



VOLUME 71 ISSUE 3
March 2020

PPRAA Club Officers

President	<u>Don DuBon, N6JRL+</u>
Vice President	<u>Tom Oliphant, K0BUL+</u>
Secretary	<u>Jay Winterton, W0WJ+</u>
Treasurer	<u>Dick Kohlhaas, W5UDM+</u>
Ø-Beat Editor	<u>Jerre Redding, WAØBCM</u>
Webmaster	<u>Douglas Nielsen, N7LEM</u>
Past President	<u>Jim Bishop, KD0KQL</u>
Board	<u>John Bloodgood, KDØSFY*</u>
Board	<u>R, Lee Glazer KE0YSE</u>
Board	<u>Dennis Major, N0ABC</u>
Board	<u>Logan Perry, KE0KZA</u>
Board	<u>Anthony Mitchell, KE0LQK</u>
Board	<u>Mike McLaughlin, K0JT*</u>
Board	<u>Michael Walter KE0TWK</u>
Board	<u>Mike Anderson, WV7T*</u>

* In final year of 2-year term

+ One year officer position

All officers can be contacted at: boardmembers@ppraa.org

Monthly Ham Breakfast



Western Omelette, 16 S Walnut Street Saturday, 4 April 2020

8:00 to 9:30 AM Saturday, 7 March 2020

All are warmly invited to come on down and join



March PPRAA Club Meeting

The March 11th 7PM club meeting will be at the Golden Corral on Palmer Park and Powers Blvd (just east of Powers Blvd).

1970 Waynoka Rd, Colorado Springs, CO 80915 (719) 591-9870

January 2020 Board Meeting Minutes

1/6/2020

CTO @ 6:30 PM by N6JRL (Don)

In Attendance:

WV7T (Mike Anderson), W5UDM (Dick Kohlhaas), KD0VRB (Jay Winterton), KD0SFY (John Bloodgood), KD0KQL (Jim Bishop), N6JRL (Don DuBon), K0JT (Mike McLaughlin), K0BUL (Tom Oliphant), N7LEM (Doug Nielsen), N0ABC (Dennis Major), KE0KZA (Logan Perry), KE0LQK (Anthony Mitchell), KE0TWK (Michael)

Old Business:

Don N6JRL called the meeting to order at 18:30.

The board held a moment of silence in remembrance of silent keys Ken Frazer KE5JCB and Doc Cornell W0MCT.

W5UDM presented the treasurer's report, which included receipt of \$88 from Amazon Smile. KD0SFY reported the following events for PPARES:

- Thanksgiving support for the Salvation Army went well.
- Skywarn Recognition Day was held in Pueblo.
- The Salvation Army Christmas meals event is will require support.

KD0NQM and K0BUL bought prizes at HRO on Black Friday for next year's Megafest.

N6JRL reported that the PPRAA Christmas Party will be held this Wednesday at the Black Forest Community Center from 7 PM to 10 PM. There will be no meeting agenda. The event will be catered by The Dinner Basket.

- W5UDM recommended that name tags be available for members and spouses at the Christmas Party. He will buy the name tags.
- 67 adults and 6 kids have signed up so far. If other people show up, PPRAA won't turn anyone else away, but we are cutting it close on the number of meals purchased.

N6JRL passed along that KE5JCB (SK) had been very adamant that upon his passing, that the proceeds from the sale of his equipment be split between PPRAA and Youth DX Adventure (YDXA). This is also the wish expressed by his widow. PPRAA will auction off the equipment (since our club doesn't need most of it). Included in this batch is a brand-new surface-mount soldering kit, which will stay in the club. The equipment will be shown in a slide show at PPRAA's Christmas Party, and auctioned off during the January meeting. N6JRL presented the slide show for the board members.

WV7T brought up that the people holding the Thursday-evening 10-meter net need to report to the board what they do and mention during the net that it is a PPRAA net (since it is sponsored by PPRAA).

N6JRL and WV7T will be setting up a QCWA table at the Megafest. Discussion about starting a QCWA chapter within PPRAA was presented.

WV7T reported that

- the Pearl Harbor Day event in Ellicott had a good turnout.
- the new licensing class location is the Carl's Junior on Garden of the Gods - east of the I25 overpass.

A suggestion was made to create a certification program for access to the Ellicott station, with 3 levels of certification. Everyone receiving certification would be given a name badge showing their level of access and the lock combination.

KE0TWK presented information on the inventory of club equipment.

- It was agreed that inventory labels should be used.
- WV7T will perform research on inventory labels and prices and present this at the next board meeting.
- The final format of the inventory list and including pictures were discussed.

N6JRL led discussion on life memberships for PPRAA. Prices and age breakpoints were discussed. It was agreed that the board needs to do brainstorming on this issue and continue discussion at the next board meeting.

KD0KQL motioned make and AE2RW seconded that PPRAA donate \$200 from its general account for YDXA support. Upon continued discussion, it was decided that the funds should come from the raffle account instead. AE2RW motioned and K0BUL seconded that the funding come from the raffle account, vice the general account.

N6JRL initiated discussion about lack of information about the status of PPRAA's scholarship award for 2019 (through Foundation for Amateur Radio). Michael Derbort, KC0ELG, who had been handling the scholarship for PPRAA, expressed his problems trying to contact FAR leadership on this issue. KD0SFY stated he had emailed the president of FAR and had heard back from him. There was discussion about bringing this function of coordinating with FAR back under PPRAA. W5DUU volunteered to take over the FAR scholarship program. KD0KQL added the information that FAR actually evaluates the scholarship applications and makes the award.

N0ABC suggested getting W0MCT's call sign as a replacement for WA0VTU. Coordination with W0MCT's next of kin to have W0MCT listed as a silent key was also discussed.

AE2RW -- asked about internet at Ellicott. He said that the WISP Canopy internet service might work and would be faster than DSL.

K3ILC recommended that PPRAA have a point of contact listed on the door to the Ellicott club station, in case of emergency.

K0JT motioned to adjourn, K0BUL seconded.

