



LETARC PROPAGATION

The official Newsletter of the Longview East Texas Amateur Radio Club



July 2018

Volume 2018-7

Understanding Waterfall Displays



With personal computers and advanced transceivers being more widely used within the confines of our radio shacks, there is a tremendous amount of data available to use with the push of a few keys. The presentation of a waterfall on our computer screen of radio frequency use has certainly streamlined and quickened our ability to see where action is taking place on a specific radio band.

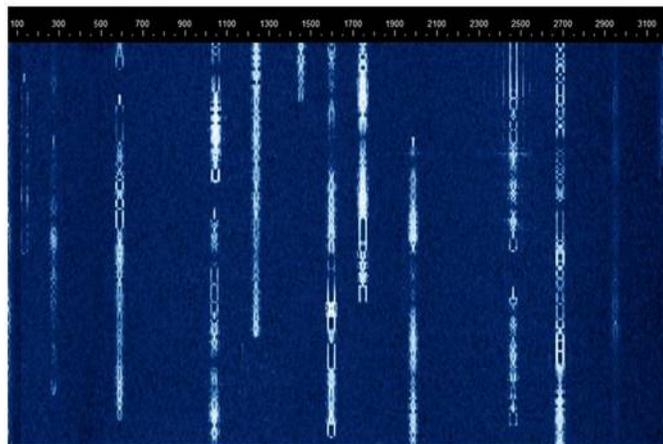
In the event that you've never observed a waterfall display on a computer screen, it's a real time even or almost a real time event of radio activity on various parts of the band. By leaving aside the complicated mechanics of how all of this happens, or the amount of activity you see, it is a snapshot of activity on the band that is continually changing by the second.

The waterfall display is a way of showing tons of data in a very compact way; just as you would view a movie,

As you look at the horizontal axis on the display, it represents the frequency. And the vertical axis represents the time, the color indicates signal strength. So for an example, let's say you're looking at the 40 meter band from 7.0 MHz to 7.3 MHz. On the left side of the screen you'll see 7 MHz and on the right side 7.3 MHz. And in-between and halfway across the display you'll see 7.150.

Now, in a similar manner, the zero seconds ago appear at the top of the waterfall display and they begin to cascade downward as time progresses. So on the chart example, the 1 minute ago would be at a lower point than zero seconds ago. And depending on how you have set up the whole screen updating on your computer screen, this cascading effect can take place slowly or rapidly. Your display could represent 10 seconds, 10 minutes or 10 hours of data depending on how you have set things

up on your computer. The setup is very flexible, entirely configurable and totally arbitrary.



To understand signal strength, envision the color black as having no signal strength and the color red being the maximum signal strength. The brightness or intensity of these colors indicates more signals being present.

A radio operator might be sending a CW signal in Morse code and the signal may show up on the waterfall as a series of dits and dahs cascading down the screen with the oldest part of the signal being found at the bottom and the newest found at the top of the waterfall.

Whereas, an AM signal may show up as a wide or thick line in a bright color indicating a high strength signal in the middle and lighter colors showing a low signal strength towards the edges.

Each mode of radio operation has its own visual characteristics displayed on the waterfall and some of the characteristics in some instances you can be read information about that signal on the computer screen.

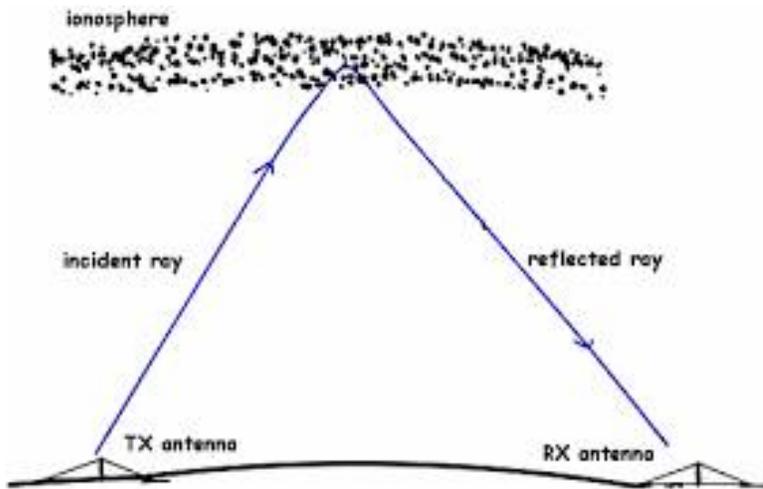
Then there are some strange things you may see on the waterfall display like diagonal lines.

