



WATTS NEWS



The Best of Amateur Radio

OARC e-Magazine

www.OgdenArc.org

SEPTEMBER 2020

Next Club Meeting/Activity

JOINT SWAP MEET



Dave Mamanakis KD7GR
President



Justin Hall KB7LAK
Vice President



Barbara Siddle KB7FWW
Secretary



J. Siddle KG7CJN
Treasurer



Mike Wilde KJ7HEX
Program Director



Todd Shobe KW7TES
Activity Director



Val Campbell K7HCP
Webmaster/NL Editor

PREVIOUS CLUB MEETING/ACTIVITY

AUGUST Activity

Steak Fry

Cancelled due to Covid-19

NEXT CLUB MEETING/ACTIVITY

Next OARC Activity

JOINT SWAP MEET

OARC/DCARC/UARC

PREVIOUS MEETINGS PICS

Photos by ... **photographers have been quarantined**

“Previous Meeting - pictures”

Photos located on the club web site home page.



OARC COMING EVENTS



Next Activity

JOINT SWAP MEET

See next page

Next VE Test Session

1st Wednesday 07 October 2020 @ 6:00 PM

CLUB NEWS

JOINT SWAP MEET

OARC/DCARC/UARC

Event: DCARC Swap Meet

Start: Saturday, 2020-09-19 @ 09:00 MDT

End: Saturday, 2020-09-19 @ 12:00 MDT

Location: 400 North 200 West, Bountiful, UT 84010 – Bowery

The DCARC Annual Swap Meet will be held on Saturday, September 9, 2020 at the fourth North Bowery in Bountiful.

Individuals who have equipment to sell can setup a table.

All participants will be required to wear a Mask and Social Distance per COVID-19 requirements.

CLUB NEWS

My Dear Friends,

There is an old saying, “May you live in interesting times”. Some say it is a curse you wish upon your enemies, others believe it is the curse of every generation; to see their time as “unique” and “interesting”.

We have come to understand that we, too, live in interesting times. But I don’t see it as a curse, I see it as an opportunity!

Our current nationwide struggles with this pandemic continue to impact every aspect of our lives. The Ogden Amateur Radio club certainly is not exempt from these impacts.

Current input from members participating in the Ham and Eggs net, e-Mails through the Yahoo group, and deep concerns from the Board members for the continued health and safety of the Club members, the Board has voted unanimously to suspend large in-person meetings until the end of 2020. This decision will affect the August Steak Fry, the October and November club meetings, and the Christmas Party. The September Swap meet will be a personal choice for those wishing to attend.

The current and future Board members have been tasked with finding effective and interesting ways to celebrate and support the Club and its members. We have chosen not to meet in large, in-person meetings but to explore alternative ways we can interact as a Club with interesting, fun, and creative ways.

As amateur radio operators, we have the ultimate social distancing platform. We now have the opportunity or even a duty to make amateur radio even better than it has been. We have the ability to reach out and have a positive impact in someone else’s life, no matter where they live.

Where will your next acquaintance be located? From the earliest spark gap transmitters spattering their signals across the seas, to voice transmission, talking through satellites or repeaters, bouncing signals off the moon, sending images, and even making contact half way around the world using just a few watts of power with FT8 and similar modes, amateur radio continues connect people everywhere. IRLP, Echolink, d-Star, WiresX, and other modes are available to technician class license and above. General class license and above have even more flexibility with the HF bands.

We encourage you to take full advantage of licensing privileges to reach out and contact people; locally, around the country, and across the world! Remember, this is a Global Pandemic. People all over the world find themselves in the same situation that we find ourselves in!

It is only a matter of time before this Pandemic comes to an end. Vaccines are in the works, our healthcare professionals are learning more about how to treat and cure this disease. As the saying goes, we truly do live in interesting times!

Continued ...

As you know, the Steak Fry is also the time that we renew our memberships in the Club. We would like to continue this tradition by having everyone do one of two things:

- 1) Use PayPal from our website to renew your membership
- 2) Print the membership form and mail it in to the Club with a check

I, myself, have used the PayPal method. I found it to be easy enough. The only thing I'd like to see more is the ability to have a recurring payment, so I don't have to worry about it again!

We also take care of the elections in August. If you've ever thought about serving the Club in a board or support position, I would encourage you to contact our Nominations Committee and let them know what position you'd like to be considered for! During the next three weeks, we are taking the names of those interested, and then we will have the elections online! We are working on that now, and it will be ready in time to have elections before the end of the month. We will announce the results of the elections on the Ham-n-Eggs net on the 1st of September. We would like to have all nominations in by the 25th.

I'd like to thank you all for your support of this club and I appreciate your willingness to support us as we deal with these interesting times!

As things move forward, the Board will continue to assess the situation and make changes to our plans. We are already talking about doing another Poker Run and another T-Hunt. And as things change, we will adapt to make the most of it for you, our Members! We are hopeful and excited for what the future brings!

Thank you for your time and patients!

Dave Mamanakis, KD7GR – OARC President

Gil Leonard, NG7IL – OARC Program Director

Dave's Rag Chew



Dave Mamanakis KD7GR

My Good Friends!

We are officially embarking on the Road to 2021! With the Club's elections now behind us, and the new board selected, we are well on our way to a FABULOUS new year! For those who haven't heard, here are the results of our Club Officer Elections:

President, Dave Mamanakis (KD7GR)
Vice-President, Justin Hall (KB7LAK)
Secretary, Barbara Siddle (KB7FWW)
Treasurer, J. Siddle (KG7CJN)
Program Director, Mike Wilde (KJ7HEX)
Activities Director, Todd Shobe (KW7TES)

A BIG Thank You to our Nominations and Elections Committee for making it possible!

A BIG Thank You to all who volunteered to enter the elections!

And a BIG Thank You to those who have served and continue to advise the Board!

And PLEASE, to those who weren't elected, or who are no longer serving, PLEASE continue to support the Club! There is always Next Year!

I appreciate all the members as this club wouldn't be a club without you!

We have a lot of things planned this year, and if you'd like to help out, there are many ways we'd like you to help out!

There is the Centennial Committee! If you'd like to help, contact Gill Leonard (NG7IL), I'm sure he would like put you to work!

Again, Thank You all!

--Dave (KD7GR)

Dave's Rag Chew follows ...

Dave's Rag Chew

I have 2 or 3 other topics to write about, but I'm also curious, what would you like to talk about? Are there any topics in Ham Radio that you'd like to see more information on?

POTA, SOTA, IOTA? (Sounds like the Greek Alphabet, but it is a bunch of contacting and contesting ideas)

Other things?

Today, I'm going to start out a little "tongue-in-cheek" and say, "Because it is 2020, maybe we should prepare for the next disaster!!! Murder Hornets! Godzilla! Yellowstone!"

But in reality, ARE you prepared?

I know several of you volunteer with ARES, the Amateur Radio Emergency Service, or CERT (Community Emergency Response Teams) and you'll have what we call a "Go Bag" or "Go Kit".

If you aren't working with ARES or CERT, you still SHOULD have a go bag.

Here is what it is and why you should have one:

If you've done any work with these organizations, you know that you should be prepared. You never know when something might happen, like an earthquake, flood, tornado, or other weather event or natural disaster. Heavens knows, we've had enough weird ones around here; tornado in Riverdale, flood in Riverdale... basically, stay out of Riverdale!

When something like that happens, you don't want to be sifting through your sock drawer trying to find your warm socks, or your spare batteries. That takes up precious time! The best thing to do is get prepared beforehand.

One of these preparations is to make a list of things you will need for a minimum of 3 days. Cloths, medications, flashlight, batteries, food, water, etc. Whatever you will need to "go camping" for a minimum of 3 days. Then you pack up that stuff into a bag, box, or bucket.

Some of you might be lucky and have a trailer or camper that can be hooked up and hauled off in minutes... that is good! You might already have it pre-packed and ready to go! The rest of us mere mortals aren't so lucky!

I have 5-gallon buckets. One for each child, one for me, one for my wife, etc. These buckets have the "gamma seal lids" on them, so you can easily get into them, but they are also water-proof when closed... this makes it great in case of wet conditions, or you need something that floats.

There are many websites that have good lists of what people have found useful. I won't try to re-create these lists here, just do a search for "go bag lists" online. You can also go to FEMA's website "Are You Ready" which has a lot of good ideas.

If a 5-gallon bucket doesn't work for you, use one of those black and yellow buckets from Costco... they can hold a tent and sleeping bags, as well as freeze-dried food and other necessities.

The idea is to be able to "grab and go" with that box or bucket or bag and "hit the road" with very little notice... and NOT HAVE FORGOTTEN ANYTHING IMPORTANT!

I don't know about you, but I have found that each time I go camping, I forget something...

Being prepared, beforehand, is an attempt to not have forgotten anything, especially when you need it most.

I have purchased 72-hour food kits from something like "patriot supply"... these are 3 days' worth of meals, freeze-dried, and they last for 24 years! Pack them once and forget about them!

No, I'm not paranoid. I just believe that, when an emergency happens, you need to be prepared.

We also have a Family Emergency Plan. All of my kids have a copy. If anything happens, we grab our kits and we "go" and meet up at a specified location. Then we decide what to do next.

I will be "bringing up the rear" as I also have responsibilities with both CERT and ARES. As long as my family is off to safety, I can "stay behind" and help out. I'll catch up with my family later.

My truck affords me 4x4, 2 radios, a place to sleep, tools and equipment...

And because we are prepared, I know exactly where my family will be and how to get there.

