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Contents

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If you would like to contribute to the newsletter by publishing an article, adding calendar events, or any other contribution, please send all submissions before the end of the month to the newsletter editor:

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President's Message

BY RON MATUSEK, WA6TQH

The Uncertain Future of Ham Radio

Will the amateur airwaves fall silent? Since the dawn of radio, amateur operators—hams—have transmitted on tenaciously guarded slices of spectrum. Electronic engineering has benefited tremendously from their activity, from the level of the individual engineer to the entire field. But the rise of the Internet in the 1990s, with its ability to easily connect billions of people, captured the attention of many potential hams. Now, with time taking its toll on the ranks of operators, new technologies offer opportunities to revitalize amateur radio, even if in a form that previous generations might not recognize.

The number of U.S. amateur licenses has held at an anemic 1 percent annual growth for the past few years, with about 7,000 new licensees added every year for a total of 755,430 in 2018. The U.S. Federal Communications Commission doesn't track demographic data of operators, but anecdotally, white men in their 60s and 70s make up much of the population. As these baby boomers age out, the fear is that there are too few young people to sustain the hobby.

"It's the $60,000 question: How do we get the kids involved?" says Howard Michel, former CEO of the American Radio Relay League (ARRL). (Since speaking with IEEE Spectrum, Michel has left the ARRL. A permanent replacement has not yet been appointed.)

This question of how to attract younger operators also reveals deep divides in the ham community about the future of amateur radio. Like any large population, ham enthusiasts are no monolith; their opinions and outlooks on the decades to come vary widely. And emerging digital technologies are exacerbating these divides: Some hams see them as the future of amateur radio, while others grouse that they are eviscerating some of the best things about it.

No matter where they land on these battle lines, however, everyone understands one fact. The world is changing; the amount of spectrum is not. And it will be hard to argue that spectrum reserved for amateur use and experimentation should not be sold off to commercial users if hardly any amateurs are taking advantage of it.

Before we look to the future, let's examine the current state of play. In the United States, the ARRL, as the national association for hams, is at the forefront, and with more than 160,000 members it is the largest group of radio amateurs in the world. The 106-year-old organization offers educational courses for hams; holds contests where operators compete on the basis of, say, making the most long-distance contacts in 48 hours; trains emergency communicators for disasters; lobbies to protect amateur radio's spectrum allocation; and more.

Michel led the ARRL between October 2018 and January 2020, and he fits easily the profile of the "average" American ham: The 66-year-old from Dartmouth, Mass., credits his career in electrical and computer engineering to an early interest in amateur radio. He received his call sign, WB2ITX, 50 years ago and has loved the hobby ever since.

“When our president goes around to speak to groups, he'll ask, 'How many people here are under 20 [years old]?' In a group of 100 people, he might get one raising their hand," Michel says.

ARRL does sponsor some child-centric activities. The group runs twice-annual Kids Day events, fosters contacts with school clubs across the country, and publishes resources for teachers to lead radio-centric classroom activities. But Michel readily admits “we don't have the resources to go out to middle schools"—which are key for piquing children's interest.

> **We need to “convince them there's more than getting licensed and putting a radio in your drawer and waiting for the end of the world."**

Sustained interest is essential because potential hams must clear a particular barrier before they can take to the airwaves: a licensing exam. Licensing requirements vary—in the United States no license is required to listen to ham radio signals—but every country requires operators to demonstrate some technical knowledge and an understanding of the relevant regulations before they can get a registered call sign and begin transmitting.

For those younger people who are drawn to ham radio, up to those in their 30s and 40s, the primary motivating factor is different from that of their predecessors. With the Internet and social media services like WhatsApp and Facebook, they don't need a transceiver to talk with someone halfway around the world (a big attraction in the days before email and cheap long-distance phone calls). Instead, many are interested in the capacity for public service, such as providing communications in the wake of a disaster, or event comms for activities like city marathons.

“There's something about this post-9/11 group, having grown up with technology and having seen the impact of climate change," Michel says. “They see how fragile cellphone infrastructure can be. What we need to do is convince them there's more than getting licensed and putting a radio in your drawer and waiting for the end of the world."

New Frontiers

The future lies in operators like Dhruv Rebba (KC9ZJX), who won Amateur Radio Newsline's 2019 Young Ham of the Year award. He's the 15-year-old son of immigrants from India and a sophomore at Normal Community High School in Illinois, where he also runs varsity cross-country and is active in the Future Business Leaders of America and robotics clubs. And he's most interested in using amateur radio bands to communicate with astronauts in space.

Rebba earned his technician class license when he was 9, after having visited the annual Dayton Hamvention with his father. (In the United States, there are currently three levels of amateur radio license, issued after completing a written exam for each—technician, general, and extra. Higher levels give operators access to more radio spectrum.)

“My dad had kind of just brought me along, but then I saw all the booths and the stalls and the Morse code, and I thought it was really cool," Rebba says. “It was something my friends weren't doing."

He joined the Central Illinois Radio Club of Bloomington, experimented with making radio contacts, participated in ARRL's annual Field Days, and volunteered at the communications booths at local races.

> **“We want to be making an impact… The hobby aspect is great, but a lot of my friends would argue it's quite easy to talk to people overseas with texting and everything, so it's kind of lost its magic."**

But then Rebba found a way to combine ham radio with his passion for space: He learned about the Amateur Radio on the International Space Station (ARISS) program, managed by an international consortium of amateur radio organizations, which allows students to apply to speak directly with crew members onboard the ISS. (There is also an automated digital transponder on the ISS that allows hams to ping the station as it orbits.)

Rebba rallied his principal, science teacher, and classmates at Chiddix Junior High, and on 23 October 2017, they made contact with astronaut Joe Acaba (KE5DAR). For Rebba, who served as lead control operator, it was a crystallizing moment.

“The younger generation would be more interested in emergency communications and the space aspect, I think. We want to be making an impact," Rebba says. “The hobby aspect is great, but a lot of my friends would argue it's quite easy to talk to people overseas with texting and everything, so it's kind of lost its magic."

That statement might break the hearts of some of the more experienced hams recalling their tinkering time in their childhood basements. But some older operators welcome the change.

Take Bob Heil (K9EID), the famed sound engineer who created touring systems and audio equipment for acts including the Who, the Grateful Dead, and Peter Frampton. His company Heil Sound, in Fairview Heights, Ill., also manufactures amateur radio technology.

“I'd say wake up and smell the roses and see what ham radio is doing for emergencies!" Heil says cheerfully. “Dhruv and all of these kids are doing incredible things. They love that they can plug a kit the size of a cigar box into a computer and the screen becomes a ham radio…. It's all getting mixed together and it's wonderful."

