



**Doc # 19**

## **Amateur Radio on the International Space Station**

### **Committee Report to the ARRL Board of Directors**

**July 2022**

**Submitted by:**

**The 2022 ARRL ARISS Committee,  
VD Tharp, Chairman**

#### **ARRL ARISS Committee Members for 2022**

Vice Director Tharp

Vice Director Schilling

Vice Director Nelson

Vice Director Temples

Vice Director Walls

Ms. Rosalie White, ARRL representative to ARISS

Mr. Steve Goodgame, ARRL HQ staff liaison

## Summary of ARISS Program

Amateur Radio on the International Space Station (ARISS) is a well-known international working group that promotes STEM education and Amateur Radio. In 1996 the ARRL CEO tasked ARRL Headquarters staff to meet NASA's challenge to set up just 1 worldwide ISS ham radio team. The staff, working with AMSAT-NA, set about establishing ARISS-International. The ARRL has been an ARISS sponsor since 1996. ARISS was built on the shoulders of human spaceflight radio activities since 1983 when international amateur radio organizations worked with space agencies to fly Amateur Radio to support educational and ham radio activities on the Space Shuttle (SAREX), Mir (Mirex) and the ISS (ARISS).

The ARRL-led portions of these projects always included leadership roles, advice to ARISS on items related to FCC and IARU regs, public relations support, and some education activities related to school radio contacts.

Each year ARISS helps astronauts earn ham licenses and make hundreds of Amateur Radio school contacts. Tied to these is the ARISS activity that puts Amateur Radio in the lives of students, educators, media, communities, and political leaders.



Photo: This ARISS school taught students' basic electrical principles and circuits.

Hams are proud to know astronauts are licensed hams. Hams enjoy making thousands of Amateur Radio contacts each year via the ARISS cross band repeater and using ARISS packet. Hams capture ARISS SSTV images downlinked by the ISS crew—over 10,000 each year.

*ARISS-USA, a 501(c)(3) as of 2021:* In 2020, ARISS leaders in the US began the process to set up ARISS-USA as a 501(c)(3) group. This was completed in March 2021. The ARRL ARISS Committee continued to work well with ARISS during the transition and afterwards. ARISS's 501(c)(3) status benefits both organizations.

## **Authorizing Board Motion to Establish the ARRL ARISS Committee, Minute 27, January 2019**

In January 2019 the ARRL Board of Directors established the ARRL ARISS Committee and tasked it with improving ARRL's support to the ARISS program. The wording of the ARRL Board motion follows.

*Be it therefore resolved: A permanent ARISS committee is created by the Board to develop an interactive relationship with ARISS. Said committee should consist of three members of the Board, with assistance of the ARRL Lifelong Learning Manager and the ARRL Communications Manager as consultants, all to be appointed by the ARRL President. The committee will recommend the framework under which the ARRL will support ARISS to include recommendation of the ARRL representative to ARISS, standardized mission support, operational needs, ongoing mentoring and assistance to local Amateur Radio clubs in support of ARISS contacts, and a standardized set of Public Relations messages to ensure consistency of the ARRL message to ARISS, local Amateur Radio groups and the public at large.*

### **ARRL ARISS Committee Activities from January 1 to June 30, 2022:**

Following the January BOD meeting, after appointments by President Rodrick, the committee welcomed VD Walls, and Mr. Goodgame to the team. Mr. Goodgame's coming on board opens up many opportunities for updating and expanding the videos ARISS has had for many years. Although still relevant in material, some of the videos' images are outdated.

The committee met, via ZOOM on March 16<sup>th</sup>. Updates from Ms. White were presented as well as an overview of the program for the new members of the committee.

ARRISS had won three multiple-year grants for education programs in late 2021 and in 2022 began ramping up these three programs. One is named ARISS \*STAR\* and Year 1 of this program was funded by The ARRL Foundation.

Following the January 2022 BOD meeting, the committee collaborated along with Ms. White and Mr. Bauer to develop a specific idea for a graphic for the ARISS \*STAR\* program. The graphic could aid with fund raising for Year 2 of ARISS \*STAR\*. HQ accepted the challenge to create a draft concept of the graphic. After a review of it by the Committee, the graphic project was finalized by Cascade Sign Co. as a donation. (VD Tharp works with this company and called in a favor.) The final version of the logo is in Appendix A.