Now, if I could just get my family to study up and get their ham radio licenses!

Be Safe, My Friends!

--Dave (KD7GR)

CLUB NEWS

OARC Club Communications/Notices

Starting immediately all club communications/notices such as meeting and activity notices and club newsletter release notices, etc. will be emailed directly to each registered club member and to expired members who were previously paid-up members the prior year.

In the past, the above mentioned notices were distributed via OARC Yahoo Group email forwarding service but a lot of new members have not signed up with the Yahoo Group. Since we now have and maintain our own email distribution list this should be a much improved method to disseminate information.

The OARC Yahoo Group will still remain in service for Yahoo Group enrolled members to post Ham Radio related comments and questions for the group to share.

If you are not a member of the Ogden Amateur Radio Club but would like to be put on the club email CC: list, send me your email address to the following address.

Club email: w7su@arrl.net

OARC website: <http://OgdenARC.org>

Thank You,

73, K7HCP (Val Campbell)

CLUB NEWS

HAM and EGGS Net

Tuesday Evenings at 6:30 PM Mountain Time

Mt Ogden **70 cm repeater 448.600 MHz** (- offset, 123.0 PL Tone)

New, Intermediate & Old Timers. Elmering, Education, General Ham Discussion and Rag Chew.

New hams encouraged to check in. Get connected, learn new things and ask questions.

Questions: Larry Griffin AD7GL, ad7gl@arrl.net

Stan Sjol W0KP, stansjol@xmission.com

CLUB NEWS

10 Meter Net

Thursday Evenings at 0200 UTC (7:00 PM MT)

10 Meters HF - **28.385 MHz SSB (USB)**

Purpose is to promote activity on the 10 meter band (especially during low sunspot activity).

To give technician class operators an opportunity to operate phone, and to provide a venue for conversation and experimentation with antenna and ground wave propagation.

Questions and Net Control: Gene WB7RLX, ee_morgan@outlook.com

CLUB NEWS

OARC Membership Drive

August was OARC membership renewal month.

Thank you. Almost 100 of you, enrolled as members of our very special club last month.

Memberships are current from August of the current year thru to August of the following year.

To those that have not done so already, remember that you can Enroll/Renew by using the OARC online membership Application Join/Renew form. You can pay your dues online using the optional PayPal process or by mailing a check or money order to the club PO box.

Thank you.

OARC officers and board.

CLUB NEWS

OARC Officers Elections

August was OARC Officers Elections month.

More than 50 of you voted during the OARC elections period last month.

Thank you. OARC officers.

Congratulations to the following OARC 2020-2021 officers

President:

KD7GR Mamanakis, Dave - *Incumbent*

Vice President:

KB7LAK Hall, Justin

Secretary:

KB7FWW Siddle, Barbara - *Incumbent*

Treasurer:

KG7CJN Siddle, James - *Incumbent*

Program Director:

KJ7HEX Wilde, Mike

Activity Director:

KW7TES Shobe, Todd

Officers: Be sure to read the ...

[OARC Officers Duties and Responsibilities](#)

CLUB NEWS

Ogden Amateur Radio Club *Centennial 2021* *QSL Card Contest*

The Ogden Amateur Radio Club Centennial Committee would like to announce a QSL card contest. The Centennial committee will be scheduling a special event station to celebrate the 100-year mark for the OARC. Tentative date May 15, 2021. The final card design will be printed and mailed to all over the air radio contacts who request a card.

This contest is open to all club members. Contest will run from September 1, 2020 until April 15, 2021. Voting for the winning design will be held online to determine the final card design. In the event of a tie, the final winner will be determined by the board.

Original artwork, photographs, and drawings are all welcome. Desired theme should be radio related, and emphasize the Centennial milestone of the club.

Scoring will be based on: Originality. Centennial Theme. Aesthetic quality.

Grand Prize

\$100

All entries will become the sole property of the Ogden Amateur Radio Club.

Submit all entries electronically to:

w7su@arrl.net

CLUB NEWS

Ham Shack Photos

Last month the unidentified Ham Shack Photo was ...

Kent Gardner WA7AHY



CLUB NEWS

Ham Shack Photos

The next in the series of unidentified ham shacks is shown below.

Do you know whose ham shack this is?



CLUB NEWS

STILL WANTED

Ham Shack Photos

We want you to submit pictures of your ham shack to us for future publication in the club newsletter. Submit home ham shack, mobile ham shack, handheld ham shack. Antennas too.

I will keep the submissions anonymous if you prefer.

My thinking is that I would publish one-set of ham shack pictures each month with the idea that all viewers could privately try to guess whose ham shack was featured that month.

I think it will be interesting to see the wide variety of equipment that each of us has chosen to populate our hobby work space with. This could be invaluable to each of us as we make future decisions about equipment upgrades.

Thank you in advance. 73, Val K7HCP

Submit to

k7hcp@arrl.net or w7su@arrl.net

Or

801.389.0690



So How About it?

Send me your Ham Shack Photos soon.

CLUB NEWS

OARC Club History

I was going through some of my old "stuff" the other day and found this article from the Ogden Standard Examiner News paper (1993?). The picture was taken in the Club's trailer that we had at the time.

It was in the nineties (1993?). I was a Tech Plus, getting my license in 1991. I was active in the Ogden Amateur Radio Club as President and a member of ARES.

Alan N7SHA



FEATURED QSL CARD

N7SHA Alan Parks

N7SHA

ALAN PARKS

Ogden, Utah

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afparks1941@yahoo.com

801-621-0203 (H)

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N7SHA

Alan Parks

Ogden, Utah USA

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Ogden, Utah
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DN-41



HOBBY NEWS

DX Assn notice of upcoming events

Ron Wilcox, from the Utah DX Assn. thought we might be interested in the following list of activities! Here are some of our upcoming presenters in case any in the club are interested

We have some exciting speakers and presenters for the next few months for the Utah DX Association. These will be zoom meetings, so if you are interested let us know so that we can send the log in information to you.

In September, on the 16th, we will have Cezar Trifu, VE3LYC. Cezar will be presenting first on the basics of IOTA, Islands on the Air, and then on some of his rare island activations.

Cezar is an avid DXer and IOTA island activator. He is on the International Board of Directors for IOTA. He has received many Dx and IOTA awards.

Following Cezar, Will Costelo, WC6DX, will speak on IOTA and DXing. He is an avid participant in DXing, IOTA and LOTA (lighthouses on the air). This is the presentation he was going to make at Visalia, at the IOTA banquet, so it will be great to be able to see it.

In October, on the 21st, we will have Carl Luetzelschwab, K9LA, speaking to us. He has chosen a series of mini topics including:

DXing with vintage equipment

DXing with simple antennas

Solar update

Propagation update

Surprise topic?

Carl is an avid DXer, an expert on propagation. His website is amazing,

Please check out all of their QRZ pages and their websites. These individuals bring a wealth of experience and knowledge. In fact, so much that we will probably want to see if they will come back to present to us some time in the future again.

Be sure and invite ham radio friends, and other clubs you know in the hobby to attend these meetings to hear their presentations.

Today is a good day to have a great day!

Ron Wilcox KF7ZN RN, BSN

Utah DX Association Board of Directors

ARRL Instructor

ARRL & W5YI Volunteer Examiner

Davis County Assistant Emergency Coordinator (ARES)

HOBBY NEWS

Author unknown

How important was the radio to your family?



National Radio Day (20 August) is here in the United States and in my family history research I've found plenty related to how my family relied upon the radio for news and entertainment. In the 1930 US Federal Census, respondents were asked if they owned a radio set. Why was this important? From [The 1930 Census in Perspective*](#):

The 1930 census reflected the emerging values of early twentieth-century America, in particular the growing influence of consumerism and mass culture. The 1930 census included for the first time a question regarding a consumer item. Respondents were asked whether they owned a "Radio set," a luxury that had become increasingly common in the 1920s. As historian Roland Marchand has argued, in the early decades of the twentieth century, American business and political leaders viewed radio as a source of cultural "uplift" for the population as well as a valuable medium for advertisement of mass-produced goods. The inclusion of a question on radio ownership reflected this new interest in the possibilities of consumer items and methods of mass communication.**



'So I went to check on several of my ancestors and I see that my great-grandparents John Ralph Austin and Therese McGinnes did own a radio set according to the entries on the 1930 US Census! I knew times were tough for them especially throughout the Great Depression, and I'm sure they relied upon that radio quite a bit!

And while I don't know how much they spent on that radio or what it looked like, here is an advertisement for radio sets from 1930:

This Offer Is For A Limited Time Only

Look!

READ OUR SPECIAL OFFER ON THE NEW 1930 CONSOLE MODEL.

PHILCO

Balanced-Unit

SCREEN GRID RADIO

Never before have you been able to buy a genuine Philco in cabinet model for so low a figure.

All-electric—Screen-Grid—Balanced Unit.

Famous Philco Tone—Pure and clear at any volume.

Absolutely free from distortion.

All the volume you will ever need—and more.

Amazing Selectivity and Distance Range.

A Marvelous Value. Never before has so little bought so much in radio. See it—hear it—today.



Complete With New Type Indirect Speaker Radio

In Each Console Model \$102
Less Tubes

FREE DEMONSTRATION (With 7 Tube Screen Grid Chassis \$112)

Hear this marvelous set in your own home—Tune in stations you have never heard before—Judge the pure, sweet tone—Test the tremendous volume—Then when you decide to buy pay as low as only

\$5 Down

Balance Easy Terms to suit!

