RCA Amateur Radio Club
Indianapolis, IN
www.w9rca.org

OCTOBER 2021   MONTHLY NEWSLETTER

THE NEXT MEETING OF THE RCA AMATEUR RADIO CLUB WILL BE TUESDAY,
OCTOBER 12th 6:30 PM AT NORTH SIDE EVENTS, FORMERLY THE
KNIGHTS OF COLUMBUS, IN THE GAME ROOM, 2100 EAST 71ˢᵗ, INDIANAPOLIS, IN

RCA ARC NEWS

SEPTEMBER MEETING SUMMARY – Thanks to all who attended the September meeting, our second in-person meeting of the year. The postponement of the FCC licensing fee until next year and FCC rule changes involving GMRS, CB, and FRS services were discussed. There was some discussion about the Indy Hamfest and our Club if there is no Indy Hamfest next year. No final decision about the Indy Hamfest has been made yet. Next years' Field Day was discussed. The general consensus was that our Club would participate again next year in the Indy United FD group. 2021 results will be published in December QST.

AMATEUR RADIO LICENSE TEST SESSION
        Date: **Saturday, November 13, 2021**
        Time: Starting at 12:00 pm **by appointment only**.
        Location: Salvation Army EDS Training Facility, 4020 Georgetown Rd
                             Indianapolis, IN 46254-2407
                             Required: FRN and completed form NCVEC 605.
        Contact: Jim Rinehart, k9ru@arrl.net, 317 721-1458

HAMFESTS, OPERATING EVENTS, VOLUNTEER OPPORTUNITIES

    Oct. 16 Shelbyville 2021 Tailgate, Shelby County Fairgrounds
                http://www.brvars.com
    Oct 23   Hamtober Fest Lynnville Community Center
                http://www.w9og.net/hamtoberfest-hamfest-2021
    Oct 30 – 31   CQ WW DX Contest, SSB
                https://www.cqww.com/rules.htm
    Nov 6 – 8   ARRL Sweepstakes, CW
                hhttp://www.arrl.org/sweepstakes
    Nov 13 & 14 Ft Wayne Hamfest & Central Division Convention
                http://www.fortwaynehamfest.com/
    Nov 20 – 22 ARRL Sweepstakes, SSB
                http://www.arrl.org/sweepstakes

NEXT SPACEX COMMERCIAL CREW TO ISS COMPRISED OF RADIO AMATEURS

Four radio amateurs will head to the International Space Station (ISS) aboard a commercial flight, thanks to Amateur Radio on the International Space Station (ARISS). They are Raja Chari, KI5LIU; Tom Marshburn, KE5HOC; Kayla Barron, KI5LAL, and Matthias Maurer, KI5KFH, a European Space Agency (ESA) astronaut. The targeted launch date is no sooner than October 31, from Kennedy Space Center in Florida. The launch will mark the third SpaceX CrewDragon spacecraft and Falcon 9 rocket launch combination as part of NASA's Commercial Crew Program, which provides transportation to and from the ISS. The crew is scheduled for a 6-month stay aboard the orbiting laboratory, living and working as part of what's expected to be a seven-member crew.

The launch will be the first spaceflight for Chari, Barron, and Maurer, and the third for Marshburn.NASA's SpaceX Crew-3 will be the third crew rotation mission to the ISS with astronauts on a US rocket and spacecraft and the fourth flight with astronauts, including the Demo-2 test flight in 2020, the Crew-1 mission in 2020 - 2021, and the ongoing Crew-2 flight as part of the Expedition 65 crew.

Crew-3 astronauts plan to arrive at the station to overlap with NASA Astronauts Shane Kimbrough, KE5HOD, and Megan McArthur; Japan Aerospace Exploration Agency (JAXA) Astronaut Akihiko Hoshide, KE5DNI, and ESA Astronaut Thomas Pesquet, KG5FYG, who flew to the station as part of the agency's SpaceX Crew-2 mission in April 2021.

