



**Doc # 19**

**Amateur Radio on the International Space Station  
committee report to the ARRL Board of Directors**

**January, 2021**

**Submitted by:**

**The 2020 ARRL ARISS Committee,  
VD Tharp, Chair**

## **ARISS Program Summary**

Amateur Radio on the International Space Station (ARISS) project is a well-known international partnership that promotes STEM education and Amateur Radio around the world. The ARRL CEO in 1996 tasked ARRL Headquarters staff to meet NASA's challenge to set up one worldwide ISS ham radio team; the staff, working together with AMSAT-NA, set about doing that. The ARRL has been an ARISS sponsor since 1996. The ARRL-led parts of the project successfully including leadership roles, advice to ARISS leaders on items related to FCC regulations, and Public Relations support for the project in addition to education activities related to many school contacts and events. The ARRL ARISS Committee was tasked in January 2019 with improving the ARRL support-part of the project, and with the creation of ARISS-USA in 2020 the Committee is looking forward to working together in benefit of both organizations.

Since 1983, international amateur radio organizations have worked with the space agencies to fly Amateur Radio to support educational and ham radio activities on Space Shuttle (SAREX), Mir (Mirex) and ISS (ARISS). Each year, astronauts make hundreds of school contacts from the ISS because of ARISS. The educational activity alone puts Amateur Radio in the picture for students, educators, media, school leaders, communities, and local political leaders. Astronauts have also made thousands of Amateur Radio contacts using FM voice, SSTV and packet.

### **Authorizing Board Motion, Minute 27, January 2019**

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.

### **2020 ARRL ARISS Committee members: July 2020-January 15, 2021**

Vice Director Tharp (Chair)

Vice Director Schilling

Vice Director Nelson

Mr. Kris Bickell (Consultant - Lifelong Learning Manager)

Ms. Rosalie White K1STO (Consultant - ARRL representative to ARISS)

## **ARRL ARISS Committee Activities from July to December 2020 were:**

The Committee exchanged a number of emails during the last half of the year. As Covid restrictions continue to disrupt in person meetings and conventions, not much needing the full attention of the Committee was brought forward.

Shortly before the second meeting in July, ARISS-USA announced to the Committee and others that it had formed as an independent entity out from under the umbrella of AMSAT. This move had been in the working stage for many months, and after much work, in June the public announcement was made. This change was the final step that allowed ARISS to apply for IRS 501(c)(3) status to receive donations directly, for costs of day-to-day operations, hardware and other items. Currently, ARISS is waiting for the IRS to clean up its backlog and make a decision.

With Covid restrictions preventing most in-person contacts the *Multipoint Telebridge Contact via Amateur Radio* continues to be the method of choice for schools and groups to conduct ISS contacts. The Committee would like to note that some people are still not understanding that this method is using amateur radio on the ISS and on the ground. The classroom is linked via audio (and video in some cases) to ARISS ground station volunteers who operate the radio(s).

ARRIS welcomed another volunteer to act as a ground station for the *Multipoint Telebridge Contact via Amateur Radio* in Portland, Oregon. David Payne NA7V is filling a void left from a station in California at a public college closed due to Covid.

The Committee appreciates that Ms. White continues to inform the Directors, Vice Directors, and Section Managers in the respective divisions and sections where ARISS contacts take place.

In September the crew on the ISS was allowed time to install the latest radio package that was sent up earlier in the year. The crew is now operating a Kenwood D710GA which went through a number of modifications to make it space worthy, as well as a new multi-voltage custom-built power supply. When ARISS knew set-up was completed, Ms. White sent a news release to the Committee, Mr. Inderbitzen, and Mr. Lindquist. VD Tharp shared it on ODV. Mr. Lindquist wrote items for the ARRL web, *The ARRL Letter*, and *QST*, which Ms. White proofed and provided photos for. A link to the ARRL web item is here: <http://www.arrl.org/news/first-element-of-ariss-next-generation-radio-system-installed-and-operating-on-iss>.



Photo: NASA-specified launch bag that the new ARISS radio system traveled in to the ISS

Ms. White, and Mr. Tharp, with the assistance of Mr. Bauer continued to work together on financial reporting requested by the A&F Committee to meet the requirements of the CFO. On December 8, the transfer of funds budgeted by the Committee for ARISS in 2020 was made to the ARISS account.

### **ARRL and ARISS Publicity – Committee Aids with Force Multiplier for Each**

With the departure of Mr. Isgur from the Hq staff, the Committee wanted to ensure the continuation of cooperation between ARRL and ARISS on PR. Mr. Inderbitzen stepped in to temporarily fill the void. Ms. White forwarded 19 ARISS media hits to him, which he posted on the ARRL web. This is a large increase over the 8 media hits from the first 6 months of 2020. The list of 19 media hits are in Appendix A.

