



RCA Amateur Radio Club

Indianapolis, IN



ARRL Affiliated Club
www.w9rca.org

MAY 2024

MONTHLY NEWSLETTER

THE NEXT MEETING OF THE RCA AMATEUR RADIO CLUB WILL BE TUESDAY, MAY 14th
6:30 PM AT NORTH SIDE EVENTS, FORMERLY THE KNIGHTS OF COLUMBUS,
2100 EAST 71st, INDIANAPOLIS, IN

RCA ARC NEWS

APRIL MEETING SUMMARY – Thanks to all who attended the April meeting. Greg, K0GAH, gave the treasurer's report. We haven't paid Repeater Council dues yet. Need to do that. Some discussion developed on receiving QST now that it is in "electronic" format. "The ARRL Current" is subject line of a monthly email announcing QST, QEX, NCJ, and "On the Air." Doesn't exactly stand out in your inbox. Jim, K9RU, renewed the Club's Certificate of Deposit. Our Club is still committed to Field Day with the Indy United club. The Indy Radio Club's upcoming tribute to Bob, W9KVK, was discussed. We need to replace the 2m antenna at the IVY Tech '88 repeater receive site. At the Hamvention, we'll have a dinner get together after the show Friday evening. Jim, K9RU, took a list of those wishing to attend and will make a reservation.

AMATEUR RADIO LICENSE TEST SESSION

Date: Saturday, June 8, 2024 **No test session in May.**
Time: Starting at Noon, **by appointment only.**
Location: Salvation Army EDS Training Facility, 4020 Georgetown Rd
Indianapolis, IN 46254-2407
Contact: Jim Rinehart (317) 721-1458
Email: testing@indyradioclub.org
Required: FCC FRN and a completed NCVEC 605 license application form.
ARRL Test Fee: \$15

Laurel VEC test sessions: <https://www.laurelvec.com/?pg=exams>

HAMFESTS, OPERATING EVENTS, VOLUNTEER OPPORTUNITIES

Salvation Army Open Net, Thurs. 7PM, W9RCA repeater, 146.88 MHz, tone 88.5 Hz

May 17-19 Dayton Hamvention <https://hamvention.org/>
Dayton Hamvention Tickets: <https://hamvention.org/purchase-tickets/>

June 8 Monroe County Hamfest, Community Building, Monroe County
Fairgrounds, 5700 W. Airport Rd., Bloomington, Public Contact: Tom
Henderson W9YW, Phone: 317-250-4646, Email: W9YW@arrl.net

WA7BNM expanded contest calendar, <https://www.contestcalendar.com/>

Visit the **ARRL Special Event Stations database** at www.arrl.org/special-event-station to find other on-the-air events and commemorations.

Hamfest or Convention: www.arrl.org/hamfests
Find a license exam in your area: www.arrl.org/exam
ARRL Home: www.arrl.org

RCA ARC AT THE DAYTON HAMVENTION – If you're planning to go to the Hamvention, the Club lunch get-together will be as usual. Grab something from the food vendors and meet at 12 noon in the grandstand. We will be monitoring use 144.43 MHz simplex.

The Hamvention closes at 5 pm Friday. We are planning dinner at a Nick's, a local Pub, same place as last year.. Nicks Restaurant is on Hwy 68 basically just North the fairgrounds at **443 N Detroit St., Xenia, OH 45385** We have a **reservation for 5:00 pm** in Jim Rinehart's name, for eight persons. It's unlikely we'll be able to accommodate any more. If you need to contact Jim, (317) 721-1458



W9RCA REPEATER WORK – The 2m receive antenna at the remote receive site, located at IVY Tech, for the 146.88 repeater was replaced the last week in April. Sometime during the winter the antenna broke off at the base leaving only the wire which was inclosed by the white fiber glass tube, dangling in the wind. The replacement antenna was donated to the club.

The photo shows John, KF9UH, tightening the U-bolts on the UHF antenna which transmits back to the repeater site. Thanks, John!

2024 ARRL NATIONAL CONVENTION AT DAYTON HAMVENTION -- PROGRAM AND APP AVAILABLE

The 2024 ARRL National Convention, hosted by Dayton Hamvention®, is just a month away, and the convention program guide is now available at www.arrl.org/expo. The ARRL Events app is also ready to use, encouraging everyone planning to attend to preview all of the Hamvention exhibits, forums, and related activities.