But there are other hams who think that the amateur radio community needs to be much more actively courting change if it is to survive. Sterling Mann (N0SSC), himself a millennial at age 27, wrote on his blog that “Millennials Are Killing Ham Radio."

It's a clickbait title, Mann admits: His blog post focuses on the challenge of balancing support for the dominant, graying ham population while pulling in younger people too. “The target demographic of every single amateur radio show, podcast, club, media outlet, society, magazine, livestream, or otherwise, is not young people," he wrote. To capture the interest of young people, he urges that ham radio give up its century-long focus on person-to-person contacts in favor of activities where human to machine, or machine to machine, communication is the focus.

These differing interests are manifesting in something of an analog-to-digital technological divide. As Spectrum reported in July 2019, one of the key debates in ham radio is its main function in the future: Is it a social hobby? A utility to deliver data traffic? And who gets to decide?

Those questions have no definitive or immediate answers, but they cut to the core of the future of ham radio. Loring Kutchins, president of the Amateur Radio Safety Foundation, Inc. (ARSFi)—which funds and guides the "global radio email" system Winlink—says the divide between hobbyists and utilitarians seems to come down to age.

> **"Ham radio is really a social hobby...Here in Mississippi, you get to 5 or 6 o' clock and you have a big network going on and on—some of them are half-drunk chattin' with you."**

"Younger people who have come along tend to see amateur radio as a service, as it's defined by FCC rules, which outline the purpose of amateur radio—especially as it relates to emergency operations," Kutchins (W3QA) told Spectrum last year.

Kutchins, 68, expanded on the theme in a recent interview: "The people of my era will be gone—the people who got into it when it was magic to tune into Radio Moscow. But Grandpa's ham radio set isn't that big a deal compared to today's technology. That doesn't have to be sad. That's normal."

Gramps' radios are certainly still around, however. "Ham radio is really a social hobby, or it has been a very social hobby—the rag-chewing has historically been the big part of it," says Martin F. Jue (K5FLU), founder of radio accessories maker MFJ Enterprises, in Starkville, Miss. "Here in Mississippi, you get to 5 or 6 o' clock and you have a big network going on and on—some of them are half-drunk chattin' with you. It's a social group, and they won't even talk to you unless you're in the group."

> **"It'll all be digital at some point, right at the antenna all the way until it becomes audio."**

But Jue, 76, notes the ham radio space has fragmented significantly beyond rag-chewing and DXing (making very long-distance contacts), and he credits the shift to digital. That's where MFJ has moved with its antenna-heavy catalog of products.

"Ham radio is connected to the Internet now, where with a simple inexpensive handheld walkie-talkie and through the repeater systems connected to the Internet, you're set to go," he says. "You don't need a HF [high-frequency] radio with a huge antenna to talk to people anywhere in the world."

To that end, last year MFJ unveiled the RigPi Station Server: a control system made up of a Raspberry Pi paired with open-source software that allows operators to control radios remotely from their iPhones or Web browser.

“Some folks can't put up an antenna, but that doesn't matter anymore because they can use somebody else's radio through these RigPis," Jue says.

He's careful to note the RigPi concept isn't plug and play—“you still need to know something about networking, how to open up a port"—but he sees the space evolving along similar lines.

“It's all going more and more toward digital modes," Jue says. “In terms of equipment I think it'll all be digital at some point, right at the antenna all the way until it becomes audio."

The Signal From Overseas

China's advancing technology and growing middle class, with disposable income, has led to a “dramatic" increase in operators.

Outside the United States, there are some notable bright spots, according to Dave Sumner (K1ZZ), secretary of the International Amateur Radio Union (IARU). This collective of national amateur radio associations around the globe represents hams' interests to the International Telecommunication Union (ITU), a specialized United Nations agency that allocates and manages spectrum. In fact, in China, Indonesia, and Thailand, amateur radio is positively booming, Sumner says.

China's advancing technology and growing middle class, with disposable income, has led to a “dramatic" increase in operators, Sumner says. Indonesia is subject to natural disasters as an island nation, spurring interest in emergency communication, and its president is a licensed operator. Trends in Thailand are less clear, Sumner says, but he believes here, too, that a desire to build community response teams is driving curiosity about ham radio.

“So," Sumner says, “you have to be careful not to subscribe to the notion that it's all collapsing everywhere."

China is also changing the game in other ways, putting cheap radios on the market. A few years ago, an entry-level handheld UHF/VHF radio cost around US $100. Now, thanks to Chinese manufacturers like Baofeng, you can get one for under $25. HF radios are changing, too, with the rise of software-defined radio.

“It's the low-cost radios that have changed ham radio and the future thereof, and will continue to do so," says Jeff Crispino, CEO of Nooelec, a company in Wheatfield, N.Y., that makes test equipment and software-defined radios, where demodulating a signal is done in code, not hardwired electronics. “SDR was originally primarily for military operations because they were the only ones who could afford it, but over the past 10 years, this stuff has trickled down to become $20 if you want." Activities like plane and boat tracking, and weather satellite communication, were “unheard of with analog" but are made much easier with SDR equipment, Crispino says.

Nooelec often hears from customers about how they're leveraging the company's products. For example, about 120 members from the group Space Australia to collect data from the Milky Way as a community project. They are using an SDR and a low-noise amplifier from Nooelec with a homemade horn antenna to detect the radio signal from interstellar clouds of hydrogen gas.

“We will develop products from that feedback loop—like for hydrogen line detection, we've developed accessories for that so you can tap into astronomical events with a $20 device and a $30 accessory," Crispino says.

Looking ahead, the Nooelec team has been talking about how to “flatten the learning curve" and lower the bar to entry, so that the average user—not only the technically adept—can explore and develop their own novel projects within the world of ham radio.

“It is an increasingly fragmented space," Crispino says. “But I don't think that has negative connotations. When you can pull in totally unique perspectives, you get unique applications. We certainly haven't thought of it all yet."

The ham universe is affected by the world around it—by culture, by technology, by climate change, by the emergence of a new generation. And amateur radio enthusiasts are a varied and vibrant community of millions of operators, new and experienced and old and young, into robotics or chatting or contesting or emergency communications, excited or nervous or pessimistic or upbeat about what ham radio will look like decades from now.

As Michel, the former ARRL CEO, puts it: “Every ham has [their] own perspective. What we've learned over the hundred-plus years is that there will always be these battles—AM modulation versus single-sideband modulation, whatever it may be. The technology evolves. And the marketplace will follow where the interests lie."

See you at the July General Meeting!

Ron Matusek
President NARS

Exam Practice

Are you new to the hobby and looking to pass your Technician exam? Are you preparing to level up your license by taking the next level exam? Check out the questions below to test your knowledge!