Ms. White began forwarding *all* ARISS news releases to the Committee and Mr. Inderbitzen. News releases covered these topics: scheduled ARISS SSTV events, dates for mode changes made to the ARISS radio (packet, crossband repeater), upcoming school contacts, awards ARISS receives, and so on. Mr. Inderbitzen chose which news releases would interest ARRL members; he facilitated the running of ARRL web stories with fact-checking by Ms. White. These stories also ran in *The ARRL Letter* and many in *QST*. One particular success began with ARISS's news release on its 20 year anniversary of Amateur Radio operations on the ISS, which Ms. White forwarded to the Committee and Mr. Inderbitzen. He contacted Ms. White for additional facts to pull together, shared this with Mr. Lindquist who, after asking Ms. White to fact-check, finalized a story for the web and *The ARRL Letter*. The URL is: <http://www.arrl.org/news/ariss-to-celebrate-20-years-of-ham-radio-on-the-international-space-station>



Image: ARISS designed a logo commemorating its 20 years.

Other examples of ARRL stories built from ARISS news releases sent to the Committee:

- ARRL Web items posted about ARISS SSTV Sessions so popular with ARRL members, SWLers, and space enthusiasts who download anywhere from 900 to 12,000 images.
- Mr. Lindquist ran *QST* "Happenings" item on ARISS becoming a legal entity.
- ARRL covered the ARISS Transcontinental Balloon Race with amateur radio payloads transmitting signals for homebound youth to track and graph using ARISS online lessons.



Image: from ARISS web page for homebound students tracking balloon race

The ARISS school contact news releases were going to the Committee, so they had the opportunity to watch the livestreams. Mr. Inderbitzen began to post the URL on ARRL Social Media, then experimented with livestreaming the contacts on ARRL Facebook and Twitter. One of these livestreams was the October contact at Ramona Lutheran School—and within hours, he reported to Ms. White:

“The event already has a reach of 7,073, which compares nicely to the reach of other well-performing ARRL posts. After 24 hours, 123 people have responded as “going” (they receive regular reminders for watching the upcoming contact). I also included the link to watch the ARISS YouTube live stream.”

ARRL Members began noticing the school contacts were publicized on ARRL Social Media and started monitoring it for news. For Mr. Inderbitzen’s post before the December ARISS contact at Tecumseh (OK) High School, he shared the following with Ms. White:

Facebook metrics for Dec 4-7, 2020

- Reach: 22,900
- Engagement: 1,100 Reactions and Shares
- 682 Post Clicks

### **More Ways the Committee helped ARRL and ARISS Work Together on Outreach**

The Committee facilitated other ARRL-ARISS networking; here are some examples.

- VD Tharp advised Ms. White on who should receive ARRL informational pieces.
- Mr. Inderbitzen provided some quick advice to Ms. White on good ways to enhance Social Media.

NASA produced several items to celebrate ARISS’s 20 years and created an ARISS Infographic. Ms. White shared that with the Committee and Mr. Inderbitzen made it available to ARRL PIOs as an additional resource for them when describing ARISS to others.

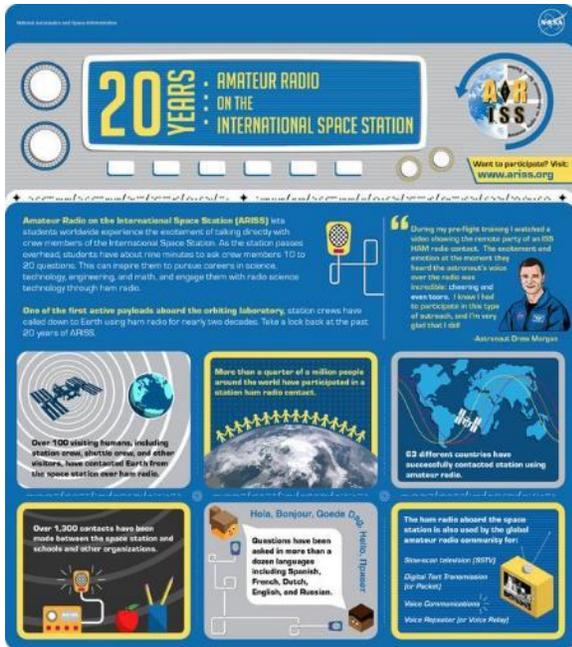


Image: ARISS Infographic shared with ARRL PIOs as background information

## ARISS Contacts in the US in July-December

ARISS contacts in the US made during the period, in addition to schools in other parts of the world were:

- Ramona Lutheran School - Ramona CA
- Kopernik Observatory & Science Center - Vestal NY
- Tecumseh High School Electronics and Amateur Radio - Tecumseh OK
- American School - Rio de Janeiro Brazil
- McConnell Middle School - Loganville GA
- Oregon Charter Academy - Mill City OR

\*\* As FYI, many US schools postponed their Fall contacts due to not knowing when schools might be open due to Covid. Also, for the month of November, the one ham-licensed crew member was unable to volunteer time for ARISS contacts because of workload.