Download the free **ARRL Events app**, or access the content from an internet browser. The app is offered in partnership with Hamvention, and it contains Hamvention's full program and live updates, so attendees can browse and schedule forums, find affiliated events, and preview the extensive list of exhibitors. During the event, attendees can use many of the app's other features to follow the hourly prize drawings organized by the Dayton Hamvention Prize Committee and browse building and site maps.

The MyProfile icon in the app allows users to add their name, call sign, email address, and any additional information they would like to share with other Hamvention attendees. Additionally, the MyBadge icon displays a QR code of your event badge that can be scanned by another attendee or exhibitor using the Scan Badge icon to instantly share contact information with other hams at the event. The app is available for Apple and Android smart devices. You can also access the web browser version, which is optimized for nearly any browser or mobile device.

Use the app to preview many of the informative presentations planned by Hamvention and ARRL that cover a variety of topics and interests to help grow your skills as a radio amateur -- no matter where you are in your journey.

Young hams and young newcomers to amateur radio are reminded to register for the 2024 ARRL Youth Rally, which will be held on Saturday during the convention. While Hamvention offers free tickets for youths aged 12 through high school, advance registration for the Youth Rally (\$20) includes a tee shirt to wear on Saturday, a badge, a lanyard, and a reusable tote bag. Register for the Youth Rally now (11 to 21 years of age).

Hamvention and the 2024 ARRL National Convention is May 17 - 19 at the Greene County Fairgrounds and Expo Center, in Xenia, Ohio. In the lead-up to the convention, the venue has finished making improvements to the flea market area. The walking paths have been topped with gravel and rolled to make the paths smooth and safe.

Complete information about this year's event can be found on the Hamvention website, Facebook page, and at www.arrl.org/expo.

STUDENTS TO PROMOTE COLLEGIATE AMATEUR RADIO AT THE 2024 ARRL NATIONAL CONVENTION AT DAYTON HAMVENTION®

Young adults planning to attend the 2024 ARRL National Convention at Dayton Hamvention® can look forward to meeting many other young hams at the event, including college students representing the ARRL Collegiate Amateur Radio Program (CARP). The convention is on May 17 - 19, 2024, at the Greene County Fairgrounds and Expo Center in Xenia, Ohio.

CARP will occupy a booth in the large ARRL exhibit area, which will be staffed with college students and advisors for the program. CARP will also have a forum at the end of the ARRL Youth Rally on Saturday, May 18, at 4 PM in Forum Room 3. The forum will be followed by a pizza party at a nearby restaurant.

"The CARP booth will be a great place to connect with other college-aged hams, and to learn more about the extensive network of college amateur radio clubs across the nation," said Andy Milluzzi, KK4LWR, from Clermont, Florida.

Andy and his brother Tony Milluzzi, KD8RTT, from Lenexa, Kansas, are co-advisors for CARP, and they moderate a monthly Zoom meetup to help network college radio clubs. The brothers have recruited many college students who are regular CARP participants to support the booth and related activities at Hamvention.

Morgan Lyons, KI5SXY, is one of the volunteers. She's a student at the Missouri University of Science and Technology and a very active radio amateur. "I'm super excited to be working with ARRL at the CARP booth at Hamvention! This will be my second time at Dayton Hamvention, and I had so much fun last year. I'll also be helping with the Collegiate Amateur Radio Forum," she said.

The energy around CARP is exciting. Lyons, whose other interests include rocketry, is an aerospace engineering major and serves as president of the ARRL-affiliated Missouri S&T Amateur Radio Club, W0EEE, which recently celebrated 100 years of existence. She says that legacy is one she's proud to carry at the National Convention. "I love representing the college students in ham radio and showing folks that ham radio [will continue with the future generations]!"

Additional student volunteers will include Andrej Antunovikj, K8TUN, and Adam Goodman, W7OKE, both undergraduates attending Case Western Reserve University in Cleveland, Ohio, and members of the Case Amateur Radio Club, W8EDU -- also an ARRL Affiliated Club. "I'm looking forward to going to an amateur radio convention and meeting other students from the CARP program in-person," said Antunovikj.

The ARRL Collegiate Amateur Radio Program is sponsored in part by the W1YSM Snyder Family Collegiate & ARRL Affiliated Club Endowment Fund. The program was first established in 2017, and today includes an extensive community of participating students, alumni, and faculty. In addition to its monthly Zoom meetups, students can make connections

through the ARRL CARP Facebook group and Discord. For more information about CARP, visit www.arrl.org/WeWantU.

