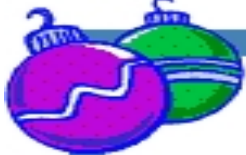




ROUNDTABLE



PRESIDENT'S MESSAGE

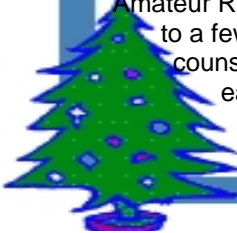
By Robert White – K0RCW



As I write this, I am turning the rest of the Thanksgiving turkey into sandwiches, soup, and salad in total disbelief that the Holiday season is but days away. Where has this year gone? Surprisingly, almost no snow has fallen yet so far. If you haven't had a chance to make final preparations to your HF antenna for those long cozy nights ahead at your rig full of superb DX, now is the time!

In lieu of our December meeting, I want to remind everyone to attend our holiday party and speaker meeting to be held December 15th at the Country Buffet at Crestline and Wadsworth. The dinner buffet costs approximately \$12 plus tax including beverage. Plan to arrive a little after 5 to leave plenty of time for food and fellowship with your fellow members. At 6:30 our program begins. All are welcome especially members, prospective members, spouses, kids, and any interested others. This program will not be too technical and of general interest to a wide audience. Please see <http://www.w0tx.org> for complete information and directions.

Each month I plan to feature a member, activity, or event that is of interest to our membership. This month I visited with Brant Zirker, W0BKZ who serves our community as an Amateur Radio Merit Badge Counselor for the Frontier (Eastern Metro) District of the Denver Area Council of the Boy Scout organization. Brant is an Eagle Scout who first became interested in Amateur Radio in his youth but was not licensed until a few years ago. Serving as a merit badge counselor, he can plant the seed of excitement early on around our fantastic service and hobby.



As part of earning the merit badge, a scout can elect to visit a radio station, engage in Short Wave Listening, or explore Amateur Radio. Brant volunteers with the Amateur Radio portion of this badge. Scouts range in age from twelve to fifteen and attend an intensive merit badge session on a Saturday morning seminar that offers instruction on up to 15 merit badges. Both of Brant's classes consisted of approximately eight scouts each. The class covered basic electronics, resistors, and capacitors. In addition Brant showed them basic block and schematic diagrams.

After learning some basic radio fundamentals, they visited Brant's station. They then were each instructed on how to make a first contact, and to practice the techniques in a live contact. Club member Bob Wilson, KC0CZ was on the radio to make the QSOs. Other club members that have participated in scout QSOs include KD0CXX Paul and K10PN Dennis. One Scout asked Bob what his best DX contact was to which Bob replied, "To the South Pole – That was kind of fun." Brant said that the scouts' eyes lit up at that information! Brant is grateful for the support of the DRC and says every time he's needed our support we have been there.

Welcome new members Elden Miller – KDOMKY and John Bridges – N0QOP. We look forward to seeing you at future events.

Happy Holidays to Everyone,

73
Robert – K0RCW
President



INSIDE THE ROUND TABLE

November Meeting - What'd I Miss	Pg 2	Propagation Charts	Pg 6
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NOVEMBER MEETING - WHAT'D I MISS

By Bill – W6OAV

There were 42 folks in attendance. Robert, K0RCW, began the meeting with introductions. After Robert announced the Christmas dinner and the program (see program announcement “MEET RTD...” on Page 3), Bob, KB0BZZ, gave an overview of the work required to get approval for the TSA vhf/uhf/hf antenna system and then to design and install the system. Bob then handed out certificates of appreciation on behalf of the TSA to those that worked on the TSA project. Following this Lance, N1ETV, demonstrated a \$13 Harbor Freight automotive circuit tester. The tester is inserted in place of a radio's fuse and provides a digital readout of the radio's current draw in 0.1 amp steps up to 30 amps.



