



ROUNDTABLE

The Denver Radio Club Newsletter

Since 1917

July 2019

PRESIDENT'S MESSAGE

BY GERRY VILLHAUER, W0GV

Hello DRC Members,

Looks like summer is finally here....Maybe?

Our Field Day was a great success, despite the weather doing its best to totally wash the event right off the mountain. All members involved hung in there, set the site up and had a great time. Thanks to members and guests that participated. A special thanks to Doron (K1DBC) for coordinating the event. This was Doron's first time as Field Day Chairperson and he did a splendid job. Other thanks goes out to Dave (K0HTX) for being "advisor", assisting Doron in the many little details that have to be done to pull off a successful event. Thanks to Jim (K0TOR) for the many hours he spent in The Salvation Army canteen. Do to scheduling; we did not get the newer canteen vehicle. The older canteen had lots of operational problems that Jim had to work through. I don't believe anyone went hungry so all was well in the end. Finally, thanks to EVERYONE who helped get the vehicles and tower trailer to and from the site. And to all of you (too many to properly mention) that helped set up and tear down the antennas...THANK YOU!

Our June meeting presentation by Justin (AE2L) on the Yeasu Fusion system was very interesting and informative. For some reason, the Fusion and Wire-X seems to be more of a mystery to a lot of us than other digital systems. The Tech Committee will work on clearing up the mystery.

What is Standing Wave Ratio? A little box on our desk tells us a number and we fiddle with dials or trim our antennas in order to keep that number low. But what does SWR really mean, what's really happening on the transmission line, and is high SWR really always bad? Using simple equipment we will directly observe reflections and standing waves, and we will explore ways to make it all work for us instead of against us.

The above will be our July program, presented by Chris Hamilton (AE5IT). I have seen Chris' presentation and I guarantee it will hold your interest and you will go away with a much better understanding of Standing Waves. Chris uses a device that will visually show what is really happening on a transmission line. Mark your calendar for July 17th; you will not want to miss this!

Another date for your calendar is August 18, 2019. That is the date for "The Big One" our DRC Hamfest held at the Jefferson County Fairgrounds. You can print a table [reservation form from our website](http://w0tx.org), w0tx.org. This is our BIG event for the year and for it to be successful we need "YOUR" participation. Please get your table reservation in soon and plan to attend.

Thanks to all of our new members who have recently joined the DRC. Your support is very much appreciated. Please come to meetings and events and stay active. Your name and call will be posted in this edition of the Roundtable.

73 for now,

Gerry
W0GV
President



WHO'S NEW IN THE DRC?

By BOB WILLSON, KC0CZ

The DRC is a very active club in the Denver metro area and we'd like to have all of our members listen for these new calls and personally to make them feel welcome. Welcome to our newest members:

Gerald Hurt - N0SR	Danny Fero - KD0LDW	Abigail Colwell - KE0WBG
James McCoy - KS4DE	Everett Vinzant - WN7ANT	Doug Comer - KE0DC
Joel Jacobson - KE0EIN	Kelvin Kos - KE0UOB	-

We have a number of activities throughout the year and we'd like very much for you to participate in serving your community. If you have questions please feel free to ask on any of the repeaters or see the contact information on the last page of this publication.

Also, please join us once a month at the regular club meeting on the 3rd Wednesday at 7:00 p.m. For new hams we have the Elmer session which starts at 6:00 p.m. before the regular meeting.

TECHNICAL COMMITTEE REPORT

By BILL RINKER, W6OAV

The following is an overview of current issues discussed at the June meeting.

St Anthony Repeater

Goal: Improve coverage by moving the repeater and antenna to a better location on the building.

Status: The move has been approved by our St Anthony contact. W0GV, WW0LF AND W0GN inspected the facilities to determine what equipment and procedures will be required for the move.

DRC/TSA Aurora Site

Goal: Work with the TSA relative to establishing a "communications room" for the DRC.

Status: The Board is reviewing the MOU received from the TSA and corresponding with the TSA relative to the installation of wiring and coax runs.

6 Meter Repeater

Goal: Troubleshoot audio and "buzz" issues.

Status: W0GV and N0ETV will organize a work party to troubleshoot the issues and to routine the systems.

Move the Fusion repeater to Centennial Cone

Goal: Provide better coverage.

Status: The board has approved the move. The Frequency Coordinator is presently reviewing the move.

DRC Repository VS Cloud Services

Goal: Determine which "cloud service" would be appropriate for online backup of club documents.

Status: The board is reviewing various available "cloud services".

Station 4 Remote Power Control

Goal: Determine which club members will be responsible for controlling the system.

Status: The system is working well. The board will discuss this issue at their next meeting.

JUNE MEETING - WHAT'D I MISS?