New Business:

- ☐ SK's: None other than Earl Watkin's father o KD0VRB, Jay will send out cards/flowers in the future to SK's
- ☐ Treasurers report by W5UDM, Dick o We did get confirmation that \$1,000 went to a girl by Emily, but we have not been getting much of a response from FAR. We might go with an ARRL scholarship foundation instead.
- ☐ ZeroBeat Report by WA0BCM, Jerre
- ☐ Webmaster report, N7LEM, Doug – Not present
- ☐ Secretary's Report – KD0VRB, Jay
- ☐ PPARES Report by KD0SFY, John o Making plans for this year's SKYWARN training program
- ☐ Megafest Follow-up - KD0NQM, Jim – Not present, but the following info has been passed along.
 - o Paperwork to the school has been submitted. Awaiting date approval from the school. He will let us know what dates we can select from.
 - o Prizes from HRO have been purchased. Probably more to come.
- ☐ Christmas Party – good report back o Idea to do this same thing again next year and invite GOG and Village 7.
 - ☐ K0BUL, Tom motioned that we invite these clubs to our next Christmas party. KD0KQL, Jim 2nd. All in favor.
- ☐ N6JRL, Don - January meeting – K0BUL, Tom will be running the auction. Slight presentation at the start of the meeting showing the items. Don's wife thought it'd be nice to have some photos of the previous meeting shown in the presentation as well.
- ☐ KD0KQL, Jim – Thursday PPRAA Net on 2m.
- ☐ Bylaws – N6JRL, Don – All board members take a look at the bylaws and pencil in changes and go over these changes together at the next board meeting.
- ☐ QCWA Chapter 58, N6JRL, Don – Will ask at the club meeting how many are or qualify for membership in this club. There hasn't been a chapter here for many years.
- ☐ WV7T, Mike – Asset labels presented
- ☐ N6JRL, Don – Whatever we do not sell at our auction Don will make sure it gets to the club station as Megafest assets for sale.
- ☐ KD0KQL, Jim – Pillar Institute for Lifelong Learning – Membership dues are fairly reasonable. Jim will be teaching a class in April this year.
- ☐ Raffling off an IC-705 -3rd weekend in May (tickets, \$5/ EA or 5 tickets for \$20) for the youth DXAdventure.
- ☐ FAR Scholarships – Move it to ARRL or another organization instead of FAR. Moved by K0JT, Mike, 2nd by K0BUL, Tom.
- ☐ K0BUL, Tom - Net for new hams - 3rd Sunday of every month at 6 PM. .470 repeater
- ☐ N0ABC, Dennis moved that we drop the lifetime membership discussion. 2nd by KD0KQL, Jim. All in favor.
- ☐ KE0TWK, Mike motioned that we form a committee of 4-5 people including John to do the PR affairs for the club. Jim, KD0KQL 2nd.
- ☐ N0ABC, Dennis – idea of getting W0MCT, Doc's callsign as one of the club's callsign. NOABC, Dennis motioned that we go ahead and look into getting Doc's callsign to use as one of the club

callsigns. We can only have one vanity callsign. Our club has 2 FRN's, so this shouldn't be an issue. 2nd by KD0VRB, Jay. Motion carried.

Motion to Adjourn @ 7:58 PM by KD0SFY, John
Second by K0JT, Michael
All In Favor.

January 2020 Club Meeting Minutes

1/8/2019

CTO @ 7:00 PM by N6JRL, Don

In attendance: 47

- ☐ Who attended the Christmas party? ☐ Pledge of Allegiance – Lead by N6JRL, Don ☐ SK's:
 - o Earl Watkin's father o W0TLB's wife
- ☐ Introductions

Old Business:

No club business in December 2019 – our club's Christmas Party was held in lieu of our regular monthly club meeting.

New Business:

- ☐ New hams
- ☐ WV7T, Mike presented an award to KD0KQL, Jim (for service in education) and KE0KZA, Logan (for excellent handling of information in an emergency situation)
- ☐ KD0KQL, Jim - Pillar Institute for Lifelong Learning – Class on April 21st on the subject of Amateur Radio. Jim will be the instructor at this class. Curiosity Unlimited also has some great educational classes.
- ☐ N6JRL, Don discussed the startup of the QCWA chapter again
- ☐ Treasurer's Report: W5UDM, Dick o See the treasurer's report
- ☐ Secretary's Report: KD0VRB, Jay o Old business:
 - ☐ None
 - o New business:
 - ☐ None
- ☐ ZeroBeat Report: WA0BCM, Jerre – Released the final version of ZeroBeat today.
- ☐ Webmaster Report: N7LEM, Doug – November and December meeting minutes are on the website. So is the recent ZeroBeat.
- ☐ PPARES Report: KD0SFY, John o Salvation Army Christmas Day meal went well. Thanks to all of those who assisted. o Nothing on the schedule.
 - o First event in May or beginning of June o SKYWARN training date and info to be released soon
 - o He is asking for a public relations committee be formed. He has 2 volunteers and would like about 2 more. He will guide you on what needs to happen.

Goal will be to let media, politicians and other people out to Field Day so they can see what ham radio is about. If interested, please let John know.

- ☐ N6JRL, Don o If you get an email about gift cards from N6JRL please ignore it.
- ☐ Megafest Report: KD0NQM, Jim o All prizes have been purchased for this event.
 - o Application has been submitted to Lewis Palmer HS for our Megafest.
 - o We will get the raffle tickets printed as soon as we know the dates that we can use.
- ☐ Christmas Party Information by N6JRL o Only one complaint: There wasn't enough gravy. They said that they'd bring a lot more next year.
 - o We are going to invite Garden of the Gods club and Village 7 for next year.
 - o Somebody suggested we invite the club in Woodland Park as well.
- ☐ Scholarship - KOJT, Mike – Mentioned that we discussed as a board to move it over to the ARRL to manage. He motioned that we move our scholarship fund from FAR to ARRL. 2nd by WV7T. Motion carried.
- ☐ WV7T, Mike mentioned the free class on Thursday from 8-10 AM at Carl's Junior on corner of Northpark and Garden of the Gods. If looking to upgrade or learn CW this class is for you.
- ☐ KE0TWK, Mike offered business cards to help publicity of our club. Feel free to get some from him to hand out to people you come across.
- ☐ N6JRL, Don – Youth group trip to Curacao. They are doing a raffle for an IC-705. \$5/ticket or \$5/20. Only selling 500 tickets.

