



ROUNDTABLE

PRESIDENT'S MESSAGE

By Robert White – K0RCW

As I sit here writing this in late October, autumn is in full swing and the leaves are falling. As you read this, we will be approaching Thanksgiving, a time that we hopefully can gather around the important things in life, our family, our loved ones, a free and democratic society where we can pursue activities such as amateur radio!

I noticed last night I can now see most of my G5RV antenna, strung between two trees and over my house at about 30 feet. It looks as if it has weathered the summer pretty well, but Fall always brings gusty winds which have in the past, more than once, destroyed it. Oddly, colder, stormy weather is referred to as "good antenna construction weather". Does anyone know the origin of this phrase? I'll just keep my fingers crossed. With the weather rapidly cooling down I am looking forward to spending some time in the shack on the HF bands.

It looks, too, as if solar cycle 24 is beginning to cooperate, and sunspot numbers are finally trending upwards. Bill Rinker, W6OAV, turned me on to an excellent web resource, <http://www.solarcycle24.com>, that monitors all things solar. VE3EN – Kevin Gebau, a ham from Cornwall, Ontario Canada is the author of this web site and set it up in anticipation of a very active solar cycle 24. Numerous subjects of interest to amateurs are covered in detail here including sunspot counts, planetary K index, geomagnetic A index, solar flux, condition of the geomagnetic field, etc. as well as good explanations of all of these. It's an excellent portal that consolidates several reports from multiple locations and tools including the NOAA Solar Report. There's even a toolbar to access DX Clusters for each of our bands that you can access simply by clicking on the band. If you want to know more about the current solar cycle

On a different topic, I wanted to draw your attention to an excellent article in the October issue of QST that you receive if you are an ARRL member. In this article, page 9, President Kay Craigle, N3KN writes in about the 10th paragraph what I feel is the true spirit of our amateur radio service. She writes eloquently, and please check out her actual words, but I'll paraphrase her. We say "yes" when we are asked to be of service, whether that's selling tickets at the hamfest, joining ARES®, elmering another ham, or welcoming new or prospective members to the hobby. I am impressed with the number of DRC members who actively serve our community in a multiplicity of ways and are there, ready, and available when needs arise. If you are new to our club, we will be reaching out to you to seek your involvement.

We want to thank two newly licensed hams for checking into our October 10th net, Mike – K0UFO, and Anthony – K0MSP. If you hear them on our repeaters make a point of welcoming them. I will try to report all newly licensed and visiting hams in this space over the previous month. Also, beginning next month, I'd like to profile a "member of the month" in a couple of paragraphs in my monthly communication to you. I am always struck by the depth and breadth of our members and the vast amount of technical experience some of you have. If you'd like to be featured, please contact me at k0rcw@arrl.net.

We had a great October meeting covering QRP radio hardware and operation. I want to thank the Colorado QRP Club members who presented to our membership specifically Scott Garcia – KC0HSV, Al Dawkins – K0FRP, and Dick Schneider – AB0CD. See the recap elsewhere in the Roundtable for "What you missed".

For our December meeting on December 15th, we're back at our traditional Christmas meeting, greeting, and eating place, the Country Buffet at 8100 W. Crestline Avenue in Littleton. Stay tuned to the web site for additional details. Frank Smith – W7FES will present to us on driving the light rail, the experiences he has had, and the "interesting" people he has met and situations he has to handle.

Our November 17th meeting and technical will feature Mike Lozano - K0NGA who will speak to the club about APRS Voice Alert technology, specifically what it is, what problems it solves, how it works, operational procedures, caveats, and enhancements.

I would like to welcome and thank new DRC members Nathan Pyle, KB6PLH and Neil Temmer, K0MRY. Please check in on the nets, come to the meetings and activities and remain an active member.

The meeting will be held on November 17th at the El Jebel Shrine Center one block west of the intersection of 50th Avenue and Tennyson Street. Proceed to the second floor in the East Room. Please remember to always check our web site at <http://www.w0tx.org> for important information about the DRC. The Elmer Session and Tech Meeting begin at 6:30 pm immediately followed by the regular program at 7:30 pm.