BY BRENNAN PATE, AD0UZ

PHOTOS BY MIKE BYWATER, AD0WB

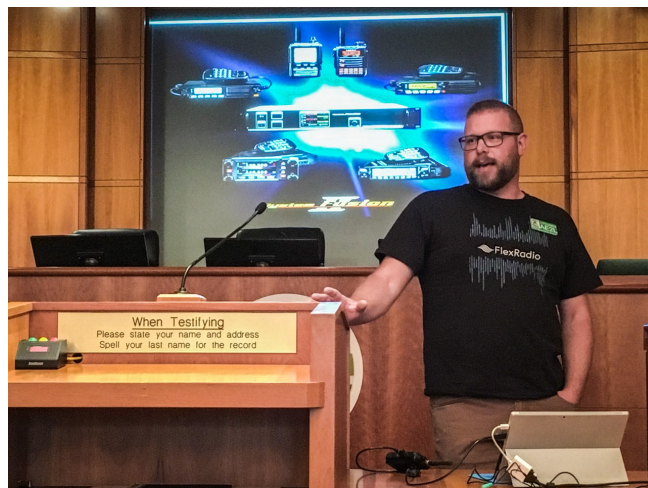
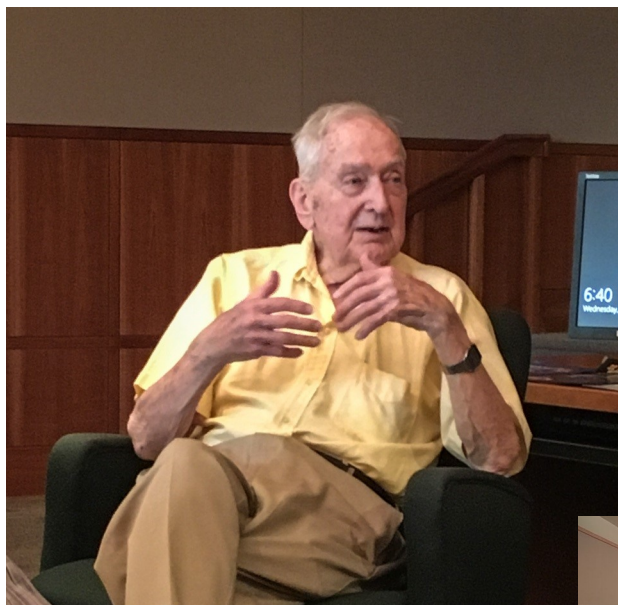
The start of the regular meeting was slightly delayed by carryover from the Elmer session. For good reason too. Claude (W0IC), the longest-standing member of the DRC (85 years!), was front and center and taking questions from the audience. Claude just turned 100 years old. He obtained his license when he was 12 and has been active since. It was clear that those in attendance had a great amount of respect for him and I'm sure he had a great number of things to share.

Dave (K0HTX) kicked off the introductions for the 50 people in attendance and then Doron (K1DBC) provided an outline of the plans for Field Day. Next, Jim (K0TOR) gave a quick synopsis of the Wheat Ridge siren test.

The evening's presenter was Justin (AE2L). He's been interested in digital since he first became a ham and his presentation was a good introduction to digital radio. He covered various aspects of digital voice vs analog, Yaesu System Fusion, Wires-X, the Colorado Link, reflectors, useful software and C4FM. He had several diagrams describing how data is passed from radios and other devices, across the systems.

Towards the end of the meeting he had a short QSO, via his radio and laptop (over wifi), with another ham who was in the Ohio "room" and was driving somewhere in Indiana (I think...).

It was an enjoyable presentation and it was clear he was just scratching the surface.



LEARNING NET REPORT

BY FRED HART, AA0JK

Thanks go out to our Net Controller(s): Doron (K1DBC).



The following topics were discussed this past month:

- Field Day
- FT-400DR /XDR
- FT-991 Yaesu
- Diamond C76-AR
- Yaesu FT-400 Cross-Band- Repeat
- Copper Tube J-Pole antenna's
- Eco Link
- Visiting Repeater sites
- Grounding
- Grounding and Bonding – ARRL item #0659
<https://ask-the-electrician.com/electrical/electrical-code/electrical-grounding.html>
- Fusion / Wires X
- Wheat Ridge siren test
- Cross Band Radios
- Weather Alerts

Great topics from our group. We certainly enjoy everyone's participation. Thanks to all. If you are listening and don't yet have your license, you can contact us via w0tx@w0tx.org or elmer@w0tx.org.

We are always looking for additional net control operators. If you would like to participate we can help you with the basics of becoming a net controller. This is a great opportunity to learn and get experience running a net.

Net controllers are always needed to perform Emergency Communications services. The Amateur Radio Emergency Service® (ARES) consists of licensed amateurs who have voluntarily registered their qualifications and equipment, with their local ARES leadership, for communications duty in the public service when disaster strikes. <http://www.arrl.org/ares>. In the event of emergencies such as floods, fires, or other public service, the amateur radio community is always ready to help. If you have an interest in participating, when the need arises, learn and train now to be prepared. For additional information contact our EmComm Coordinator: Mike Vespoli (KE0HFH) at emcomm@w0tx.org.

If we don't have the answer here on the net, we have a lot of experienced hams in the club that can help. Questions can also be submitted on the YAHOO Learning Net web page <https://groups.yahoo.com>. Here you will also find information from past activity that you might find of interest.

Getting that first Technician license? Upgrading to General or Extra? We're here to help. We would encourage those who have been Hams for several years to also join us. Your experience and input is welcomed. What topics would you like to discuss? Join us Wednesday nights, 7:30 PM, 145.490, 100 Hz PL tone & linked to 448.625, 100 Hz PL tone.

(Note: The third Wednesday of the month is devoted to the DRC club meeting. Elmer Session: 6 PM, Main Meeting: 7 PM. See the [W0TX web site](#) for additional information.)

73,

Fred
AA0JK

ELMER SESSION START TIME
The Elmer Session Starts at 6 p.m. before the regular 3rd Wednesday DRC Meeting! All are welcome. Meet in Hearing Room # 2.
Come join in on the sharing of information.

THE ROUNDTABLE ARCHIVE - w0tx.org/RoundtableArchive/

JULY MEETING PRESENTATION

BY CHRIS HAMILTON, AE5IT

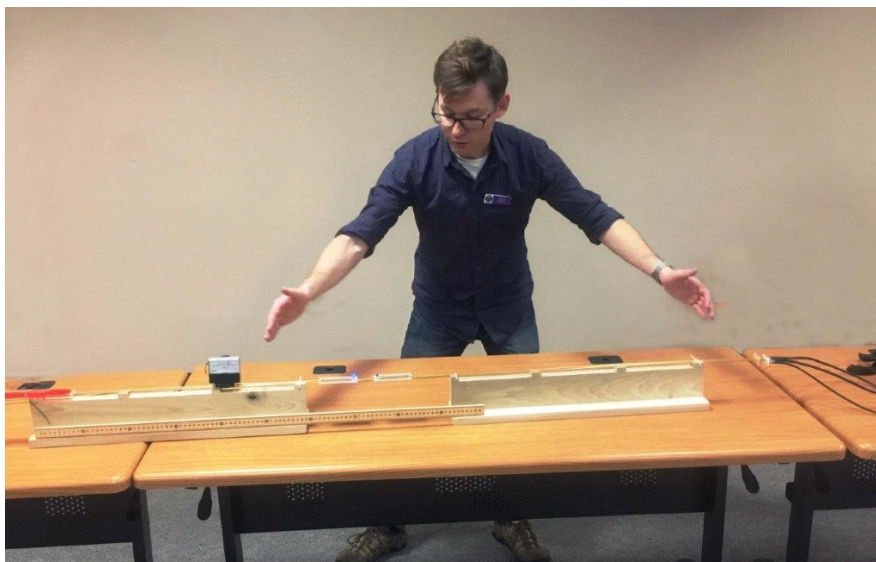
Hands-on with SWR, Reflections, and Impedance