At most ARISS contacts, only a few students are at school and most are home watching the livestream (usually 1,000 to 4,000 live views). Ms. White asks ARISS mentors to urge schools to show the ARRL video produced by VD Delaney. Every school the past six months has played the video. Also, ARISS exhibit items include the ARRL diamond and are displayed. In early 2020, NASA Hq had provided VD Delaney's video to NASA-TV so that it could be shown on random occasion. In mid-October, the ISS National Lab (INL), another ARISS sponsor, asked permission to offer the ARRL video to its 600 Space Station Ambassadors (SSA). SSAs are educators, leaders, and life-long learners from all over the US who access educational tools for use in schools.

## **ARRL ARISS Committee had Budgeted for ARISS at Conventions, Conferences**

ARRL ARISS could not take advantage of ARRL-ARRL ARISS Committee funding that was budgeted to exhibit at Hamvention, to travel to the ARISS-International annual meeting, to network in person at NASA Hq and Johnson Space Center, or to present at national education conferences and large space-industry conferences. Ms. White wanted to share, though, that in the past 6 months, ARISS took on the following outreach events (99% virtual):

- 10 presentations at US-wide, state, or region educator conferences
- 3 presentations at US-wide space industry conferences
- 1 hybrid (in-person/virtual) Hamfest
- 1 interview on HamTalk Live,
- 10 ham club talks
- 3 service club talks

Some events had over 2,000 attendees while others had a dozen.

Ms. White had invited VD Tharp and the Committee to attend the world team ARISS-International Annual Meeting (virtual this year, 4 hours on 4 mornings), and shared the agenda. VD Tharp took part when possible, but the morning meetings with a 3-hour time-zone difference made this difficult. Attending were 60 people from 12 states and 12 countries. Ms. White shared with the Committee her ARISS-US Region Report covering successes of the past 12 months.

ARRL-ARRL ARISS Committee had decided to help ARISS by having an ad for *QST* that solicited donations. 2017 was when the last one had been in *QST* and it had been effective. Mr. Bickell updated the graphic and worked with the Advertising Manager; the ad ran four times in 2020. Ms. White thanked the Committee and staff who made this possible, stating she asks donors why they click the Donate button, and each time the ad ran, more donors gave. VD Tharp shared that information on ODV.

The Committee had chosen a 2020 goal for shooting an ARISS video, but with Covid, that couldn't be done. Mr. Bickell thought an ARRL Learning Network Webinar on ARISS could fulfill the goal. He and Ms. White exchanged emails; he suggested an ARISS teacher explaining ARISS's effect on teachers, students, and schools. Ms. White asked an ARISS teacher who had a part in the Hamvention ARISS Forum and this excited teacher drafted a rough outline, which has been sent recently to Mr. Bickell.

The Committee facilitates other types of cooperation between ARRL and ARISS. The next two paragraphs describe examples.

At times Mr. Bickell receives emails asking about ARISS details, such as ARISS Proposal rules or ARISS history. Mr. Bickell forwards these ARRL emails to Ms. White who promptly answers them.

Mr. Bickell and Ms. White continue to exchange information about educators who attend TI before or after an ARISS contact and the associated lessons. The two most recent ones also got school ham clubs set up, as well—the Tecumseh High School Ham Club and the McConnell

Middle School Amateur Radio Club are recent examples. Another, Ramona Lutheran School is in the process of setting up a club.



Photos: A number of youths at ARISS schools with school ham clubs got licensed. (Some new young hams haven't provided parental permissions to use their photos.)

In early December, the Committee began discussing the creation of a slider ad to run occasionally on the ARRL home web page. Mr. Bickell asked for ideas, Ms. White submitted suggestions, and Mr. Bickell began work.

The Committee's budget had included funds to update the ARISS roll-up banner. The committee finalized the updated graphics earlier in the year. When the budgeted funds were transferred recently, plans were set in motion to purchase the two banners for this year, with plans to order another set in 2021.

ARRL Chairman Frank Bauer thanked ARRL for the generous funding provided to ARISS in December. Ms. White shared these factoids with the Committee on December 9, 2020: "The ARISS Interoperable Radio Station serial number 1001 has been in space 6,655 hours and has traveled 116.5 million miles, according to ARISS hardware team member Kerry Banke, N6IZW and his Arduino-based 'Space Radio' clock.

Ms. White and VD Tharp continue to correspond weekly about various subjects and when felt appropriate, to inform the Committee and Board about upcoming activities and events.