73
Robert – K0RCW
President

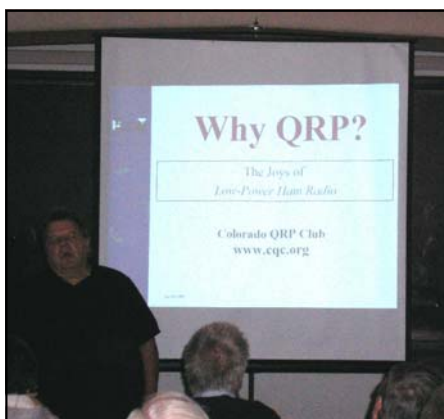
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OCTOBER MEETING - WHAT'D I MISS

By Robert – K0RCW; Photo By Dave – K0HTX

Al Dawkins K0FRP, Scott Garcia, KC0HSV, and Dick Schneider AB0CD visited the October Denver Radio Club meeting from the Colorado QRP Club. QRP is the art of operating at or below five watts of power to make contacts. Al was the primary presenter and gave an excellent presentation on the techniques and equipment related to low power operating.



Al emphasized QRP is an enjoyable operating activity because conditions sometimes allow for surprisingly distant propagation of weak signals. It is also safer for your family and the public. In addition high quality equipment that is relatively simple to operate is readily available. There is also much traditional ham joy in the home brewing and kit building aspect of the hobby.

Al cited QRP operating as an excellent way to improve operating skills. He pointed out that you can easily take it backpacking, attach it a bicycle, or even mount it on a goat or two as CQC member Steve Galchutt routinely does. It goes without saying this aspect of our hobby is also a lot of fun.

The QRP has traditionally operated two different field days along the Front Range. The first was originally quite competitive and staffed with seasoned operators and was located up on the Rampart Range road. In recent years, ATV users have invaded their prime location and they have been forced to move their operating location to Elizabeth. The team actually acquired an old Qwest COW or Cell tower on wheels, which can be cranked up to 100 feet.

Al reminded us that even though Field Day is not a contest, you still get seven points per QRP QSO on battery power, twice the number of points of a traditional 100 watt HF rig. The CQC traditionally ranks in the top few clubs in the country in this category.

The second field day or Aloha site is held at Cherry Creek State Park and is much more informal. If you chose to operate at this event, wearing of a Hawaiian shirt is required. Nearly all QRP QSOs are made using the CW mode. SSB QSOs are considered a major challenge. CW gets the job done, is far from dead, and has many dedicated adherents. Interestingly, modes such as PSK31 have also bolstered interest in QRP in recent years as it is also a very efficient, narrow bandwidth mode contrasted with SSB.

Al, Scott, and Dick brought a plethora of QRP equipment including an Elecraft K2. They remarked on its fantastic front end and how well it worked for their competitive Field Day. Also present were a Heath HW-8 and a Hendricks PFR-3 transceiver used on 20/30/and 40 meters. Scott KC0HSV brought a Yaesu FT-817ND attached to a Miracle Whip Antenna. Tuning this antenna involves the "ear" method to tune to the highest volume of noise on a band. In addition, the CQC people had one of Steve Weber's – KD1JV's ATS-3 radios available for inspection. Other gear included an OHR-500. Finding parts for some of these older model radios has been a bit of a problem.

The price of getting in to the QRP side of the hobby varied from \$110 - \$1,200 according to Al and depends of course on the features you want on your radio.

TECHNICAL COMMITTEE REPORT

By Bill – W6OAV

This report provides an overview of items discussed during the October Technical Committee meeting.

New Salvation Army Location

Goal: Install VHF/UHF systems and HF long range and NVIS capability.

- The antennas and coax runs were installed earlier in the month (see article elsewhere in this issue). Now need to set up the VHF/UHF/HF stations, station partitions, desk, etc.

TS-940 failure at Station 4

Goal: Determine if re-soldering and cleaning connectors will fix radio.

- WYØJ, KB0A and K0TOR will work on a plan to repair the radio.

147.33 - Hudson Audio and RF issues

Goal: Determine source of crackle on transmitted audio when windy.