Presentation abstract:

What is Standing Wave Ratio? A little box on our desk tells us a number and we fiddle with dials or trim our antennas in order to keep that number low. But what does SWR really mean, what's really happening on the transmission line, and is high SWR really always bad? Using simple equipment we will directly observe reflections and standing waves, and we will explore ways to make it all work for us instead of against us.

Speaker Bio:

Chris Hamilton AE5IT (ex KD0ZYF) was first licensed in 2014 so he could call for help in the wilderness. Although a lifelong nerdy kid and tinkerer, he somehow never got into electronics; once licensed it wasn't long before that aspect of the hobby consumed his mind and soul. Now a no-code Extra, he probably holds the lowest Morse-weight call in the room *because hubris!*



2019 WHEAT RIDGE SIREN TEST

BY FRED HART, AA0JK

Test of Outdoor Emergency Alert Sirens

Wheat Ridge conducted a test of its outdoor emergency alert sirens on Wednesday, June 12, 2019 at 11 a.m.

These sirens are primarily used to warn residents who are outdoors when dangerous weather or a flash flood is approaching. The system can also be used to alert residents and motorists of chemical spills and other emergency situations. Do not rely on outdoor sirens in case of emergencies, however. Local residents should sign up for CodeRed so alerts can be sent to homes and/or cell phones.



All sirens in the system were activated with a long wail, followed by a voice test message over the public address portion of the system. The test concluded at noon. The annual test of the outdoor siren system was required to ensure that all siren sites in Wheat Ridge are functioning correctly.

Fulfilling Our Purpose as Amateur Radio Operators.

By providing our skills and services to our communities, we fulfill our purpose as Amateur Radio Operators.

Radio Amateurs (“Hams”) gain recognition and enhance the value of the Amateur Radio service to the community as a voluntary noncommercial communication service. Particularly with respect to providing emergency communications.

During this exercise we continued, and extend, the Hams proven ability to contribute to the advancement of radio communications. During exercises like this, or in an actual emergency, we stand to serve our communities. Enhancing our skills, as operators, technicians, and electronics experts.



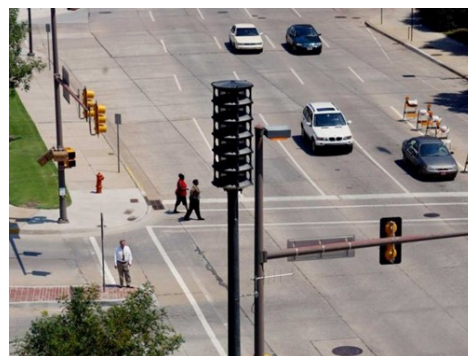
Through exercises like this we stand ready for weather conditions, such as severe thunder storms, hail, flash floods, tornadoes, and possible associated power outages that may be encountered.

Wheat Ridge



According to the United States Census Bureau the city of Wheat Ridge has a total area of 9.55 square miles of which 9.30 square miles is land and 0.25 square miles (0.65 km 2) of it (2.6%) is water. As a suburb of Denver, Wheat Ridge is part of both the greater Denver metropolitan area and the Front Range Urban Corridor. Population density: 3,414 people per square mile.

Tornado activity: Wheat Ridge-area historical tornado activity is above Colorado state average. It is 20% greater than the overall U.S. average. On 6/15/1988, a category F3 (max. wind speeds 158-206 mph) tornado 9.3 miles away from the Wheat Ridge city center injured 7 people and caused between \$5,000,000 and \$50,000,000 in damages. On 5/18/1975, a category F3 tornado 19.6 miles away from the city center. Earthquake activity: Wheat Ridge-area historical earthquake activity is near Colorado state average. It is 86% greater than the overall U.S. average.



Local Amateur Radio Operators came together to assist the Wheat Ridge City government in testing the community’s emergency alert and siren system.



So how does the needed tests get accomplished?

Amateur Radio operators went to each siren site throughout Wheat Ridge and assessed the conditions of each unit as the alarm system was activated. The results were relayed back by radio to our coordinating net control operators at the Wheat Ridge central office.

Jim Beall (K0TOR, net control), Brennan Pate (AD0UZ), Dave Baysinger (WG0N) and Kevin Schmidt (AD0GX) collected data and Jim will present the exercise results to the Wheat Ridge staff.

In addition to sirens, CodeRED can provide alerts to cell phones and home phones. If residents no longer have a landline at home, getting registered to receive alerts on a cell phone is an important step. As a reminder, while landline phones are automatically included in CodeRED notifications, cell phones are not. Residents and business



owners are encouraged to visit the CodeRED registration web site at <http://bit.ly/JeffcoCodeRED> to add additional contact information, including additional cell phone numbers, SMS (text) and email address preferences.

CodeRED registration is especially important for those addresses without a landline, as individuals must register if they want to receive emergency notifications. For more information about emergency preparedness <http://bit.ly/WREmergencyPrep>.

Thanks goes out to all who participated. It was greatly appreciated. This voluntary service to the community by Hams, when public service is needed prior to, and when disaster strikes, is what defines us as Amateur Radio Operators. Hardly Amateur, we're professional grade in times of need.

Amateur Radio: Skills – Service – Discovery.