See the full list of ARRL National Convention activities at www.arrl.org/expo. Buy tickets for the convention on the Hamvention website.--ARRL Letter

ACTIVE HURRICANE SEASON PREDICTED FOR 2024

Colorado State University (CSU) hurricane researchers predict an active Atlantic hurricane season (June 1 to November 30) in their initial 2024 forecast.

ARRL Director of Emergency Management Josh Johnston, KE5MHV, attended the National Hurricane Conference in Florida in late March, where the CSU prediction was issued. "The common discussion at the National Hurricane Conference this year was the potential for a very active year, and the forecast from CSU enforces that thought," said Johnston. "Several of the forecasters were pointing to indications that we are moving from an El Niño to a La Niña and that could potentially cause a more active season."

The CSU Tropical Weather & Climate Research team predicts 23 named storms during the Atlantic hurricane season. Of those, researchers forecast that 11 will become hurricanes and five will reach major hurricane strength, as measured by the Saffir-Simpson Hurricane Wind Scale, with sustained winds of 111 mph or greater. The prediction is above the 30-year average for hurricanes and storms and is above the total of 20 storms, seven hurricanes, and three Category 3 or higher hurricanes in 2023.

Senior Research Scientist in the Department of Atmospheric Science at CSU and the lead author of the report Phil Klotzbach said, "So far, the 2024 hurricane season is exhibiting characteristics similar to 1878, 1926, 1998, 2010, and 2020. Our analog seasons were all very active Atlantic hurricane seasons."

The team predicts that 2024 hurricane activity will be about 170% of the average season from 1991 - 2020. By comparison, 2023's hurricane activity was about 120% of the average season. The report also includes the probability of major hurricanes making landfall, including a 62% probability for the entire US coastline.

The average landfall from 1880 - 2020 was 43%. The report also indicates increased landfall probabilities of 34% for the East Coast of the US, including the Florida peninsula (the average from 1880 - 2020 was 21%); 42% for the Gulf Coast, from the Florida panhandle westward to Brownsville (the average from 1880 - 2020 was 27%), and 66% for the Caribbean (the average from 1880 - 2020 was 47%).

The National Weather Service (NWS), National Hurricane Center (NHC), and Hurricane Watch Net (HWN) are prepared for an active hurricane season. Amateur radio operators can take part in activations on 14.325 MHz during the day and on 7.268 kHz at night. As propagation changes, the HWN may operate both frequencies simultaneously.

At the Florida conference, Johnston also highlighted the relationship between ARRL and the Federal Emergency Management Agency (FEMA), as well as ARRL's position as a net control station within the SHARED RESOURCES High Frequency Radio Program (SHARES) managed by the Cybersecurity and Infrastructure Security Agency.

"Now is the time to prepare for emergencies of any type by building relationships, training and refreshing skills, and testing and preparing equipment," added Johnston.

MFJ CEASING ON-SITE PRODUCTION

MFJ Enterprises, Inc founder Martin F. Jue, K5FLU, announced that as of May 17, 2024, the company will cease on-site production at their Starkville, Mississippi, facility. Ameritron, Hy-Gain, Cushcraft, Mirage, and Vectronics brand products will be affected by the shutdown.

In a letter posted to social media, Jue said he is looking forward to retiring.

Times have changed since I started this business 52 years ago. Our product line grew and grew and prospered. Covid changed everything [for] businesses, including ours. It was the hardest hit that we have ever had, and we never fully recovered.

I turned 80 this year. I had never really considered retirement, but life is so short, and my time with my family is so precious.

Jue founded MFJ Enterprises in 1972, after building a CW filter kit that sold for less than \$10. Since 1990, the company has acquired several other legacy brands within the amateur radio market. Jue shared that the company will remain open to sell existing inventory because they have "a lot of stock on hand." They will also continue to offer repair services for the foreseeable future.

Jue expressed gratitude to the many longtime employees of MFJ, some of whom have been with the company for 40 years. He also thanked MFJ dealers and radio amateurs for their patronage over the decades.

He also sent a special message to ARRL Members, and loyal QST readers:

"I give my deepest heartfelt thank you to my fellow hams all over the world and especially to ARRL members and QST readers. In my youth, I was given a second-hand set of 1958 QSTs. I read them over and over until I practically memorized every word. This gave seed to MFJ.