A diagonal line would represent a radio signal that is strong and occurs as a particular time and frequency. Then a moment later it has changed frequency, only to change frequency again. It is the steepness of this diagonal line that is dependent on two things: the speed the frequency changes and the rate the waterfall display is updated on the computer.

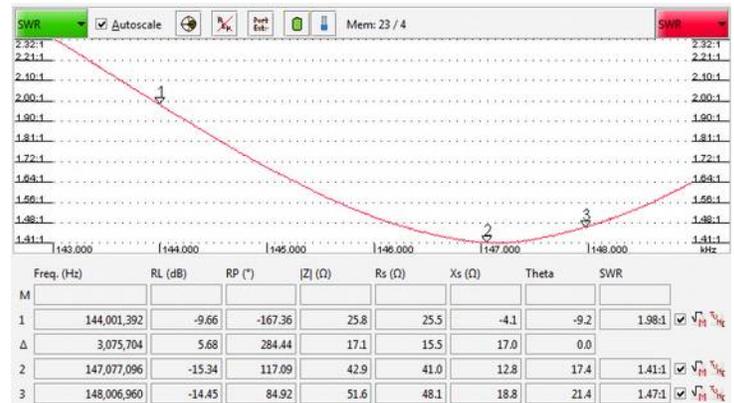
Before waterfall displays came into existence, the way a radio operator would experience this type of signal that flashes up as a low to high swoop or high to low swoop sound and is dependent on the listening mode and direction of the frequency change.

So what is that signal called?

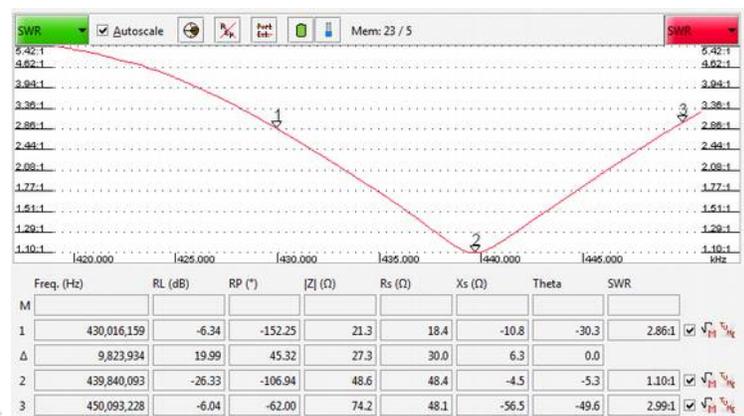
It's called an Ionospheric Sounder. The operator pings the ionosphere across several frequencies and is listening for a return echo to see if the ionosphere is reflective for a particular frequency(s) at that point in time. This information allows for the creation of a map on what the ionosphere is doing at the present moment and what frequency can be used to make a contact.



Antenna SWR Test Results:



2M SWR Response



70CM SWR Response

My primary interest in the antenna's SWR performance is because manufacturers **do not** provide the SWR specifications for mobile antennas. They claim that how the antenna is mounted on the vehicle controls an antenna's SWR performance. Not publishing the antenna SWR spec precludes any customer complaints.

I was very interested in the SWR performance because most of radio designs today rely on the SWR level to protect the transmitter's output stage. My VHF/UHF radio is a good example, this radio starts to reduce transmitter output power when the SWR exceeds 1.5:1. I was not very impressed with the SWR performance of this antenna, the 1.5:1 SWR frequency coverage was very limited on 70cm.

The www.trambrowning.com web site provided me with an answer why the BR-180 antenna SWR was not very good. The BR-180 antenna is not listed as a No-Ground Plane antenna. The Browning antenna would probably provide good SWR readings if I cut a hole in top my truck roof, removed the paint around the hole and installed NMO base connector. Unlike the BR-155, the BR-180 needs grounding.