Mission teams have a target launch date of no earlier than April 15, 2022, for the launch of the SpaceX Crew-4 mission. "NASA's Commercial Crew Program is working with industry through a public-private partnership to provide safe, reliable, and cost-effective transportation to and from the International Space Station, which will allow for additional research time and will increase the opportunity for discovery aboard humanity's testbed for exploration," NASA said. "The space station remains the springboard to space exploration, including future missions to the moon and Mars."

For launch coverage and more information about the mission, visit the NASA website.

ARISS RECEIVES RECOGNITION FROM NASA MISSION DIRECTORATE

Amateur Radio on the International Space Station (ARISS) has received recognition from NASA's Human Exploration and Operations Mission Directorate (HEOMD) for its accomplishments in promoting science, technology, electronics, and mathematics (STEM) initiatives through amateur radio. The HEOMD provides leadership and management of NASA space operations, such as developing rockets and spacecraft, that will contribute to human exploration in and beyond low-Earth orbit.

"NASA's Space Communications and Navigation (SCaN) networks enable NASA to inspire the next generation of scientists, engineers, and explorers -- even from 350 kilometers above Earth," said Kathryn Lueders, NASA Associate Administrator for Human Exploration and Operations, in a LinkedIn post. "In addition to connecting the science community on Earth with the groundbreaking research studies and experiments aboard the International Space Station, SCaN enables the space station to act as a unique platform for global STEM outreach and education efforts. For over 20 years, the Amateur Radio on the International Space Station (ARISS) program, a nonprofit supported by SCaN, has connected classrooms on Earth with astronauts aboard the space station, allowing students to engage directly with astronauts in real time."

Working with an amateur radio club on the ground, the ham radio stations on board the ISS enable students to ask the crew questions about life in space and what it takes to become an astronaut. In preparation for their ARISS contact, tudents explore a variety of STEM activities through space exploration, radio communication, and wireless technologies.

"With tens of thousands of student participants each year, the ARISS program plays an important role in inspiring the Artemis Generation and encouraging students to pursue STEM careers," Lueders said.

PAST AMSAT PRESIDENT AND DIRECTOR, AND AMATEUR SATELLITE PIONEER TOM CLARK, K3IO, SK

AMSAT-NA Past President and ham radio satellite and digital pioneer Tom Clark, K3IO (ex-W3IWI), of Columbia, Maryland, died on September 28 after a short illness and hospital stay. An ARRL Life Member, he was 82. Clark's accomplishments are legendary, and he left a lasting footprint in the worlds of amateur radio satellites and digital techniques.

"His long-time technical achievements, mentoring to others, and technical leadership will be missed by his many peers and friends the world over," said Bob McGwier, N4HY.

To honor Clark, AMSAT has rebranded its upcoming annual gathering as the 2021 AMSAT Dr. Tom Clark, K3IO, Memorial Space Symposium and Annual General Meeting. It will take place on October 30 via Zoom. (AMSAT members may register to attend via AMSAT's Membership and Event portal.) The event will be livestreamed on AMSAT's YouTube channel.

A founding member of Tucson Amateur Packet Radio (TAPR), Clark was a co-founder of the TAPR/AMSAT DSP Project, which led to software-defined radio (SDR). He was a leader in the development of the AX.25 packet radio protocol. Clark served as AMSAT's second President, from 1980 until 1987. He also served on the AMSAT and TAPR Boards.

In concert with McGwier, Clark developed the first amateur Digital Signal Processing (DSP) hardware, including a number of modems. He developed the uplink receivers and the spacecraft LAN (local area network) architecture used on all the Microsats (AMSAT-OSCAR 16, Dove-OSCAR 17, WEBERSAT-OSCAR 18, LUSAT-OSCAR 19, Italy-OSCAR 26, AMRAD-OSCAR 27, and TMSAT-OSCAR 31). McGwier said it was Clark who convinced him in 1985 that the future lay in DSP.

"We started the TAPR/AMSAT DSP [digital signal processing] project, and it was announced in 1987," McGwier recounted. "We showed in our efforts that small stations with small antennas could bounce signals off the moon, and, using the power of DSP, we could see the signals in our computer displays." This led to the software-defined transponder (SDX) for satellite work, including ARISSat and AMSAT's Phase 3E.

