Johnson Space Center nor the NASA agency.

What is the story behind your club's formation?

The Manned Spacecraft Center Amateur Radio Club was formed in 1967 by 3 NASA employees:

- Dr. Kent D. Castle (W5QNV/W5OJ), President/Trustee
- Jack D. Alexander (W5BVD/W5OF), Vice President
- Lillian C. Smith (WA5NUR), Secretary/Treasurer

In 1974, Dr. Castle requested the club's first callsign from the FCC and was issued WB5IQB. A year later the club then adopted the callsign W5RRR to honor the passing of club member, Harmon L. "Red" Brendle, who was the club's first member and served a significant role in the management of the Apollo Spacecraft program. Red's widow, Betty, generously donated his Heathkit equipment to the club, which became the club's first radio station.

Your club seems to be active in many areas (community and youth outreach, licensing assistance, on-air events, club projects/activities, maintaining a strong online presence, and more). What are three areas your club feels it excels/specializes in the most, and why? Please provide examples (such as past success stories with quotes from people involved) to support these.

JSCARC (JSC Amateur Radio Club) has been providing radio communications support to the Johnson Space Center and the center's Human Space Program mission for over 50 years. Located in a dedicated radio room facility at the Gilruth Center, NASA radio hams render voluntary service and support to the center, the agency and the public. Our club's primary areas of emphasis and specialization are:

1. **Space communications supporting SAREX (retired)/ARISS (current)**
2. **JSC Student Intern Amateur Radio sponsorship**
3. **Licensing exams for astronauts and general public**
4. **On The Air presence with NOTA (NASA On The Air) and POTA (Parks On The Air)**

1. Space communications supporting SAREX (retired)/ARISS (current)

For 36 years, the JSCARC has served as a space radio switchboard during scheduled public events for on-orbit astronauts to speak via radio with students on the ground.

Beginning in 1989, the JSCARC teamed with astronaut Owen Garriott W5LFL to take a ham radio into space on the Space Shuttle Mission, STS-9. This event paved the way for the highly successful SAREX (Shuttle Amateur Radio Experiment) program which used amateur radio equipment on board the Space Shuttle to communicate with schools via W5RRR and other participating amateur radio ground stations. After the retirement of the Space Shuttle Program in 2011, the JSCARC currently supports the ARISS (Amateur Radio on the International Space Station) program to provide NASA STEM outreach to schools throughout the world.

George AD5CQ:

"... members of the club have setup and operated ARISS contacts with elementary school campuses by installing antennas on school roofs, training students about how to speak into a microphone and operating transceivers while students asked their questions to the in-flight astronauts.... We did a lot of schools in the Houston area. I remember very well climbing ladders, installing a yagi antenna, and stringing coax all the way back down to the school auditorium. Most of the other schools we used antennas (some elevated) outside the door to the auditorium..."

2. JSC Student Intern Amateur Radio Sponsorship

The JSCARC supports the NASA JSC Education Office by regularly hosting special amateur radio curriculum of activities for those enrolled in the JSC student intern program. Each semester, the club sponsors a committee of interested students to get licensed, learn the art of amateur radio, and "get on the air".

We have provided students with a variety of different hands-on activities including soldering exercises, radio and antenna builds, ARDF (Amateur Radio Direction Finding) on 2m and 80m, special and public events operating, CW classes, and operating tutorials.

Jeff AB4ME

"I believe that supporting the club and student outreach are important to hopefully inspire younger generations to continue their education and pursue careers in science and technology.

I enjoy sharing in the excitement and sense of accomplishment when the student projects work, whether they work the first time or after some troubleshooting and re-work. There is also the general satisfaction of spending time with other people who share interests in science and technology and learning new things and solving problems."

In our most recent initiative to solicit even more student interest and excitement, we introduced the art of radio pico ballooning. There seems to be growing excitement of launching a real balloon by using amateur radio as a learning tool for the transmission and reception of the tracker's WSPR signal.

John AB5SS:

"As an almost retired NASA guy, I get some amount of personal reward out of helping/teaching the JSC interns about launching balloons carrying ham radio. Kind of like investing in our intern's future success here at JSC. My idea was to try it for a few semesters and see how it goes and hopefully get some of the other club members engaged to build a core team that can help our interns on balloon projects. Time will tell how that plays out."

Additionally, the JSCARC provide tours and demonstrations for visiting schools, and Scouts, while supporting STEM camps, museums, and public exhibits to promote STEM and amateur radio.

3. Licensing exams for astronauts and general public

The JSCARC in partnership with our sister club, the CLARC (Clear Lake Amateur Radio Club) have hosted monthly VE exams for the general public. Two standout VE's KB5PGY and W9TWJ have separately hosted VE exams responsible for licensing thousands of hams. KB5PGY has participated in over 521 test sessions since accreditation in October 1991. He serves as the JSCARC VE Liaison supporting Saturday monthly FCC licensing exams held adjacent to the W5RRR shack at JSC. W9TWJ has supported over 1381 test sessions and has helped revolutionize test access by the launch of a weekly nationwide remote online examinations to support the growing demand for flexible licensing options.