NMO No-Ground Plane 2.4 dBd Gain, 5 MHz Band Width			
BR-155	1/2 wave	132-174 MHz	2.4 dBd 49° .100" (2.5mm)
NMO Amateur Dual Band Antenna			
• Wide band • Pre Tuned • NMO mounting			
BR-180	1/2 wave	144-148 MHz	2.4 dBd
	5/8 over 5/8 wave	430-450 MHz	5.5 dBd

VHF/UHF MOBILE ANTENNAS by Jerry Ritchie – WA5OKO

When I was at the Shreveport Ham Fest, I purchased a Browning BR-180-B 2m/70cm mobile antenna and a NMO magnet mount from a vendor. The vendor's table displayed a sample antenna attached to a magnet mount. The antenna package only showed the manufacturer's specifications, but no installation instructions. The vendor assured me that he had sold hundreds of these antennas and they work great with a magnet mount. I parted the ham fest with a smile and about \$60 less in my pocket.

At the Plano Ham-Com, I picked up a Diamond antenna product catalog. The NR73BNMO antenna does not need to be grounded or have a ground plane according to notes.

Dualband Mobile Antennas							
Model	Bands	Gain(dBi)	Max. Pwr. Rating	Height (inches)	Conn.	Element Phasing	Notes
NR72BNMO	2m/70cm	2.15/2.15	100	13.8	NMO	2m: 1/4λ; 70cm: 1/2λ	A, B Black
NR73BNMO	2m/70cm	2.15/5.3	100	33.5	NMO	2m: 1/2λ; 70cm: 2.5/8λ	Black
NR77DHA	2m/70cm	3.0/5.5	200	38.2	UHF	2m: 1/2λ; 70cm: 2.5/8λ	Black
NR77DHB	2m/70cm	3.0/5.5	200	38.2	UHF	2m: 1/2λ; 70cm: 2.5/8λ	Black
NR77DHNMO	2m/70cm	3.0/5.5	200	40.2	NMO	2m: 1/2λ; 70cm: 2.5/8λ	Black
NR77DHNMO	2m/70cm	3.0/5.5	200	40.2	NMO	2m: 1/2λ; 70cm: 2.5/8λ	Black
NR7900A	2m/70cm	3.7/6.4	300/250	57	UHF	2m: 1/2λ + 1/4λ; 70cm: 3.5/8λ	A

NOTES:
 A. Not recommended for Magnet Mount. B. Grounding required.

Magnet Mounts:

Magnet mounts provide a minimal amount of capacitive coupling between the antennas ground and the metal roof top, but this is not a substitute for a RF ground or ground plane. If you are going to use an antenna magnet mount, the antenna must be designed to operate without a ground system.

Summary:

Magnet mounts are very popular with amateurs. I looked at several mobile antennas at the Plano Ham-Com and didn't see "Magnet Mount compatible" on any of them. Since the manufacturers of mobile antennas don't include SWR specifications, it's difficult to determine which antenna to purchase. I could have installed the Browning antenna on my truck, attached my VHF/UHF radio and never checked its SWR performance. My radio does not sound any alarms when the output power is reduced or radiation efficiency sucks. Cutting a hole in my truck roof top is not an option, so a Diamond NR73BNMO is on my too purchase list.

Note: The Vector Network Analyzer (VNA) that was used to measure the Browning antenna SWR will be donated to LETARC next month.

Field Day 2018

Field Day 2018 started off just as any other day in amateur radio. As time progressed, the hustle and bustle of activity began to pick up as radio operators began to filter into Camp Tyler in preparation for the commencement of fast and furious activities that begin at 1:00 PM later in the day.



As the activities of Field Day began to ramp-up, Smith County Sheriff's Department brought in it's impressive mobile communications van and

105' vertical antenna. Just seeing that rig setup could be considered enough eye candy for any radio operator. But, then when you've think that was enough, just walk inside he meeting hall at Camp Tyler and you would find a well oiled communication's setup for 15, 20 & 40 meter bands for all modes of communication (CW, digital, and phone). Wayne Hoskins of the Tyler ARC has a lot of experience setting up Field day for the club and things ran very smoothly from a technical standpoint. And Field Day this year was the typical well run activity for Tyler ARC.