73,

Fred
AA0JK



FIELD DAY 2019

BY DORON BEN CHAIM, K1DBC
PHOTO BY ALEX ACERRA, KS0E

We had a great attendance despite the weather, we will have stats available soon. For now, please refer to [this shared google drive](https://www.w0tx.org/fieldday.htm) (<https://www.w0tx.org/fieldday.htm>). Everyone has read-only access to everything, just in case you would like to see some of the behind the scenes, and/or would like to contribute next year.

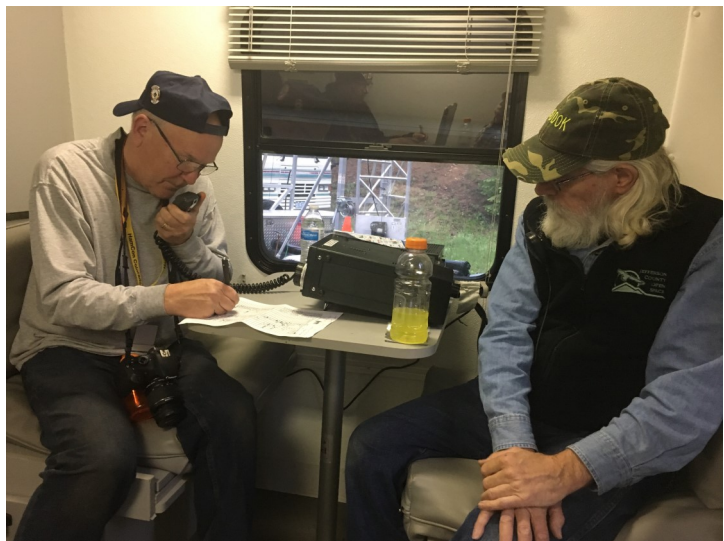
I have also uploaded all of the photos and videos I took over the weekend. If you took photos or videos, please create you own subfolder in the [media folder](#), name it with your callsign, and upload to that, you need to be signed into google to upload. We will also post these videos to our [YouTube](#) page.

If you attended but didn't sign in, please [use this spreadsheet](#) to log your details in the appropriate log sheet, visitor or operator, don't worry about order, I will be update that periodically. If you signed a paper log, there is no need to sign in again. The paper visitor log hasn't been copied over yet, but will be soon.

We would like to thank all attendees, operators, volunteers (K1DBC - event coordination, canteen driver and operations, K0TOR - canteen operations and KD0SYD for communications vehicle transport), and those people who helped setup and teardown the camp, the crankup tower and all the antennas, and any other help we needed throughout the event. We also would like to greatly thank the Salvation Army for the use of their canteen and communications vehicles, as well as their crank up tower. This event wouldn't have been possible without everyone's assistance. Hope to see everyone again next year, with better weather hopefully.

Doron
K1DBC

(Photo: Dave (K0AXP) and Doc (W0DOK) on 20m)



HAMS HELP TRACE “MYSTERY” SIGNAL DISRUPTING KEYLESS ENTRY DEVICES

LINK PROVIDED BY FRED HART, AA0JK

As Fred pointed out in his Wheat Ridge Siren Test piece, hams can help their communities during emergency testing and actual emergencies. They’ve been able to help their communities in other ways, as well. For an interesting read on how, see the ARRL’s post:

<http://www.arrl.org/news/hams-help-trace-mystery-signal-disrupting-keyless-entry-devices-in-ohio>

3905 CENTURY CLUB SHOOTOUT REPORT 2013 - TORRINGTON, WY

BY BILL RINKER, W6OAV

FROM THE CENTURION, THE 3905 CENTURY CLUB’S NEWSLETTER

Hams are always interested in how various HF mobile antennas and antenna combinations compare in performance. In 2013 the 3905 Century sponsored an HF mobile “shootout”. So, what is a “shootout”? It is an activity where mobiles take turns parking at a designated location on a test range which can be a park or field clear of obstacles such as trees, power lines, etc. A calibrated transmitter is then connected to each mobile antenna. A calibrated receive station, located at the far end of the test range, measures the strength of the signal from the mobile

Figure 1 shows the results of the 2013 shootout which was done on 75 meters. A full write up with pictures of the mobiles can be viewed at <http://www.3905ccn.com/files/pdf/centurion-2013-3.pdf>.

Note: The results of the 3905 Century Club shootout done in 2010 is written up in the August 2010 issue of the Roundtable which is available on the W0TX website.

Finish Order	Test Order	Call	Antenna	Whip/Cap Hat Configuration	Vehicle	Antenna Mounting Position	Raw Score in mV	Adjusted Score	dB Down from Top Gun
1	2	KC0CL	Scorpion SA680 http://www.scorpionantennas.com/	Scorpion Cap Hat on a 4' Mast	2008 Ford Escape	Home brew tubular mount at driver's side rear including linear actuator to lower antenna for garaging	23		0
2	7	W2UJ	Hustler 75 Meter Standard Resonator http://www.new-tronics.com/main/	None	2002 Crown Victoria	Rear Hitch Receiver	16		-3.15
3	3	WT0A	Hustler 75 Meter Standard Resonator at 90° http://www.new-tronics.com/main/	Hustler Resonator at 90° at top of mast at 13' 4"	2006 Chevy 1500 Pickup	Rear Bumper	16		-3.15
4	10	KB3PU	Tarheel 200 http://www.tarheelantennas.com/	Standard 6' Whip	2004 Honda Accord	Rear Hitch Receiver	15		-3.71
5	1	N9QZF	80 Meter Hamstick with a Hamstick Radial Tarheel 400A http://www.tarheelantennas.com/	6' Mast with a six-spoke Cap Hat at the top	2012 Chevy Impala	Home brew tubular mount rear bumper frame mounted	13		-4.96
6	6	NA0L	80 Meter Hamstick with a Hamstick Radial Gagtenna: 1/2λ 75 Meter Loop http://www.whatabunchcrap.com	None	2009 For Ranger	Home brew mount coming out the side of the hitch mount assembly at right rear	12		-5.65
7	9	KS9WI	80 Meter Hamstick with a Hamstick Radial	None	2012 Chevy Impala	Home brew tubular mount rear bumper frame mounted	12		-5.65
8	13	W9OO	Tarheel 400A http://www.tarheelantennas.com/	2' Mast to a six-spoke Cap Hat with a 5' Mast on top	Did not notice due to the monstrosity on its roof	Mid Roof	12		-5.65
9	8	K9ZK	80 Meter Valor Pro Am	None	1998 Ford Windstar	Rear Hitch Receiver	11		-6.41
10	4	KC0MS	Hustler 75 Meter Standard Resonator http://www.new-tronics.com/main/	None	2009 Honda Accord	Trunk Deck Lid	10		-7.23
11	12	WB0PYF	GS-4 http://www.gs-mfg.com/index_003.html	4' Whip Only	2012 Chrysler Town & Country	Left rear Hatch	10		-7.23
12	11	W9JAY	Hustler 75 Meter Standard Resonator http://www.new-tronics.com/main/	None	2000 International Pro Star Big Rig Rental Car	Passenger Side Mirror Mount	9		-8.15
13	5	WF4H	Hustler 75 Meter Standard Resonator http://www.new-tronics.com/main/	None	2013 Dodge Avenger Rental Car	Mid Roof on a Mag Mount	8		-9.17
14	14	WA0SIK	Hustler 75 Meter Standard Resonator http://www.new-tronics.com/main/	None	2008 Chevy Colorado	Behind Cab on Bed Rail	7		-10.33