- Part of the problem could be all of the loose metal parts on the tower making noise in the wind. Need to spend a day with a few climbers on the tower to tighten things up.

TSA Battery Backup Project

Goal: Automate the station battery backup system using two West Mountain Radio PowerGate modules.

- Will be done when the station installation is completed.

WHAT IS AN ANTENNA RADIATION PATTERN? Part 2

By Bill – W6OAV

3-D Pattern

The 3-D pattern is a three dimension graphical picture of an antenna's total radiation pattern in all directions (the X, Y and Z axis's). Figure 2 shows the 3-D radiation pattern of our horizontal dipole of Figure 1. In Figure 2 we are looking down at the dipole from the same position as shown in Figure 1. Most antenna modeling applications will allow rotating the viewing position to any desired angle.

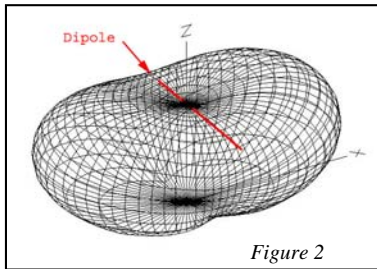


Figure 2

Elevation Pattern

The elevation pattern is a graphical picture of the radiation pattern of an antenna looking at it from the same height as the antenna itself. The elevation pattern is developed by vertically slicing the 3-D pattern in half along the desired axis, removing the half of the pattern nearest our viewing position and looking at the remaining half-pattern.

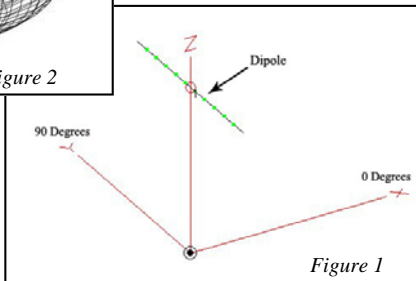


Figure 1

Let's look at our dipole's broadside radiation pattern along the X axis. Refer to Figure 3. In order to determine the elevation pattern of our dipole in Figure 1 along the X axis, we slice the dipole's 3-D pattern along the X axis as shown in red. We discard the pattern on our side of the slice. We then change our view point so that we're looking toward the end of our dipole and the remaining "half" pattern. Figure 4 shows the resultant slice pattern. Figure 5 shows how this pattern would appear in an antenna pattern plot of our dipole. Let's define the terms shown in Figure 5.

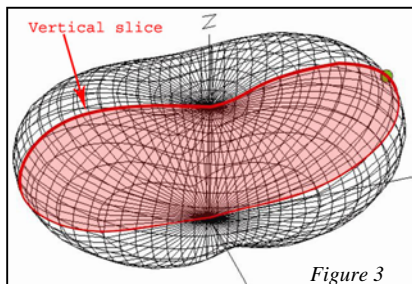


Figure 3

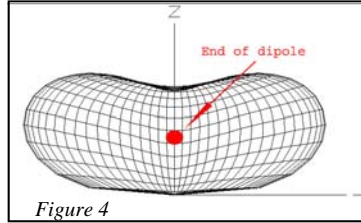


Figure 4

Definitions

1. Azimuth angle - The angle of the slice made to the 3D pattern. In this case, the slice was made at 0 degrees which is along the X axis.

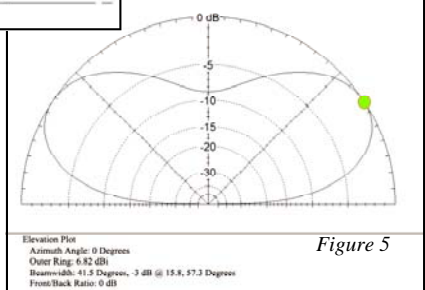


Figure 5

2. Outer Ring dBi – The power ratio of our dipole's maximum lobes compared to that of an isotropic antenna. So, what is an isotropic antenna? An isotropic antenna is a point in space that radiates power equally in all directions. See Figure 6. A real antenna normally radiates more energy in some directions and less in other directions.