Call at Our Store or Phone—Today

As you probably know the demand for this marvelous new Philco is tremendous. Hence we can place only a limited number on free home demonstration. So call at our store or telephone before this special offer ends. No obligation.

—and the

Marvelous New 76-Screen-Grid Low-Boy Only

\$119.50 Less Tubes





DeLuxe Screen-Grid
\$195.00 Less Tubes
Hi-Boy Screen-Grid
\$139.50 Less Tubes

Illinois Power and Light Corporation

And in relation to how much \$102 USD was in 1930?

That amount in 2020 dollars is **1,604 USD!**

Yikes!

FEATURE ARTICLE

by Eugene Morgan WB7RLX



Building an End Fed Antenna

By Eugene Morgan

In this article I will cover several topics given that the subject is about building an Antenna System and not just the antenna. There are four specific areas we will dive into, the first is the antenna, the second baluns, the third chokes, and lastly the transmission line. All of these items are necessary in virtually every antenna installation regardless if it's a simple vertical, dipole or a multi element parasitic array such as a Yagi.

This article will focus mainly on the antenna we built at Alan Parks, N7SHA, QTH. But the techniques used are applicable to any antenna installation. However we will focus on the specific of an end fed wire which apply to all end fed wires regardless of length.

After doing a survey of Alan's yard we determined that the easiest antenna and perhaps the most effective antenna we could deploy was an end fed wire. His yard was perfect for such an installation. He has a deep back yard surrounded by many tall trees with his house sitting near the front of the lot. We determined that we could run a wire over 180 feet into one of the tall trees in his back yard. The far end would be close to 50 feet high and the other end would terminate at end of his house and be connected to the electrical mast where the power comes into his house. That end would be about 20 feet in the air.

Our first challenge was of course getting the far end of the wire into the tree. Climbing was out of the question. So we built an Antenna Canon. The antenna canon is very simple design requiring only a saw and a drill. We were able to acquire the PVC and valve from the local Lowes and the gauge and valve stem at the Auto parts store. The air pressure gauge is optional. We will not go into the construction of the canon but a picture has been provided, see Figure 1 and can provide an easy example to follow.

The canon is made from 2" PVC and a length of $\frac{3}{4}$ PVC for the barrel. The valve is a gas line ball valve. The reel is an old fishing reel wound with 50 lb. Spider wire. Important note: Monofilament fishing line is not the best choice given its tendency to twist and tangle. The spider wire on the other hand is a braided fishing line that is a lot less prone to tangling and for its size it is very strong. For weights we use 2oz. egg sinkers. I painted them bright yellow to make them easy to spot. Total cost for the antenna canon was \$31 not including the fishing reel or line, which we already had.

Although it took us several tries we were able to get the line where we wanted it. After placing the line we pulled up progressive stronger line until we had a final haul line in place which was a 50' length of mountain climbing rope.

The key consideration is the abrasion the haul line will take. Climbing rope is a good choice given it's resistance to abrasion, its ability to stretch, and its larger diameter. We understand that not everyone has a bit of old climbing rope laying around. The key thing is to use as large a line as possible, not so much for its strength but for its resistance to wear. If climbing the tree is an option then inserting the haul line through a small bit of garden hose can be employed to minimize wear on both the haul rope and the tree. This is the technique we used at N7KID's installation. To the haul line we tied a small carabiner that we used to run our halyard through. This made it possible to lower or adjust the antenna without disturbing the haul line. We will readjust the haul line from time to time in order to move the wear spot. By using the halyard we can readjust the antenna as needed without putting any stress on the tree. See Figure 2 for details of how we rigged the haul line and antenna halyard.



Figure 1: The Air Powered Antenna Canon

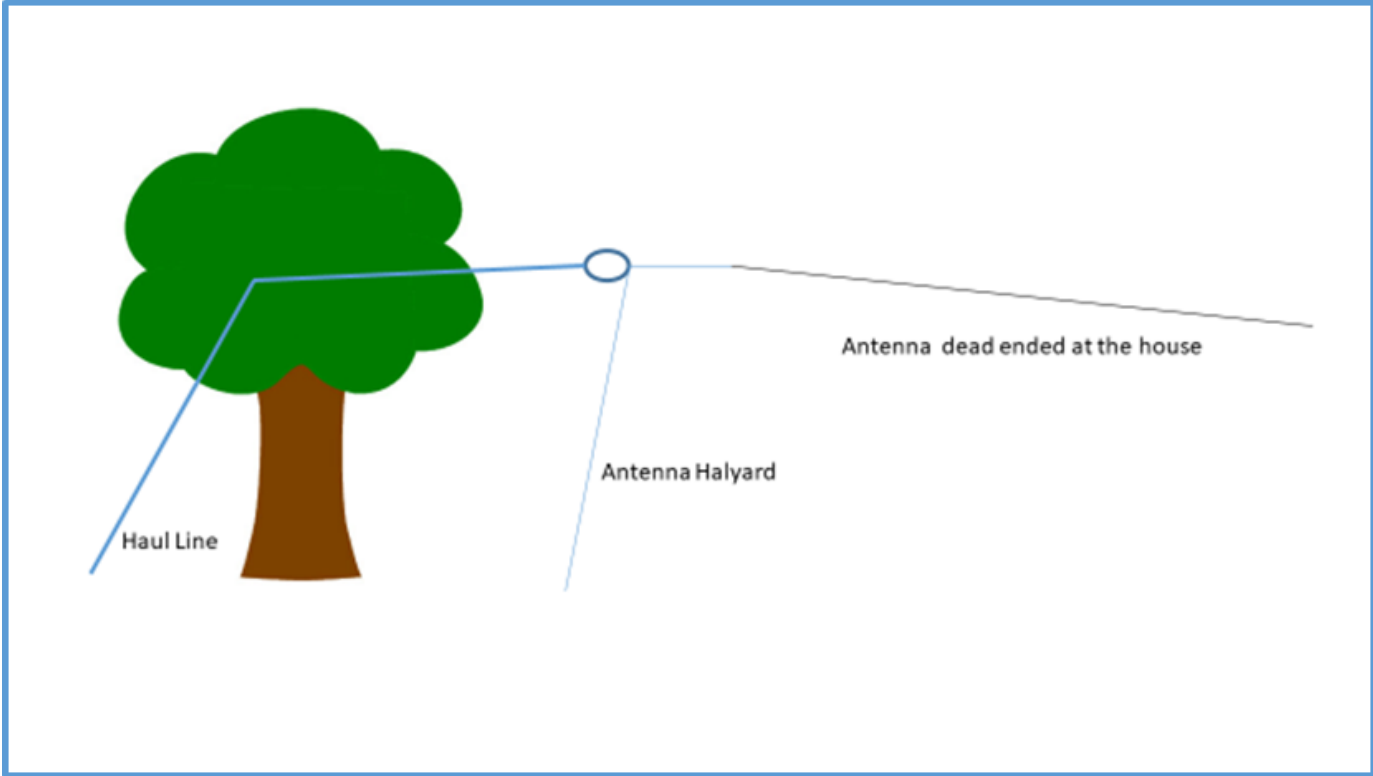


Figure 2: Line configuration

Now that the antenna is in the tree and the other end is tied off to the house it's now time to focus on connecting the antenna to radio.

How Long Should My Wire be?

We started off the article with how to install an end fed wire but we kind of skipped over figuring out how long a wire to put up. The table below should help to fill in that gap. It presents a number of options. I have personally built three of these antenna. The first was Alans (N7SHA) which we didn't measure but I suspect it would be in the 173' range. The second, was Bruce's, (N7KID) which we carefully cut to 85' with over 65' of feed line and finally my antenna at 203' feet, however my feedline is only 90' long. I took careful measurement of my antenna and here are the results:

The SWR was fairly close to predictions with the exception of 160 meters. Here the SWR was higher than expected, but still within range of the tuner in my Yaesu FT-950. I suspect the reason for the higher than expected SWR was a less than optimum feedline length, the recommended length is 130'. Fortunately the line loss on 160 meters with a 5.1: SWR across 90' of RG8 (.6dB loss at 10mhz per 100') is calculated to be only .28dB. Remember that 6 dB = 1 S unit on a properly calibrated S meter. So the loss will be virtually undetectable. The loss on 10 meters will be a bit higher at 1.14dB, which is still undetectable on the normal S meter.

Freq.	SWR @ Radio
1.9	5.2:1
3.574	3.3:1
7.074	1.5:1
10.136	1.3:1
14.074	1.4:1
21.074	1.7:1
28.074	2.2:1

Table 1: SWR Results with 203' wire with 90' feedline

Bands Covered (meters)	Wire Length (feet)	Minimum Coax Length (feet)
40-30-20-15	35-43, 49-63, 70-85	35
40-30-20-17	35-45, 54-64, 67-77	35
80-40-30-20-17-15-12-10	38-44, 55, 60, 68-73	50
80-60-40-30-20-17-15-12-10	55, 68-73, 85, 92, 102, 120-125	65
160-80-40-30-20-17-15-12-10	135, 141, 173, 203	130

Table

2: Optimum wire and feedline lengths

SWR for all lengths should typically be under 2.2:1 and in most cases will be under 1.8:1 for 160-10m which will allow most built in ATU's to match the antenna on all bands. Initial installation should utilize a length longer than the recommended length shown. Experimenting by slightly changing the wire length (+ or -) is encouraged to provide best overall performance for individual installations. If you can get the length close enough that your tuner can establish a conjugate match on each target band should be good enough. Remember that one S unit on your S meter is equal to 6 dB. At HF the difference between a 2:1 and a 3:1 SWR is virtually undetectable.