Figure 1 - Results of the 3905 Century Club antenna shootout

TRY HAM DATA PROTOCOLS FOR FREE

BY BILL RINKER, W6OAV

Have you ever wanted to try some of the many ham data protocols (RTTY, PSK31, Olivia, MFSK, etc) to see if you would like any of them? Perhaps, since you didn't know if you would like any of the data protocols, you were reluctant to spend money for an interface, or to take the time to build an interface, to connect your PC and radio. Well, fear not, you can try the data protocols for free by using a free soundcard data protocol software and a no cost wireless "acoustic interface"!

All you need to do is to download and install one of many free soundcard data protocol programs. Most programs do not require a fast or complex computer. A good list of soundcard programs and the data protocols they support is available at <http://www.packetradio.com/soundcardsoftware.html>.

Once you have installed the soundcard software, setup the "acoustic interface" by positioning your PC and transceiver microphones and speakers as shown in Figure 1. (External PC microphone and speakers would be better). The idea is that when the PC's speaker transmits the data signal the transceiver's microphone hears the data signal and the transceiver transmits it (blue arrow - Figure 1). The reverse occurs when the transceiver's speaker transmits the incoming data signal which the PC's microphone hears and the PC decodes and displays (red arrow - Figure 1).

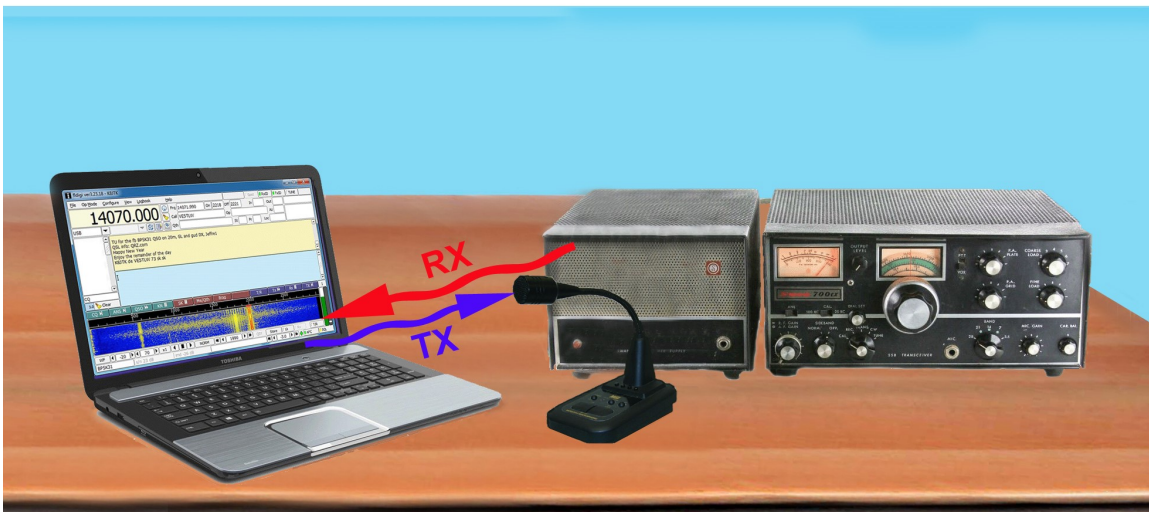


Figure 1 - Acoustic interface (Audio from speakers to microphones)

Initial station setup:

Receive mode (red arrow - Figure 1):

After tuning the transceiver to an incoming data signal adjust the transceiver's speaker audio gain control to a comfortable audio level and the PC's microphone gain control until the presentation looks best on the PC's signal monitor display, usually a waterfall as shown on the PC's screen in Figure 1.

Transmit mode (blue arrow - Figure 1):

Set the PC's soundcard audio out gain control to approximately mid range. After connecting the transceiver to a dummy load, put the transceiver into the transmit mode. Operate the PC to send data. Using the transceiver's microphone gain control, adjust the transceiver's power out to any desired level as long as the ALC meter always stays at zero. Any ALC reading above zero will normally result in data signal splatter. If the audio level is too loud, you may want to readjust both the PC and transmitter gain controls for a comfortable audio level.

If you can have a station monitor the quality of your data signal, you may find that you can "purify" your transmitted data signal by adjusting both the PC's soundcard audio out gain control and the transceiver's microphone gain control. They usually will interact relative to signal purity.

Operating the station:

Receive mode (red arrow - Figure 1):

The PC's microphone will hear data signals coming from the transceiver's speaker (red arrow - Figure 1) which the PC will decode and display. Other than tuning the transceiver to the proper frequency no other action is required to decode data signals.

Transmit mode (blue arrow - Figure 1):

There are two methods for transmitting data signals:

Manual - To transmit a data signal the operator must depress and hold the transceiver's PTT while transmitting data signals from the PC to the transceiver.