MFJ became a worldwide ham radio leader only because of you. As I turned 80, I cannot thank you all enough for 52 wonderful ham radio years. Thank you, 73s . . . Martin F. Jue, k5flu"

CQ MAGAZINE PUBLISHER DICK ROSS, K2MGA, SK

Longtime amateur radio publisher Dick Ross, K2MGA, has become a Silent Key. He passed away on April 27, 2024.

In 1960, Ross started working for Cowan Publishing Company and quickly became Associate Editor for CQ. In 1964, he was promoted to Editor of CQ, when Cowan Publishing moved its offices to Long Island, New York. As Ross became more involved with the business side of the magazine, he was elevated to Vice President/General Manager of the company in 1976. In this role, he was responsible for all fiscal matters and publishing operations for five publications.

His colleagues respected him greatly. "Dick was a friend as well as my boss and we saw eye-to-eye on most things regarding amateur radio. Dick was a leader in the ham radio industry for decades and an innovator in ham radio publishing. He also built the CQ brand into worldwide leadership in many aspects of the radio hobby, particularly contesting and DXing," said CQ Editorial Director Rich Moseson, W2VU.

Ross had been Publisher of CQ magazine since 1979. As President of CQ Communications, Inc., he was also publisher of multiple magazine titles, including *Popular Communications*, *CQ VHF*, *CQ Contest*, *WorldRadio*, *Communications Quarterly*, *CB Radio Magazine*, *Electronic Servicing & Technology*, *Modern Electronics*, *MicroComputer Journal*, and *Music and Computer Educator*. In addition, Ross oversaw the production and publication of CQ Communications books and calendars, the CQ Video Library, and more.

Ross was given the Dayton Hamvention® 2010 Special Achievement Award for his work on CQ: <https://www.arrl.org/news/dayton-hamvention-announces-2010-award-winners>.

"I will greatly miss his ideas, his insights, and his friendship. His passing is a great loss for our hobby," added Moseson.

Ross is survived by his wife Cathy, daughters Kate and Jennifer and their husbands, and five grandchildren. A memorial service will be scheduled at a future date.

BOB BEGEMAN, W9KVK, A CENTENNIAL HAM !



Bob was born and raised in Sandborn, Indiana (36 miles from Vincennes with a population of about 800) on August 18, 1924.

While in high school, in one of his first forays into radio, Bob transmitted music on the AM broadcast band and over the local party line phone using a 6L6 oscillator.

Graduating from high school in 1942, Bob attended Vincennes University earning an Associate's Degree in Pre-Engineering with a side interest in radio.

In 1943 Bob was drafted into the Navy Electronic Technician Program. His work in the Navy included radar, sonar, and radio.

Bob worked as an Electronic Technician on the attack transport USS George Clymer (APA 27) which was the flag ship scheduled to be part of the invasion fleet on Japan in November 1945.

WWII ended in August, and in September Bob joined a landing party to visit a Japanese cave radio station and disassemble it. He found that many of the tubes were almost identical to the US tubes, even with the same numbers!

After discharge from the Navy in 1946, Bob attended Purdue University as a WWII Veteran and earned his Bachelor's Degree in Electrical Engineering. He was active in Tau Beta Pi, Sigma Xi, Eta Kappa Nu, and the W9YB Ham Radio Club. In 1949 Bob earned his Master's Degree from Purdue with his thesis on Pulse Code Modulation.

From 1949 to 1951 Bob worked for Electronic Research Inc. in Evansville, IN which did antenna and electronic design. Most of the engineers were hams and it was during this time Bob received his conditional license, W9KVK which was the equivalent of a General class license.

Electronic Research allowed employees to experiment at work and one of the projects was building a modified version of the Gonset 10 meter ham band to AM car radio converter used for mobile. 10 meter AM was popular in the 1950s on 29.6 MHz. Bob also designed and built a 10 meter AM mobile transmitter using a 807 for the final and a 6N6 as the modulator mounted in the trunk of the car powered by a DM-35 dyanmotor with a remote control head under the dash.

In 1951 Bob interviewed with PR Mallory in Indianapolis, but they didn't show an interest in him. On a lark, he decided to stop by the Naval Ordnance Plant (became Naval Avionics) to see if they had a job. He had been working on radar at Electronic Research and so they offered him a job working on the design for the APG46 radar. This later evolved into automatic turn clearance and following radar which was revolutionary.