Program: Auction led by K0BUL, Tom

Motion to Adjourn @ 8:47 PM by KD0NQM, Jim, 2nd by WV7T, Mike.

All In Favor

February 2020 Board Meeting Minutes

2/10/2020

CTO @ 6:30 PM by K0BUL (Tom)

In Attendance:

WV7T (Mike Anderson), W5UDM (Dick Kohlhaas), KD0VRB (Jay Winterton), KD0SFY (John Bloodgood), KD0KQL (Jim Bishop), KOJT (Mike McLaughlin), K0BUL (Tom Oliphant), N7LEM (Doug Nielsen), N0ABC (Dennis Major), KE0LQK (Anthony Mitchell), KE0TWK (Michael), WA0BCM (Jerre Redding)

Old Business:

- ☐ SK's: None other than Earl Watkin's father o KD0VRB, Jay will send out cards/flowers in the future to SK's
- ☐ Treasurers report by W5UDM, Dick o We did get confirmation that \$1,000 went to a girl by Emily, but we have not been getting much of a response from FAR. We might go with an ARRL scholarship foundation instead.
- ☐ ZeroBeat Report by WA0BCM, Jerre

- ☐ Webmaster report, N7LEM, Doug – Not present
- ☐ Secretary's Report – KD0VRB, Jay
- ☐ PPARES Report by KD0SFY, John o Making plans for this year's SKYWARN training program
- ☐ Megafest Follow-up - KD0NQM, Jim – Not present, but the following info has been passed along.
 - o Paperwork to the school has been submitted. Awaiting date approval from the school. He will let us know what dates we can select from.
 - o Prizes from HRO have been purchased. Probably more to come.
- ☐ Christmas Party – good report back o Idea to do this same thing again next year and invite GOG and Village 7.
 - ☐ K0BUL, Tom motioned that we invite these clubs to our next Christmas party. KD0KQL, Jim 2nd. All in favor.
- ☐ N6JRL, Don - January meeting – K0BUL, Tom will be running the auction. Slight presentation at the start of the meeting showing the items. Don's wife thought it'd be nice to have some photos of the previous meeting shown in the presentation as well.
- ☐ KD0KQL, Jim – Thursday PPRAA Net on 2m.
- ☐ Bylaws – N6JRL, Don – All board members take a look at the bylaws and pencil in changes and go over these changes together at the next board meeting.
- ☐ QCWA Chapter 58, N6JRL, Don – Will ask at the club meeting how many are or qualify for membership in this club. There hasn't been a chapter here for many years.
- ☐ WV7T, Mike – Asset labels presented
- ☐ N6JRL, Don – Whatever we do not sell at our auction Don will make sure it gets to the club station as Megafest assets for sale.
- ☐ KD0KQL, Jim – Pillar Institute for Lifelong Learning – Membership dues are fairly reasonable. Jim will be teaching a class in April this year.
- ☐ Raffling off an IC-705 -3rd weekend in May (tickets, \$5/ EA or 5 tickets for \$20) for the youth DXAdventure.
- ☐ FAR Scholarships – Move it to ARRL or another organization instead of FAR. Moved by K0JT, Mike, 2nd by K0BUL, Tom.
- ☐ K0BUL, Tom - Net for new hams - 3rd Sunday of every month at 6 PM. .470 repeater
- ☐ NOABC, Dennis moved that we drop the lifetime membership discussion. 2nd by KD0KQL, Jim. All in favor.
- ☐ KE0TWK, Mike motioned that we form a committee of 4-5 people including John to do the PR affairs for the club. Jim, KD0KQL 2nd.
- ☐ NOABC, Dennis – idea of getting WOMCT, Doc's callsign as one of the club's callsign. NOABC, Dennis motioned that we go ahead and look into getting Doc's callsign to use as one of the club callsigns. We can only have one vanity callsign. Our club has 2 FRN's, so this shouldn't be an issue. 2nd by KD0VRB, Jay. Motion carried.

New Business:

- ☐ SK's: None
- ☐ Treasurers report by W5UDM, Dick
- ☐ ZeroBeat Report by WA0BCM, Jerre

- ☐ Webmaster report, N7LEM, Doug o Mentioned Hamcon Colorado 2020 held on August 7-9, 2020. See <http://www.hamconcolorado.com> for more information.
- ☐ Secretary's Report – KD0VRB, Jay
- ☐ PPARES Report by KD0SFY, John o SKYWARN training program 4/25 o Other ARES events coming up
 - o Facebook request for digital presentations at the club meetings ☐ Megafest

Follow-up - KD0NQM, Jim – Not present.

- ☐ Internet Committee - N7LEM, Doug – No progress or reasonable solution.
- ☐ Robin Adair will present on Wednesday
- ☐ Thurs. 10 m net – we're all invited to participate, 2 m net – we had 21 participants. We've changed our tech questions so they aren't as difficult.
- ☐ QCWA Chapter 58, WV7T, Mike – We only need 2 more members to start the chapter of the QCWA.
- ☐ KD0KQL, Jim Motioned that we move money from Amazon Smile to the scholarship fund account. N0ABC 2nd. Motion carried
- ☐ W5UDM, Dick – Moving scholarship to ARRL. Can be done after the March board meeting. Let's
- ☐ Bylaws – N6JRL, Don – All board members take a look at the bylaws and pencil in changes and go over these changes together at the next board meeting. ☐ WV7T, Mike – Asset labels presented
- ☐ FAR Scholarships – Move it to ARRL or another organization instead of FAR. Moved by K0JT, Mike, 2nd by K0BUL, Tom. Need to bring up adding another \$1000 scholarship to the club membership later.
- ☐ Bylaw discussion
- ☐ KD0SFY, John o Sesquicentennial Celebration for the City of Colorado Springs o Territory Days – 5/25 – Cost of \$255
- ☐ N0ABC, Dennis – W0MCT Doc's callsign to be used as our official call sign. Permission by the family granted. Doug is the trustee for the club station call sign.
- ☐ KD0KQL, Jim o Mentioned an elderly ham with Parkinson's that needs an elmer. Jim will send out information on him to the board.
 - o Earl Watkins is going to school full-time and working full-time. He needs a replacement on the board. WV7T, Mike is volunteering. We can bring it forward to the club at the next meeting.