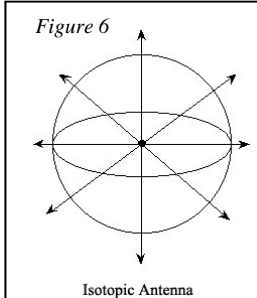


Figure 6

Isotropic Antenna

The dBi gain of a real antenna in a given direction is the amount of energy radiated in that given direction compared to the energy that an isotropic antenna would radiate in the that same direction when driven with the same input power as the real antenna. In Figure 7 we are looking down on a beam which concentrates more of the total energy towards the right compared to that of the isotropic antenna. All antenna radiation patterns are referenced to the isotropic pattern. In Figure 5, the dipole's maximum lobes exceed the power of the isotropic antenna by 6.82 dB. The term dBi states that the ratio is with the isotropic antenna.

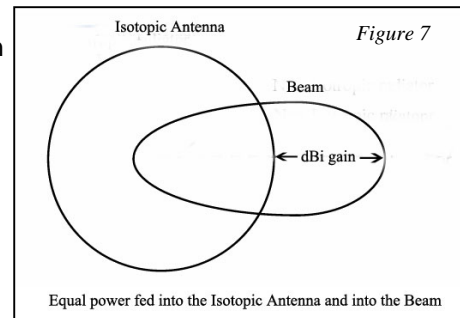


Figure 7

3. Beamwidth – The width in degrees between the -3 dB points of the lobe. See Figure 8, next page. The beamwidth of our dipole is 41.5 degrees at the -3dB points of the lobe.

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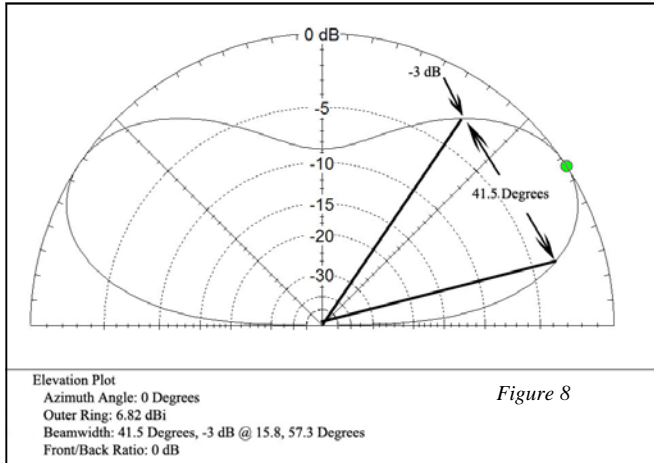


Figure 8

Front/Back Ratio – The ratio of the power towards the front and towards the back of the antenna. In the case of our dipole, the ratio is 0 dB. If we were looking at the pattern of an average 3 element beam, then the front/back ratio would be around 20 dB.

Let's do another example. This time we'll look at the pattern off the ends of our dipole. Referring to Figure 9, we slice our dipole's 3-D pattern

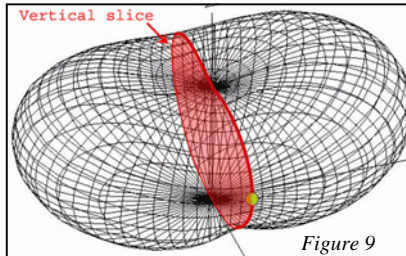


Figure 9

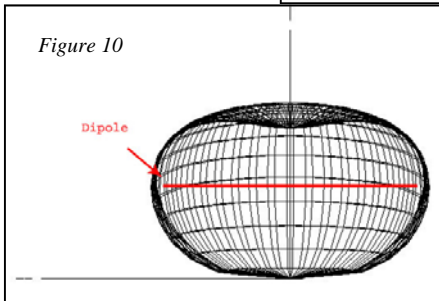


Figure 10

along the Y axis and discard the left half of the pattern. We then go down to ground level on the left and look towards the broadside of our dipole. We see the slice pattern as shown in Figure 10. Figure 11 shows how this pattern would appear in an antenna plot of our dipole.

Figure 11 shows how this pattern would appear in an antenna plot of our dipole.