As you can see from the above dimensions you don't need a massive lot or a small farm to erect an end fed wire antenna. One can install an end fed wire in an attic or even on a small urban lot. Also, an end fed wire is a much simpler antenna especially when compared to something like a G5RV which requires the use of twin lead, which can be extremely problematic in an attic space and highly susceptible to RFI. I think the end fed wire has gotten a bad rap because they are usually not properly installed with the necessary unun and choke.

How to Feed an End Fed Wire? The Balun or in this case the Unun

The end fed wire regardless of its length presents a high impedance to the feedline. If the intention is to build a $\frac{1}{2}$ wave mono band antenna then it is necessary to attach a 48:1 unun at the feed point given the extremely high impedance. But if it's a multi band antenna and is not $\frac{1}{2}$ wavelength long on any of the intended bands then a 9:1 unun is necessary.

Why an Unun? Typically we find two kinds of impedance transformers, balanced and unbalanced. Given that today nearly all antennas used by the ham community are fed with 50 ohm coaxial cable. In addition a balun is often used to connect then unbalanced coaxial cable to a semi balanced antenna. You will note that throughout I use the term (semi) balanced antenna. The reason for this is that in reality the only really balanced antenna is one that exists in free space. Antenna unbalance is caused by all those things that surround an antenna, buildings, trees, powerlines, fences, cars, and so on. In theory antennas, like dipoles and Yagi's, are considered balanced antennas, unless they are up high and in the clear there will be some level of unbalance in the antenna. As you will see in the next paragraph these imbalances can cause problems that in some cases is very noticeable and in other instances can be very subtle.

Coaxial cable is considered an unbalanced feed system. So if you attach an unbalanced feed line to a (semi) balanced antenna such as a dipole or Yagi you will get unpredictable and often unreliable and more importantly undesirable results, that are caused by common mode currents. Common mode currents on the feed line can manifest themselves in a variety of really icky ways. In worst case scenarios they can invade your shack and cause all sorts of issues with RF noise, electrical shocks, and computer mice and wireless routers that behave erratically. A much harder condition to detect is when the coaxial cable is acting like an antenna on both transmit and receive! On transmit the radiation pattern may be off, the SWR unnecessarily higher than it should be and worst of all, some of that precious RF power is being radiated where it shouldn't be radiated. During the receive mode the antenna may be picking up random electrical noise and RFI. In short **common mode currents are bad**. We will go more into common mode currents when we get into RF chokes later in this article.

In the case of the end fed antenna it is an unbalanced antenna so it is possible to connect your unbalanced coaxial cable to an unbalanced antenna but now you have another issue, an impedance mismatch. The

end fed wire has a high impedance, usually several hundred ohms, while the coaxial feedline has a much lower 50 ohm impedance. So that won't work either! So what do we do???

In the case of the end fed wire we need to use an unbalanced impedance transformer, or in other words a 9:1 Unun (unbalanced to unbalanced). It will convert the 50 ohm impedance of our coax to a 450 ohm impedance and allow us to connect the unbalanced feedline to our unbalanced 450 ohm antenna. That should help to tame the antenna mismatch to a degree that most inboard ATU's can establish a conjugate match.

In the case of the end fed wire we know what we need to do, either buy a 9:1 unun or build one. There are several good options on the market today. LDG sells one that is good for a 100 watt station for around \$30. If you're running a bit more power then Palomar Engineering or Balun Designs both have good solutions, some a bit on the pricy side. Our other option is to build our own. Now don't stop reading at this point. These things are not hard to build, you can get everything you need from Amazon and Lowes. And they are not expensive. As to tools all one needs is a drill and a couple of right size bits. And there is a goodly number of YouTube videos that will walk you through the process. I think the following YouTube videos is one of the better ones: <https://www.youtube.com/watch?v=VAV9Wws-Bs0> In his video he used a different core. My research suggests that Ferrite (FT) is better material for building ununs and baluns. Now that you have watched a video or two let me tell you what you will need acquire:

From Amazon:

If you running less than about 500 watts you will need one FT240-43 core. They run about \$12. If you are running more power you will need two. The type 43 mix works best in the HF range. If you are building for UHF or VHF a different mix is necessary.

You will need a roll of 14 AWG enamel magnet wire. The Amazon descriptions is: "*TEMCo 14 AWG Copper Magnet Wire - 8 oz 40 ft 200°C Magnetic Coil Winding*" It runs about \$20 for 40 feet. This will be more wire than you will ever need and it gives you some extra in case you flub it up. Don't worry this is not brain surgery. However, if you have actually read this article this far and are really serious about building your own unun come see me. I have part of a 40' roll and I will gladly share.

You will need a little more than 7' of Teflon tubing. The Amazon description is: "*PTFE Teflon tubing 5ft - 2mm ID X 3mm OD - Allen Tech PTFE Teflon Tube*" It runs \$7 per 5 ft. You will need to buy two packages. You will insert the enamel wire into this tubing. This will give you a little more power handling capabilities and ensure the wire does not short out on the core.

You will need one SO-239. They come in quantities of 5 and will cost you a little over a buck a piece.

From Lowes:

You will need one electrical box. Home Depot didn't have the right kind, Lowes did. Look for the square grey 4"X4" plastic box in the electrical department.

You will need two 6x32x3/4 stainless steel screws with stainless steel nylock nuts. These are for securing the SO-239 to the housing.

You will need three small eyebolts with nuts and washers. Use all stainless steel. In mine I used a fender washer rather than a normal sized washer. The fender washers are larger than the

normal washers and will help to spread the strain put on the eye bolts over a larger area of the box. One on each side for the antenna wire, one for an optional ground, and one to support the antenna and unun.

These devices are really simple to build. And if you're not sure, call me, I'll be glad to give you a hand. Figure 3 is a picture of the one I built. It's modeled after the Balun Designs 9:1 unun. See Figure 4 for a diagram of the circuit. I used color electrical tape to keep track of each wire. I will admit after you do the winding and are looking at 6 wires you may find it intimidating. Just go slow and double check your connections before you break out the soldering iron. No one's going to take away your birthday if you get it wrong. And if you mess it up, you did buy 40' of wire so you can start all over if you want.

When I tested the unun I put a 450 ohm load across the antenna attachment eyes and connected an antenna analyzer to the SO-239. I got a 1:1 reading up to 4 Mhz and a 1.1:1 reading up to 20 Mhz. I didn't test it higher. This version should be able to comfortably handle up to 600 watts. The antenna wire is attached to the right side and the left side can be attached to ground. You will note that in my unun I did not include the suspension eye bolt that normally would be mounted to the top of the box. Rather than hanging mine, I mounted mine to a 4X4 7' fence post.