Motion to Adjourn @ 7:44 PM by N7LEM, Doug

Second by KD0KQL, Jim

All in Favor.

February 2020 Club Meeting Minutes

2/12/2020

CTO @ 7:00 PM by N6JRL, Don

In attendance: 37

- ☐ Pledge of Allegiance – Lead by N6JRL, Don
- ☐ SK's: K0GIE, Tom
- ☐ Introductions

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New Business:

- ☐ New hams – a new radio was given to one of our newest club members, Phil, who just got his license on Saturday.
- ☐ Treasurer's Report: W5UDM, Dick
- ☐ Secretary's Report: KD0VRB, Jay
- ☐ ZeroBeat Report: WA0BCM, Jerre – Final version of ZeroBeat coming out soon.
- ☐ N6JRL, Don – feel free to grab a club card on your way out tonight. Also, we have door prizes that you can purchase raffle tickets for. A youth DX Adventure is planned by N6JRL. He's selling tickets for a radio. He's also selling \$5 DX Adventure pins. All proceeds for the pins and the raffle tickets for the radio go towards the Youth DX Adventure to Curacao. Club pins are \$5. Proceeds from the club pins go to the youth scholarship.
- ☐ Webmaster Report: N7LEM, Doug – January minutes are on the website. HAMCON will be in Colorado, Aug 7-9. For more information please see the website:
<http://www.hamconcolorado.com>
- ☐ PPARES Report: KD0SFY, John o 25th of April – SKYWARN training o 20th of June Mountain Top Cycling Club event o Ascent Marathon – August o Others to follow in later meetings
- ☐ KE0TWK, Mike – Business cards to pass out to publicize our club.
- ☐ N6JRL, Don o Vote was held led by Don to make KE0TWK, Mike as a board member.
 - o Vote was held to make KE0YSE, Lee and K0PQ, Botten a board member. KE0YSE, Lee wins. Lee is the new board member.
- ☐ Megafest Report: KD0NQM, Jim o All prizes have been purchased for this event.
 - o Application has been submitted to Lewis Palmer HS for our Megafest. No date has been received yet.
 - o We will get the raffle tickets and flyers printed as soon as we know the dates that we can use.
- ☐ KD0NQM, Jim – Discussed King Sooper's cards and Amazon Smile to fundraise for the club.

Program: Community Emergency Response Team (CERT) presentation by Robin Adair

Adjourned @ 8:21 PM by N6JRL, Don



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CAPTURE AREA

What is it? Does it mean the bigger the antenna the more performance it will have.

A very large antenna that has not been resonated can receive and transmit very poorly. If you resonate the antenna by a tuner or other technique, it will become quite effective. The size of the antenna will have an effect.

Not everyone can put up BIG antennas. Therefore, how can you determine if the antenna has sufficient capture area?

Keep in mind, this is an "area", not length. A wire has little area per foot. Making long skinny antennas will give the capture area needed. However, at the same time it needs to be resonant somehow or it will not perform well and your radio will reject it.

So, do you want to use sheets of 4'X 8' plate steel for this "area"?

If you want you could, but there is a better way to determine if the antenna has enough capture to be effective.

Start with a very small resonant circuit. A capacitor and inductor in series. I am referring to components you would find on a circuit board. The circuit is resonant just like an antenna. Why would you not put this on your 60 foot tower? Because it would not impress anyone that tries to see it. It would not be impressive to anyone trying to hear it either, why?

A series resonant circuit using small components is certainly doing the same thing electrically as the big antenna. Except for one value that you can measure. Radiation resistance. A small circuit will have a radiation resistance close to zero ohms. This means it is close to a dead short. Or, it means the circuit will have to operate at a very high current. This plummets efficiency.

Try making the circuit bigger. Use a bigger coil and an air spaced capacitor. You are also increasing the radiating area of the antenna. If you measure the radiation resistance, you will find it has increased. It will also start to radiate more efficiently.

Keep increasing the physical area of the resonant circuit and you eventually achieve 25, 50, 100 ohms and higher. When you start to get radiation resistance readings at resonance of these values, the antenna becomes quite efficient.

For example, you make the coils and capacitor large enough to develop 50 ohms of radiation resistance. This is convenient since most radios match to 50 ohms. If you do this using only an inductor and large plated capacitor your efficiency can be figured as:

$$\text{radiation resistance} \div \text{radiation resistance} + \text{pure resistance}.$$

Since your pure resistance is the resistance of the coil (using an ohm meter), it will be very close to zero or just a fraction of an ohm. This puts your efficiency almost to 100%.

Making the antenna bigger will offer little improvement since your efficiency is maxed out.

So, how big do you make it to have this 50 ohm radiation resistance?

It is sales pitch time. The sizes of the Isotrons are based on having enough "Capture Area" to develop 50 ohms of radiation resistance or more to provide a fully efficient antenna. It will be evident initially at the receiver, it will come alive. Putting the antenna in a good location will offer good transmit performance.

73,
Ralph WD0EJA

MARCH 2020

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FLORISSANT, CO. 80816 U.S.A
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How the National Bureau of Standards helped make “radio”

This was originally published as “NIST’s Role in the Early Decades of Radio (1911-1933)” on the National Institute of Science and Technology’s blog, *Taking Measure*.....Dan

Even if you weren’t able to watch the recent Super Bowl on TV, you could still listen to the play-by-play commentary on the radio. But radio does more than just broadcasting sporting events or playing music. It plays a major role in emergency response, navigation and science.