Technician (Element 2)

T2B03

Which of the following describes a linked repeater network?

A. A network of repeaters in which signals received by one repeater are transmitted by all the repeaters in the network
B. A single repeater with more than one receiver
C. Multiple repeaters with the same control operator
D. A system of repeaters linked by APRS

General (Element 3)

G6B12

Which of these connector types is commonly used for low frequency or dc signal connections to a transceiver?

A. Type N
B. PL-259
C. BNC
D. RCA Phono

Amateur Extra (Element 4)

E7B03

Which of the following components form the output of a class D amplifier circuit?

A. A temperature compensating load resistor to improve linearity
B. A matched load resistor to prevent damage by switching transients
C. A low-pass filter to remove switching signal components
D. A high-pass filter to compensate for low gain at low frequencies

See the answers on Page 26.

The ARRL Letter

An excerpt from the weekly ARRL Letter

Did you know...

that the ARRL sends a weekly letter describing some of the current events, activities, and policies that are taking shape in the Amateur Radio world? The following is an excerpt from these letters in January. View all the ARRL letters at http://www.arrl.org/arrlletter

ARRL and NASA Team Up to Help Teachers

A radio experiment held on July 26, 2023, to decode a slow-scan TV (SSTV) message sent via the ham radio station on the International Space Station (ISS) was successful.

The image was received by a group of educators at ARRL Headquarters in Newington, Connecticut through the voice repeater on the ISS. Teachers from around the United States were on hand for the ARRL Teachers Institute on Wireless Technology, a program that empowers educators to incorporate amateur radio into their science, technology, engineering, and mathematics (STEM) curriculum. As part of the professional development program, the group received and decoded the image sent by volunteers with Amateur Radio on the International Space Station (ARISS). The transmitted image said, "ARRL Teachers Institute: ensuring a space for radio in the next generation."

The image transmitted from NASA Goddard Space Flight Center to the ARRL Teachers Institute on Wireless Technology participants via the ISS repeater.

The teachers thought it was cool. "Amateur radio is so important to the future of engineering and STEM in our country," said Kristen Kucko, KQ4ECP, one of the institute participants. The group gathered outside ARRL Headquarters with antennas they had made earlier in the day. As the pass happened, the educators tracked the ISS by hand. A warble of SSTV transmission filled the air, and the group was excited. After the pass, they used laptops to decode the audio stream into an image, while they sat on picnic tables and enjoyed pizza and wings.

The teachers made tape measure Yagi antennas for the experiment. [Sierra Harrop, W5DX, photo]

For ARRL Education and Learning Manager Steve Goodgame, K5ATA, the experiment was a way to allow teachers to engage with the power of radio. "When teachers can pull an image off the ISS via amateur radio, it gives a sense of accomplishment that gets them excited. We want to get them fired up about radio, so they can carry that energy back to their classrooms and do the same thing with their students," said Goodgame.

Teachers decode the SSTV image over a picnic of pizza and wings while a photojournalist from WFSB-TV shot video of them. [Sierra Harrop, W5DX, photo]

Each of the teachers on hand for the second phase of the institute, -- "TI-2: Remote Sensing and Data Analysis," -- have already been through the introductory course and they are all licensed radio amateurs. The institute costs teachers nothing to attend, thanks to funding from the ARRL Education & Technology Program.

Several local television stations from the Hartford-New Haven market covered the event. See coverage from WTNH News 8 (ABC) and WFSB Eyewitness News 3 (CBS).

Hurricane Watch Net Seeks Bilingual Net Control Operators

The Hurricane Watch Net (HWN) is looking for new members who are willing to train to become Net Control Operators. HWN is especially interested in recruiting bilingual operators who are fluent in Spanish and English or French/Creole and English. Net Control responsibilities can entail hours of duty to ensure all received ground-truth weather reports are forwarded directly to the National Hurricane Center in Miami.

The net generally activates whenever a system has achieved hurricane status and is within 300 statute miles of a populated landmass. This can vary, however, due to the forward speed and intensity of a storm, or at the request of the forecasters at the National Hurricane Center. Once activated, the HWN continuously operates until a storm is no longer a threat to life and property.

The mission of the net is to disseminate the latest advisories issued by the National Hurricane Center, and to obtain real-time, ground-level weather conditions and initial damage assessments from amateur radio operators in the affected areas. The net then relays that information to the National Hurricane Center by way of WX4NHC, and when required, the Canadian Hurricane Centre. It also functions as a backup communication link for the National Hurricane Center, National Weather Service Forecast Offices, the Canadian Hurricane Centre, Emergency Operations Centers, emergency management agencies, non-governmental organizations, and other vital interests that can involve military relief operations. Such operations can be involved in the protection of life and property before, during, and after a hurricane event.

HWN Manager Bobby Graves, KB5HAV, says training will be provided and each candidate will go through a probationary period with a mentor. Graves, an ARRL member, says an applicant's station must be reliable. "While having a tower, beam, and/or amplifier is not a requirement, your station must allow you to hear and be heard. Therefore, directional antennas and amplifiers are preferred," he said.

The net coverage area includes the hurricane-prone areas of eastern Canada, the US East Coast, the Gulf of Mexico, Central America, and the Caribbean. The net specifically seeks applicants in the middle-to-western sections of the US, Canada, Central America, and the Caribbean. "As always, the HWN is hoping for a quiet season, yet [we are] prepared for the worst," said Graves.

Those interested in learning more can visit the HWN Net Control Information web page at https://hwn.org/about-us/ncs_info.html

Slow-Scan TV Experiment with ARRL Planned for Amateur Radio on the International Space Station

Amateur Radio on the International Space Starion (ARISS), in collaboration with ARRL, plans to carry out a special slow-scan TV (SSTV) experiment from the ISS on Wednesday, July 26, 2023. During the event, the Columbus Module Repeater, transmitting at 437.800 MHz, will carry a message to be received by teachers attending the ARRL Teachers Institute on Wireless Technology professional development class.

The pass will be over the Mid-Atlantic and New England area, with transmissions scheduled to begin at 20:05 UTC (16:05 ET) and end at 20:20 UTC (16:20 ET). If necessary, a backup window is scheduled from 21:40 UTC (17:40 ET) to 21:55 UTC (17:55 ET).

NASA Astronaut Kjell Lindgren, KO5MOS, participates in ARRL Field Day 2022 aboard the International Space Station. [NASA photo]

Radio enthusiasts are welcome to download the message and follow along with the event, but it is asked that all hams refrain from using the repeater for voice contacts during the event. This is a special experiment conducted through ARISS and ARRL. After the experiment has concluded, normal operations of the repeater should resume in voice mode only.