Terry Gimble, President of the Tyler Club, coordinated things such as inviting LETARC, Smith County Sheriff's Department, local officials and the news media. KETK's Neal Barton did a nice story about Field Day on the 10:00PM news. He also joined in on some of the activity and great conversation. He is a fellow amateur radio operator as well.

Then Mark DePaepe with his better half coordinated and cooked all the great vittles that were served for lunch and dinner. For lunch, we had some mighty tasty hamburgers and hot dogs and soft drinks and chips. Then for dinner we had a great spaghetti and salad dinner. There was enough spaghetti to serve the armed forces a good dinner. Mark and his wife did an outstanding job feeling us!

At the height of the lunch time activity, there were about 50-60 folks in the building all sharing stories, advice and great conversation. It was truly a very pleasant and fun experience.

Then when 1:00 PM rolled around, things got down to business with five radios in operation using different modes of communication. The



activity on all bands was fast and furious accompanied with many pile ups on the various frequencies. In fact the pace was so fast, I had a hard time keeping up with all the radio activity since this was really my first Field Day being a participant and I did not know what to expect.

As soon as I put on a set of ear phones, all I could hear was a multitude of voices trying to break through the pile up on a frequency where an operator had managed to occupy the frequency and make tons of contacts. People all from all over were trying to get through to make contact. Then there were others on those rare unused frequencies that were calling CQ, CQ, CQ in hope others would find them and sit tight as more and more radio operators would join in on the fun. If a radio operator could find an unused frequency and call CQ, CQ, CQ and get people to acknowledge him, he would be in the drivers seat for collecting many contacts. This is perhaps the goal of any radio operator on Field Day if he is lucky enough.

Since this was my first try at being a participant, it made me realize this West Texas fellow not only talked slowly, I also hear real s-l-o-w-l-y, as well. I might get the first letter of the call sign only to miss the rest. And then when I do get the call sign, I've missed other pertinent information required for making the contact. Instead, I just shake my head wondering how some are able to do it at all. I guess I need to learn to hear faster.



After giving things a try as a participant, I took a break in another room and talk with other members of the Tyler Club. It was a time I got to pick their minds about setting up a vertical antenna. They had a lot of good experience to glean information from on the best way to set things up without having to read tons of material. They know what worked for them should work for me and make life a little easier installing the antenna.

Field Day 2018 with the Tyler ARC was a really enjoyable experience. For those who did not join in on the activities, you missed a great experience in learning about contesting and making some nice friends. There were seven members of LETARC who participated with the Tyler club and they made us feel more than at home; we were part of the club. What a wonderful group of welcoming people!

Here's who showed up from LETARC:

Jim Perry – KA5BCM
 Noah Chalker – KE5VQL
 Chris Crawford – KG5SMZ
 John Armstrong – KG5LWD
 Buddy Walker – WD5W
 Terry Johnson - KG5WO
 Jim Quinn – AA5CX

Here are the statistics of Field Day obtained from the Tyler ARC web site.

Total Contacts	1233
CW Contacts	264
Phone Contacts	952
Digital Contacts	16

If atmospheric conditions would have been better to facilitate radio wave propagation, the number of contacts would have been much higher for all radio operators around the nation and other parts of the world. Mother nature was not too cooperative this time around and radio propagation was horrible.

Newbie Corner – Learn to Rag Chew

As we watch many others in today's society, we may often wonder what ever happened to the art of having a conversation. After all, everywhere we look, we see people in restaurants, waiting rooms, subways, bus stations, airports, the dinner table, at family gatherings and even walking down the sidewalk with their noses buried in the cell phone screen. No one really talks to each other one on one anymore unless it is via a text message.

And I often wonder if that is carrying over into the realm of Amateur Radio. Is the art of conversation, or as we know it, in ham radio Rag Chewing a dying art?

If you listen to some of the old timers on the radio, you'd have to say no to that questions. These people have the ability to carry on meaningful conversations with strangers thousands of miles way. They exchange stories, opinions, solutions to problems, humor or whatever. Many are never short of words. But they all share common traits: courtesy and a willingness to listen to what the other person has to offer. **Listening** is the keyword here. **Hearing** what people say is much different from listening. There's a huge difference between the

two words. If I listen, then I am paying attention to what is being said. If I hear you, the words basically go in one ear and out the other without giving any thought to what is being said.