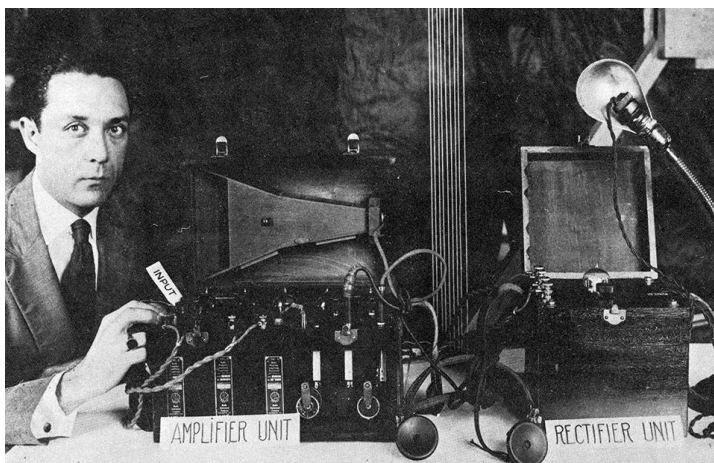
The word “radio,” however, didn’t become part of our regular vocabulary until 1911, and it happened thanks in part to J. Howard Dellinger, a radio scientist at the National Bureau of Standards (NBS), the agency that became the National Institute of Standards and Technology (NIST). This came about when the second International Radiotelegraph Conference was being planned in London, and a professor sent Dellinger a paper that he was going to present to the conference for review.

At the time, “wireless” was used as the term for radio communication, especially by the British. However, NIST was charged with revising standards in preparation for the conference, and Dellinger suggested that the professor use “radio,” which was already becoming a popular word in the U.S., instead of “wireless.” The professor agreed, and the word “radio” went on to become the universally accepted term.

Dellinger not only played a role in popularizing the word “radio,” but he also played a role in the first radio work done at NIST. A commercial company asked NIST to calibrate a wavemeter, a device developed by one of its engineers that measures electromagnetic waves like those of radio. Dellinger was known as the wireless expert and took on the project of calibrating the first radio instrument at NIST.

A New Type of Radio Receiver

But for radio to become mainstream, it first had to be commercialized, which began with its introduction into households. However, the challenge was building a radio set that used the electrical current, called alternating current (AC), which powered lights, fans and kitchen appliances when plugged into wall sockets.



The predecessor to this technology was developed and patented by two researchers, Percival D. Lowell and Francis W. Dunmore, at NBS in 1922. They called their invention the “mousetrap.”

The “mousetrap” was a receiver for a radio amplifier that could run on AC. This was considered a breakthrough because at that time radios were only able to be powered by direct current (DC) provided by batteries. These batteries were bulky and heavy, had to be charged from time to time and were considered dangerous because of the acid used in them. The researchers’ prototype meant the radio could be used in homes without causing damage and with the same performance quality.

Lowell and Dunmore filed two more patents together for other innovations, and for the “mousetrap” they sold the rights to the Dubilier Condenser Corporation. Little did they know that, because there was no uniform policy on patents issued to government employees, their actions would result in more than a decade of litigation over who legally had the rights to the patent.

While they were tied up in court, the Radio Corporation of America (RCA) developed its own model of the AC radio in 1926. Its model later became the first AC-powered radio sold to consumers.

Flying by Radio

During the early years of flight navigation, NIST was doing research to assist pilots while they were flying and landing. Pilots needed three things to get their bearings when flying “blind,” meaning it’s foggy, too dark or too cloudy to see. They needed to know the longitudinal position, altitude and speed of the aircraft, which were all achieved by various beacons installed in the plane. The remaining issue was that there were two frequencies the pilot constantly had to switch between the frequency that the Department of Commerce used to send weather information to planes and ships, which sometimes caused interference for pilots, and the frequency the radio beacon operated on, which gave altitude and other information.

Dunmore created a prototype, but Harry Diamond, a radio engineer who joined NIST in 1927, completed the device, called the radio guidance system. Diamond solved the problem by developing a separate device that allowed for voice communication to the pilot without receiving any outside interference from ships’ radios.

A Curtiss Fledgling, a trainer aircraft developed for the U.S. Navy, was equipped with the device, and flight tests were performed between NIST’s experimental air station at College Park, Maryland, and Newark Airport in New Jersey in foggy weather. After a series of successful tests were performed, the device was turned over to be used by the Department of Commerce in 1933.

Praise From a Famous Inventor

While mostly intended for serious users, some of NIST’s journals and publications were popular with the public. One such book, titled *The Principles Underlying Radio Communication*, covered topics such as elementary electricity, radio circuits and electromagnetic waves and was also published as a textbook for soldiers in the U.S. Army. The famous inventor Thomas Edison received a copy from NIST and wrote a

letter thanking the first director, Samuel W. Stratton, for publishing it, saying it was “the greatest book on this subject that I have ever read.”

As these and other examples show, NIST had a significant influence on radio research between 1911 and 1933. However, NIST’s radio work didn’t end with the first blind landing. NIST would continue to contribute to the field leading up to and during World War II, and research continues to this day in areas such as 5G, public safety communications and spectrum sharing.

ABOUT THE AUTHOR

Alex Boss is a general assignment writer in the NIST Public Affairs Office and covers standard reference materials (SRM). She has a B.S. in biology from Rhodes College and an M.A. in health and...



New Amateur Extra-Class Question Pool Released

The new Amateur Extra-class license examination question pool, effective from July 1, 2020, through June 30, 2024, has been released and is available at the National Conference of Volunteer Coordinators ([NCVEC](#)) website.



The [2020 - 2024 Extra-class pool](#) incorporates significant changes compared to the current 2016 - 2020

question pool, which expires on June 30. The number of questions in the pool was reduced from 712 to 622. The result was 239 modified questions, 49 new questions, and 139 questions removed due to changes in what was felt to be an abundance of outdated questions, while areas of new technology and subjects were added.

In addition, an effort was made to balance the difficulty level, removing or replacing some questions deemed too easy or too difficult compared to the rest of the pool.

The 2020 pool has 10 diagrams, which have been renumbered because the new question pool has two fewer than the 2016 question pool.

International Space Station Resupply Mission to Carry New ARISS Ham Radio Gear



The scheduled March 7 (UTC) SpaceX CRS-20 mission to the International Space Station (ISS) will include the initial Amateur Radio on the International Space Station (ARISS) Interoperable Radio System (IORS) flight unit, which is listed as a primary payload. The IORS is the foundation of the ARISS next-generation amateur radio system on the space station. Once at the space station, the IORS will be stowed for later installation.