Clark received a doctorate in astrogeophysics from the University of Colorado. He went on to serve as Chief of the Astronomy Branch at NASA Marshall Space Flight Center and was a Senior Scientist at NASA Goddard Space Flight Center, where he was principal investigator for the Space Very Long Baseline Interferometry (VLBI) activity there.

In 2005, Clark became the first non-Russian to be awarded a Gold Medal of the Russian Academy of Sciences for his contributions to the international VLBI network. He is a member of the 2001 class of *CQ* magazine's Amateur Radio Hall of Fame.

In 2016, ARRL awarded Clark with its President's Award, to recognize his 60 years of advancing amateur radio technology. On that occasion, McGwier said, "There would be no AMSAT to inspire all of this work without Tom Clark. Tom…saved the organization and inspired all of us to look to the future and aim for the stars."

Clark was a Fellow of the American Geophysical Union and the International Association of Geodesy. --ARRL

DEAF PUPILS SET TO SPEAK WITH ISS CREW MEMBER IN A WORLD-FIRST EVENT

Amateur Radio on the International Space Station (ARISS) will offer a group of pupils at the Mary Hare School for deaf children in England an opportunity to speak with an astronaut via amateur radio. The contact is expected to take place sometime during October 10 – 17. Mary Hare School, with Pippa Middleton as its ambassador, is the largest non-maintained school for deaf children in the UK. The event will mark the first time an ARISS contact has been arranged with a school for deaf youth.

"It is a very exciting event — a world first for deaf pupils," said Alex Ayling, a science teacher at the school. "I think it is very important to our deaf pupils, as it shows whatever your challenges with communication there is no limit to what you can achieve. The sky is not the limit."

Ciaran Morgan, M0XTD, ARISS operations lead for the UK, said that technical aspects of the radio contact are being handled by the ARISS-UK team. The Newbury and District Amateur Radio Society (NADARS) will provide "the amateur radio experience" for the students, through ham radio events and activities at the school. Lessons related to ARISS include a crystal radio, electricity and circuits, forces, energy, sound, electromagnetism, space and space exploration, the ISS, and rocketry.

During September the school has been conducting a competition, inviting students to enter questions from one of five categories — science in space, space technology, living in space, space communication, and Earth from space. The school staff will pick the 10 best questions, and those students will be invited to ask their questions. The astronaut's response will then be rendered as text for the students.

At the school, an expected audience of 250 spaced-apart spectators will be able to see the radio contact firsthand. The remaining students and audience members will be linked in via a web feed, so that they do not miss out.

Amateur radio equipment has been on board the ISS for more than 20 years, and most astronauts hold ham radio licenses. A live web feed will be available.

Mary Hare School educates some 240 profoundly and severely deaf children, aged 5 – 19, each year. — *Thanks to* UK News

OPEN-SOURCE AMATEUR SATELLITE WORK NOT SUBJECT TO EXPORT ADMINISTRATION REGULATION

CEO Michelle Thompson, W5NYV, reports that Open Research Institute (ORI) received an advisory opinion from the US Commerce Department Bureau of Industry and Security (BIS) on September 2. The letter confirmed that public internet posts regarding open-source amateur satellite communications work are not subject to Export Administration Regulation (EAR). ORI was founded in March 2018 by Bruce Perens, K6BP, in order to provide a formal structure for open-source satellite work. Prior work by ORI established that open-source amateur satellite communications work was free of International Traffic in Arms Regulations (ITAR).

"This is a significant regulatory success for open-source amateur satellite work and open source in general," Thompson said. In a later post on the ORI site, Thompson said ITAR and EAR have had a dramatic effect on both commercial and amateur satellite work since the 1990s. "The regulations are blamed for a significant decline in US market share for satellite systems and halted highly successful international amateur collaborations," she wrote.

Open-source work that is published as it is created and is freely available to the general public at

no cost is not subject to ITAR or EAR, Thompson said.

ORI's work was funded by ARDC, with legal assistance provided by Thomsen and Burke LLP. All documents and links to presentations about the work are available.