Respectively submitted,

Mark J. Tharp, KB7HDX  
ARRL ARISS Committee Chair

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## Appendix A:

### ARISS Media Hits Posted on ARRL Web Pages in the Past Six Months:

Story on ARISS school

<https://www.sandiegouniontribune.com/ramona-sentinel/news/story/2020-12-09/ramona-amateur-radio-club-links-students-to-space-station-astronaut>

*Ramona Sentinel*

Story on ARISS volunteer/ham who worked on new radio system

<http://www.therepublic.com/2020/07/08/connecting-in-orbit-retired-columbus-engineer-works-on-radio-power-supply-for-space-station/>

*The Republic*, Columbus IN newspaper

Story on Amateur Radio's future & high school ARISS volunteer

<https://spectrum.ieee.org/telecom/wireless/the-uncertain-future-of-ham-radio>

*IEEE Spectrum*

Story on ARISS school contact

<https://www.binghamtonhomepage.com/local-news-2/kopernik-offers-kids-the-chance-to-speak-with-the-international-space-station/>

NBC-TV prime-time evening news and online

Story about ARISS hardware lead volunteer, Amateur Radio and ARISS

<https://lamesacourier.com/space-radio/>

*LA Mesa Courier*

College hams in Nova Scotia swamp, retrieving ARISS Balloon Race contender

<https://www.cbc.ca/news/canada/nova-scotia/california-mid-altitude-balloon-lands-nova-scotia-woods-1.5611192>

CBC news

Story about ARISS school and students

<https://www.pdxmonthly.com/sponsored/2020/08/students-reach-for-the-stars>

*Monthly Portland*

Video of ARISS school contact—got 36,700 views!

[https://twitter.com/Space\\_Station/status/1298273936124153860](https://twitter.com/Space_Station/status/1298273936124153860)

astronaut Twitter account

Story about US astronaut's ARISS video of school contact

<https://www.dailymail.co.uk/sciencetech/article-8666705/NASA-astronaut-Chris-Cassidy-ISS-receives-call-Canadian-students-using-ham-radio.html>

*Daily Mail*

Article about ARISS crossband repeater

<https://hackaday.com/2020/09/10/iss-ham-radio-repeater/>  
*Hackaday*

Interview with ARISS hardware volunteer N6IZW

<https://www.cbs8.com/article/news/local/zevely-zone/la-mesa-man-building-space-radios-from-his-garage/509-445801a4-aaf2-419b-8758-f423d8333a04>

CBS News, San Diego

Feature story on ARISS thermal volunteer, K9EK and Amateur Radio

[http://www.thevillagesdailysun.com/news/villages/villager-built-power-supply-for-space-station/article\\_d0aa5c2a-1b87-11eb-b95c-5b372f36d243.html](http://www.thevillagesdailysun.com/news/villages/villager-built-power-supply-for-space-station/article_d0aa5c2a-1b87-11eb-b95c-5b372f36d243.html)

*The Villages Sun*, in Florida

### **Villager Built Power Supply for Space Station**

By Michael Salerno, Daily Sun Senior Writer Oct 31, 2020



Ed Krome, of the Village of Amelia, helped create a power supply for the International Space Station.

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WVIG - Live



NASA article honoring 20 years of ISS communications, ARISS and ham radio

<https://www.nasa.gov/feature/goddard/2020/the-international-space-station-20-years-of-communications-excellence>

NASA web page

2 media hits on upcoming ARISS contact at Sea Road School

<https://www.seacoastonline.com/story/lifestyle/2020/11/11/sea-road-students-radio-orbiting-astronauts/6251386002/>

<https://www.pressherald.com/2020/12/04/liftoff-sea-road-school-students-to-chat-with-space-station-astronaut/>

Kennebunk ME media outlets

Students' interest in Amateur Radio & space after ARISS contact at Kopernik Observatory

<https://wbng.com/2020/11/13/kopernik-reacts-to-spacex-launch/>

WBNG-TV – Binghamton NY

Follow-up story on ARISS school – Ramona Lutheran School

<https://www.sandiegouniontribune.com/ramona-sentinel/news/story/2020-12-09/ramona-amateur-radio-club-links-students-to-space-station-astronaut>

Ramona Sentinel

November 12, The ISS National Laboratory distributed a 44-page report called *20 Years of Student Experiments on the ISS*. The report highlights ARISS on the ISS in a number of different sections, including a full page about ARISS and student studies, ARISS as the first interactive experiment on the ISS, and metrics that Ms. White provided.

<https://www.issnationallab.org/research-on-the-iss/reports/20-years-of-student-experiments-using-the-iss/>

ARISS school contact

<https://www.countywidenews.com/story/2020/12/10/news/tecumseh-students-call-space-station/3243.html>

*Countrywide News*