The ARISS hardware team built four flight units, and the first will be installed in the ISS *Columbus* module. A second flight unit expected to be launched on a later 2020 cargo flight will be installed in the Russian Service Module. NASA contracts with SpaceX to handle ISS resupply missions.

The IORS represents the first major upgrade of on-station ARISS equipment. The package will include a higher-power radio, an enhanced voice repeater, and updated digital packet radio (APRS) and slow-scan television (SSTV) capabilities for both the US and Russian space station segments. The IORS consists of a custom-modified JVCKenwood TM-D710GA transceiver, an AMSAT-developed multi-voltage power supply, and interconnecting cables.

The ARISS hardware team remains busy on IORS development and final certification. While the initial unit has been certified for launch and stowage on ISS, the team is still deep into the final certification of the IORS for flight operations, and construction of a second flight unit is in progress.

ARISS will mark 20 years of continuous amateur radio operation on the space station in November.



Dayton Hamvention Officials Keeping an Eye on Coronavirus Situation

With Dayton Hamvention® 2020 a little more than 10 weeks away, Hamvention officials say they are closely following the coronavirus (COVID-19) situation. Show organizers will post updates as the May 15 - 17 event nears, but they're optimistic that coronavirus will not be an issue.

"At this time, the Hamvention Executive Committee has been in contact with the Greene County Public Health Department, and we do not anticipate any impact because of this issue," a March 3 Hamvention statement said. The Greene County Public Health Department reports that no cases of COVID-19 have been confirmed in Ohio.

"Greene County Public Health is working closely with the Ohio Department of Health and the Centers for Disease Control and Prevention, and are prepared to respond, should there be



a community spread of COVID-19," the Hamvention statement noted. "The current risk to the general public is very low. Travel advisories are in effect, and can change anytime, so please see the [CDC Travel Advisory web page](#) before traveling."

The Hamvention advisory pointed out the best ways to prevent becoming infected or spreading the virus:

- Wash your hands often with soap and water, or use alcohol-based hand sanitizer.
- Avoid touching your mouth, nose, or eyes.
- Cover coughs/sneezes with your arm or a tissue.
- Avoid exposure to others who are sick.
- Stay home if you are ill and avoid close contact with others.
- Get adequate sleep and eat well-balanced meals to ensure a healthy immune system.
- Clean and disinfect frequently touched objects and surfaces.

The Ohio Department of Health also offers helpful [information](#) regarding COVID-19.

Dayton Hamvention takes place May 15 - 17 at the Greene County Fairgrounds and Expo Center in Xenia, Ohio.

ARRL Reshapes Podcast Offerings for 2020

In conjunction with the launch of its new [On the Air](#) magazine, which is aimed at those just beginning their journey in amateur radio, ARRL is reconfiguring its podcast lineup.

Heading up the new schedule will be a free companion podcast to the bimonthly *On the Air* magazine. The monthly *On the Air* podcast will take a deeper look into select features and projects from the magazine. Each month, host and *On the Air* Editorial Director Becky Schoenfeld, W1BXY, will offer additional resources, techniques, and hints to help less-experienced radio amateurs to get the most from the magazine's content.



In addition to the podcast, ARRL Product Development Manager Bob Inderbitzen, NQ1R, will curate a free *On the Air* blog featuring content from the communicators and makers who are the driving force of amateur radio today. The blog will highlight opportunities and activities available to new licensees. The *On the Air* blog is intended as an entry point into the world of amateur radio for those seeking original voices and perspectives. Readers will be [invited](#) to take part in the conversation by sharing their stories and experiences.

Upcoming events in the Rocky Mountain Division: (more info @ [ARRL.org](#): click on "hamfests")

LARCFest

04/04/2020

Location: Boulder County Fairgrounds
9595 Nelson Road
Longmont, CO
Type: ARRL Hamfest
Sponsor: Longmont Amateur Radio Club
Website: <http://www.w0eno.org>
=====

Utah Valley Hamfest

2020 Utah State Convention

05/08/2020

Location: Utah Valley University UCCU Center
800 West University Parkway
Orem, UT 84057
Website: <https://utahvalleyhamfest.com>
Sponsor: Utah Valley Amateur Radio Club
Talk-In: 146.780- (PL 100.0)
Public Contact: Caryn Alarcon , KG7UUR
PO Box 1288 Orem, UT 84059
Phone: 562-965-6079
Email: k7uva@arrl.net

ARRL Rocky Mountain Division
Director: Jeff Ryan, KORM
k0rm@arrl.org

Major Events

LARC Fest

- Saturday, April 4, 2020 (0800-1400)
- Boulder County Fairgrounds
- Longmont, Colorado
- More info [here](#).

2020 ARRL Rocky Mountain Division Convention Hamcon Colorado 2020

- Thursday, 6 August 2020: DX University
- Friday August 7 thru Sunday August 9, 2020

- Location: Parker, CO
 - More info [here](#).
-

PPRAA 75 years Special Event Station
PPRAA Veterans' Day Special Event Station
PPRAA Pearl Harbor Day Special Event Station

- QSL to: PPRAA, PO Box 16521. Colorado Springs, CO 80935-6521
- No need to send a SASE, we will send cards to all confirmed contacts.

Unraveling the Mystery of 1 × 1 Call Signs

The [1 × 1 Special Event Call Signs](#) system offers a way for clubs, groups, or even individuals to use a short call sign of special significance to the amateur community. These 1 × 1 call signs are [reserved](#) in advance for use in conjunction with short-term special events and commemorative operations. The FCC does not assign 1 × 1 call signs, so they are not "official."

On the matter of special event call signs, the FCC says, in Section 97.3(a)(11)(iii) of the Amateur Service rules: "The call sign is selected by the station licensee from a list of call signs shown on a common database coordinated, maintained and disseminated by the amateur station special event call sign data base coordinators. The call sign must have the single letter prefix K, N, or W, followed by a single numeral 0 through 9, followed by a single letter A through W or Y or Z (for example K1A). The special event call sign is substituted for the call sign shown on the station license grant while the station is transmitting."

The FCC also says in Section 97.119 (d): "Additionally, the station must transmit its *assigned call sign* at least once per hour during such transmissions." This requirement tends to be widely flouted, however.