Part of the ARISS \*STAR\* grant funding was for hiring interns. One of their tasks was to help with ideas on what types of robotics-related wireless radio lessons may interest youth. Three interns were hired and began work in June. Of the three, one has already earned his ham license!



Photo: New ARISS interns learned to make satellite radio contacts. The young man in the maroon t-shirt got his ham license just before Field Day, and made QSOs at his area ham club's Get-On-the-Air station!

### **ARRL ARISS Committee Communications**

The Committee appreciates that Ms. White continues to notify the Committee and Directors, Vice Directors, and Section Managers in the respective divisions and sections when an ARISS radio contacts will take place near them. At times, Mr. Inderbitzen asks Hq staff to do ARRL Social Media posts about these school contacts. Ms. White provides ARISS news releases, details on what STEM- and ham-related activities the schools plan to do, and which schools established student ham clubs.



Photo: Suffolk County Charter School students at their school ham club meeting—Director Jairam stops in at times to mentor their on-the-air activity.

Ms. White shares with Steve Goodgame's office the names and contact information of ARISS teachers interested in Teachers Institute. His office reciprocates by sharing names of educators with an interest in ARISS contacts. Two members of the ARISS-US Education Committee are totally excited that they were selected to attend a July *Level 2* ARRL Teachers Institute. Kelly Cammarano, KM6SMW is a new member of the ARISS-US Education Committee who teaches STEM, led the Ramona (CA) Lutheran School in a 2020 ARISS contact, had attended ARRL TI 1, and works with Ramona Outback Amateur Radio Society. Kathy Lamont, KM4TAY chair of the ARISS-US Education Committee, does ARISS talks at state teacher and ham conventions, teaches elementary school gifted classes--inserting ham and ARISS lessons in class when possible and does Vienna Wireless Society's Field Day satellite points each year.

Ms. White related to Directors and Vice Directors when ARISS was going to have an exhibit booth at conventions. She shares schools' names when they've first been selected for ARISS contacts, and when an ARISS window opens to accept school education proposals that could win an ARISS contact. Ms. White gave a summary to the Committee about ARISS beginning to much more seriously work with Axiom Space Company. ARISS was readying for the Spring launch of Axiom commercial astronauts to the ISS—Axiom could be a big part of ARISS's upcoming years if a future US president decided to sunset the ISS early.

Greatly appreciated by ARISS is the tremendous cooperation received after Ms. White asked for assistance from Ms. Somma in guiding ARISS on how to help astronauts when they must navigate the FCC-fee web pages when they are ready to take the Amateur Radio exams.

### **ARRL and ARISS Publicity**

VD Tharp requested one of the ARISS roll-up banners to be shipped to him for use as a static display at the Northwestern Division convention (SEAPAC) as well as the Wenatchee, WA Hamfest, the PNW DX Convention in Spokane, WA and the PNW VHF Conference in Salem, OR. Two of these were purchased and two more are on the to-be-purchased list. (See SEAPAC photo in Appendix A)

Handouts for both ARISS and the \*STAR\* project along with business cards from Mr. Bauer and VD Tharp were made available to take away from these ham events.

ARRL's graphics group developed a one-third page ad for *QST* about ARISS \*STAR\*. It is a new size from earlier ARISS ads, and when there's an empty space in the journal, this ad can be slipped in. (See Appendix A)

The Committee continues the cooperation between ARRL and ARISS on ham radio PR. Ms. White forwards ARISS media hits to Mr. Inderbitzen who gets many of them posted on ARRL web pages. In January to June, Ms. White forwarded 22 media hits. A rundown of all of these so far for 2022 is in Appendix C.



Some of the media hits forwarded to ARRL included items NASA or the astronauts prepare and post. These items garner a great deal of attention for Amateur Radio and ARISS. Here are 3 recent examples.

- A) Photos used by Astronaut Lindgren, KO5MOS for his Twitter and Instagram posts about his getting on the air from the ISS for ARRL Field Day—note the flag!