The ARRL Teachers Institute on Wireless Technology is a donor-funded professional development program designed to help classroom teachers elevate their STEM programs through the use of wireless technology. As a part of the ARRL Education & Technology Program, several sessions are conducted each year, and the program continues to grow.

The primary goal of the ARISS program is to promote exploration of science, technology, engineering, the arts, and mathematics topics (STEM/STEAM). ARISS does this by organizing scheduled contacts via amateur radio between crew members aboard the ISS and students. The next scheduled ARISS contact is with scouts at Camp William B. Snyder in Prince William County, Virginia. The contact is scheduled for Friday, July 21, 2023 at 1754 UTC (13:54 EDT). Scouts will ask their questions of Astronaut Sultan Al Neyadi, amateur radio call sign KI5VTV, who will use the ARISS radio station on the ISS to talk. The downlink frequency for this contact is 145.800 MHz and may be heard by listeners within the ISS footprint.

ARISS is a cooperative venture of international amateur radio societies and the space agencies that support the ISS. In the US, participating organizations include NASA's Space Communications and Navigation program (SCaN), the ISS National Laboratory -- Space Station Explorers, ARRL, and AMSAT.

ARRL Laboratory Study of HF Petition Ongoing, Filed Comments to Follow

ARRL is treating a petition before the Federal Communications Commission (FCC) to allow data communications on multiple bands within the HF 2 - 25 MHz range with up to 20 KW as a subject of concern for its members and the greater Amateur Radio Service. ARRL Laboratory staff are studying the matter from a technical standpoint, including analysis of transmitted signals potentially interfering with Amateur Radio communications on Amateur Radio spectrum. The results from this expert review are being finalized and will inform ARRL's filed comments on the matter.

ARRL has heard from many members and other licensed radio amateurs who share interest and concern about this petition. Read more about our efforts here.

ARRL CEO interviewed on "W1DED in Maine"

ARRL CEO David Minster, NA2AA, was interviewed on the "W1DED in Maine" YouTube channel. In the nearly hour-long chat with host Kevin Thomas, Minster shared quite a bit about things going on at ARRL. He talked about the culture within the organization, the impact social media has on amateur radio, and how he approaches listening to members. The pair also covered the results of the recent ARRL dues survey.

The "W1DED in Maine" YouTube channel is dedicated to the core principle of asking for advice, perspective, and inspiration from experienced amateur radio operators around the world. The concept of sharing experiences is fundamental to ham radio, and through this channel, viewers can connect with experts in their particular niche, gain knowledge from their point of view, and seek help with issues that can't always be solved through trial and error or found in a book.

The channel started when Thomas was trying to get back into the hobby. "I did what hams have been doing forever -- I reached out to other hams to ask questions. I then realized I should be recording the conversations because the perspective might be useful," said Thomas.

Click here to view the video: https://youtu.be/f-ltELsO9gE

Commercial Interests Petition FCC for High Power Allocation on Shortwave Spectrum

The ad hoc group Shortwave Modernization Coalition petitioned the Federal Communications Commission (FCC) to allow data communications on multiple bands within the HF 2 - 25 MHz range with up to 20 kW, including on bands immediately adjacent to spectrums allocated to the Amateur Radio Service. This group appears to represent high-speed stock trading interests. The FCC has assigned the public notice as docket number RM-11953. Comments are due by July 31, 2023, and comment replies are due by August 15, 2023. While the petitioners exclude the amateur bands, high-power operations on immediately adjacent bands are proposed. ARRL is reviewing the petition.

A PDF of the petition is available at: https://www.fcc.gov/ecfs/document/104284018 7330/1.

Teachers Gather for STEM Training at ARRL

A group of educators were at ARRL Headquarters in Newington, Connecticut, the week of July 13, 2023, for the ARRL Teachers Institute on Wireless Technology. The 13 teachers were from all over the country, and they were in town to learn hands-on

STEM activities through amateur radio. "They liked foxhunting and satellite contacts the best," said ARRL Education and Learning Manager Steve Goodgame, K5ATA.

A group of teachers from the ARRL Teachers Institute of Wireless Technology learn about radio direction finding (foxhunting) in front of ARRL Headquarters.

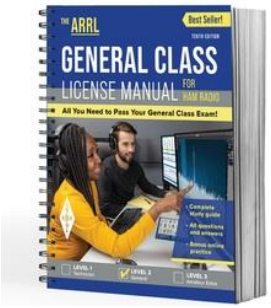
ARRL holds five sessions each year, and each session is 5 days in length. The Teachers Institute is an expenses-paid professional development program filled with lectures, hands-on activities, and demonstrations that are intended to provide teachers with tools and strategies to introduce basic electronics, radio science, satellite communications, amateur radio, weather science, microcontrollers, and electronic sensors to their students. "The whole idea is to inspire teachers to go back and inspire their students to be excited about amateur radio," said Goodgame.

Support for the institute is provided by donations from amateurs like you to the ARRL Education & Technology Fund.

Handbook 100: Now Available in Softcover

The 100th edition of The ARRL Handbook for Radio Communications is the most extensively revised and expanded edition in recent years. Each chapter is filled with up-to-date knowledge repre senting radio amateurs' wide and ever-expanding range of interests. There are practical, hands-on projects for all skill levels, from simple accessories and small power supplies to amplifiers and high-gain antennas. The traditional softcover edition features the same piano-finish black cover as the hardcover collector's edition and six-volume paperback set.

Techs: Now is the Time to Upgrade to General!



A new question pool took effect on July 1, 2023, for General-class license exams. ARRL has released new editions of its popular study resources including the 10th edition of The ARRL General Class License Manual and the 7th edition of ARRL's General Q&A.

ARRL has also updated its free online review and practice resource, ARRL Exam Review for Ham Radioâ¢.

"ARRL Volunteer Examiners (VEs) are already administering the new General-class exams," said ARRL VEC Manager Maria Somma, AB1FM. Somma suggests that candidates first take a practice test using ARRL Exam Review. "If you're already passing online practice exams, then you're ready to search for an in-person exam session team, or you can take the exam online via a remote video-supervised session." Visit the exam session search page on the ARRL website.

The new General-class question pool is valid for examinations taken between July 1, 2023, and June 30, 2027. "Upgrading from a Technician-class license to General-class significantly opens more operating privileges on HF bands," added Somma.

IARU Administrative Council Met in Germany

The 58th meeting of the IARU Administrative Council (AC) was held in person at the SEEhotel in

Friedrichshafen, Germany, on Sunday, June 25, and Monday, June 26, 2023.