Under special request from the JSC Astronaut Office, JSCARC personnel conduct ad hoc special FCC licensing exams for astronauts, typically before they depart for an on-orbit mission assignment. The licensed crew members operate the Kenwood radio equipment onboard the International Space Station (ISS) in various modes and VHF/UHF bands.

4. On The Air presence with NOTA (NASA On The Air) and POTA (Parks On The Air)

The JSCARC are active participants of NOTA, a consortium of 12 NASA radio clubs which periodically activate together in commemoration of significant NASA historical events. The club has been enjoying this coordinated special operations since 2018. Operating during these events gives the club an exciting opportunity to act like a DX station through large pileups, but also it provides an important role to commemorate the contributions of the NASA agency toward the advancement of space exploration.

"It's kind of like being a rock star, and everyone wants to line up to talk to us." That's how John AB5SS describes being part of NASA Johnson Space Center's Amateur Radio Club and putting W5RRR on the air.

The Club was also an early participant in POTA (Parks On The Air) having activated over 35 state parks in the last few years.

Ken K5RG

"From having participated in the Club's POTA activations as operational shake-down exercises, portable operation in the Khumbu region of Nepal as 9N7RG was a complete success. Over a 100 contacts were made from two base camps during the Himalayan expedition. 'It was almost too easy without a single failure except when the LiFePO4 batteries had problems attempting to operate at 20°F.' "

Club members have enthusiastically gotten together traveling to different state parks and conduct over 35 activations over the last few years. The opportunities to experiment testing out different equipment has made these events very popular:

Terry N5LOW

"Our club focuses on the design, construction, and testing of a variety of wire antennas and matching networks, particularly for use during events like Field Day and Parks on the Air operations. One of the exciting aspects of our work includes recreating classic antenna designs. For example, we've built the Zeppelin antenna, originally designed by Hans Beggerow in 1909 for use with airships, as well as the folded dipole antenna developed by Australian engineer Rudolf Guertler in the 1940s. Our antenna experimentation includes flying kite antennas, erecting a colinear antennas, and a multitude of other wire antennas.

In addition to antennas, several members also design and build custom coils and matching networks that help minimize SWR (Standing Wave Ratio) by ensuring the antenna impedance matches the 50Ω feedline of ham radios. These matching networks are critical in achieving optimal performance and efficiency in the field"

What are some examples of any challenges/difficulties you've had to overcome as a club?

The club is challenged with age. Most of our members are baby boomers and we are challenged with replenishing our membership with youthful hams. Although our efforts to work with students are excellent, once we get them licensed, their retention with the club and hobby is low. Identifying and conscripting key leaders to innovate and inspire membership outreach ideas is difficult. We're hopeful to encourage and install and grow new generational leaders, as a few potential target candidates have been identified.

Another difficult challenge for any club is scarce resource for radio equipment and operational support. This club is fortunate to have resourceful and generous sources to outfit our extraordinary radio station:

- An 80' tower, 7 element yagi, 40m rotatable dipole, rotation system, HF and VHF/UHF antennas, were privately funded by 5 members.
- Difficult tower climbing maintenance is regularly provided by a member who is a 7-time Himalayan mountaineer.
- We have successfully solicited key sponsorship from within the JSC institution for Flex radios, Elecraft amplifiers and a new antenna foundation. We recently received a STEM based grant to help augment our radio capabilities.
- The design and configuration of our internal WIFI network, our station controllers, hardware/software repair/maintenance and enhancements, tower/antenna designs, furniture, and miscellaneous administration are all performed by the rich expertise of skilled and selfless volunteers in the club.

Our club members' resourcefulness and ownership to the club's success is an invaluable asset which can overcome most any obstacle.

What do you envision for the future of your club? Are any plans (expansion, station upgrades, new opportunities, etc.) currently in the works?

The club has several new plans to pursue. We'll be erecting a new 60' self standing tower in 2026. This new tower will allow the club station to install new HF/VHF/UHF/Microwave capabilities which will expand the club's RF footprints and engage and inspire some new interests of our club members.

Another plan is to kindle interests within the Houston area to promote activity in the UHF/Microwave bands. The build up of portable and rover systems to test group-build radios is a potential goal, while also inspiring more VHF/UHF/Microwave activities such as contesting, Meter scattering, and EME.

We've been working slowly with the Lone Star Flight Museum over the last 2 years. Our efforts have included submitting content for a Radio Merit badge program and supporting an info booth at the Girls In Aviation event. We've been asked to consider trying to initiate an "Aviation Museum On-The-Air" event. Plans are being devised to make this happen this year.

Lastly, we'll be expanding the use of Pico balloon launching as a primary curriculum for those who elect to participate in our ham radio JSC student intern program. This will be our effort to determine if this type of project has wider appeal to the new generation and as a steppingstone into deeper ham radio activities. For us, this new project initiative provides the perfect real lessons about engineering and ham radio. It has direct applicability into electronics, avionics, hardware/software DIY, and teaching our fundamental NASA space tenets: optimizing Size Weight and Power (SWAP), and "Fly what you test, and Test what you Fly". The development, test, integration and launch preparation are interestingly similar. And for ham radio, it requires at least one licensed ham (preferably an intern) to register the tracker to their callsign. Student also learn to use WSJTX/WSPR to track and monitor the beacon. It's an entry door to digital radio and satellite tracking, weak signal communications, and propagation, etc.