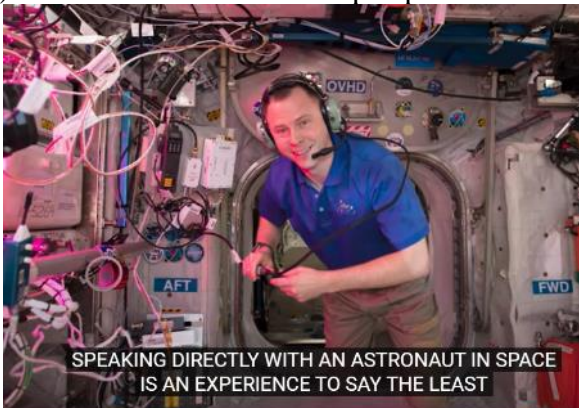


[Astronaut Lindgren, KO5MOS, even “talked the talk,” emailing the following note to ARISS: “I’m posting this ‘Orbital ham shack ready for business on Field Day.’”]

- B) NASA Twitter & web site: NASA’s “*Best ISS Science Pictures of the Year*” featured two different photos of astronauts using the ARISS radio. Here is one of the two:



- C) NASA Air-to-Ground--April podcast on ARISS school contacts, sparked 5,825 viewers



Ms. White was asked to fact-check several articles about ARISS written by ARRL staff prior to these going live. An example of the collaboration was a nice story on ARRL web pages that was written based on ARISS's news release about the ARRL Foundation grant, ARISS \*STAR\*.

When appropriate, Ms. White composes for the Committee 1-2 page summaries of ARISS successes of particular interest to ARRL. Examples include a summary of a great showing at HamCation, ARISS's superb outcomes at Hamvention, as well as great outcomes at ARISS US schools doing hours and hours of wireless radio lessons for every student enrolled in the facility.

Again this year, Ms. White prepared the section on ARISS for the ARRL Annual Report after Mr. Goodgame requested that she write it.

### **ARISS Contacts in the US in January to June 2022**

US ARISS radio contacts made during this period in addition to other countries were:

- Lewis Center for Educational Research - Apple Valley CA
- Sussex County Charter School for Technology - Sparta NJ  
[The Sussex Charter School Amateur Radio Club has 12 members who get on the air every week, and on occasion, Ms. Jairam mentors them.]
- Carter G. Woodson Middle School – Hopewell VA
- Space Hardware Club, University of Alabama – Huntsville AL
- Bellefontaine High School - Bellefontaine OH  
[Bellfontaine High School Amateur Radio Club has several licensed hams, Dale Williams visited the school.]
- Old St. Mary's School – Chicago IL
- Matinecock District, Suffolk County Scouts – Medford NY
- Eaton Public Library – Eaton CO
- early July ARISS contact: 8 Challenger Learning Centers located around the US

### **ARRL ARISS Committee Travel Budget for ARISS at Conventions, Conferences**

ARISS worked hard to set up exhibit booths and present forum talks at major ham conventions and a few educator conferences. The ARRL ARISS Committee helped with this by ensuring a budget was sufficient for travel, for providing ARISS roll-up banners, and for needed handouts.

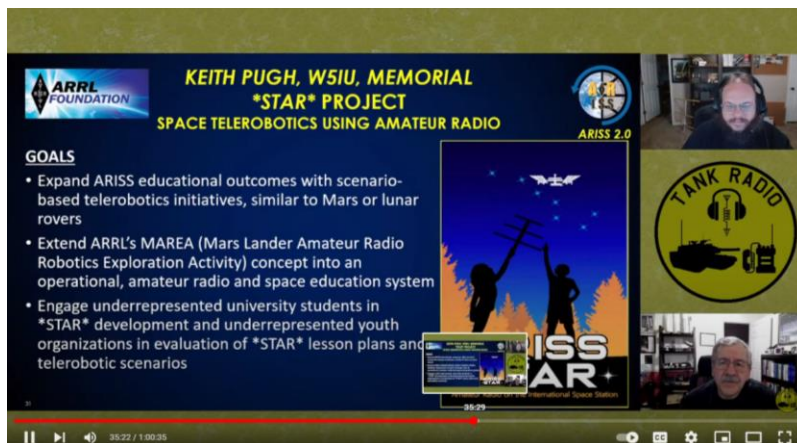
ARISS was in full force at the ARRL National Convention (HamCation) in Orlando with several volunteers setting up and staffing a big booth and ensuring coverage during the ARISS forum. At Hamvention 2022, ARISS leaders were highly pleased with all of the successes experienced there: a very busy double exhibit booth, an ARISS forum, networking with possible future partners, and meeting or talking with sponsors such as ARRL officials.