With this basic listening concept in mind, it gives you the first important tool for Rag Chewing over the air waves.

The second important tool for Rag Chewing is to realize everyone has an opinion. Opinions are like noses; everyone has one. So the sooner one can accept listening to another person's opinion without judgment is crucial. You don't necessarily have to agree with the other person, but you should respect that individual. Be polite. You can disagree with what is being said as long as you remain courteous. After all, good conversations are the exchange of thoughts and ideas without the fear of being judged. Like I said, everyone is entitled to their own opinion. The other key word is **Courtesy**.

So where to you begin Rag Chewing?

First of all, turn on your radio and say CQ, CQ, CQ. Some folks don't like doing that sort of thing because they are shy or not sure of what to say next. But if you get right down to it, you are reaching out to others and extending your friendship to another person. You're giving them a gift, and in return they are giving back. It's call friendship. And as you continue to call CQ, CQ, CQ over the air each time you get on to the radio, you'll be amazed at the number of QSOs you make. Pretty soon, your gift of gab will begin to develop as you turn these brief responses from others into nice conversations. You'll exchange thoughts and ideas to/from others and you may even learn something in the process.

Where to you go to Rag Chew?

One of the most important decisions that needs to be made on Rag Chewing is what band to use. Typically 10, 12, 15, 17 & 20 meter bands are not used for rag chewing, though it does happen on those bands. The 40 & 80 meter bands seem to be where most of that activity takes place. Propagation on these two bands makes it more likely you'll be heard on a daily, weekly and monthly basis. This will allow the radio operator to develop friendships with people locally or in far away places. The higher bands can be good places for DX rag chews, but the radio station needs to be better equipped for that to happen often.

Choosing the antenna

If you have been in ham radio for any length of time, you know not all antennas are created equal. An Inverted-V or flat top dipole would be two good choices of antennas to use for rag chewing. For 80 meter, the antenna ideally needs to be no more than 60 feet in height and a 40 meter antenna up about 30 feet.

For those who do a lot of Dxing and know antenna theory, this may seem a little strange promote. But, the truth of the matter says that using a "cloud burner" that points all the signal gain upwards are great for putting out a big signal and getting folks to hear you during rag chews. Vertical antennas are said to not be good for rag chewing, but good for Dxing.

Heating up the Wire

For a well seasoned rag chewer and CQ caller, he realizes the more power that can be radiated, the better your chances are of being heard. When having an extended QSO with another individual and your signal is just above the noise, it can be a frustrating event for the other person elsewhere on planet earth. The easier they can copy you through all the QSB, QRM or QRN, the better it will be for a more enjoyable QSO for them.

Pushing a lot of power is not really about who has the biggest and baddest transmitter to impress someone else. Instead, it's about making life easier for the other person to hear you easily and clearly. But, I also

feel a well designed antenna without using a lot of power can be just as effective in making these contacts. This now takes things on to the next related topic.

Good Audio

Traditional radio communication as many of us know it has a limited bandwidth and higher to signal to noise level than eSSB, which in simplistic terms is Hi-Fi for radio. It allows one to get more talk power per watt. But, the benefits of eSSB doesn't stop there. It will allow for better quality in the sound of speech to being heard by the other person; making communication easier to understand.

Courtesy

Do you remember those traffic signs that were once seen on the highways "Courtesy Pays". Well, that concept is applicable to ham radio. Courtesy will go a long way in rag chewing. Always be polite and avoid controversial topics such as politics and religion while on the air. With social conditions nowadays in this nation, you have no idea who may be offended by saying something you feel is very innocuous. Some folks wear their feelings on the cuff of their shirts and become offended at the drop of the hat. You may be accused of being misogynistic, racist and all sorts of other types of undesirable labels for not watching what you say. It's political correctness run amok. So, it's better to let those controversial topics slide off to the side and left alone since you don't know who you will offend.

It's also advisable to avoid the use of those four letter words we hear so often in movies and on TV. Even though we hear the "S", "F", bomb words being use often in those formats, we should not stoop to using them on the amateur radio airwaves. However, I have more and more of this creeping into the language being used on ham radio, it still doesn't mean its the right thing to do. In fact, that sort of language should be reported. If the FCC fined a few folks for this inappropriate language, perhaps the air waves would be cleaned up.