From 1951 to June 1982 Bob was employed as a Consulting Engineer in electronic design of radar, sonar, and display systems. This included flight and sea trial testing. He participated in a radar flight test at Naval Air Weapons Station in China Lake, CA. He completed lake and

submarine sea trials which included a trip to Rota Spain and becoming an Honorary Submariner while aboard the USS Mendel Rivers (SSN686).

During this time, Bob was instrumental in designing ATV and SSTV products including the 4CX250 432 transmitter. Bob played “pong” with Don Miller on ATV and gave a talk at the Dayton Hamvention about it.

Bob let his license lapse, but in 1959 he received a Technician license, getting the W9KVK call again. Bob has always been interested in building and experimenting with circuits and antennas and this allowed him to try ideas that he had been working on. Since most of the ideas were radar and VHF-UHF based, the tech license fit his needs.

In July 1982 Bob was not ready to retire and went to work for RCA Consumer Electronics in Indianapolis, IN as an Electrical Engineer working on Teletext and TV tuner design until 1987.

Bob became an active member of the RCA ARC and at one of the test sessions he took the General written and 13 WPM code tests and passed them. It was suggested that he try the Extra 20 WPM code and written test and passed them also.

Bob joined the RCA VE team after receiving his Extra class license. Since then, Bob has participated in VE sessions at Hamfests and with VE teams in the Indianapolis area including the RCA ARC, Red Cross, Greenfield ARC, and currently the Indianapolis Radio Club.

Bob is on the ARRL VE Honor Roll participating in 295 ARRL VEC Test sessions and this does not include test sessions done with other VECs! Bob has been an ARRL member for over 60 years! Bob is an IEEE Life Senior Member and holds several patents.

Bob married Marjorie on Thanksgiving day in 1955. Marjorie holds a general class license, K9RYH.

Bob and Marjorie sponsor scholarships at the University of Indianapolis, Purdue, IUPUI (now IU), and Vincennes University. --K9RU, N9KT

ON LINE THIS MONTH



“NOW WE ADD RADIO SIGHT TO SOUND,” PROCLAIMED RCA PRESIDENT DAVID SARNOFF, 85 YEARS AGO AS HE DEDICATED THE RCA PAVILION AT THE NEW YORK WORLD’S FAIR WITH THE LIVE TELEVISION BROADCAST THAT INITIATED COMMERCIAL TV SERVICE IN THE U.S.

Finally, after a \$50 million investment – or more than \$1 billion in today’s money -- the dream of electronically transmitted moving images was reality.

Sarnoff wisely launched TV service 10 days before the World’s Fair opened, knowing that the pageantry of the opening day would overshadow his announcement if he waited. And Sarnoff was tired of waiting, especially impatient with the Federal Communications Commission, which had demurred on setting standards for the new technology (eventually early receivers would need to

be modified to align with FCC standards.)

Sunday, April 30 was opening day for the New York Fair (and RCA also had TV receivers on hand at the Golden Gate Exposition that year in San Francisco.) President Franklin Roosevelt became the first president televised with the new RCA system. The New York Herald published a special edition that weekend with a colorful World's Fair insert. A story about the RCA Pavilion quoted Sarnoff.

"The public is about to participate in a new era of radio, one that will bring them into the field of visual services – facsimile and television," Sarnoff explained. More than half the radio tube-shaped RCA building was given over to TV demonstrations, although other RCA technologies were also in the limelight - including an entertainment room of the future.

Sarnoff prophetically opined about the future to the newspaper.

"Countless new radio services may evolve from the microwave field of exploration. One would be an extension of telephone service to motorists traveling the highways. We may visualize motorists in separate cars talking to each other by radio."

Fewer than 200 actual television receivers were in New York at the time, meaning that fewer than a thousand people probably saw the first official broadcast. RCA's first TV product line in that inaugural year included a tiny video-only 5" tabletop model, slightly larger console versions with 5" and 9" screens, and the top-of-the-line TRK-12, with its 12" view. All were luxuriously styled and promoted showing viewers in tuxedos and evening gowns, befitting the target audience who could afford the new technology at home.

A few years ago, we were fortunate to find a New York area collector who was ready to sell his non-working TRK-12, the famous first RCA model with the mirror in the lid. The mirror is required because the 12-inch picture tube is so long that direct-view is impractical. The TV image comes up on the tube in reverse, and the mirror completes the experience. It was restored by early TV expert Chuck Azzalina to working condition, even receiving over-the-air broadcasts when connected to a digital-to-analog receiver (itself 15 years old!)