The meeting was turned over to our guest speaker Mike, K0NGA. Mike discussed the APRS Voice Alert system. Voice Alert is a packet radio system that automatically alerts the user to other Voice Alert equipped mobiles within simplex range. Mike covered the following topics:

- How Voice Alert Works
- Caveats of Voice Alert
- Operating Procedures
- Advanced Concepts

Additional information can be found at <http://www.aprs.org/VoiceAlert3.html>

TECHNICAL COMMITTEE REPORT

By Bill – W6OAV

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

Voter System

Goal: Design and build a voter site and a remote site for the 147.33 voter system.

- The Tech Committee approved using existing equipment to build a test configuration. The configuration will be composed of two 147.93 receivers, a remote receiver at N1ETV's house and a local receiver at Station 4. N1ETV's receiver will be linked via UHF to Station 4. The UHF link receiver at Station 4 and the local 147.93 receiver will interface to a voter. The voter in turn will interface to the 147.33 transmitter.
- KB0A will draw up a circuit diagram of the system and the required wiring. Once this is done, a Skype conference call will take place to determine the next steps in the project.

Temporary Salvation Army Location:

Goal: Complete station installation.

- Lloyd, KB0MQQ, donated an HF radio for club use at the TSA station.
- Lance, N1ETV, will design a side mount for the TSA business band radio antenna. The side mount will be attached to one of the existing antenna mounts.
- The R7 antenna has a bit of play in the mount. Will check out during the next work party.
- The antenna lightning grounding system needs bonding to the building framework. Will accomplish this during the next work party.
- Bill, W6OAV, will setup a Skype conference to develop a work party plan and a work party date.

Upgrade 448.625 Repeater

Goal: Replace 448.625 UHF Syntor with new Kenwood Repeater. Replace the S Comm controller with a 7330 controller.

- Project will be put on hold until the Kenwood can be removed at Hudson and installed at Centennial in place of the Sintor. When the Kenwood is removed the Master 2 at Hudson will be put on line and an amplifier installed. This will become the voter master transmitter.

TS-940 Failure at Station 4

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

- The TS-940 has been given to Jim, K0TOR, to troubleshoot.
- Jim has two TS-940s that can be used to provide proper test point references. Also, Jim has the proper test equipment for troubleshooting these types of problems.

147.33 - Hudson Audio and RF issues

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

- This item put on hold until the next spring as not a major issue.

Tech Committee Meeting Productivity

Goal: Investigate the possibility of increasing the tech committee meeting productivity but using tools like Skype audio conferencing.

- If members desire to be added to the conferences, they need to provide their Skype names to Bill, W6OAV.

6 Meter Repeater Relocation

Goal: Move the 6 meter repeater to Blue Mountain:

- This item cancelled as presently there is no room for the equipment at the site.

MEET RTD LIGHT RAIL AT THE DRC CHRISTMAS DINNER

By Bill – W6OAV

Interested in learning about the RTD Light Rail system? If so, be sure to attend the DRC annual Christmas dinner. Frank, W7FES, will give a non technical presentation about the Light Rail system. He will present the history to date of the Light Rail system and the future expansion plans. He will also share antidotes of both serious and humorous incidents which Light Rail operators have experienced in their day to day operation.

Frank has been with RTD for 5 years and has operated Light Rail trains for 4 ½ of those years. Before that, Frank spent 30 years in Telecommunications and Data Communications, 6 years of which were spent in the Navy as an electronics technician.



Frank was licensed in 1976 as WB7OTE. In 2001 he became W7FES. His main interests are HF/VHF/UHF voice operating.

INVERTED “V” VERSES THE DIPOLE

By Bill – W6OAV

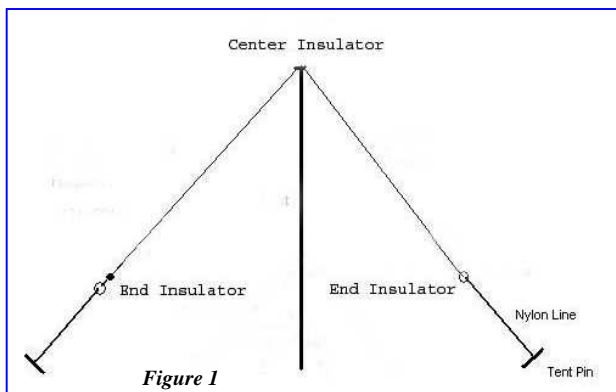
One often hears a discussion centered around “Which is better, an inverted V or a dipole?” This article will attempt to answer that question.