A 1 × 1 Special Event Call Sign aids other radio amateurs by calling attention to the special event or other occasion. 1 × 1 call signs may be used for a variety of purposes, such as conventions, festivals, dedications, anniversaries, commemorations, and ARRL Field Day. Even local events qualify.

There are 750 1 × 1 Special Event Call Sign possibilities, and radio amateurs of any license class may reserve one as far as a year in advance to use for up to 15 days. Of course, 1 × 1 Special Event Call Signs are recycled. It's first come, first served. See the [Frequently Asked Questions](#) page for more information. The FCC has selected coordinators to approve and post 1 × 1 Special Event Call Sign reservations to a [searchable database](#). -- *Thanks to The Radiogram (Portage County Amateur Radio Society newsletter)*

You shop. Amazon gives.

PPRAA VE Session

Monthly on the second Saturday

Pikes Peak Regional Office of Emergency Management

3755 Mark Dabbling Blvd, Colorado Springs, CO 80907, USA

Organizer: ve@ppraa.org

Amateur Radio Emergency Links Info

Amateur Radio and Emergency Communications

<https://alertfind.com/amateur-radio-and-emergency-communications/>

Disaster Preparedness on a Budget

<https://couponfollow.com/research/disaster-preparedness-on-a-budget>

From the annals of PPRAA history

March 1981:

Fifty-six members attended the February meeting. The swapfest will be on April 12 at Peterson AFB, hangar #8. The club has to provide people to direct traffic at the site. Oak KØROL announced the CCARC is ten years old this year. Its first meeting was on Oct 24, 1970 in Denver. Its purpose is to coordinate club activities in Colorado. Larry Steimel WØACD is the current chairman. The CCARC is publishing new call sign directories this year for \$4. The club is planning to provide communications for the Sweet Adelines convention, Walk for Mankind, Black Forest Outhouse Race, SpringSpree, and the GT 10 mile run. Bill and Marilyn KAØGIT will begin working on the paperwork to get the club a tax exemption number.

ARRL Outgoing QSL Bureaus

www.arrl.org/outgoing-qsl-service

ARRL affiliated-club stations may use the service when submitting club QSLs for its members in bulk ("pooling" their members cards together in one package) by indicating the club name inside the package. Club secretaries should check club affiliation on the ARRL web site to ensure that their affiliation is current. In a "pooled" package, each club member using this service **must also be an ARRL member**. Cards should be sorted "en masse" by prefix and a proof of membership should be enclosed for each ARRL member. QSLs for unaffiliated club calls may also be sent via the outgoing bureau to foreign destinations if the trustee of the club call is a member in good standing. The trustee's proof of membership must be included with the club call-QSLs.

Parker Radio Association

PPRAA Team,

Be sure to join us for our weekly nets Monday and Tuesday evenings!

First, Monday, at 8:30pm, on D-Star XRF223B, the PRA holds its D-Star net. There is plenty of conversations from everything digital to the latest projects and devices...

from DStar / DMR / Fusion / Brandmeister / Hotspots, and even CW. This can be accessed via your local hotspot. Also, many have linked via the WOCDS 2M repeater as well. Considering our KOPRA repeater is being relocated, using the WOCDS 2M side would be best (please follow common/courteous practice when linking).

Second, at 8:00pm on Tuesday, is the PRA weekly analog net on the WOCFI 448.675 – (100Hz) repeater. This is a great way to catch up on the happenings of the PRA and is a great environment to ask any question related to the hobby or to give yourself some bragging rights on a recent license, upgrade, or new piece of equipment.

We'll see you on the air!

73,

KØPRA Your Friends at the Parker Radio

Association

www.facebook.com/parkerradioassociation
[on parkerradio.org](http://parkerradio.org)

[@ParkerCORadio](#)



PPRAA VE EXAMS (MONTHLY)

PPRAA VE session has relocated and will be held at 10:00 am on the second Saturday of the month at Pikes Peak Regional Office of Emergency Management
3755 Mark Dabbling Blvd, Colorado Springs, CO 80907, USA

Organizer: ve@ppraa.org

TESTING IS FREE. Applicants will need the following items at the session:

1. A valid PHOTO ID, driver's license preferred (if you do not have a valid photo ID, please call for alternative identification requirements).
2. Your FRN NUMBER (Please obtain in advance of the session).
3. A copy of your amateur radio license (if any).
4. The ORIGINAL of any relevant CSCEs you have AND a PHOTOCOPY for the VE Team to keep.

PPRAA VE Team policy, as with many VE Teams, is to not allow same day retests on failed exams. Anyone passing their Technician Class examination at a PPRAA test session will receive a free year's membership to the Pikes Peak Radio Amateur Association.

Jim Bishop kd0kql@hotmail.com, 719 332-5283

Dennis Major NOABC, PPRAA VE Contact



MARC VE EXAMS

(January, March, May, July, September, November)

The Mountain Amateur Radio Club (MARC) VE Team conducts VE exam sessions in Woodland Park every odd month at 10 am on the first Saturday in the Community Meeting Room of the Woodland Park Library, 218 East Midland Avenue. The MARC VE Team is affiliated with the ARRL/VEC and examinations for all classes of license will be offered.

Full information, including driving directions to the Woodland Park Library, is available under "VE Sessions" on the MARC website at <http://www.nx0g.org/ve.html> or contact Wes Wilson (KØHBZ) at k0hbz@arrl.net or call (719) 687-8758.

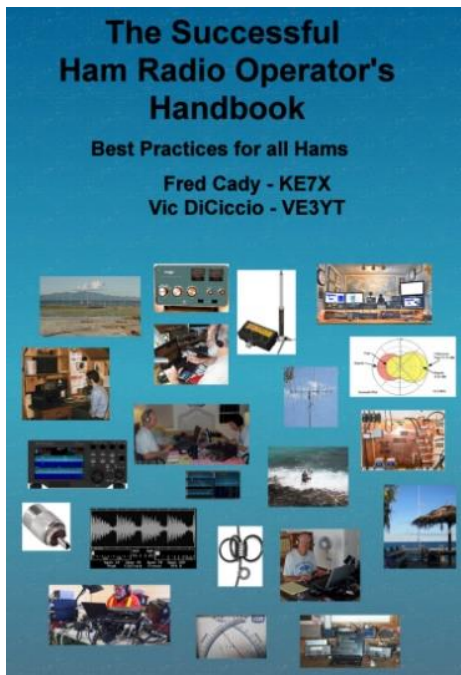
If attending, please BE SURE to bring the following items to the session:

A valid PHOTO ID, driver's license preferred (if you do not have a valid photo ID, please call for alternative identification requirements).