In matters related to World Radiocommunication Conference 2023 (WRC-23), the AC received reports on the Conference Preparatory Meeting, ITU-R Working Party 5A, and the latest updates regarding agenda items 1.2, 1.12, and the current status of agenda item 9.1b, which is about the radionavigation-satellite service (RNSS) and the 23-centimeter band.

On the subject of strategic planning, preliminary results from the work of the Relationship Working Group, Legal Working Group, and Finance Working Group were approved. Their work will continue to address a planned restructuring of IARU. An initial report will be presented at the Region 1 Conference in Zlatibor, Serbia, in November.

The AC received a report on the completion of the IARU officer consultative process regarding nominating candidates for the offices of President and Vice President for the 2024 - 2029 term. The nominees will be formally submitted to member-societies for ratification later this year.

Reports were received from IARU Beacon Project International Coordinator Peter Jennings, AB6WM/VE3SUN; Electromagnetic Compatibility Coordinator Martin Sach, G8KDF; Satellite Advisor Hans Blondeel Timmerman, PB2T, and Emergency Communications Special Advisor Rod Stafford, W6ROD.

The AC appointed Rick Palm, K1CE, Editor for the ARRL ARES Letter, as the IARU Special Advisor on Emergency Communications to assume the responsibilities of Rod Stafford, W6ROD, in representing IARU in the ITU Telecommunication Development Sector.

Gaspar MirÃ³, EA6AMM, presented a report on the IARU Monitoring System and submitted a proposed revision to the current terms of reference (TOR). The AC will continue to review the proposal to consider a resolution to update the TOR.

A report was received on the successful 2023 World Amateur Radio Day that supported the United Nations initiative to promote Human Security for All (HS4A).

Preliminary thoughts on how to celebrate the 100th anniversary of IARU, founded in Paris in 1925, were exchanged.

Nominations for the IARU Michael J. Owen, VK3KI, Award and the IARU Diamond Award were received.

Members attending the meeting were IARU President Tim Ellam, VE6SH/G4HUA; IARU Vice President Ole Garpestad, LA2RR; IARU Secretary and ARRL Past President Joel Harrison, W5ZN; IARU Region 1 President Sylvain Azarian, F4GKR; IARU Region 2 President George Gorsline, VE3YV, and IARU Region 2 Secretary Rod Stafford, W6ROD; IARU Region 3 Co-Chairmen Ken Yamamoto, JA1CJP, and Yudi Hasbi, YD1PRY, also attended the meeting along with retired ARRL Chief Executive Officer and current IARU Assistant Secretary David Sumner, K1ZZ. IARU Region 1 Secretary Mats Espling, SM6EAN, sent his regrets for being unable to attend.

Thanks to IARU Secretary Joel Harrison, W5ZN, for this report.

W1VCM Receives Grant for the Vintage Radio and Communications Museum

The amateur radio club of the Vintage Radio and Communications Museum of Connecticut, W1VCM, has received a grant to design and implement new antennas that cover frequency ranges available to US radio amateurs and add Earth-space capabilities to their shack.

"These new capabilities will allow club members to show the full range of technologies that make amateur radio the unique lifetime hobby it is," said club President Bob Allison, WB1GCM. "Over the years, these demonstrations have encouraged more than a few visitors to pursue their amateur radio licenses. These improvements will allow our visitors to better engage with technologies that impact their everyday lives," he added.

The museum is run by volunteers and it opened in September 1990. It is dedicated to the preservation of old-time communications equipment and to educating the public about communication systems of the past.

The new functionality will include computer-controlled tracking, a high-gain antenna system, and a new satellite transceiver that allows communications to the International Space Station and several low-Earth orbit amateur satellites.

Vintage Radio and Communications Museum of Connecticut Director John Ellsworth emphasized the importance of the amateur radio club as part of the story of communications, stating, "During our docent-led tours, we discuss the history and development of radio and television. Having a working radio station available reinforces many of the topics discussed."

The grant was awarded by Amateur Radio Digital Communications.

ARRL Podcasts Schedule

The latest episode of the ARRL On the Air podcast (Episode 28) features a discussion of digital multimeters with practical usage examples and shopping tips.

The latest edition (Episode 58) of the ARRL Eclectic Tech podcast features a discussion with author Nick Tusa, K5EF, about his new book Wes Schum - Amateur Radio's Unsung Hero.

The On the Air and Eclectic Tech podcasts are sponsored by Icom. Both podcasts are available on iTunes (iOS) and Stitcher (Android) as well as on Blubrry -- On the Air | Eclectic Tech.

Amateur Radio in the News

ARRL Public Information Officers, Coordinators, and many other member-volunteers help keep amateur radio and ARRL in the news.

"Nonprofit uses Shavano Park event to educate public on amateur radio" / Community Impact (Texas) July 20, 2023 -- The San Antonio Radio Club is an ARRL Affiliated Club.

"Amateur HAM Radio Operators Serve as Vital Link in Times of Crisis" / Mountain Lake PBS (New York) July 21, 2023 --The Champlain Valley Amateur Radio Club is an ARRL Affiliated Club.

"Teaching a new generation: Amateur radio group holds summer class" The Paducah Sun (Kentucky) July 22, 2023 -- The Paducah Amateur Radio Association is an ARRL Affiliated Club.

"Demonstration of Ham Radio and its modern capabilities, July 25" / The Loop (California) July 26, 2023 -- The Tehachapi Amateur Radio Association is an ARRL Affiliated Club.

"Teachers in Newington build antennas to decode message from International Space Station" / WTNH-TV (Connecticut) July 26, 2023 -- ARRL® The National Association for Amateur Radio.

"Amateur radio operators in Butts County put their skills to test during annual Ham Radio Field Day"

/Jackson Progress - Argus (Georgia) July 17, 2023 -- The Amateur Radio Club of Butts County.

"Bathtub society salutes Nanaimo Amateur Radio Association" / Nanaino News Bulletin (British Columbia) July 20, 2023 -- The Nanaimo Amateur Radio Association.

"Poway ham radio operators host demonstrations during national Field Day" / San Diego Union Tribune (California), July 4, 2023 --The Poway Amateur Radio Society.

"Tampa Amateur Radio Club prepares for this hurricane season" / WTOG-TV/CW-44 (Florida), July 10, 2023 -- The Tampa Amateur Radio Club is an ARRL Affiliated Club.

"Kingsport Amateur Radio Club hosts summer field days at Warriors Path" / WJHL-TV (Tennessee) June 25, 2023 -- The Kingsport Amateur Radio Club is an ARRL Affiliated Club.

"ROARS Amateur Radio Field Day lonely but rewarding for solo operator." / Ramona Sentinel (California) June 28, 2023 -- The Ramona Outback Amateur Radio Society is an ARRL Affiliated Club.