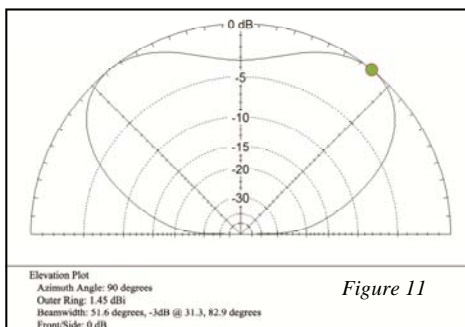
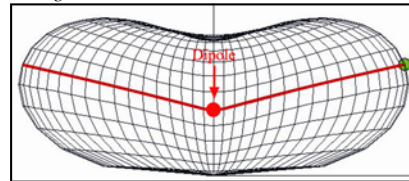


Figure 11

Azimuth Pattern

The azimuth pattern is a graphical picture of the radiation pattern of an antenna radiated in all directions from the antenna at a specified angle above the horizon. The viewing position is looking straight down at the antenna and its radiation pattern at the specified angle. The azimuth pattern is developed by thinly slicing the 3-D pattern of an antenna out from the antenna in all directions at the desired elevation above the horizon.

Figure 12



Let's determine the omni-direction pattern of our dipole at 30 degrees above the horizon. In Figure 12 we are looking at the end of our dipole.

We thinly slice the 3D pattern at 30 degrees above the horizon in all directions. We then disregard the parts of the pattern above and below our thin slice. Now, looking down at the thin slice we see the resultant pattern as shown in Figure 13.

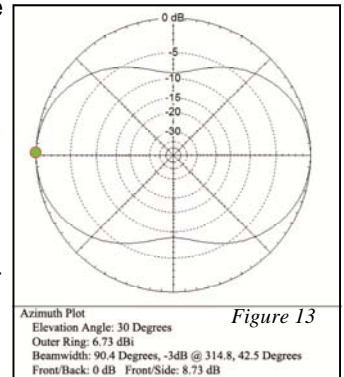


Figure 13

Let's do another example. Let's determine the omni-direction pattern of our dipole at 10 degrees above the horizon, a good angle for working DX. In Figure 14 we thinly slice the 3D pattern at 10 degrees in all directions above the horizon.

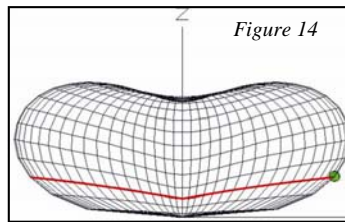


Figure 14

We then disregard the parts of the pattern above and below our slice. Looking down at the thin slice we see the resultant pattern as shown in Figure 15.

Note that the radiated power at 10 degrees is 6.72 dB below the radiated power at 30 degrees.

Hopefully this article has given you a good understanding of antenna radiation patterns. If you would like to analyze your antenna, download EZNEC, a good free and easy to use antenna analyzer program. The program can be downloaded from <http://www.eznec.com/>

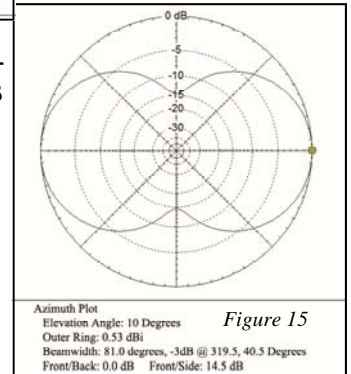


Figure 15

THE DRC/TSA STATION IS TAKING SHAPE!

By Bill – W6OAV

The DRC/ Salvation Army ham station at 70th and Washington is beginning to take shape! After six months of planning and engineering via Skype conferences a group of DRC volunteers worked 7 hard hours on October 9th to install antennas, ground systems and coax runs to the ham station room. The DRC volunteers are shown in Figure 1. Left to right in the front row are Jerome (N0OMA) and Jack (N0QHF). Left to right in the back row are Bill (W6OAV), Doug (N4ATA), Dave (K0HTX), Bill (N0LAJ), Lance (N1ETV) and Bob (KB0BZZ).



Photo at right shows the completed installation. If you look at the area under the right antenna mount, you will notice how N0LAJ hid the shiny copper ground wire in the gray tube to guard against theft. Can't be too careful these days!