- 1. Your FRN NUMBER** (now required – this includes children Please obtain in advance of the session).
- 2. Your ORIGINAL amateur radio license** (if any) **AND a PHOTOCOPY** for the VE Team to keep.
- 3. The ORIGINAL of any relevant CSEs** you have **AND a PHOTOCOPY** for the VE Team to keep.

4. **Cash, Check or Money Order for \$15** (standard ARRL VE Fee). Checks and money orders should be made out to MARC and covers all the different exams you wish to take at the VE session.

MARC VE Team policy, as with many VE Teams, is to not allow same day retests on failed exams. For already licensed hams, MARC members should be monitoring the MARC repeater system 146.820- or 448.650- (both 107.2 Hz) if you need help with talk-in. 73 Dean Buckhouse



The Successful Ham Radio Operator's Handbook

This new book is aimed at new or returning hams to help them understand the practical aspects of the hobby, how to use their radios, build antennas and baluns, and get on the air successfully. In it you will find explanations of how the various parts of your ham radio - the transmitter and receiver – work, plus how these are being implemented using software defined radio technology. Operating techniques for VHF/UHF repeaters, HF radio DXing techniques, and the new digital modes are covered. Radio propagation, antennas, transmission lines, SWR and the mysteries of baluns are explained. Building your HF station, choosing a radio, connecting your radio to a computer, and mobile and portable operation are extensively covered.

Both the pdf and spiral-bound printed versions are available from [Lulu.com](https://www.lulu.com), and the print copy is also sold by DX Engineering. You can find them via the links below:

<http://www.ke7x.com/successful/ordering-the-successful-ham-radio-operator-s-handbook>

Here is a link that describes the book in more detail:

<http://www.ke7x.com/successful>

Follow us on www.facebook.com/KE7XBOOKS to keep up-to-date on book news and to be notified of book discounts at www.lulu.com.

This book has 267 pages, 211 figures and diagrams, and 53 tables of data to make understanding the sometimes complicated ham radio operations much easier. The book follows KE7X's philosophy of presenting material in several forms to accommodate people with different learning styles -- reading, visualizing, hands-on -- with the many figures and text explanations and there are hands-on exercises throughout the book that can help you learn more about your particular radio.

Follow us on www.facebook.com/KE7XBOOKS to keep up-to-date on book news and to be notified of book discounts at www.lulu.com.

One instructor for new and advanced ham classes has said, "This book is exactly what is needed. I've seen some other books targeting the new hams that are less than satisfying both technically and in content but this one is right on the mark and covers so much information that I so often get asked about, during and after teaching classes."

Here are more details on the content:

- With nearly 110 years of ham radio experience between them, the authors are still excited about the challenges this wonderful hobby offers. *The Successful Ham Radio Operator's Handbook* will guide you when exploring some of these.
- Its goal is to help new operators and returning old-timers learn about the breadth of exciting ham radio activities and challenges available today.
- It answers the question "Why is ham radio relevant in the Internet age?"
- It covers a wide range of topics, helping the reader to understand the excitement of different facets of ham radio and to choose a challenging and exciting activity to pursue.
- It helps the reader better understand how the radio works. Many hams only use a small fraction of the features of their radio. For example, if you understand how a noise blanker or a roofing filter or the AGC works, you will be able to more easily use these, and other, features of your radio to your benefit.
- It provides exercises designed to apply the knowledge to cement your understanding of how your radio works without being radio-specific. It is good for all makes and models.
- It helps the reader get enough background to understand much of the jargon hams who pursue special activities, such as the various digital modes, VHF contesting and moon bounce. It quickly takes the novice reader to higher level of understanding and provides URLs and websites that help the reader go deeper into new interests.
- Antennas remain a key area where all hams can still successfully experiment and create a key part of their station. This book provides information to help new hams get started cutting their own verticals and dipoles. It explains why some popular multiband antennas may have compromises that impact performance.

- It gives practical guidelines about choosing transmission lines and building and using baluns and chokes.
- Digital modes such as RTTY, PSK and the new WSTJ modes are explained. The computer-to-radio connections needed for these modes are discussed and illustrated.
- Many hams are motivated by public service and emergency preparedness. This book describes typical local emergency organizations and national networks.
- Hams who like to operate while traveling will find practical information on reciprocal international agreements and how to get permission to operate legally.

Online Practice Test Sites



Study for your Amateur Radio License exam:

[Technician \(2018-2022\)](#)

[General \(2019-2023\)](#)

[Amateur Extra \(2019-2020\)](#)

[Other...](#)

HamExam.org Amateur Radio Practice Exams

Log in using <https://hamexam.org> or click [register](#) to create an account. If this is your first visit to the site, please read my brief [introduction](#).

QRZ.COM <https://www.qrz.com/hamtest/>

Eham <https://www.eham.net/exams/>

AA9PW.COM

Membership Application
Pikes Peak Radio Amateur Association, Inc.
P.O. Box 16521, Colorado Springs, Colorado 80935

Date: _____ ☐ New Membership ☐ Renewal

Name: _____

E-mail address: _____

Address: _____

City: _____ State: _____ Zip: _____

Call: _____ License Class: _____ Telephone: _____

Are you an ARRL member? ☐ Yes ☐ No

Additional Name: _____ Call _____ Class _____ ARRL member? ☐ Yes ☐ No

Additional Name: _____ Call _____ Class _____ ARRL member? ☐ Yes ☐ No

Additional Name: _____ Call _____ Class _____ ARRL member? ☐ Yes ☐ No

- ☐ Full Member - \$15.00
- ☐ Full Member over 65 - \$10.00
- ☐ Free - VE Signature Required:

- ☐ Family Membership (same address) - \$18.00
- ☐ Family Membership (both over 65) - \$12.00