Semi-automatic - After initially enabling the transceiver's VOX, the operator need only operate the PC. Any data transmitted from the PC will automatically activate the transceiver's transmitter. Note: Insure that the VOX response time is set to fast.

Should you find that you enjoy one or more of the digital protocols but don't want to build an interface, there are many interfaces available. Good examples are Rigblasters, BuxComm, and Signalink.

Suggestion:

If you are not familiar with the data protocols, try PSK31 using Digipan, a free easy to setup software package from <http://www.digipan.net/>. PSK31 is presently one of the most popular data modes and doesn't require much RF power to work the world.

Funny story:

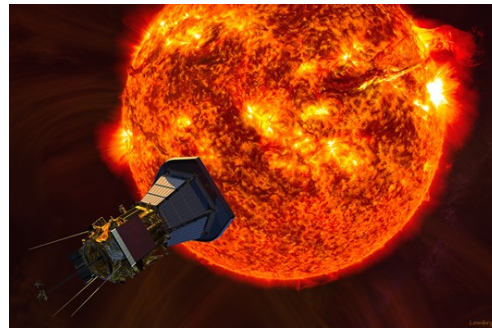
Several years ago I gave a presentation about this subject at one of our club meetings. At the next club meeting one of the club members came up to me and told me he had tried the "acoustic interface". He said it worked absolutely great for a week. I asked him what had happened after a week. He replied that the PC was on one side of the room and the transceiver on the other side. The signal volume was fairly high. It was working very well until one day the wife came in and told him to turn off that **** racket! She was tired of hearing it. So, he ordered an interface unit.

SOLAR UPDATE

PROVIDED BY FRED HART, AA0JK

A SUNSPOT FROM THE NEXT SOLAR CYCLE: Getting tired of Solar Minimum? Good news: It won't last forever. In fact, the next solar cycle made a brief appearance. On May 28th, a small sunspot materialized in the Sun's northern hemisphere, then, hours later, vanished again. The polarity of its magnetic field marked it as a possible member of Solar Cycle 25.

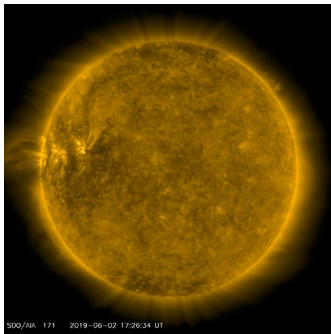
Northern sunspots from old Solar Cycle 24 have a +/- polarity. This ephemeral sunspot was the opposite: -/+. According to Hale's Law sunspots switch polarities from one solar cycle to the next. The unnumbered sunspots appeared to be a herald of Solar Cycle 25.



Solar cycles always mix together at their boundaries. Indeed, these ephemeral sunspots possibly belong to Solar Cycle 25, have already been reported on December 20th, 2016, April 8th, 2018, and November 17th, 2018. Now we can add May 28th, 2019, to the list. The slow transition between Solar Cycle 24 and Solar Cycle 25 appears to be underway.

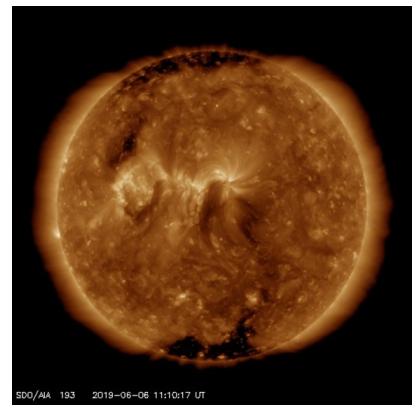
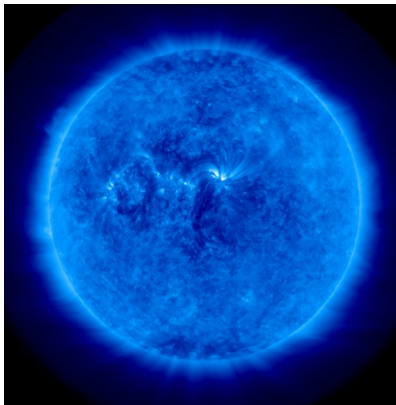
Incoming bright coronal regions that had departed two weeks ago had spun around again. They were massive solar tornadoes around the west limb as the plasma filament regions were putting on quite a show. There was no eruptive activity associated with the filament regions. Coronal holes were mostly confined to the polar region (a phenomena associated with solar minimum).

The bright active surface areas were all magnetic, and showed no sunspot connections with those fields. Arching regions were connected to bright surface anomalies, or plage.



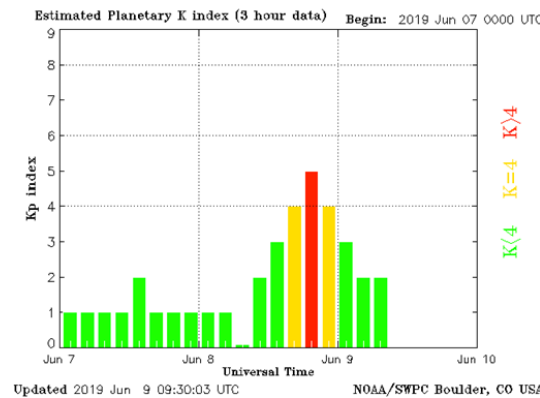
June 5th - There were two bright regions returning to Earth-view, and they were boosting radio propagation on the Earth's day side into the marginal range. Also, a stealthy solar storm had launched towards Earth, and was expected to arrive around June 8th. In addition to some small pockets of fast solar wind, this meant we were expecting mild shortwave radio and GPS disturbances at high latitudes.

(Photo to immediate right: Fe IX/X 171 Å, Solar. Far right: Dynamics Observatory (SDO))



Note the dark coronal holes at the North and Southern regions. These indicate that the Sun is at solar minimum in its eleven year cycle.

Plasma filaments were dancing around at the center of the disc, with bright arching magnetic loops. Bright arching field loops of plasma filaments embedded with ionized helium.