Rag Chewing Etiquette

In a similar fashion as with courtesy, etiquette plays a big role in ham radio communications. It's those little things that you can do to make the communications much more enjoyable for others. As an example, many times rag chews hold down the key to their mics for a minute or more. When the part of the communication is over, ID yourself so that listeners know who is participating in the conversation. On top of this, always be prepared for someone to break into the conversation and leave a little gap in-between transmissions to allow for this to happen. If someone does break in, acknowledge the person breaking in. And some operators will hand things over to the breaker right way, while others may wind up the discussion and turn things over to the other person.

Encourage other Contacts (QSOs)

When winding up the conversation, always give a thanks of appreciation for someone who answered your CQ. Express your pleasure for having the opportunity to talk with someone, particularly if it is a new contact. Make the other person feel valued and encourage them to feel free to contact you when the occasion arises. That way, you will have made another friend. And that's what ham radio is all about.

LETARC MEETINGS

City of Longview Fire Training Facility, 411 American Legion Blvd, Longview, TX.

LETARC's monthly meeting held the fourth Saturday of each month at 0900 at the Longview Fire Training Facility at 411 American Legion Boulevard. Talk-in on 147.34 (+136.5). Presentations, free coffee and donuts and friendship!

The VE Sessions have also been moved to the fourth Saturday of each month at LeTourneau University. The time of the day not changed. It still takes place at 2:00PM.

Minutes of the May 2018 Monthly Meeting Of The Longview/East Texas Amateur Radio Club

The May 2018 monthly meeting of the Longview East Texas Amateur Radio Club was called to order at 9:04 am Saturday, May 26th by President Jim Quinn, AA5CX. Introductions of members and guests were made. The minutes and treasurer's report from the last meeting were read and approved after a motion was made by Jim Quinn, AA5CX, to accept them. The motion passed.

Our guest speaker did not show so we went straight to the business portion of the meeting.

President Jim Quinn, AA5CX, opened up the meeting.

1. President Jim Quinn asked for a report on the Tailgate sale from May 12th. Terry Johnson reported that we had an excellent turnout and had people from all over attending the sale.
2. Dave Luchak gave a report on the May 19th Fox Hunt. Included in the 6 teams participating were Allen Peterson, Buddy Walker, Don Gamble, Terry Johnson, Dean Patterson, Chris Howell, and Jason Litton. The fox was set up the night before but only worked if one was in a half mile radius of it. Dave swapped out the fox with a duplicate one but still had problems with it. The hunt went on longer than anticipated and a couple of people dropped out. They finished at 3:30 in the afternoon with the prize going to Chris Howell and Chris Litton. A big thank you went out to Ross Bennett for creating the liability waiver for the fox hunt.
3. Jerry Ritchie gave a short review of an antenna he made the night before the fox hunt.
4. The radio room at the Mims VFD has been framed in, a lockable door put in, and the tower is up. We have our own sub-panel with a 50amp breaker and 20amp service around the walls.
5. Fusion is offering an upgrade to one of our existing repeaters. To swap out the repeater with a brand new one will cost around \$550.00. Jim Perry has suggested that we take advantage of this.
6. We need to replace an antenna with a brand new hex beam antenna. Ross Bennett made a motion to purchase a new hex

beam antenna and allow Jim Rogers to replace the old antenna with the new one. Mary Jane Burnett seconded his motion and the motion passed.

7. Jim Liberacki announced that the Upshur Gregg AARES will be setting up an operating radio table at Yamboree in October. He asked if LETARC would like to be a part of the event. John Zenter motioned to make LETARC a part of the event. It was seconded by Terry Johnson and the motion passed with no opposition.
8. There is a need for a technician radio class. Dave Luchak would like to put a class on the schedule after the middle of July when the new test questions come out. Dave is looking for volunteer assistants.
9. The June meeting will be held at the Mims VFD during Field Day. We will be operating as an EOC.

VE testing will be held this afternoon, May 26th, at 2:00 at Le'Tourneau University. The monthly informal dinner will be Sunday, June 10th at Pasado's Restaurant at 6:00. With no further business to conduct, the meeting was adjourned at 10:40 am.