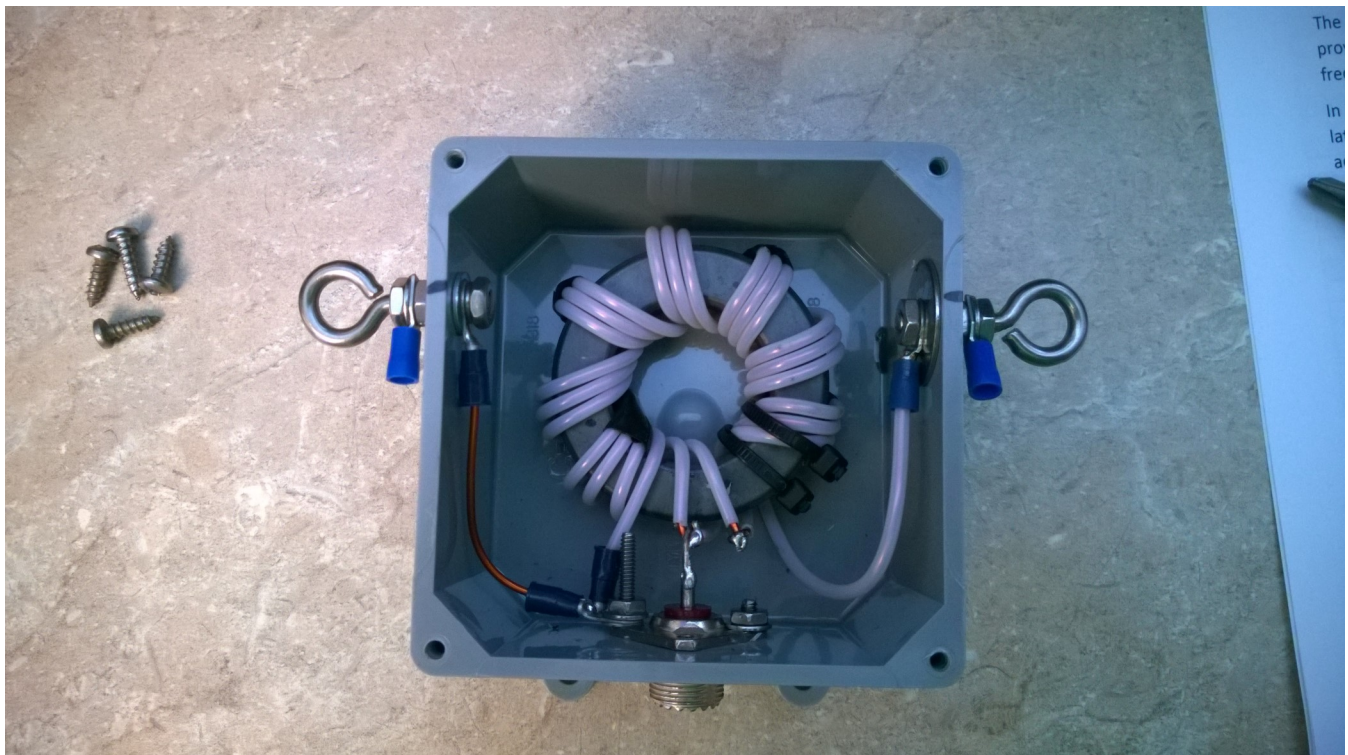


Figure 3: A 600 watt homebrew 9:1 Unun

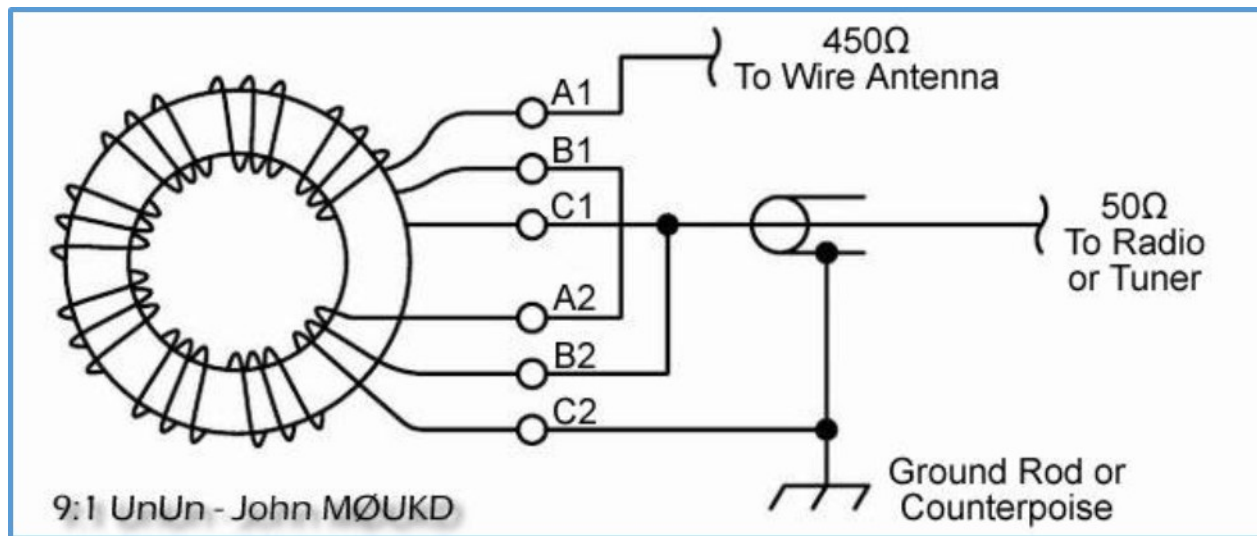


Figure 4: 9:1 Unun Circuit Design

Now that we have built our 9:1 Unun and attached it to our antenna wire it's now time to move on to our Common Mode Choke.

The Common Mode Current Choke

Virtually every antenna will benefit from an RF Choke. That unfortunately is not well understood by most hams. The purpose of the choke is to minimize the common mode currents (CMC) that are caused by a number of things, an unbalance in the antenna and or a high SWR. And the sad truth is that most hams don't know they have a problem with CMC. In the case of Alan's installation when we added the choke we saw a significant drop in the noise level on 80-20 meters. And we saw a drop in the 15-10 meter band as well but it was not as significant. Given the design of our choke that was not surprising. Our choke was designed specifically for the 80-20 meter band. Before we get into the design of a choke let's first understand what they are for and what they do.

Common mode currents: The primary purpose of a choke is to impede current from flowing on the outside of the feed line. Understand we are talking exclusively about coaxial cable. In a perfect system what happens is the RF energy runs up and down the coaxial cable on the inside of the cable and all the energy is converted into RF and goes out the antenna. But as we all know in the real world there is no perfect system.

The reality of a typical antenna installation the halves of an antenna are rarely balanced due to the distorting effects of the antennas and there is almost always some mismatch between the feedline and the antenna. As a result, practical antennas can be very susceptible to the way they are installed and are rarely well-balanced. By being unbalanced the currents on both halves will be different.

In contrast with the messy environment the antenna is placed the story is different inside a coax cable. Without getting too technical the currents flowing on the center conductor and the inside of the shield

are equal and 180° out of phase. The two center conductor and the inside shield of the coax are closely coupled along the entire length of the transmission line. So the equal and opposite relationship is strongly enforced. What is going on inside the cable is unaffected by what is going on outside of the cable. The skin effect causes HF currents to flow only close to the surfaces of the conductors. The inner and outer surfaces of the coaxial shield behave as two entirely independent conductors. The cable may be taped to a tower or even buried while the currents and voltages inside the cable remain exactly the same.

The problem arises when connecting a coaxial cable to an antenna. If the antenna is in any way unbalanced, which is almost always the case, a difference will appear between the currents flowing on one side of the antenna versus the other side of the antenna. Remember, in most cases one side of the antenna is connected to the center conductor and the other side of the antenna to the shield. It is the unbalance between these two halves of the antenna that flow on the outside of the shield, these are the common mode currents.

This imbalance which results in different amounts of current flowing in each half of the antenna will cause the coax to radiate by itself. This radiation would be mainly vertically polarized since most transmission lines predominantly run vertically. Here's the really icky part, the feedline radiation causes distortion of the radiation pattern, RF current on metal masts and Yagi booms plus problems with stray RF in the shack. Even worse, the RF currents may flow in the mains and on TV cables leading to all sorts of electromagnetic problems.

The side of the antenna which is connected to the coax shield and the outer coax shield form a second antenna that will also produce an impedance. This impedance, seen looking down the outside surface of the coax outer shield to ground, is called the common mode impedance.

The common mode impedance will depend on a number of factors: the coax length and the path from the transmitter chassis to the RF ground. The path from the transmitter chassis to ground may go through the station grounding bus, the transmitter power cord, the house wiring and even the power line's service ground. In other words, the overall length of the coaxial outer surface and the other parts making up the ground can actually be quite different from what you might expect or want.

In a worst case, common mode impedance will occur when the effective path to ground is an odd multiple length of $\lambda/2$, making this path a half-wavelength resonant. In this case, we have a sort of transmission line transformer that practically short circuits the antenna arm that is connected to the coax shield and resulting in a very low impedance at the antenna feed point.

Another extreme situation that might occur is when the overall effective length of the coaxial feedline to ground is an odd multiple length of $\lambda/4$. The common mode impedance transformed to the feed point is then high in comparison to the dipole's natural feed point impedance.

In short what this means is that when we see a varying SWR measurement with varying coax cable length the inference is there is an unbalance in the antenna and there is common mode current flowing on the outside shield.

So now we know what CMC are what can we do about them? There are some very basic things that every ham should do. First make sure your ham station is well grounded. We do this for a lot more than just to minimize CMC. We also ground our stations to minimize the effects of a lightning strike. Also in

the case where we have high voltage transformers such as we find in high wattage power amplifiers we want to ensure the shortest path to ground is not through us or our equipment.

The other things we can do is to minimize CMC at the source at the feedline. This is done by using a choking balun and in some cases where the balun does not provide choking an RF choke. And we always want to use a choke when we are using an unun. As a rule ununs do not provide any RF choking.

What exactly does a choke do? It provides a high impedance path to ground. In short it makes all that currently flowing on the outside of feedline go away, or at the very least substantially reduces it.

The first thing to understand is that not all common mode chokes are equal. As a rule chokes will have specific design frequencies where they are effective and frequencies where they are not. And no common mode choke that I'm aware of can cover the entire HF spectrum from 160 meters to 10 meters. However it is possible to daisy chain chokes, with each choke designed for a specific set of frequencies.

Let's first consider the Air Choke, aka: the Ugly balun. The air wound choke is not a balun. It provides no balancing between the feedline and the antenna. It is also frequency specific as a choke and is not a very effective choke. The best chokes for HF are made using Ferrite cores and range from type 31 mixes to type 61 mixes. I'm not going to go much deeper into the topic other than explain how to build a choke and to provide you with a chart that show the frequency and impedance numbers for a number of chokes. Table 1 can be found on the internet at: <http://k9yc.com/2018Cookbook.pdf>

Table 3: Choke Cookbook

RG400	Teflon #12	NM/THHN #12
160M:		
18 turns (10KΩ)	18 turns (9.5KΩ)	18 turns (9.5KΩ)
17 turns (6KΩ)	17 turns (7KΩ)	17 turns (9KΩ)
		16 turns (6KΩ)
80M:		
16 turns (8KΩ)	15-16 turns (6.5KΩ)	15 turns (7KΩ)
15 turns (7KΩ)	17 turns (5.5KΩ)	14 turns (6KΩ)
14 turns (6KΩ)	14 turns (5.8KΩ)	16 turns (5KΩ)
17 turns (5.5KΩ)		13 turns (5KΩ)
13 turns (5KΩ)		
40M:		
14 turns (6.2KΩ)	15 turns (6.5KΩ)	14 turns (6KΩ)
15 turns (5.4KΩ)	14 turns (5.8KΩ)	13 turns (5KΩ)
13 turns (5KΩ)	13 turns (5KΩ)	
30M:		
14 turns (6.5KΩ)	14 turns (6KΩ)	13-14 turns (5.5KΩ)
13 turns (5.5KΩ)	15 turns (5.5KΩ)	
12 turns (5KΩ)	13 turns (5KΩ)	
20M:		