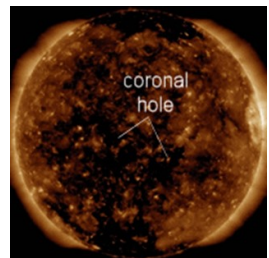


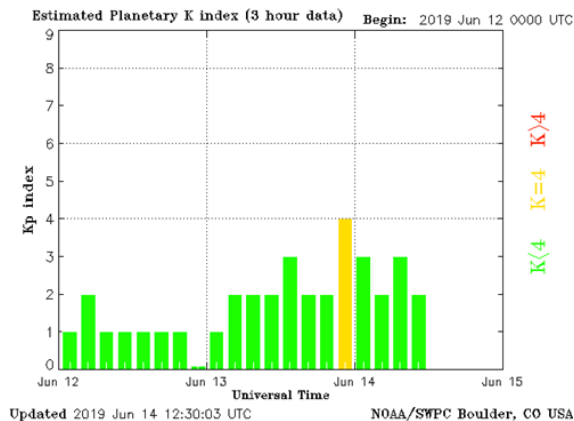
June 8th - Unexpected CME impact: On Saturday, June 8th, a dense and strongly-magnetized cloud of plasma hit Earth's magnetic field. It was, apparently, the flank of a coronal mass ejection (CME). The solar storm cloud left the Sun with little fanfare on June 3rd. Coronagraphs on NASA's STEREO-A spacecraft barely detected it.

The slow-moving CME took more than 5 days to cross the Sun-Earth divide. Typical CMEs cross the same distance in half the time. Despite its low velocity, the CME was geoeffective. Strong south, pointing, magnetic fields inside the CME, opened cracks in Earth's magnetosphere. Solar wind poured through the gaps to spark a G1 – class geomagnetic storm on June 8th. The effects of the CME were subsiding and no further storms were expected throughout the weekend.

June 13th - Solar wind flowing from this large coronal hole was expected to buffet Earth's magnetic field on June 17th. Credit: SDO/AIA

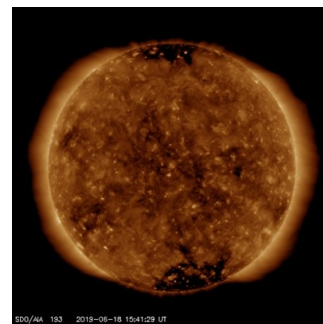
Coronal Hole Stream: A gentle solar wind stream originating from a geoeffective coronal hole was helping to disturb our geomagnetic field. Minor geomagnetic disturbances were possible at high latitudes.





June 19th - The Sun was utterly blank. This marked the 31st consecutive day that the Sun was without spots. Images of the Sun look like a big orange billiard ball, utterly blank. This is a sign of Solar Minimum, a phase of the solar cycle that brings high levels of Cosmic Rays, and long-lasting holes in the Sun's atmosphere.

The Sun continued to be reasonably quiet. The bright regions we enjoyed for two weeks, disappeared behind the Sun's west limb. This was causing solar flux to drop back into the poor range for radio propagation on Earth's day side. Photo Credit: SDO / AIA



Planetary Orbits May Explain Mystery of Sun's 11-Year Cycle

The tidal forces of Venus, Earth and Jupiter influence the Sun's 11-year cycle. <https://www.space.com/planets-affect-solar-cycle.html>

Spotless Days: Current Stretch: 33 days. Stereo solar observatory: No sign of Sun spots, or /CME activity on the back side of solar disc. Prepared jointly by the U.S. Dept. of Commerce, NOAA, Space Weather Prediction Center.

Summary: Solar activity was very low. The solar disk remained spotless. No Earth-directed CMEs were observed in available coronagraph satellite imagery.

Forecast: Solar activity was expected to remain at very low levels.

73,

Fred
AA0JK



DRC's EMERGENCY RESPONSES

In the event of a disaster in the metro area, please monitor our repeaters on 145.490/448.625 (primary) and 449.350 (secondary).

The emergency Net Control Operator will provide information and/or requests to members for assistance.

[W0TX Repeater Directory](#)



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Note to DRC Members:

Our club depends on the involvement and participation of YOU, our members. Do you have a skill or interest that could help the club. Maybe you want to volunteer to be on a committee? Like to write? Have ideas for improving what we do? Speak up and let someone know, all ideas are welcomed and participation is always helpful. ~Editor

RANDOM SITE OF THE MONTH

[DRC's Repeater Listing](#)

THE ROUNDTABLE ARCHIVE

Go to: <http://www.wotx.org/roundtables.htm>

THE ROUNDTABLE ARTICLE INDEX

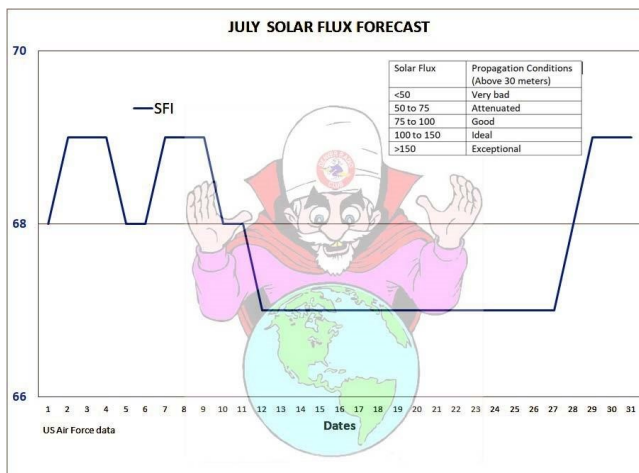
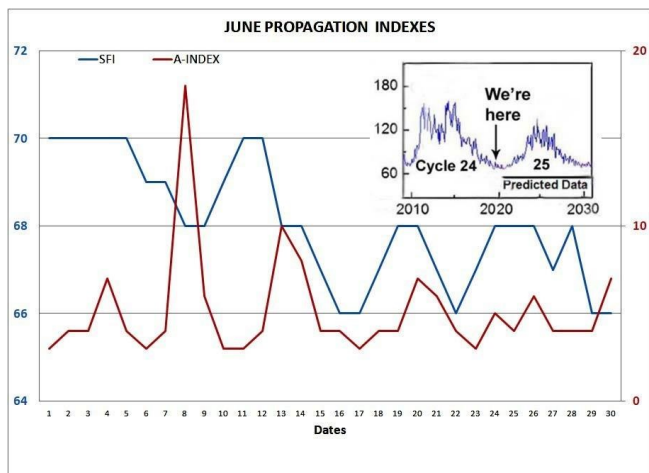
Go to: <http://www.w0tx.org/RoundtableArchive/-RoundTables-Index.pdf>