For other conventions and conferences supported, please see the list in Appendix B.

### **ARISS First-Half 2022 Outreach Events, Many with ARRL's Help**

In addition to the big conventions named above, ARISS worked hard to set up exhibit booths at hamfests, science workshop, at public gatherings; to give club talks and forum talks; and to take part in interview and podcasts.

The full list of these for January to June is in Appendix B.



Screenshot: Tank Radio podcast, talk by Frank Bauer

ARISS regularly thanks ARRL for its continuing support and for the generous funding it has provided for 2022 and in earlier years; ARRL's sponsorship is great appreciated.

Respectfully submitted,

Mark J. Tharp, KB7HDX  
ARRL ARISS Committee Chair

Rosalie White, K1STO  
ARRL ARISS Representative

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## Appendix A: ARRL Assists with ARISS Graphics

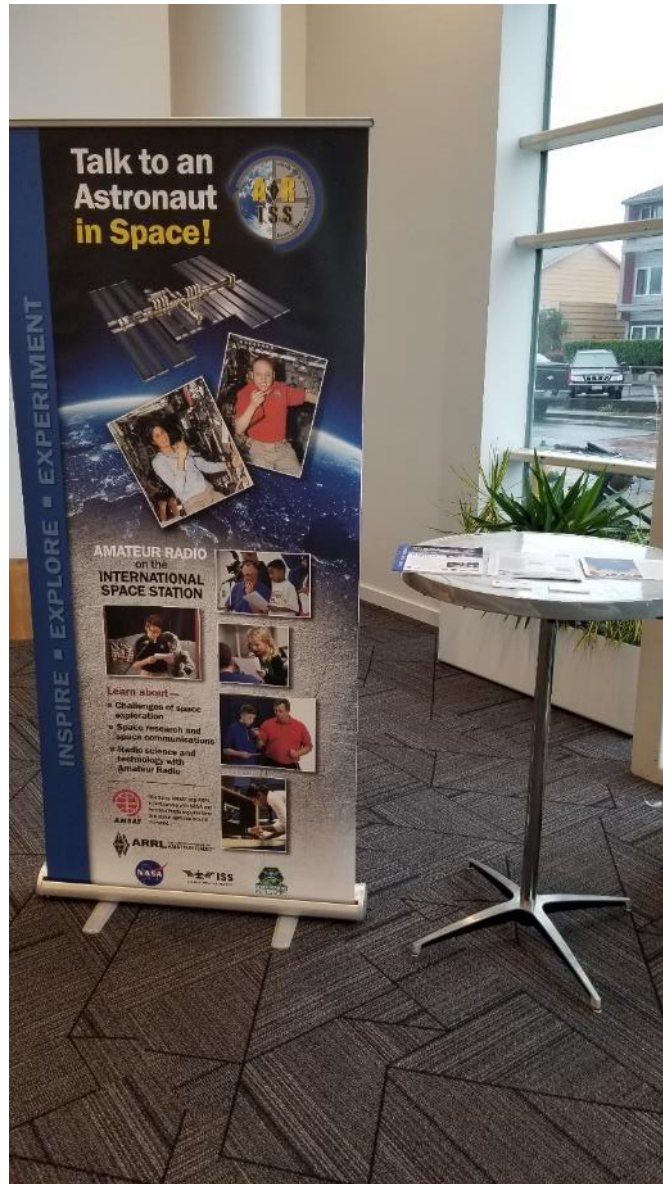
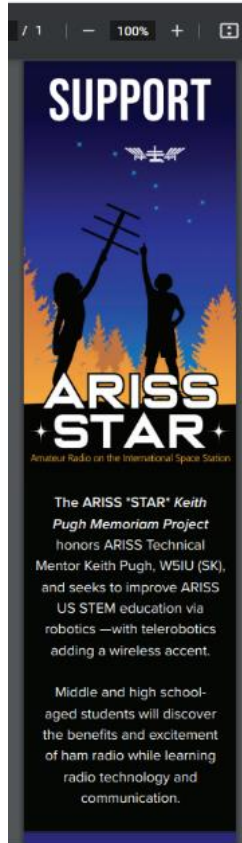