13 turns (5.4KΩ)	13 turns (5.5KΩ)	12-13 turns (5KΩ)
14 turns (5KΩ)	14 turns (5KΩ)	11 turns (4.2KΩ)
12 turns (5KΩ)	12 turns (5KΩ)	
15M:		
11-12 turns (4.8KΩ)	11-12 turns (4.7KΩ)	11 turns (5KΩ)
10 turns (4.2KΩ)	10 turns (4KΩ)	12 turns (4KΩ)
	13 turns (3.8KΩ)	10 turns (4KΩ)
10M:		
10 turns (4.4KΩ)	10 turns (4.3KΩ)	10-11 turns (4.2KΩ)
9 turns (3.8KΩ)	11 turns (4KΩ)	
11 turns (3.5KΩ)		
160-80M:		
17 turns (6KΩ 160M, 6K 80M)	17 turns (7.5KΩ 160M, 5.5K 80M)	16 turns (6KΩ 160M, 5K 80M)
80-30M:		
	15 turns (6.5KΩ 80-40, 5.5K 30M)	14 turns (6KΩ 80-40, 5.5 KΩ 30M)
80-20M:		
14 turns (6KΩ 80-30M, 5K 20M)	14 turns (5.8KΩ 80-40M, 6KΩ 30M, 5K 20M)	13 turns (5KΩ all bands)
13 turns (5KΩ all four bands)	13 turns (5KΩ all four bands)	
40-15M:		
13 turns (4.8KΩ 40-30M, 5KΩ 20M, 4.8KΩ 15M)	12 turns (4.6KΩ 40-30M, 5KΩ 20M, 4.8KΩ 15M)	

In general, any combination of chokes can be used in series to provide the desired choking impedance over the desired bandwidth. Their combined choking impedance will be the sum of their resistance values on each band. For example, two 12-turn RG400 or Teflon chokes provide at least 8KΩ from 80 to 15M and 6KΩ on 10M. Combining 14 and 17 turn RG400 chokes provides more than 8KΩ on 160M, about 12KΩ on 80M, 8KΩ on 40M, 7KΩ on 30M, and 5KΩ on 20M.

Building a Common-Mode Choke

For our end fed wire we were faced with a dilemma. What frequency should we target? Given that most of the noise we were hearing is typically in the lower part of the HF band we opted to build a choke that would cover as much of the lower part of the HF band as possible from 80-meters up. So we opted for 16 turns of RG-58 around a single FT240-31 core. Again this is a really simple device to build. Here's is what you will need:

From Amazon:

- One FT240-31. The Amazon description is "Toroid Core FT240-31 Ferrite" and costs about \$13
- Two SO-239

From Lowes:

One grey plastic Electrical box

Four 6X32X3/4 Stainless Steel screws with Nylock nuts.

From our junk we will need about a 4' length of RG-58 coaxial cable. If you need to build a choke with more power handling capability use either RG400 or Teflon coated wire or #12 insulated wire. Insolated wire is what you will find in common house wire aka: Romax. I chose to build my choke out of RG400 given its power handling ability. See Figure 5 for a picture of our choke.

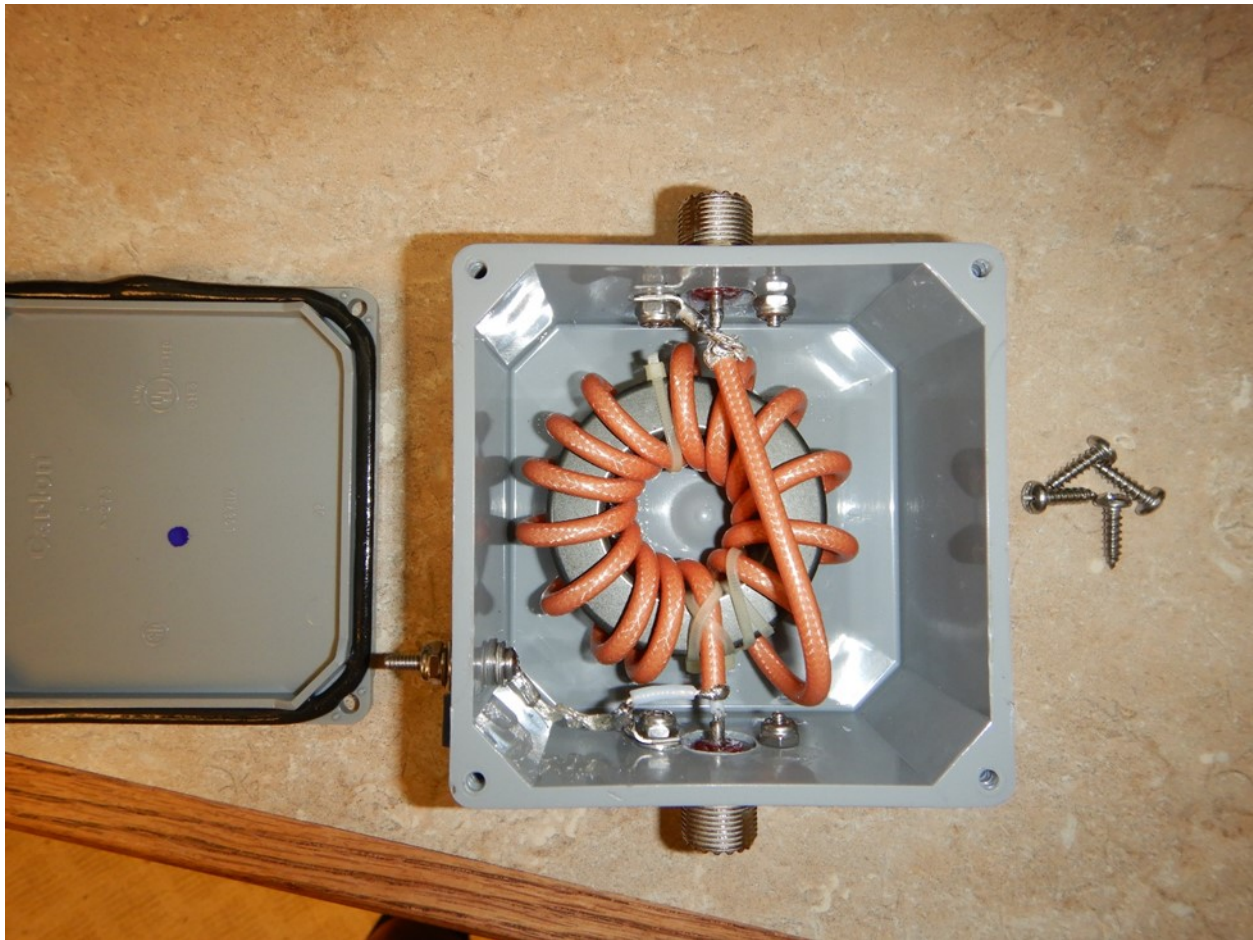


Figure 5: Common Mode Choke made using RG-400

Our Results: We took noise reading before and after installing the choke. Our results can be found in Table 2.

Band	Pre Installation	Post Installation	Change
80 meters	S4	<S1	4 S units
40 meters	S8	S4	4 S units
20 meters	S9	S3-4	4-5 S units
15 meters	S6	S4-5	1 S unit
10 meters	S6	S5	1 S unit

The results were as expected. The most improvement appeared from 80 to 20 meters with only a small change for 10 and 15 meters. Given out design this was the expected behavior. We also noticed a small change in the SWR reading but they were still well in range of the built in tuner in the FT-1000MP.

Summary

In this article we have covered a lot of ground from the installation of an end fed wire to the in's and outs of baluns, ununs and Common Mode Chokes. Nearly every ham station can benefit by making sure their aerial is properly fed and that common mode currents have been minimized. The key takeaways from this article are:

All antennas installations will have some common mode currents flowing on the coaxial cable. In some case it will be noticeable in others it not so much.

Baluns, Ununs, and Chokes are easy to build and not necessarily expensive.

An End Fed Wire can make a good antenna even where space is limited.

An end Fed Wire needs to be properly fed using a 9:1 unun and CMC's minimized by including a CMC choke.

If you are interested in finding out more about Chokes, Baluns and Ununs visit the following web sites:

<https://palomar-engineers.com/>

<https://www.balundesigns.com/>

<http://www.karinya.net/g3txq/>

<http://k9yc.com/2018Cookbook.pdf>

<http://www.yccc.org/Articles/W1HIS/CommonModeChokesW1HIS2006Apr06.pdf>

<https://www.hfkits.com/>

FEATURE ARTICLE

by Kent Gardner WA7AHY



Looking Back to our 1982 Field Day

Here are some pictures I came across last week. I can't ID any of the people, but I can see that it was up in the mountains. Perhaps some of you can identify them. I do wonder what happened to that trailer mounted crank-up beam?







Hey, that looks like my 1974 trailer!



GUEST ARTICLE

by Dan KB6NU



FCC proposes new fees for amateur radio licenses

August 27, 2020 By [Dan KB6NU](#)

On Wednesday, the FCC released a *Notice of Proposed Rulemaking* (NPRM) in MD Docket 20-270 which implements portions of the *Repack Airwaves Yielding Better Access for Users of Modern Services Act of 2018* (or RAY BAUM'S Act), which gives the FCC statutory authority to collect application fees. As a part of the Act, the FCC is required to switch from a fee structure mandated by Congress 20 years ago to a new cost-based system. This change will result in some fees being reduced and in some cases, such as the Amateur Radio Service, new fees are being added.