"Amateur Radio Association meets for a Field Day between Caledonia and Eitzen." / The Caledonia Argus (Minnesota) June 30, 2023 -- The Mississippi Valley Amateur Radio Association is an ARRL Affiliated Club.

"In the age of smartphones, what keeps Durango Amateur Radio Club going strong?" / The Durango Herard (Colorado) July 2, 2023 -- The Durango Amateur Radio Club is an ARRL Affiliated Club.

"Making connections: Ashe County Amateur Radio Club makes over 340 contacts in 24 hours" / Mountain Times.com (North Carolina) July 2, 2023 -- The Ashe County Amateur Radio Club is an ARRL Affiliated Club.

"CT ham radio enthusiasts use old-time skills to reach out to the world" / CHRON.com (Connecticut), July 11, 2023 -- The Wireless Operators of Winsted and the CQ Radio Club are ARRL Affiliated Clubs.

Arrl.org. 2023. ARRL Letter. [online] Available at: http://www.arrl.org/arrlletter?issue=current [Accessed 5 May 2023]

NARS General Club Meetings

NARS holds monthly club meetings where a variety of topics are presented from a number of guests. Come learn anything from antenna design, phasing, emergency response, and more!

Who: All club members, friends, or anyone interested in the Amateur Radio hobby

When: The Third Friday of the Month at 7:30pm

Where: HCESD 16 Admin, 18606 Stuebner Airline Rd, Spring, TX 77379
Zoom Conference Call, Meeting ID: 2815436502, Passcode: 123456

NARS Monthly Club Meeting

July's Monthly Meeting

The July meeting included a report out about Field Day and included discussion on improvements to make in later years. Robert Ewers, 2023 Field Day Coordinator, led the discussion.

Additionally, for his hard work and coordination of Field Day, a special recognition for the coordination of Field Day was presented to Robert Ewers.

Next Club Meeting

Our next club meeting will be August 18th at HCESD 16 Admin – 18606 Stuebner Airline Rd, Spring, TX 77379. During our next club meeting, our very own NARS Radiogram subject matter expert, Sheree Horton, WM5N, will be providing a presentation based on excellent Field Day reviews and special requests by the Tuesday night DMR net.

We look forward to seeing you there!

NARS Name Badges: Get Yours Today!

Cindy (KM4YGG) and Art (KM4YGH) Grant are offering the club a deal for the NARS club on getting membership name badges. Each badge costs $10 and can be delivered at the next NARS meeting (if ordered two weeks or more before the next meeting).

To order, go to https://badgesunlimitedllc.com/#!/4-2-NARS-CLUB-MEMBERS-ONLY/p/104217140/category=13635038 and pay the fees using the checkout capability on the website.

Amateur Radio Activities

The “Amateur Radio Activities” feature of NARS News highlights various activities related to ham radio. Each issue provides a quick overview for those who may be interested in the learning new aspects of the amateur radio hobby.

Understanding Effective Radiated Power

For beginner radio operators, diving into the world of radio communications can be both exciting and overwhelming. One essential concept to grasp is Effective Radiated Power (ERP), a critical factor in understanding how efficiently your radio signals propagate. In this article, we'll unravel the mysteries of ERP, its significance, and how it influences your radio communication range.

What is Effective Radiated Power (ERP)?

Effective Radiated Power (ERP) is a crucial metric used to quantify the strength of radio signals transmitted from an antenna. It represents the power that an ideal isotropic radiator (a theoretical, omnidirectional antenna) would need to generate to achieve the same signal strength at a given distance and direction as the actual antenna under consideration.

In simple terms, ERP is the power that your antenna effectively radiates into space, taking into account both the transmitter power and the antenna's directional characteristics.

Understanding ERP and Transmitting Range

The ERP directly affects the transmitting range of your radio signals. A higher ERP means more power is concentrated in the desired direction, resulting in extended communication distances. Conversely, a lower ERP limits your radio's reach, making it essential to optimize your ERP for efficient communication.

Factors Affecting ERP

- **Transmitter Power**: The output power of your radio transmitter plays a significant role in determining ERP. Higher transmitter power will generally result in a higher ERP, but this must be balanced with legal limitations and potential interference concerns.
- **Antenna Gain**: Antenna gain refers to the ability of an antenna to direct its radiation in a specific direction. Antennas with higher gain concentrate more energy in the desired direction, thus increasing ERP.
- **Cable Losses**: Losses in the transmission line or coaxial cable connecting your transmitter to the antenna can diminish the ERP. High-quality cables with low losses are crucial to maintain an efficient ERP.
- **Antenna Height and Placement**: The height and placement of your antenna have a direct impact on ERP. Placing your antenna at an appropriate height and minimizing obstructions can maximize your radio's effective range.

Calculating ERP

The formula to calculate Effective Radiated Power (ERP) is relatively straightforward:

ERP (in watts) = Transmitter Power (in watts) × Antenna Gain (dimensionless)

For example, if your transmitter has an output power of 50 watts and your antenna has a gain of 5 dB (equivalent to a gain factor of 3.16), your ERP would be:

ERP = 50 watts × 3.16 = 158 watts

Remember, the ERP value obtained using this formula represents the power radiated in the direction of maximum antenna gain.

Regulatory Considerations

It's crucial to note that radio communication is subject to various regulations, including ERP limits set by local and international authorities. Adhering to these rules is essential to prevent interference with other radio systems and to ensure efficient spectrum use.

Conclusion

Effective Radiated Power (ERP) is a fundamental concept that every beginner radio operator should understand. It directly influences the range and effectiveness of your radio communication. By optimizing ERP through careful selection of transmitter power, antenna gain, and proper cable management, you can extend the reach of your signals and improve communication efficiency. Remember to follow regulatory guidelines and continuously educate yourself about radio operations to make the most of your radio equipment and enjoy the fascinating world of radio communications. Happy transmitting!

VE Sessions and Results

PROVIDED BY SHEREE HORTON, WM5N

Attendees

On Saturday July 22, 2023, a VE Test Session was held at HCESD 16 Admin, 18606 Stuebner Airline Rd, Spring, TX 77379. During the testing session, 8 candidates took 12 tests.

Technician (Element 2)	General (Element 3)	Amateur Extra (Element 4)
5	2	3
Passed	Passed	Passed
6 Tests Given 1 Failed	3 Tests Given 1 Failed	3 Tests Given 0 Failed

Congratulations!