PAST & FUTURE PROPAGATION CONDITIONS

By Bill Rinker, W6OAV

The charts below show the Solar Flux and "A" indexes for last month and the forecast for this month's Solar Flux index.

Refer to the September 2010 *Roundtable* for more complete information on interpreting these charts, which is available at: [http://www.w0tx.org/RoundtableArchive/2010-RoundTables/RT201009\(SEP\).pdf](http://www.w0tx.org/RoundtableArchive/2010-RoundTables/RT201009(SEP).pdf)



UPCOMING EVENTS
HAMFESTS & CONVENTIONS

Event	Date	Location	Sponsor Website
49th Megafest	07/27/19	Pikes Peak Radio Amateurs Assoc.	PPRAA.org/megafest

UPCOMING QSO PARTIES

The following are the Contests not sponsored by the ARRL. Please submit additions for future issues.

State/Province	Start Date	End Date	Sponsor Website	Notes
Maryland-DC	08/10/2019	08/11/2019	Anne Arundel Radio Club	
Hawaii	08/24/2019	08/26/2019	Hawaii QSO Party	
Kansas	08/24/2019	08/25/2019	Kansas QSO Party	
Ohio	08/24/2019	08/25/2019	Ohio QSO Party	
Colorado	08/31/2019	09/01/2019	Pikes Peak Radio Amateur Association	
Tennessee	09/01/2019	09/02/2019	Tennessee QSO Party	
Alabama	09/07/2019	09/08/2019	Alabama QSO Party	
Iowa	09/21/2019	09/22/2019	Story County ARC	
New Jersey	09/21/2019	09/22/2019	New Jersey QSO Party	
Washington	09/21/2019	09/22/2019	Western Washington DX Club	
Maine	09/28/2019	09/29/2019	Wireless Society of Southern Maine	
Texas	09/28/2019	09/29/2019	Texas QSO Party	
California	10/05/2019	10/06/2019	California QSO Party	
Nevada	10/11/2019	10/13/2019	Sierra Nevada Amateur Radio Society	
Arizona	10/12/2019	10/13/2019	Radio Society of Tucson (RST)	

ATTENTION

SUPPORT THE DRC FROM YOUR AMAZON PURCHASES

You can now support your Denver Radio Club when you make purchases from Amazon.com. Amazon Smile donates 0.5% of your purchase to the non-profit (501.c.3) organization of your choice. This is at no additional cost to you. To support the DRC just visit smileamazon.com. Select Denver Radio Club, Inc. as the organization you want to support and proceed with your order as usual. Amazon Smile will credit the DRC automatically. Thank you for your support.

DRC REPEATERS

BAND	Freq / Shift / PL Tone	Additional Information
6m	53.090MHz (-1MHz) 107.2Hz PL	
Packet	145.05MHz<>14.105MHz	2 meter / 20 meter gateway. Useable by Technicians on 2 meters. See January 2015 RT.
2m	145.490MHz (-) 100Hz PL	Linked to 70cm / 448.625MHz. 1° disaster net f.
2m	147.330MHz (+) 100Hz PL	Local area. Has voting receivers. Does not TX a PL.
2m	147.330MHz (+) 131.8Hz PL	Test mode operation. Send signal reports to Tech Committee.
1.25m	224.380MHz (-) 100Hz PL	
70cm	447.825MHz (-) DCS~073; NB 12.5; +/- 2.5	Saint Anthony's. Note: This is a narrow band repeater requiring DCS.
70cm	448.625MHz (-) 100Hz PL	Linked to 2m / 145.490MHz. 1° disaster net freq.
70cm	449.350MHz (-) 100Hz PL	Wide area coverage with Echolink, node # 4140. 2° net f.
70cm	449.775 MHz (-) 100Hz PL	Yaesu Fusion Digital, Wires-X and analog. 100 Hz tone required for analog.
70cm	446.7875MHz (-)	BrandMeister Repeater: Slot 1 – Wide Area Traffic, Slot 2 – Local Talk Group 310804



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

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JULY 2019							<i>DRC Net Sundays at 8:30 p.m. on 145.490 / 448.625 (no PL)</i>
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
	1	2  New Moon	3 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	4 	5	6	
7	8	9  First Quarter	10 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	11	12	13 IARU HF Championship - Starts 1200 UTC	
14 IARU HF - Ends 1159 UTC	15	16  Full Moon	17 DRC Meeting Elmer 6 p.m. General 7 p.m.	18	19	20	
21	22	23	24 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)  Last Quarter	25	26	27	
28	29	30	31 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)				

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Please Let Us Know

Over the years we occasionally hear from hams who have read the RoundTable in other states and countries around the world. We appreciate the comments and we would like to know where you are located. So if you live outside the Front Range or Denver Metro Area and read the newsletter either online, email or hard copy please send a short note via email with your *City, State or City, Country*.

We will publish it at a later date in our new regular feature called RoundTable RoundWorld.

To respond to this request send your information to drc.editor@gmail.com.

Subject: I'm located in...

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DRC members - this is your newsletter. Please email your club or amateur radio related suggestions to the editor. Members are the heart of The Denver Radio Club, so if you have an expertise or an interest in a particular segment of ham radio that you'd like to write about, you may email your submissions to drc.editor@gmail.com. The submission deadline is the 25th of the Month. ~ Editor