Here is N0LAJ, K0HTX and N0QHF showing what it took to drive the ground rods.

Before beginning the project, KB0BZZ did a lot of back ground work. He had to go through several levels of the building management company to get approval for the installation. Then, after he had the various utilities clear us for driving ground rods, Bob also consulted a civil engineer to insure that we would be properly installing the antenna mounts that involved penetrating a 6" concrete wall and an interior metal wall.

The project also involved driving two 8' ground rods into river rock fill (tough), bonding all mounts to the rods, installing coax carriers and running long lengths of coax from the back of the building to the radio room in front of the building.

The project went very well in spite of its complexity. KB0BZZ developed the project plan which enabled the project to proceed very smoothly. N1ETV designed and built the custom antenna mounts. N0LAJ designed and installed the grounding system. K0HTX and N1ETV installed the antenna mounts. The rest of the volunteers mounted the coax carriers and ran the coaxes. They also provided help where needed.

At right, the antenna mounts and ground systems are being installed.



Here K0HTX is drilling a coax feed through hole.

(Continued on page 6)

(Continued from page 5)



K0HTX is completing the installation of the R7 HF antenna which was quite a feat with the strong winds that blew all day. K0HTX spent most of the time climbing ladders to drill and mount the antenna mounts and the antennas themselves. He looked pretty "pooped" at the end of the project. I know that the rest of us would not have been able to do the physical work that Dave did! We thank you Dave for your expertise, tools, and for doing the roof level work.

The highlight of the day was a great hot lunch provided by the TSA. N0QHF is indeed a great cook!

A great big THANK YOU goes to all the volunteers.

It was normal to work the world day or night with only a few watts. Consequently, the bands were packed band edge to band edge with wide bandwidth Amplitude Modulation (AM) signals. It was often difficult to find a clear spot to call CQ.

Why so many tones? In those days, the main transmission mode for voice was AM. An AM signal contains a continuous carrier and, when the operator talks, contains sidebands on each side of the carrier. Without getting heavily into the theory, when two AM signals are very close to each other the two carriers will "beat" in the receiver and produce an audio frequency. For example, if two carriers are 2 kHz apart on a band they will produce a 2 kHz tone in a receiver. This process is called heterodyning.

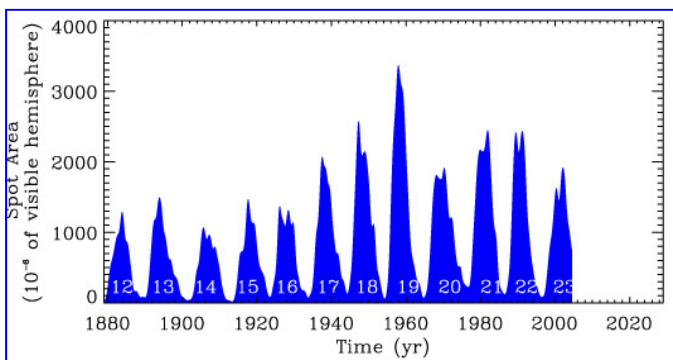


REMEMBER WHEN?

By Bill – W6OAV

The purpose of this article is to let newer hams know what ham radio was like in the late 50s and early 60s and to bring back memories to the older hams.

Old timers, like me, remember the days in the late 50s and early 60s when the HF bands were totally packed, band edge to band edge, with voices and many different frequency tones.



Why so many signals? Well, solar cycle 19 was the best solar cycle ever measured. See graph above.

So, how did we handle getting rid of the heterodyne tones and the interference of two close AM signals? Many of us used the famous Heathkit Q Multiplier. See **Figure 2**. The Q-Multiplier was bridged onto the receiver's IF channel. One could set the Q-Multiplier to either function as a notch filter or as a bandpass filter. The notch filter allowed notching out the heterodyne tone. The band pass filter allowed the narrowing of the receiver IF to allow only the desired signal to pass through the IF. Some of us got fancy and bridged two Q Multipliers to a receiver to allow simultaneously notching and bandpassing.