"Thank you to those who have supported and assisted ORI during the many stages of this successful regulatory endeavor," Thompson said. "ORI will build upon this work to advance the aims and purposes of open-source amateur satellites."

Some ORI projects include:

Phase 4 Ground Station — Digital microwave broadband communication system for space and terrestrial amateur radio use.

Phase 4 Space — Digital microwave broadband communication system for space. 6U, GEO and interplanetary. Both Phase 4 projects rely on an open source version of DVB-S2/X and polyphase filter banks, with FDMA uplink at 5 GHz and TDM downlink at 10 GHz.

M17 Project — M17 is a new alternative digital radio protocol. Headed by Wojciech (SP5WWP) in Poland, a team of several other amateur radio operators is involved.

Visit the ORI website's "Getting Started" page to get involved. --ARRL

AMATEUR RADIO VOLUNTEERS ASSIST IN MAJOR US CYCLING EVENT

On September 11, some 115 amateur radio volunteers from five states provided communication support for LoToJa, the longest single-day USA Cycling (USAC)-sanctioned bicycle event in the country and now in its 39th year. Starting in Logan, Utah, the 203-mile course ends in Jackson Hole, Wyoming, taking cyclists through northeastern Utah, southeastern Idaho, and western Wyoming in the process. The race attracts thousands of applicants, and upward of 2,000 are selected to compete. Some 1,700 competed this year. The event generates more than $2 million a year for Huntsman Cancer Foundation. Hams participate from multiple clubs in Utah, including Goldman Spike Amateur Radio Club (GSARC), Ogden Amateur Radio Club (OARC), and Utah Valley Amateur Radio Club (UVARC). The race deploys four command centers and multiple repeaters.

Prior to the event, Race Director Brent Chambers told the *Cache Valley Daily* that "This year's race will have 600 course volunteers, which includes 150 ham radio operators [and helpers] from the Bridgerland Amateur Radio Club. They provide uninterrupted communication throughout LoToJa's mountainous and remote terrain."

"We take two portable repeaters to the top of mountains, and we deploy multiple APRS [Automatic Packet Reporting System] digipeaters," explained Kevin Reeve, N7RXE, who is the coordinator of amateur radio operators and communications systems for LoToJa. "All ham vehicles run APRS, and we have APRS and a radio operator with the race director and race official. Our goal is the help the cyclists, their support crews, and their families have a safe and enjoyable event."

Ted McArthur, AC7II, heads the communication infrastructure team for the LoToJa hams. In all, nine repeaters and several simplex frequencies are used throughout the event, and APRS plays an important role.

"With [an increase in] the number of mobile vehicles needed to meet a growing event, Net Control Stations were spending a lot of radio time asking for position reports," McArthur said. "We needed the airtime for real traffic, like helping cyclists, emergencies, and other critical traffic."

"LoToJa is such a great event for amateur radio operators to participate in," said Tyler Griffiths, N7UWX. "It is the ARES [Amateur Radio Emergency Service] radio operator's dream event. We know where it starts, we know where it ends, but everything that happens in between is different from year to year." --ARRL

NEW ENGLAND PARKS ON THE AIR EVENT SET FOR MID-OCTOBER

The inaugural Autumn New England Parks On The Air (NE POTA) event will take place on Saturday, October 16, 0000 – 2359 UTC, the K1USN Radio Club has announced. The goal is to have one group or individual operator at as many Parks On The Air® as possible. The K1USN Radio Club hopes this will become an annual event. This is a recreational radio event, not a contest, so no logs will be required to participate. Summaries of activity are encouraged, however, and a post-event link will be available.

"This began as a reaction to the widespread local interest in the Parks On The Air (POTA) program here in New England. Last year, Ohio had a successful Ohio-wide POTA weekend, and Wisconsin is now doing something similar," said K1USN Radio Club President Pi Pugh, K1RV. "Autumn is a special time in New England, and I figured the event might generate some extra interest before winter. Perhaps this can become an annual New England event or, better yet, an annual nationwide or worldwide event."

ARRL New England Division Vice Director Phil Temples, K9HI, is hoping the event will give the public a chance to learn a bit more about amateur radio. He encouraged those who plan to participate to promote the event with informational handouts.