Treasurer's Report for May 26, 2018 to June 23, 2018

Brought forth from the last reporting period: \$11,662.72

Income for this period: \$25.00

Membership Dues (Renewals): Pat Brown \$25.00

Total Income: \$25.00

Expenses for this period:

Donuts for monthly meeting (Adan's) \$15.35
Pay Pal (Antenna) \$610.00

Total Expenses \$625.35

Ending Balance (as of June 23, 2018): \$11,062.37

EVENTS AND CONTESTS

July 2018

14-15 IARU HF World Championship

<http://www.arrl.org/contest-calendar>

REGIONAL CLUBS

[Click on underscored name to visit site.](#)

[Tyler](http://www.tylerarc.org/) <http://www.tylerarc.org/>
[Nacogdoches](http://w5nac.com/) <http://w5nac.com/>
[Athens](http://www.athensarc.org/) <http://www.athensarc.org/>
[Cedar Creek](https://k5cc1.wordpress.com/) <https://k5cc1.wordpress.com/>
[Marshall](http://marclub.net/) <http://marclub.net/>
[Minden](http://www.n5rd.org/) <http://www.n5rd.org/>
[Shreveport \(ARCOS\)](http://www.qsl.net/nwlam/arcos.htm) <http://www.qsl.net/nwlam/arcos.htm>
[Shreveport \(SARA\)](http://www.k5sar.com/) <http://www.k5sar.com/>
[Rusk County \(Henderson\)](http://www.ruskcountyarc.com/) <http://www.ruskcountyarc.com/>
 Four States (Texarkana) <http://www.4444sarc.org/>
[Palestine-Anderson County](http://www.pacarc.org/) <http://www.pacarc.org/>
[Navarro, Freestone, Limestone and Leon County](http://www.nflarc.com/)
<http://www.nflarc.com/>
 Panola County (no website)
 LeTourneau University – LUARC (no website)

Other Ham Clubs

Fond du Lac Amateur Radio Club, Fond du Lac, WI
<https://www.fdlhams.com/>

The Rare Ones Of New Orleans

Do a little rag chewing with a group of really nice fellows living in and around the Big Easy on 40 Meters – 7.260 Mhz (+/- 5 khz) – Most Evenings About 1930-2130 CST.
<https://therareonesofneworleans.loga.us/>.

“The “Rare Ones” of New Orleans was resurrected on February 22, 2017 after much deliberation and thought by nine (9) amateur radio operators in the Greater New Orleans Area. The purpose of the group is to promote the amateur radio HF Communications, the City of New Orleans, and the Audubon Zoo.



The original “Rare Ones” of New Orleans was established in 1965. The current “Rare Ones” are the third generation of this fine group, and are excited to promote our wonderful City’s unique culture, history and fine traditions. To

learn about the History of the “Rare Ones” please click on the following link: [History of the “Rare Ones”](#)

The “Rare Ones” of New Orleans also promotes the Audubon Nature Institute. To show our appreciation for the Zoo, each member of the “Rare Ones” has adopted an animal figure to represent a personal connection with the Audubon Zoo. Of course, if you’ve been to the Zoo, they all asked for you! Well, the “Rare Ones” all ask for you to check in with us on the air waves!

One of the goals in resurrecting the “Rare Ones” of New Orleans is to provide a place where displaced New Orleanians could “pull up a chair” and chat with someone back home. Sharing childhood stories and memories with our displaced friends and family brings a great satisfaction to the “Rare Ones”.

The “Rare Ones” of New Orleans love to tell the story of the City of New Orleans to new comers as well as displaced former New Orleanians. By all means, don’t be a stranger and come by for a spicy taste of New Orleans!”

Upshur-Gregg County Yamboree-ARES

The Upshur-Gregg ARES, facilitated by LETARC, is setting up a radio station on the Yamboree grounds in Upshur County on October 18-20 for three days from which we will conduct VHF and HF communications with a special event call sign. The station will attempt to do three things: Recruit members for LETARC, Introduce ARES to the community it serves, and acquaint visitors with HAM radio. The event is made possible by the efforts of many members of LETARC so it should actually be considered a LETARC public service and recruiting event.

ext LETARC Tail Gate Sale

This event is co-sponsored by the Regional Amateur Radio Clubs and the **Texas Broadcast Museum**.