Some 1,779 of the large TRK-12 models were built. The expensive receiver, in today's money, would carry a \$13,000 price tag. The Early TV Museum in Ohio counts 88 surviving RCA TRK-12 (or later TRK-120) models that remain. More than 30 are in museums, and only a handful – like mine – actually operate.

RCA pioneers David Sarnoff and engineer Vladimir Zworykin knew the potential for television. Success has many fathers, including Philo Farnsworth, who won a million-dollar patent suit against RCA. But, in the end, it was the Radio Corporation that had the financial might to mount an entirely new broadcasting industry – creating the system, the broadcast equipment, the programming, the stations, and the receivers that delivered television to the world. The next challenge would be all-electronic color broadcasting, which would take another 15 years of development by The Radio Corporation. – Dave Arland and Edward Milbourn

MODERN COMMERCIAL AM RADIO – If you're in the commercial AM radio business, you want to send your signal as far and wide as possible. More listeners means you can make more ad revenue, after all. [Jeff Geerling] recently visited a tower site for WSDZ-AM, which uses a full eight towers to broadcast its 20kW AM signal. To do that, it needs a phasor to keep everything in tune. Or, uh... phase.

The phasor uses a bunch of variable inductors and capacitors to manage the phase of the signal fed to each tower. Basically, by varying the phase of the AM signal going to each of the 8 transmitter towers, it's possible to tune the directionality of the tower array. This allows the station to ensure it's only broadcasting to the area it's legally licensed to do so.

The tower array is also configured to broadcast slightly differently during the day and at night to account for the differences in propagation that occur. A certain subset of the 8 towers are used for the day propagation pattern, while a different subset is used to shape the pattern for

the night shift. AM signals can go far farther at night, so it's important for stations to vary their output to avoid swamping neighboring stations when the sun goes down.

<https://hackaday.com/2024/04/20/am-radio-broadcast-uses-phasor-to-let-eight-towers-spray-one-big-signal/> [Jeff's] video is a great tour of a working AM broadcast transmitter. If you've ever wondered about the hardware running your local commercial station, this is the insight you're looking for. AM radio may be old-school, but it continues to fascinate us to this day. Video after the break. --Hackaday

SHORTS

Just a quick reminder that the ballots for the Indiana Section Manager election are due at HQ on Friday May 17. There are two candidates: Brian Jenks W9BGJ and Bob Burns (AK9R – incumbent). Please read their resumes and exercise your privilege to vote.

If you haven't received a ballot, call ARRL HQ (860-594-0200) and request a ballot. --ARRL Central Division, Director: Carl Luetzelschwab, K9LA k9la@arrl.org

2024 ARRL Field Day Poster Released A poster promoting 2024 ARRL Field Day has been released on the Field Day web page, www.arrl.org/field-day. The two-sided informational poster features this year's theme "Be Radio Active". It includes a space for clubs to fill in information about their planned activation so that members of their community can come visit the site. More resources for promoting 2024 ARRL Field Day are being developed and will be available soon. ARRL Field Day always occurs on the fourth full weekend in June. This year, it happens on June 22 - 23.

The [National Voice of America \(VOA\) Museum of Broadcasting](#) in West Chester, Ohio, will be open with special hours during Dayton Hamvention weekend from May 16 - 19, 2024.

The museum is about an hour away from the Greene County Fairgrounds in Xenia. Museum Executive Director Jack Dominic said they will be open May 16 and 17 from 1:00 - 9:00 PM, May 18 from 12:00 - 9:00 PM, and May 19 from 12:00 - 5:00 PM. Admission is \$10. A map from the Hamvention to the museum, as well as additional information is available [here](#). The [West Chester Amateur Radio Association's](#) (WCARA), WC8VOA, ham shack is located in the museum building and includes exhibits like a collection of R. L. Drake radios and the recently restored WLWO (W8XAL) transmitter.

THANKS FOR READING

THE RCA ARC MONTHLY NEWSLETTER IS COMPILED AND EDITED BY JIM RINEHART, K9RU AND JIM KEETH, AF9A. ALL MATERIAL CONTAINED HEREIN IS OBTAINED FROM THE SOURCES CREDITED AND EDITED FOR THIS NEWSLETTER.