Proposed new fees for Amateur Radio and reduction in GMRS fees

Section 8 of the RAY BAUM'S Act does not provide any kind of statutory exemption for filing fees in the Amateur Radio Service, which, historically has had no filing fees. Citing the costs involved in the automated processes, routine maintenance of the Commission's Universal Licensing System (ULS) and limited instances where staff needs to be involved in the application process, the FCC is proposing an across-the-board fee of \$50 for new and modified licenses in the personal radio services, which includes Amateur Radio and the General Mobile Radio Service (GMRS). For GMRS, this is a reduction of the current \$70 fee. The FCC also proposes these fees for license renewals and requests for vanity call signs, the latter which had its filing fee eliminated several years ago. The FCC is proposing to still not charge for administrative updates, such as mailing address changes on amateur or GMRS applications. Amateur Radio will remain exempt from annual regulatory fees under Section 9 of the RAY BAUM'S Act.

Commenting on the changes

Once the NPRM is published in the *Federal Register*, filing deadlines for comments and reply comments will be established. Those dates will be announced by the FCC in a separate *Public Notice*. Comments will be accepted in the FCC's Electronic Comment Filing System under proceeding 20-270.



What's New?

FCC EXTRA CLASS QUESTION POOL REVISED JULY 1, 2020

The FCC question pool for Extra Class license examinations has been revised and is effective for exams conducted on or after July 1, 2020. Study materials are available through the [ARRL store](#).



FCC Proposes to Reinstate Amateur Radio Service Fees

08/28/2020

Amateur radio licensees would pay a \$50 fee for each amateur radio license application if the FCC adopts rules it proposed this week. Included in the FCC's fee proposal are applications for new licenses, renewal and upgrades to existing licenses, and vanity call sign requests. Excluded are applications for administrative updates, such as changes of address, and annual regulatory fees.

The FCC proposal is contained in a *Notice of Proposed Rulemaking* ([NPRM](#)) in MD Docket 20-270, which was adopted to implement portions of the "Repack Airwaves Yielding Better Access for Users of Modern Services Act" of 2018 — the so-called "[Ray Baum's Act](#)."

The Act requires that the FCC switch from a Congressionally-mandated fee structure to a cost-based system of assessment. In its *NPRM*, the FCC proposed application fees for a broad range of services that use the FCC's Universal Licensing System (ULS), including the Amateur Radio Service that had been excluded by an earlier statute. The 2018 statute excludes the Amateur Service from annual regulatory fees, but not from application fees.

"[A]pplications for personal licenses are mostly automated and do not have individualized staff costs for data input or review," the FCC said in its *NPRM*. "For these automated processes — new/major modifications, renewal, and minor modifications — we propose a nominal application fee of \$50 due to automating the processes, routine ULS maintenance, and limited instances where staff input is required."

The same \$50 fee would apply to all Amateur Service applications, including those for vanity call signs. "Although there is currently no fee for vanity call signs in the Amateur Radio Service, we find that such applications impose similar costs in aggregate on Commission resources as new applications and therefore propose a \$50 fee," the FCC said.

The FCC is not proposing to charge for administrative updates, such as mailing address changes for amateur applications, and amateur radio will remain exempt from annual regulatory fees. "For administrative updates [and] modifications, which also are highly automated, we find that it is in the public interest to encourage licensees to update their [own] information without a charge," the FCC said.

The FCC also proposes to assess a \$50 fee for individuals who want a printed copy of their license. "The Commission has proposed to eliminate these services — but to the extent the Commission does not do so, we propose a fee of \$50 to cover the costs of these services," the FCC said.

The Ray Baum's Act does not exempt filing fees in the Amateur Radio Service. The FCC dropped assessment of fees for vanity call signs several years ago.

Deadlines for comments and reply comments will be determined once the *NPRM* appears in the *Federal Register*. File comments by using the FCC's Electronic Comment Filing System ([ECFS](#)), posting to MD Docket No. 20-270. This docket is already open for accepting comments even though deadlines have not yet been set.



FCC releases proposal for new filing fee structure - new fees for ham radio

Wed, 08/26/2020 - 21:43

On Wednesday, the FCC released a *Notice of Proposed Rulemaking* (NPRM) in MD Docket 20-270 which implements portions of the *Repack Airwaves Yielding Better Access for Users of Modern Services Act of 2018* (or RAY BAUM'S Act), which gives the FCC statutory authority to collect application fees. As a part of the Act, the FCC is required to switch from a fee structure mandated by Congress 20 years ago to a new cost-based system. This change will result in some fees being reduced and in some cases, such as the Amateur Radio Service, new fees are being added.

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A Short History Of US Amateur Radio License Fees

Here's a short history of US Amateur Radio License fees (not VE test fees). The following is based on QST articles from the time periods listed. In all cases, the ARRL strongly opposed the fees. Sometimes the opposition was effective, sometimes it wasn't.

In 1933, the FRC (predecessor of the FCC) proposed a fee of \$5 (\$100.17 in 2019 dollars) for amateur operator licenses. In those days operator license terms were 3 years. This proposal was strongly opposed and was not enacted.

In 1954, the FCC proposed a fee of \$3 (\$28.93 in 2019 dollars) for amateur licenses. In those days, and until the early 1980s, license terms were 5 years. This proposal was strongly opposed and was not enacted.

In the early 1960s the FCC again proposed fees for amateur licenses, and this time the proposal was enacted despite the opposition. The original effective date of January 1, 1964 was delayed a few months by a legal challenge, but by mid-March, 1964 the following fees were enacted:

New or renewed license: \$4 (\$33.45 in 2019 dollars)

Modified license: \$2 (\$16.72)

Special callsign: \$20 (\$167.25)

Novice and RACES licenses remained free.

Effective August 1, 1970, the FCC raised the above fees for amateur licenses to the following:

New or renewed license: \$9 (\$60.09 in 2019 dollars)

Modified license: \$4 (\$26.71)

Special callsign: \$25 (\$166.92)

Novice and RACES licenses remained free.

Effective March 1, 1975, the FCC lowered the above fees for amateur licenses to the following:

New or renewed license: \$4 (\$19.27 in 2019 dollars)

Modified license: \$3 (\$14.46)

Duplicate license: \$2 (\$9.64)

Special callsign: \$25 (\$120.46)

Novice and RACES licenses remained free.

Finally, effective January 1, 1977, FCC dropped all fees for amateur licenses. From then until now, all US amateur licenses have been free.

VE testing fees are set by the VECs, and go to pay the costs of conducting the test sessions - space rental, duplication, postage, etc. The FCC sets a maximum fee, but VECs can set the fees lower, or waive them entirely.

Modern vanity-call fees have varied over time - someone else can write their history.

In the above schedule of fees, a "new or renewed license" included the fee for taking the tests, pass or fail, for a new license or a license upgrade. A "modified" license meant a change of address or name, but not a license upgrade.

Special callsigns in those days followed different rules than today, but there were specific cases where an amateur could get a callsign that wasn't sequentially issued. The special-callsign fee was a one-time charge.

All 2019-equivalent prices are from the Westegg Inflation Calculator: <https://westegg.com/inflation/>

It is left to the reader to figure the per-year cost of the above fees.

CLUB REPEATER NEWS



Scott Willis KD7EKO



Mike Fullmer KZ7O

Scott Willis KD7EKO and Mike Fullmer KZ7O are the OARC repeater engineers that keep our club repeaters at Mt Ogden and Little Mountain operational.

OARC MEMBERSHIP DRIVE

SUPPORT YOUR RADIO CLUB

Don't forget to signup/renew your OARC membership now (\$15) which runs August to August. Consider signing up your spouse as well.

Ham + Spouse = \$15 + \$10 = \$25

THANK YOU FOR YOUR SUPPORT

Join OARC

Join or Renew your membership now!

Joining & Renewal is easy. On the club website home page click Join/Renew tab and fill out the membership form. You can pay using your PayPal or mail a Check or Money Order to the club PO Box listed. Or print a hardcopy of the membership form, fill it out and mail it to the PO Box along with your payment. Better yet, Come to a club meeting and bring the completed membership form with you.

DUES: Dues are \$15.00 per person and runs August - August. (Ham + spouse = \$25.) More than one ham in the family? Consider the OARC Family plan for \$25.

NOTE: New Hams >>> Membership in OARC is complimentary for remainder of 1st year licensed.

Membership in the Ogden Amateur Radio Club is open to anyone interested in Amateur Radio. You do not need an amateur license to join us. You do not need to join the club to participate with us. Dues are used to operate the club, field day activities, and repeater equipment maintenance.

Club Badges

OARC Club badges are available for all licensed club members.

The cost is \$10.00 each. The badge comes with a “MAGNETIC” clip. Badge includes your Call Sign in large letters and your First Name in a somewhat smaller font in white lettering on a pitch black background with the club logo. See example below.



Place your order along with \$10.00 prepaid in advance for each badge ordered and specify Call Sign and First Name.

Visit the club website home page Join/Renew tab and fill out a membership application form to order your badge.

Or come to our next club meeting or event and make contact with our club treasurer via club website email to order your club badge.

Club Badges



UNCLAIMED OARC CLUB BADGES

New members have ordered pre-paid club badges that have not been claimed. You can claim your badge at any club function, meeting, activity or event or contact the club badge czar / club treasurer J. Siddle KG7CJN via club website email. If you are reading this and you are one of the following hams, please collect your badge. Even if you are not reading this, come collect your badge.

NO UNCLAIMED OARC CLUB BADGES...

Not sure how to handle this. It has never happened before!

OARC YAHOO GROUP




Did you know that OARC has a Yahoo Group?

We occasionally communicate with our OARC members via the Yahoo Group. Receive email notices regarding upcoming club meetings and future e-newsletter release notices and much more like CHAT items of interest.