DEFINITIONS

Let’s begin with definitions:

Dipole - An antenna that is a straight electrical conductor measuring ½ wavelength from end to end and broken in the middle where it is connected to a feed line.

Inverted V - An antenna that is a modified dipole antenna supported high in the center with the ends lower than the center. Viewed from the side, the antenna looks like an upside down letter “V”. (Figure 1 above right)



NVIS - (Near-Vertical Incident Skywave) A process where an antenna is configured to direct a radio wave straight up from the ground. The radio wave is reflective back by the ionosphere and fills the gap between line-of-sight groundwave and long-distance “skip” skywave communications.

ADVANTAGES OF THE INVERTED V OVER A DIPOLE

Inverted V antennas are more popular than dipoles because:

- Lower installation costs. A dipole requires two tall end supports and usually one tall center support due to the weight of the coax. The inverted V requires one tall support in the middle and, depending upon the configuration, either no end supports or two short end supports.
- Requires approximately 30% less horizontal space. For example, a 40 meter dipole requires 66.2 horizontal feet. A 40 meter inverted V requires only 46.8 horizontal feet.
- Better esthetics. One high support, or tower, doesn’t stand out near as much as would two or three high supports or towers.
- Omni radiation pattern. The radiation pattern of an inverted V is more omni-directional than that of the dipole’s figure eight radiation pattern, an advantage for working all directions.
- Lower angle of radiation. The inverted V has a lower vertically polarized angle of radiation pattern off the ends of the antenna.
- Better match to the feedline. In most cases the impedance is closer to 50 ohms, determined by the height above ground.

(Continued on page 4)

(Continued from page 3)

RADIATION PATTERNS OF AN INVERTED V AND A DIPOLE

The radiation patterns discussed below should provide information which will allow the reader to decide which antenna to install depending upon the operating requirements.

Figures 2a through 5b compare the elevation radiation patterns of a dipole and an inverted V at various equal heights above the ground. (The peak of the 90 degree inverted V is at the same height as the corresponding dipole). There are two sets of patterns presented for each height. The first pattern of each height set shows the radiation pattern off the side (broadside) of the antennas. The second pattern of each set shows the radiation pattern off the ends of the antennas.

Antennas at 1/4 Wavelength Above Ground

Figure 2A shows that the dipole has a 2 to 3 dB stronger broadside pattern. Figure 2B shows that the inverted V has a 4 dB stronger lower angle pattern off the ends of the antenna. This radiation tends to be vertically polarized and low angle due to the slope of the wires. This makes the inverted V a better DX antenna off the ends of the antenna. The figure also shows that the dipole has a 2 dB stronger NVIS pattern.