Although today SSB is much more efficient in many ways, a lot of us old timers still miss the warm sounds of a good AM signal! If you haven't experienced the sound of a good HF AM signal, listen for the AM nets on the various HF bands. The AM calling frequencies are listed at <http://www.arrl.org/band-plan-1>. One can also Google "amateur AM frequencies" and find many AM nets.

WANTED

The club is looking for a used HF Transceiver in good working condition.

If you have one that you aren't using and don't need any more please contact Bryan at kb0a@arrl.net.

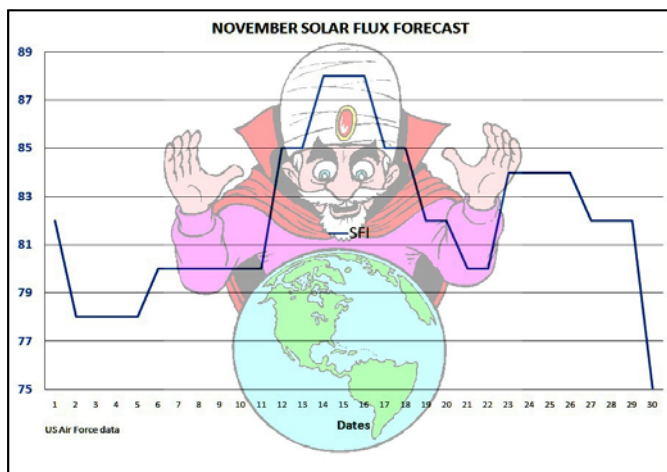
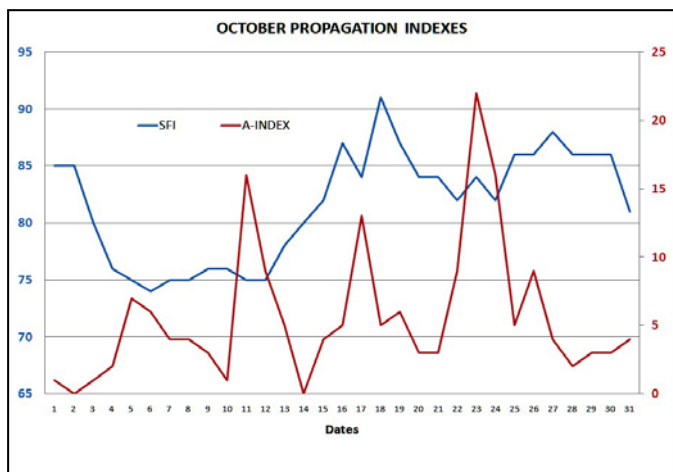
PAST & FUTURE PROPAGATION CONDITIONS

By Bill – W6OAV

This article provides two charts: the propagation conditions for last month and a forecast of next month’s propagation conditions.

USING THE PROPAGATION INDEX CHART

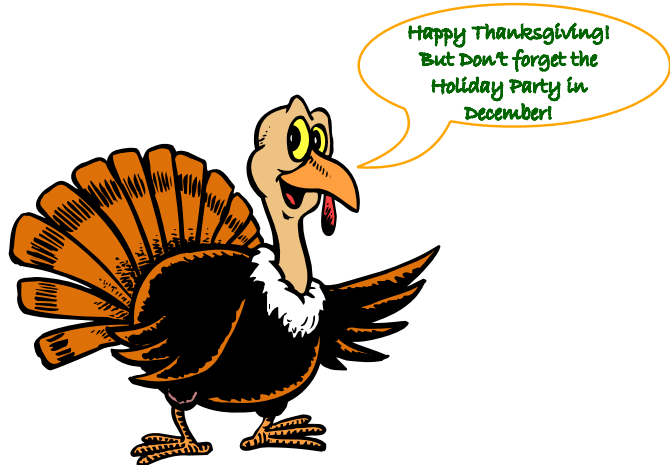
Note two things on the chart: the trend of the SFI and A indexes and the date of largest SFI peak. The trend of the SFI shows the progress of the solar cycle during the past month. The SFI peak allows the rough forecasting of the reoccurrence of SFI peak in the next month. In order to “forecast” the next SFI peak, note the date when the SFI peak occurred and project out to about 28 days. Due to the sun’s 28 day rotation, the SFI peak will often reoccur in about 28 days. The reason is because the sun spots causing the SFI peak move with the sun’s rotation and face the earth every 28 days. This 28 day repetition will become more pronounced as the solar cycle improves. Refer to the September 2010 *Roundtable* for more complete information on the “SFI” and “A” indexes.