Congratulations to the following for passing their new license exams[1]:

- Brian A Distefano – Technician
- Jessenia Gallardo – Technician
- Alvin L Parish Jr – Technician
- Michael G Tapp – Technician

Congratulations for passing all three exams:

- William K Norton III – New Extra

Congratulations to the following for passing their upgrade exams:

- Charles M Pincumbe, KJ5BSA – Upgrade to Extra (from Technician)
- Abel Tan, KJ5BRB – Upgrade to Extra

[1] Successful candidates will only receive their **NEW** licenses if they pay the $35 fee to the FCC within 10 days of receipt of their notification emails. They will have to request the ARRL VEC to resubmit their paperwork if they miss the 10-day deadline. They do **NOT** have to retest.

Pre-registration for Testing Sessions

To pre-register for an upcoming testing session, you can use one of the following links:

HamStudy.org page link: https://hamstudy.org/sessions/arrl/77070/inperson

The next session will be August 19, 2023 at the HCESD 16 Admin Building. Please visit www.w5nc.club for the announcement.

Thanks and Gratitude

Thanks to the Exam VE's in attendance:

- Michael Robinson, KI0DE – Assistant Session Manager
- Ed Messman, KT5EM – Assistant Session Manager
- Bob Ewers, K9HOU
- Brett Hebert, KG5IQU
- Paul Owen, N5NXS
- Synomen Hebert, KG5IRS
- Vicki Owen, AC5EW
- August J Canik, KI5YPD

VE Session Guidelines

If you have a temperature or feel ill – DO NOT attend.

- Tables and chairs will be arranged to meet social distancing. DO NOT MOVE THEM.
- Wear masks if you are not fully vaccinated or feel the need to wear them.

Please send an email to either of the following if you plan on attending the test session:
Sheree Horton - wm5n@arrl.net or vec@w5nc.net

Volunteering and Becoming a Volunteer Examiner

Anyone who wants to observe and/or participate in a session is always welcome. Please let Sheree Horton know if you want to learn more about becoming a volunteer examiner.

Did you know...

NARS now has the ability to run computer-aided tests through Ham.Study. Computer-aided tests provides many benefits, including the ability to make the tests easier to administer, quicker to get results, easier for many test-takers, and many more!

NARS Membership – Due Dates and More

Did you know that you can find your membership expiration date on the club website? Simply click the "Membership Reports" link on the home page or visit this link: http://www.w5nc.club/nars/index.php/2014-03-30-18-23-31/membership-reports/club-roster. Find your name in the list and look at the "Expires" column of the table!

Renewing Club Members

New Club Members

Welcome to the following new members of NARS!

- Donaldson Raymond, KJ5BRC
- McCauley Rick, KJ4EAG
- Pickut Randolph, KI5LQS
- Springs Jason, KR1BBT

Renewing Club Members

Thank you to all the members who renewed their NARS membership this past month:

- Kotila Carl, WD5JRD
- Lewis Fletcher, KE5BGG
- Meunier Michel, KI5WLU
- Pappano Phil, KI5VPF
- Walker Henry, KG5QAQ

New General Question Pool Released for Ham Radio Licensing Effective July 1, 2023

The National Conference of Volunteer Examiner Coordinators' (NCVEC) Question Pool Committee (QPC) has released the 2023 - 2027 General Class FCC Element 3 Syllabus and Question Pool to the public. The new General Question Pool is effective July 1, 2023, through June 30, 2027.

The new pool incorporates some significant changes compared to the 2019 - 2023 version. Its 432 questions were modified slightly to improve wording and to replace distractors; 51 new questions were generated, and 73 questions were eliminated. This resulted in a reduction of 22 questions, bringing the total number of questions in the pool down from 454. The level of difficulty of questions is more balanced, and the techniques and practices addressed have been updated.

The pool is available as a Microsoft Word document and PDF. The single graphic required for the new General Question Pool is available within the documents, or separately as PDF and JPG file formats.

The newly revised pool must be used for General-class license exams starting July 1, 2023," said ARRL VEC Manager Maria Somma, AB1FM, who is a member of the NCVEC Question Pool Committee. "New test designs will be available to ARRL Volunteer Examiners on that date. The ARRL VEC will supply its officially appointed, field-stocked VE teams with new General exam booklet designs around mid-June."

General class examination candidates preparing for their exams using the 9th edition of The General Class License Manual, and/or the 6th edition of ARRL's General Q & A are encouraged to test by, or before, June 30, 2023. New editions of ARRL licensing publications will be available in May, for exams taken on, or after, July 1, 2023.

Training and Education

NARS

NARS Meeting Presentations - http://w5nc.club/nars/index.php/club-info/technical-presentations

ARRL

ARRL Online Course Catalog - http://www.arrl.org/online-course-catalog

ARRL Emergency Communications Training - http://www.arrl.org/emergency-communications-training

ARRL Webinars - http://www.arrl.org/ARRL-Learning-Network#schedule

Exam Review for Ham Radio - http://www.arrl.org/examreview

Find an Amateur Radio License Class - http://www.arrl.org/find-an-amateur-radio-license-class

Free Study Guides

A study guide for Technician license preparation, Dan Romanchik, KB6NU

A study guide for Technician license preparation on the Inland Empire VHF Radio Club website, Jack Tiley, AD7FO (Click on "Training Links" and go to the Technician training link)

Online Video/Audio Courses

Online Technician license exam self-study course, Fred Benson, NC4FB - The purpose of the resources developed for this course is to provide candidates in geographical areas that do not provide classes and candidates who cannot attend a class with the means to prepare for the Technician license exam. The materials cover all questions in the question pool with explanations, sub element tests, and sample license exams. Help is available upon request via email.

Benson also offers a "kid friendly" self-study course and a self-study program especially designed for emergency services personnel.

"The Ham Whisperer" Video Course, Andy Vallenga, KE4GKP – This course is based on the FCC question pool sequence to assist with Technician license preparation.

A Self-Study Video Course, Dave Casler, KE0OG – This course provides a guided self-study video course based on ARRL's Ham Radio License Manual curriculum.

Online Technician License Preparation Course – Chris Johnson, N1IR

Study Tools

HamStudy.org: Cutting edge amateur radio study tools - Free ham radio flash cards, practice tests, and question pools as well as introduction to ham radio and explanations for questions.

HamTestOnline – Study Tips for the Ham Radio License Exams

HamExam.org - Free Amateur Radio Practice Tests with Flash Cards

eHam.net Ham Radio Practice Exams

Paid Resources

W5YI Group - Your Resource for Ham Radio and Commercial Radio Licensing

HamRadioPrep - Enroll in Ham Radio Prep, the industry's #1 online test prep and training program, and pass your FCC Amateur Radio License exam on the first try - or your money back.

HamTestOnline - Study for your Ham Radio License Exam!

Upcoming Skywarn Spotter Training for 2023

Training is free and open to the public. More dates to be added soon. For more details, please see SKYWARN - Schedule (weather.gov).