Photo of ARISS display at SEAPAC



ARISS \*STAR\* graphic



ARISS \*STAR\* Ad

(Designed in Spring, has already run numerous times in *QST*)

## Appendix B: Outreach Events

- National Science Teachers Association (TX), booth – ARISS volunteer
- ARRL Virginia State Convention (VA), forum – 2 ARISS teachers
- Hamvention 2022 (OH), forum, booth – 7 ARISS volunteers
- Matanuska (AK) Hamfest, ARISS forum – Mark Tharp participated
- National Convention-HamCation (FL), ARISS exhibit & forum, Frank Bauer and others
- Dayton (OH) Amateur Radio Club, ARISS talk by Rosalie White & Frank Bauer
- ARRL Northwestern Division Convention (OR), exhibit – Mark Tharp
- HamSCI Research Workshop (AL), forum – Frank Bauer presentation
- Georgia Science Teachers Association (GA), booth– 1 ARISS teacher, 1 ARISS volunteer
- ISS National Lab Partner Meeting (TX), talk – 2 ARISS teachers
- U. of Alabama-Huntsville, learning activities at 3 middle schools –ARISS volunteers
- Tank Radio, virtual ARISS talk – Frank Bauer
- Apple City (WA) Amateur Radio Club Hamfest, exhibit – Mark Tharp
- TARCfest (FL), booth – ARISS volunteer
- ATARA Winter Field Day (OH), exhibit – ARISS teacher
- Lake Monroe (FL) Radio Society, presentation – ARISS volunteer
- Metro Amateur Radio Club (IL) – ARISS volunteer
- Irving (TX) Hamfest, booth, forum – ARISS volunteer
- Cowtown Hamfest (TX), booth – ARISS volunteer
- Nashua (NH) Radio Society, presentation – ARISS teacher
- Lewis Research Educational Center (CA), ham learning activity – ARISS volunteer

## Appendix C: Media Hits

### January:

#### \* Dakota State University

Online article featured doctoral student Tony Rizi, NR1Z in SC and his weeks of helping his local ham club to mentor an ARISS school, leading 10 hands-on ham activities for 115 students



#### \* *Countywide & Sun*

Online news outlet, Tecumseh, OK, ran a story about ARISS high school electronics and radio club (2 students got ham licenses) after they were invited by NASA to consider becoming interns



### Tecumseh School Project Catches NASA's Attention

By Kendra Johnson in Tecumseh, January 20, 2022



#### \* "NASA Best Science Pictures of 2021" (20 photos)

NASA web item on science highlights on the ISS—2 photos of astronauts doing ARISS contacts

**February:**

\* *The Katy News*

Story on St. Stephen’s Episcopal School (TX) being selected for an ARISS contact

\* Josh Nash show

5-minute video interview during Hamcation of Frank Bauer talking about ARISS education

\* *SpaceRef*

Online news item about an ARISS contact and the goals of ARISS.

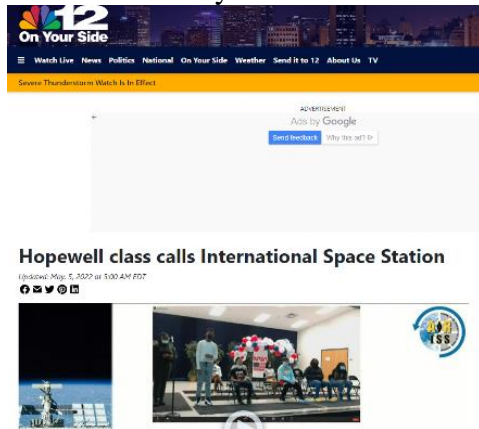
\* *The Progress-Index*

Story about Carter Woodson Middle School (VA) ARISS contact



\* NBC-12 TV

Video news story Article on Carter Woodson Middle School (VA) ARISS contact





## **March:**

- \* University of Maryland Global Campus

Online news article about student spending a semester leading her local club in working with an ARISS school, doing ham hands-on ham activities for the whole school, every grade



### **Degree in Cybersecurity Opens a Door to Space Exploration for Rachel Jones**

Posted on February 28, 2022 by Elin Karon in Cybersecurity, Profiles and Support Cybersecurity



Growing up on a farm near the Coca-Cola Space Science Center in Columbus, Georgia, Rachel Jones always looked forward to Astronomy Night. That's when she could gather with other stargazers. It was then, she says, that she knew she wanted to live with a star.