When: Saturday, November 10, 2018, 7:00 AM till 12:00 PM

What: Free tailgate sale. Bring all of your new, old, & used amateur radio equipment that you would like to sell. This is an outdoor event and will be held rain or shine. **The Texas Broadcast Museum is planning on having an auction to sell off lots of stuff that are duplicates, triplicates or just not of real interest to the Museum. There will be various old radios, video and audio equipment people will find interesting. Vintage Radio & Phonograph Societies from Dallas and Houston have been invited to attend. Antiquq and classic cars will be on display. There is a \$5.00 donation to tour the museum.**

Useful Links

LETARC Web Site
<http://www.letarc.org>

Radio Tools and Utilities for amateur radio operators
<http://www.dxzone.com/catalog/Software/Utilities/>

eham.net – Product Reviews
<http://www.eham.net/reviews/products/41>

Android Apps – Tools
<https://play.google.com/store/search?q=ham%20radio%20tools&c=apps>

ARRL
<http://www.arrl.org/>

Freedom Link

<http://www.freedom-link.org/>

Testing – Get Upgraded

LETARC is working with LeTourneau University to help with facilities for VE testing. We would like to extend our sincere appreciation to the University for helping facilitate this endeavor.

Directions to LeTourneau Campus



Upon entering the main entrance to the campus, turn right at the stop sign and follow the road around past the Solheim Center parking lot on the right to the first intersection. The building across the street and to your right is Glaske Center. Turn right and go to the parking lot at the rear of

Glaske Center. Enter Glaske Center rear entrance and go to classroom 103.

Now that you know where the place is, why not study a little and upgrade your license. If you have a Technician's license, you can upgrade to the General. And if you pass the General exam, the VE Volunteers will offer you the opportunity on the day of your exam to test for the Extra at no additional cost.

Where: LeTourneau University Glaske Engineering Center – Classroom C103.

January is membership renewal month. Please complete the form on the following page to renew your membership and mail your check to the address shown at the top of the application. Application on last page.

LeTourneau University is located on 2100 S. Moberly Avenue in Longview, TX.

LETARC CALENDAR

July 2018

<i>Sunday</i>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
1	2	3	4	5	6	7
8 Dinner	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28 LETARC MEETING VE Testing
29	30	31				

Calendar Detail

Sunday, July 8, 2018, 6:00 PM– Cracker Barrel, 822 S Access Rd, Longview, TX 75602

Saturday, July 28, 2018 – LETARC Meeting 9:00 AM at Longview Fire Training Facility, 411 American Legion Blvd, Longview, TX. and VE Testing at 2:00 PM LeTourneau University, 2100 S. Mobberly Avenue in Longview, TX.

**LETARC MEMBERSHIP
APPLICATION
PO BOX 5613
LONGVIEW, TX 75608-5613**

Membership: * New * Renew

Calendar Year: 2018

Date: _____

CALL SIGN: _____ LICENSE CLASS: _____

LAST NAME: _____ FIRST NAME: _____ MI: _____

ADDRESS: _____

CITY: _____ ZIP: _____

TELEPHONE: _____ CELL PHONE (optional): _____

E-MAIL ADDRESS: _____ DATE OF BIRTH: _____

ARRL MEMBER? * YES * NO

=====

TYPE OF MEMBERSHIP (check one)

- Full Membership: \$25.00 per year. A full member shall be an FCC licensed Amateur Radio Operator
- Family Membership: \$35.00 per year. A family membership is available to members of the same family, provided they reside at the same residence. Each member has the same privileges and same membership requirements as a full member.

Privacy: Member names, addresses, (including e-mail addresses and other personal information shall not be supplied to any third party without expressed consent of the individual.

Signature: _____ Date: _____

=====

Please list **all** of your Amateur Radio **Interests**: [Examples: Contesting, CW, 6 meter, 1.2 GHz, Kit building, ISS, AMSAT, Emergency Communications].

Entered master database;__ Confirmation letter sent:__ Entered master email list:__

For use by LETARC