Jamboree-on-the-Air (JOTA), the largest Scouting event in the world, also occurs during the weekend of October 16 – 17, and NE POTA participants are being encouraged to reach out to local Scouting groups.

A spreadsheet has been created to keep track of individuals and clubs that register. --ARRL

MICROSOFT RELEASES WINDOWS VERSION 11

October 5 was the official release date for the new Windows 11 operating system, Microsoft has announced, but it will be a slow reveal. Radio amateurs may be eager to learn if it will run the station software they're running under Windows 7 or Windows 10, and if they'll need new device drivers.

"We are not too concerned," said Tom Wagner, N1MM, of the widely popular, free logging software that bears his call sign — *N1MM Logger+*. "One member of the team and one end user has tested with Win 11 and not reported issues. We will fix them if they arise."

The WSJT-X Development Group is similarly unconcerned. "A few *WSJT*-X users have been running on the beta Windows 11 releases without any issues," said Bill Somerville, G4WJS. "This seems reasonable evidence that there should be no serious problems."

Microsoft said that the free upgrade to Windows 11 has begun rolling out to eligible Windows 10 PCs, and PCs that come pre-loaded with Windows 11 will start to become available for purchase on October 5. A prompt to upgrade to Windows 11 will come to newer devices first, with all *eligible* devices to receive their updates by next summer, according to *Gear Patrol*.

Windows 11 has higher technical requirements than Windows 10, which will be deprecated in 2025. Microsoft no longer supports Windows 7 or earlier iterations. Machines will need to have a 64-bit CPU, 4 GB of RAM, and 64 GB of storage, and have Trusted Platform Module (TPM) v 1.2 or later enabled.

Aaron Woodman General Manager of Windows Marketing at Microsoft, told *The Verge*, "We expect all eligible devices to be offered the free upgrade to Windows 11 by mid-2022."

The Verge recently reported that Microsoft not only clarified its minimum system requirements for Windows 11 but revealed a workaround for computers that don't meet them. **You can install Windows 11 on any hardware** using an ISO method, as long as the PC has a 64-bit, 1 GHz processor with two or more cores, 4 GB of RAM, 64 GB of storage, and at least TPM 1.2. If you

use a workaround to avoid the TPM requirement, however, your PC will be in an unsupported state and might not be able to access Windows updates and security patches.

Noting the TPM requirement to load Win 11, Wagner advised, "You need to turn on security features on the motherboard that some older computers may not have. We still have users who want to continue to run [Windows] *XP*."

On existing Windows 10 PCs, Windows Update will let people know when the upgrade is available for Windows 11. You can also check to see if your device is eligible for the Windows 11 upgrade through Windows Update.

Not all of Windows 11's announced features will be available on October 5. Microsoft is bringing Android apps to Windows 11 in partnership with Amazon and Intel, but this will happen down the road, possibly in 2022.

If your PC isn't fully compatible with Windows 11, Microsoft will continue to support Windows 10 until October 14, 2025.

SHORTS

The Most Significant Invention of the 20ᵗʰ Century – You may or may not agree with the author's choice, but this invention changed electronics forever. https://www.youtube.com/watch?v=bHwl8TdEI6k

Data on Number of Radio Amateurs Worldwide Needs Updating – The oft-cited figure of 3 million radio amateurs worldwide may need updating. That number was what the International Amateur Radio Union (IARU) *published* in 2000 for the global head count. The IARU once regularly collected amateur radio population statistics, but stopped the practice around the point when the worldwide amateur radio population began to decline.

Data available elsewhere for a few major countries shows a steady decline in radio amateurs since 2000, with the exception of the US, where ham licenses — not necessarily licensees — number some 780,000 to date in 2021. Japan's ham radio population has dropped by more than 600,000 over the past 2 decades; as of 2015, it was 435,581, according to JARL. China boasts more than 174,000 radio amateurs as of 2021. According to 2018 statistics, Thailand has 101,763 hams; the UK has 75,660, and Canada has 70,198.