You can also send/receive notices to/from other group members yourself.

It's easy to sign up...



Just click on the  icon at the bottom of the club website home page and then follow the Yahoo Group instructions to create yourself a user ID and password.

OARC You Tube Channel



Did you know that OARC has a You Tube Channel ?

A lot of our meeting presentations are recorded and posted to our OARC You Tube channel for you to view at a later date.

It's easy to view missed



meetings...

Just click on the icon on the bottom of the club website home page to view recorded meetings preserved for your viewing pleasure.

ANNOUNCEMENTS

Next Club Meeting:

3rd Saturday of each Month

The Ogden Amateur Radio Club meetings are usually held on the **3rd Saturday** of each month.

Meeting/Activity:

See notices above

Talk-in: **-146.82 (pl 123.0)**

Check OARC web site for details

www.ogdenarc.org

Please invite a friend to join you. You do not have to be a member of the club to participate in our club meetings or activities. We invite all to join us.

If anyone is interested in doing a presentation on something or just have something unique to show at the meetings. - Please get a hold of any of the officers and let us know.

Next Weber Co VE Test Session:

1st Wednesday Feb, Jun & Oct

Exam sessions are held in Ogden every few months, **usually** the first Wednesday in February, June, and October.

Time: 06:00 PM *Walk-ins allowed*

Location: Permanent location

**Weber County Sheriff Office
Training Room
712 W 12th Street Ogden Utah**

Contact: VE Liaison:

Rick Morrison W7RIK (Liaison)

morrisonri@msn.com (801-791-9364)

Jason Miles KE7IET (IT)

Cost: \$ 14.00

Two forms of **ID**, one of which must be a **picture ID**.

For "Upgrades" bring current **license** and a **copy** of current license, and any **CSCE's**

Most **calculators** allowed. Calculator memories must be cleared before use.

Club Web Site

Be sure to visit our club web site.

www.OgdenARC.org

Club membership is open to anyone interested in Amateur Radio. You do not need an amateur license to join us. Dues are used to operate the club, field day activities, and repeater equipment maintenance.

Club Call Sign

Listen to the club repeaters for this very familiar CW ID. You do know Morse Code don't you?

W7SU

ARRL Field Day is held on the last full weekend of June every year.

Location may vary each year so watch this notice for details as time draws near.

See you there.

OARC REPEATERS			
(*) Yaesu Fusion digital/FM compatible			
FREQ	CLUB	TONE	LOCATION
146.900-	OARC (*)	125 DCS	Mt Ogden (w/WiresX)
448.600-	OARC (*)	123.0	Mt Ogden
146.820-	OARC (*) "Talk-in"	123.0	Little Mtn
448.575-	OARC	100.0	Little Mtn (w/auto patch)

OTHER AREA REPEATERS			
FREQ	CLUB	TONE	LOCATION
146.620-	UARC	none	Farnsworth Pk
147.120+	UARC	100.0	Farnsworth Pk
449.100-	UARC	146.2	Farnsworth Pk
449.500-	UARC	100.0	Farnsworth Pk
147.040+	DCARC	123.0	Antelope Isl
447.200-	DCARC	127.3	Antelope Isl
449.925-	DCARC	100.0	No Salt Lake
145.290-	GSARC	123.0	Brigham City
145.430-	GSARC	123.0	Brigham City
147.220+	GSARC	123.0	Brigham City
448.300-	GSARC	123.0	Brigham City
146.640-	BARC	none	Logan
146.720-	BARC	103.5	Mt Logan
147.260+	BARC	103.5	Promontory Pt
449.625-	BARC	103.5	Mt Logan
145.250-	WSU	123.0	* coming soon
449.250-	WSU	123.0	* coming soon
145.490-	K7HEN	123.0	Promontory Pt
146.920-	N7TOP	123.0	Promontory Pt
449.775-	N7TOP	123.0	Promontory Pt
147.100+	Morgan	123.0	Morgan Co
448.825-	IRLP/Echo	123.0	Clearfield City
449.950-	IRLP	123.0	Clearfield City
449.425-	IRLP	100.0	Nelson Peak
147.360+	Summit Co	100.0	Lewis Peak

AREA CLUB MEETINGS & WEB SITES

CLUB	WEB SITE	DATE/TIME	LOCATION
OgdenARC	ogdenarc.org	3 rd Saturday 09:00 am	Check OARC web site ...
WC Sheriff Comm-O		1 st Saturday 10:00 am	Weber Co. Sheriff Complex West 12 th Street Ogden Utah
Barc	barconline.org	2 nd Saturday 10:00 am	Cache Co. Sheriffs Complex 200 North 1400 West Logan Ut
CSErg	dcarc.net /ares.htm/	Last Wednesday 8:30pm	Clearfield City Hall Clearfield Utah
DCarc	dcarc.net	2 nd Saturday 10:00 am	Davis Co. Sheriff Complex Farmington Utah
NU Ares	home.comcast.net/ ~noutares/	3 rd Wednesday 7:00 pm	Cache Co. Sheriff Office Logan Utah
Uarc	xmission.com /~uarc/	1 st Thursday 7:30 pm	UofU EMC Bldg Room 101 Salt Lake City Utah
UVarc	https://uvarc.club	1 st Thursday 6:30 pm	Orem City Council Chamber Room 56 North State St. Orem Utah
GSarc	Ubetarc.org	Check Website	Check Website
Utah DX Association	udxa.org	3 rd Wednesday check web page for details	check web page for details Salt Lake City area
UvhfS	ussc.com /~uvhfs/	Each Tuesday 8:00 pm (refer to web site)	Weekly 2 meter net (no eye ball meetings)
WDArc	westdesertarc.org/	1 st Tuesday 7:00 pm	Tooele County Courthouse Tooele Utah
WsuArc	https://groups.google.com/forum/#! forum/wsuarc	3 rd Thursday 5:30 pm	WSU Blding #4 Room ? Ogden Utah

LOCAL AREA NETS

DATE	CLUB	FREQ
Daily @ 12:30 PM mt	Utah Beehive net HF	7.272 Mhz HF LSB
Daily @ 07:30 PM mt	Utah Code net HF	3.570 Mhz HF CW
Daily @ 02:00 UTC	Utah Farm net HF	3.937 Mhz HF LSB
Sunday @ 8:45 AM	Ogden Old Timers HF net	7.193 Mhz HF LSB
Sunday @ 7:30 PM	GS ARC	145.430 - 123.0 (training net)
Sunday @ 8:30 PM	SATERN Net	145.900 - 123.0
Sunday @ 9:00 PM	Morgan Co Net	147.100 +123.0
Sunday @ 9:00 PM	UARC Info net	146.620- no PL tone required
Monday @ 9:00 PM	2-meter SSB net	144.250 Mhz 2-meter USB
Tuesday @ 6:30 PM	OARC—Ham & Eggs Net	448.600 -123.0
Tuesday @ 8:00 PM	Weber ARES	448.600 - 123.0
Tuesday @ 8:00 PM	VHF Society Swap	147.120 + 100.0
Tuesday @ 9:00 PM	Bridgerland ARC	147.260 + 103.5
Wednesday @ 8:00 PM	GS ARC	145.290-, 145.430-, 448.300- (all 123.0)
Wednesday @ 8:30 PM	CSERG	145.770 simplex
Wednesday @ 9:00 PM	No. Utah 10m HF net	28.313 Mhz HF USB
Wednesday @ 9:00 PM	6-meter SSB net	50.125 Mhz 6-meter USB
Thursday @ 6:30 PM	Davis Co Elmers Net	147.040 + 123.0 New Hams
Thursday @ 8:00 PM	Weber State ARC	146.820 - 123.0 (coming soon)
Thursday @ 8:00PM	State RACES VHF/IRLP	145.490 - 123.0, 146.680 - 123.0 3 rd Thursday - even months only
Thursday @ 8:30 PM	Davis ARES	147.420 = simplex
Thursday @ 9:00PM	Wasatch Back Net	147.360 + 100.0
Saturday @ 8:00AM mst	RACES State HF	3.920 Mhz HF LSB 3 rd Saturday – odd months only
Saturday @ 11:00AM mst	QCWA net HF	7.272 Mhz HF LSB

OARC OFFICERS

President: Dave Mamanakis KD7GR

Vice President: Justin Hall KB7LAK

Secretary: Barbara Siddle WB7FWW

Treasurer: J. Siddle KG7CJN

Program Director: Mike Wilde KJ7HEX

Activity Director: Todd Shobe KW7TES

"WATTS NEWS" e-Magazine

NL Editor: Val Campbell K7HCP

"OARC" web site

Webmaster: Val Campbell K7HCP

OTHER CLUB APPOINTMENTS

VE Liaisons: Richard Morrison W7RIK
Jason Miles KE7IET (IT)

Repeater Engineers: Mike Fullmer KZ7O
Scott Willis KD7EKO

Photographer: Tim Samuelson KE7DOA

Asst Photographer: Rick Hansen N7EGA

QSL Manager: Pete Heisig WB6WGS

Historian: Kent Gardner WA7AHY

Equipment Manager: Val Campbell K7HCP

Club Call Sign Trustee: Larry Griffin AD7GL

Club Elmer: Stan Sjol W0KP

Centennial Committee Chair:

Gil Leonard NG7IL

Advisors: Mike Fullmer KZ7O
Kent Gardner WA7AHY
Kim Owen KO7U
Larry Griffin AD7GL
Gil Leonard NG7IL
Jason Miles K7IET

73 de W7SU

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