As you know, it is getting 'COLD' out there. So, stay warm and support the DRC with a new DRC Logo Jacket. The jackets are Black with Grey fleece lining and are embellished with Your Name & Call Sign on the left chest and the DRC logo centered on the back.

Still just \$60.00 plus applicable taxes.

Call or email Doug (N4ATA) with your Name, Call Sign and size of jacket size. Phone: (303) 922-3305
Contact: jtbembvcinc@comcast.net or N4ATA@comcast.net (Please, put DRC Jacket in subject line)




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UP COMING EVENTS

6 November 2010

2010 FALL TECHFEST

NAØTC – 285 TechConnect Radio Club

The 285 TechConnect Radio Club (NAØTC) is pleased to announce its 3rd annual Fall TechFest on Saturday, November 6, 2010. The focus this year is on operating; topics include:

- Contesting Using Wire Antennas and 100 Watt Rigs
- DXing Using Wire Antennas and 100 watt Rigs
- The Fun Of Using Classic Radios
- QRP – Make Contacts Like the Big Boys with 5 Watts
- VHF/UHF – Beyond FM
- Audio Processing – Make That Difficult Contact

As in the past two TechFests, you can plan on meeting and talking with other hams along with learning about something about contesting, DXing, QRP, classic radios (sometimes known as boat anchors!), VHF/UHF and audio processing.

Information is available on our website www.na0tc.org. Please pre-register by e-mail - k0nnc@arrl.net. Payment (\$10) will be due at the door. As space is limited, please register early. Questions can also be directed to k0nnc@arrl.net.

15 December 2010

DRC Holiday Meeting & Dinner

More information in the December RoundTable

15 January 2011

NCARC WINTER HAMFEST 2011

Larimer County Fairgrounds

Info: <http://www.ncarc.net>



NOVEMBER 2010							<i>DRC Net Sunday 8:30pm Local</i>
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
	1	2	3 <i>Learning Net</i> 7pm	4	5	6 <i>ARRL November CW Sweepstakes</i> Begins 2100U	
7 <i>Mountain Standard Time Begins</i> 	8 <i>ARRL November CW Sweepstakes</i> Ends 0259U	9	10 <i>Learning Net</i> 7pm	11 <i>Veteran's Day</i> 	12	13	
14	15	16	17 <i>DRC Meeting</i> Elmer 6:30pm General 7:30pm	18	19	20 <i>ARRL Nov. Phone Sweepstakes</i> Begins 2100U	
21 	22 <i>ARRL Nov. Phone Sweepstakes</i> Ends 0300U	23	24 <i>NO Learning Net Tonight</i> <i>Happy Holiday</i>	25 	26	27	
28 	29	30					

Check www.ARRL.org for Contests and Rules!

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DRC REPEATERS

BAND	Freq / Shift / PL Tone	Additional Information
10m	29.620mHz (-100kHz) FM	Not In Service
6m	53.090mHz (-1mHz)	
Packet	145.05mHz<>14.105mHz	
2m	145.490mHz (-) 100Hz PL	Linked to the 70cm - 448.625mHz machine.
2m	147.330mHz (-) 100Hz PL	Local Area, Members Auto-Patch Does Not TX a PL!
2m	147.330mHz (-) 131.8Hz PL	NE Area Remote Does Not TX a PL!
1.25m	224.380mHz (-) 100Hz PL	
70cm	448.625mHz (-) 100Hz PL	Linked to the 2m - 145.490mHz machine.
70cm	449.350mHz (-) 100Hz PL	Wide area coverage with Echolink Node # 4140.

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DRC members - this is your newsletter. If there is something which is club or amateur radio related that you'd like to see as a regular feature, email suggestions to the editor. Members are the heart and sole of The Denver Radio Club, 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 AG0S@comcast.net. Submission deadline is the 25th of the November. **Editor**