But, the specific size of the worldwide amateur radio population remains open to speculation, although a 2021 figure of 1.75 million may be closer to the truth. — Thanks to *Southgate Amateur Radio News*, and other sources

N1MM Logger+ releases 1.0.9252 and later have 32 more programmable bandmap buttons! Your favorite rig control macros can be programmed for easy access. By right-clicking on an existing bandmap button, new ones can be created to send an arbitrary radio command using the CAT1ASC macro. The additional bandmap buttons can also be "pressed" from the keyboard: Ctrl+Alt+Shift+0 through Ctrl+Alt+Shift+Z. According to Tom, N1MM: "Obviously these are tough combinations to type. They are better accessed with mouse clicks, AutoHotKey shortcuts or Touch Portal." Tom also notes that "There are separate buttons for the left and right bandmaps. If only one bandmap is open, then both the left and right shift keys work to open the left bandmaps' buttons. If both bandmaps are open, you must press the key combo with the shift key corresponding to the bandmap. Left Shift = Radio 1, Right Shift = Radio 2." More information is available from the N1MM Logger+ Facebook Page, and the "The Bandmap Window" section of the online N1MM Logger+ documentation.

WSJT-X 2.5.0 Release Candidate 6 is now available from the WSJT-X website. Microsoft Windows users may need to consult the release notes to install OpenSSL, one of its dependencies.

Steve Goodgame, K5ATA, has joined the staff at ARRL Headquarters. He will serve as

manager of the Education and Learning Department (formerly the Lifelong Learning Department). He had consulted for the department as an instructional designer and was instrumental in the implementation of ARRL's Learning Network webinars. Goodgame teaches middle school computer science and is in his second year of teaching amateur radio to students at his school. "I have been teaching ham radio in some form for 20 years," he said. "Over the past 3 years, we have had close to 60 middle and high school students earn their licenses, and several have upgraded." Goodgame's favorite ham radio activity is activating parks in the Parks on the Air (POTA) program with his daughter Jherica, KI5HTA. His wife, Cyndi, is K5CYN. Steve hosts the K5ATA Ham Radio YouTube channel. He is a Volunteer Examiner and a volunteer firefighter.

Gridtracker **is a** *free* **application for Microsoft Windows, Linux, and MacOS that "displays your QSO log data from WSJT-X p**lus any combination of ADIF formatted files you have stored on your computer, your network, or the internet." It integrates real-time and historical data, supports alerting, tracks award progress, and so much more! See the project repository for the most up-to-date information

Max, NG7M, put together "MORTTY / TinyFSK Setup Tutorial for N1MM Logger+ for FSK RTTY HF Contests" back in 2020, it's still relevant today. While Max uses an Elecraft K3 in his video, the material is applicable to most rigs with FSK and PTT inputs

John, VE6EY, demonstrates the use of diversity reception in this video, and how its use can counteract fading and help increase the average signal to noise ratio of received signals

K3RRR noted in a tweet that an outdated Android phone can be repurposed as an antenna rotator controller **using the** Visual Rotor **(by EA7HG)** Android **application, and some easy-to-build Arduino hardware based on an ATMega2560. EA7HG's YouTube video also illustrates how this works**

Alan, VK2LAG, made a cute Open-Short-Load all-in-one. This is a useful tool for calibrating your VNA. If you'd like to print your own, here's a link to it on Thingiverse

Phil Karn, KA9Q, provides a tour of his KA9Q-Radio Package in a PDF appropriately entitled "The KA9Q-Radio Package." The one-sentence description: "The KA9Q-Radio package demonstrates fast convolution and IP multicasting in a flexible, multichannel software defined receiver that easily scales to hundreds of channels on low cost hardware." Think of it as a way to "scale out" the digial signal processing across multiple nodes on a TCP/IP network.

It's billed on Hackaday as "The Simplest FT8 Transceiver You'll Ever Build." Charles Hill's Pocket-FT8 mostly uses mostly board level components. A Teensy 3.6 CPU controls a Si4735 receiver chip, and the transmitter chain uses the popular Si5351 programmable oscillator driving a Mini-Circuits GVA84 power amplifier with some filtering. Simple doesn't mean basic - the design sports a color LCD screen!