- \* Hamvention Podcast

Show featured the winner of the Hamvention Special Achievement Award, ARISS team member Kerry Banke, N6ISW, who custom-designed and built ARISS's multi-voltage power supply

## **April:**

- \* WAAY-TV

News video and short online article on University of Alabama-Huntsville hosting ARISS contact and working with 3 area schools on STEM activities, ie balloon launches with ham radio payload

- \* *St. Albert's Today*

News story on St. Albert's School and its ARISS contact

- \* WHIO-TV

story and video on Bellafontaine High School's ARISS contact--note big ARRL banner

## Astronaut talks to local students about life on the ISS

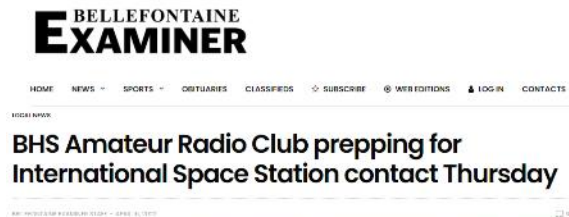
By Greg



Photo Courtesy: Bellefontaine High School Amateur Radio Club on Facebook

\* *PEAKofOHIO.COM*  
 story on Bellefontaine High School’s ARISS contact

\* *Bellefontaine Examiner*  
 story on Bellefontaine High School’s ARISS STEM studies and contact



\* *Springfield News-Sun*  
 story on Bellefontaine High School’s ARISS contact and STEM studies

### May:

\* *Interesting Engineering*  
 online feature story of 18-year-old ARISS volunteer who won a national 4-H STEM award partly due to his ARISS activities ... he’s the ARRL Illinois Section Youth Coordinator

**June:**

- \* Astronaut Kjell Lindgren Tweet and Instagram postings of him getting on the air for Field Day



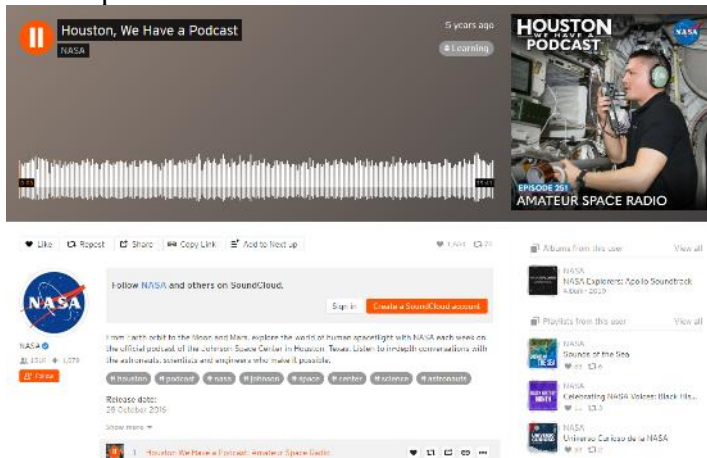
- \* Eaton Public Library web site  
Online item on an ARISS contact

- \* ABC  
online story about an area ham who made a QSO with Kjell Lindgren on the ISS

- \* Tank Radio  
podcast, interview of Frank Bauer on ARISS education

**July:**

- \* Houston, We have a Podcast  
NASA podcast on ARISS contacts from the educator's point of view



## Appendix D: Things of Interest



US ARISS Contacts—only missing S.D.—from Dec 21, 2000 to June 30, 2022



Crew On the ISS in July: ARISS got 3 of the 4 crew members licensed. Second from left, and on to the right are Robert Hines, KI5RQT; Kjell Lindgren, KO5MOS; and: Samantha Cristoforetti, IZ0UDF.



ARRL ARISS Teacher Named 2022 Virginia State Teacher of the Year: The Virginia state chapters of the Air and Space Forces Association recognized ARISS’s Melissa Pore, KM4CZN, as 2022 Virginia State Teacher of the Year. The group cited her for “achievements in advancing and motivating her high school students and young people toward STEM disciplines” and leading the Engineering Club, the Amateur Radio Club, and Underwater Robotics Club.” She is on the ARISS Ops Team that facilitates ARISS contacts from Goddard Space Flight Center Amateur Radio Club's station.

Three Photos from ARISS Schools