Date/Time	Location	Point of Contact
Advanced October 17th – 5:30pm – 7:30pm	Walker County Storm Shelter Huntsville, TX	

Exam Practice Answers

Technician: T2B03 – A. A network of repeaters in which signals received by one repeater are transmitted by all the repeaters in the network
General: G6B12 - D. RCA Phono
Amateur Extra: E7B03 - C. A low-pass filter to remove switching signal components

Of Interest to the Club

Houston Local Traffic Net

The Houston Local Traffic Net (HLTN) was formed July 14, 2020 in preparation for ARRL Field Day 2020. Originally called the Fort Bend County Traffic Net, the HLTN has been in continuous operation since then.

The nets ran on Monday nights for one hour with training sessions during the net. Because of the volume and interest in the Traffic Net, on April 15, 2021 an additional session was added on Thursday nights for 30 minutes and in 2020 the time was increased for up to an hour to also accommodate training.

The Houston Local Traffic Net currently meets from 6:30pm – 7:30pm twice a week handling National Traffic System (NTS) traffic (Radiograms) into and around the Houston Metro area and also includes, time permitted, traffic handling/training.

Monday's net: 146.940 (-) PL 167.9
Thursday's Net: 147.000 (+) PL 103.5

Backup repeater for both:

- 146.660 (-) PL 100.0,
- 444.375 (+) PL 100.0
- Echolink Node W5NC-R (all linked)

A complete schedule of Area Traffic Nets is located on the HLTN.org 'Nets' web tab with the times and frequencies. Visitors are welcome and encouraged to check-in to listen and learn this important Amateur Radio skill.

Direct any questions, via phone or email, about the Houston Local Traffic Net, Radiograms, and Traffic handling to: Sheree Horton WM5N, ARRL South Texas Section Traffic Manager

GHSN monthly Simplex Propagation Net

Beginning January 2022, the Greater Houston Simplex Network will return to its regular schedule of the 4th Thursday evening of the month, with 6:15pm for the Zoom meeting and 7:00pm for the beginning of the net. Simplex frequencies are 146.540 MHz.

I would also like to restart the relay nets for the 2nd week of each month, so I need volunteer(s) to help out as Net Control Operator. I am just swamped with developing our cool new propagation application. Please contact me if you can help with this. The script is fully developed, and can be found on the website.
Contact Mark - N5PRD@yahoo.com

Calendar

Club Activities and Events

Monthly Club Meeting – August 18, 2023 - HCESD 16 Admin – 18606 Stuebner Airline Rd, Spring, TX 77379

VE Test Session – August 19, 2023 – 18606 Stuebner Airline Rd, Spring, TX 77379 - Check-in will start at 8:30am with testing lasting from 9:00am - 11:30am. All testing activities will be completed by noon.

The full NARS calendar can be viewed at: https://w5nc.groups.io/g/main/calendar

Social Events

Lunch Break – North

Take a break with fellow radio operators and enjoy a lunch together!

Locations are announced weekly on the NARS email reflector!

Lunch Break – Medical Center

Near the Medical Center and want to take a break with fellow radio operators and enjoy a lunch together?

Watch the NARS email reflector for details!

Saturday Breakfast

Saturdays at 7 am Broken Yolk Café, 16803 Stuebner Airline Road, Spring, TX 77379

Monday Lunch (Taildraggers Lunch)

Mondays at 11 am; Aviator's Grill at Hooks Airport Terminal

Did you know...

NARS has a social media presence! Thanks to Sam Labarbera, N6HB, we have a Facebook page for those who would like to follow us there. Visit the W5NC Facebook page and join! It is open to ham radio operators, so there is a short quiz to qualify new members.

We also have a Twitter feed. Follow us on https://twitter.com/nars_w5nc

Hamfests and Conventions

August 25 - 27 | Northeast HamXposition, ARRL New England Division Convention, Marlborough, Massachusetts

September 9 - 10, 2023 | QSO Today Virtual Ham Expo (online)

September 23 | Red River Radio Amateurs' Hamfest, ARRL Dakota Division Convention, West Fargo, North Dakota

October 20 | Pacificon, ARRL Pacific Division Convention, San Ramon, California

November 18- 19 | Fort Wayne Hamfest & Computer Expo, ARRL Central Division Convention, Fort Wayne, Indiana

Contests and Radiosport

ARRL Contest Corral

August 2023 - http://www.arrl.org/files/file/Contest%20Corral/2023/August%202023%20Corral.pdf

September 2023 - http://www.arrl.org/files/file/Contest%20Corral/2023/September%202023%20Corral.pdf

For details on ARRL contests, please see http://www.arrl.org/contest-calendar.

NARS Club Officers and Information

Board Officers with Voting Privileges

President: Ron Matusek, WA6TQH, 713-825-9606, officers@w5nc.net

Vice President: Paul Kent, KI5FJS, officers@w5nc.net

Treasurer: Tom Hoherd, KK5YU, 281-370-2941, treasurer@w5nc.net

Secretary: Brandon Rogers, K5BLR, 713-294-6630, officers@w5nc.net

Director: Rich Jones, W5VEK, officers@w5nc.net

Director: Jerry Davis, N5EKO, officers@w5nc.net

Board Non-Voting Associate Members

Administrative Secretary: Neal Naumann, N5EN

Social Media Liaison: Sam Labarbera, N6HB

Newsletter Editor: Brandon Rogers, K5BLR

Public Information Liaison: Sheree Horton, WM5N

ARRL/VEC Liaison: Sheree Horton, WM5N

Repeater Team Lead: Marty Fitzgerald, W5MF

Webmaster: Bill Buoy, N5BIA, webmaster@w5nc.net

Trustee: Paul Owen, N5NXS

Did you know...

that NARS has a messaging service, called Groups.io, that allows you to connect with a giant group of experts, club members, and resources. Get more information on our club website at http://w5nc.club/nars/index.php/social-media/email-reflector-groups

Club Nets

DMR Weekly Net – Every Tuesday at 7pm. Tune in on Talkgroup 3146211 for information on configuring codeplugs, see the DMR pages on the Club website (http://w5nc.clubs) or contact a club Elmer. Sam Labarbera, N6HB, coordinates this Net.

The Weekly Wednesday Evening Net - Every Wednesday at 8:00 pm. Join us on one of the W5NC repeaters: 146.660 MHz, -600kHz offset, PL 100.0 - wide area centered on downtown Houston and/or 444.375, + 5 MHz offset, PL 100 best in the Spring / Klein area. You can also join from anywhere in the world by connecting to EchoLink node W5NC-R. Kirc Breden, N5XJB, coordinates this Net.

Repeaters

For information on NARS-managed repeaters, please see the club website at http://w5nc.club/nars/index.php/repeaters/nars-repeaters