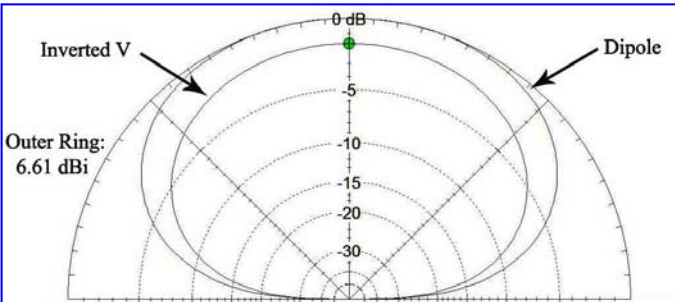


Figure 2A - Broadside Patterns of Antennas at 1/4 Wavelength Above Ground

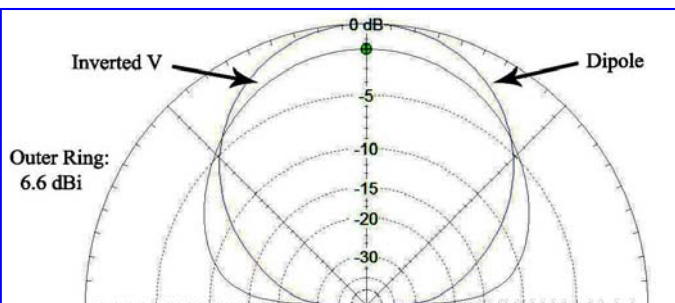


Figure 2B - End Patterns of Antennas at 1/4 Wavelength Above Ground

Antennas at 1/2 Wavelength Above Ground

Figure 3A shows that the dipole has about a 2 dB stronger medium angle broadside pattern and the inverted V has about a 9 dB higher NVIS pattern.

Figure 3B shows that the inverted V has about a 2 dB stronger low angle pattern and about an 8 dB greater NVIS pattern.

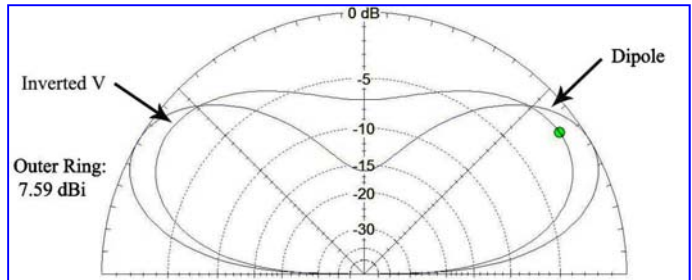


Figure 3A - Broadside Patterns of Antennas at 1/2 Wavelength Above Ground

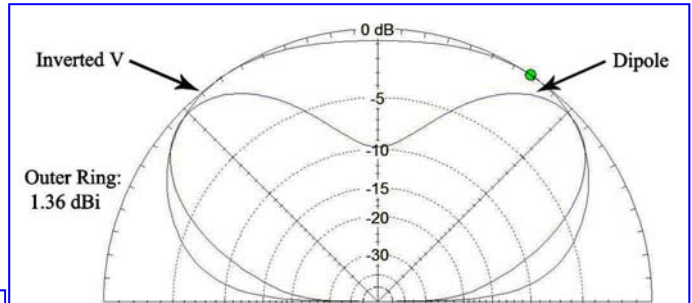


Figure 3B - End Patterns of Antennas at 1/2 Wavelength Above Ground

Antennas at 3/4 Wavelength Above Ground

Figure 4A shows that the dipole has a 3 dB stronger NVIS broadside pattern and is pretty much equal to the inverted V at the medium angles. Figure 4B (Top of Page 5) shows that the inverted V has a 2 dB stronger low angle pattern and a 3 dB weaker NVIS pattern.

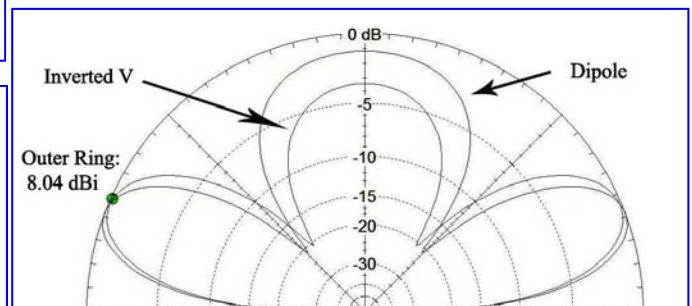


Figure 4A - Broadside Patterns of Antennas at 3/4 Wavelength Above Ground

(Continued on page 5)

(Continued from page 4)

Antennas at 1 wavelength Above Ground

Figure 5A shows that the dipole has 1 dB stronger low angle pattern and 2 dB stronger high angle pattern. The inverted V has 6 dB stronger NVIS pattern. Figure 5B shows the inverted V has a 1 dB stronger low angle pattern, a equal pattern at the high angle and has a 5 dB stronger NVIS pattern.

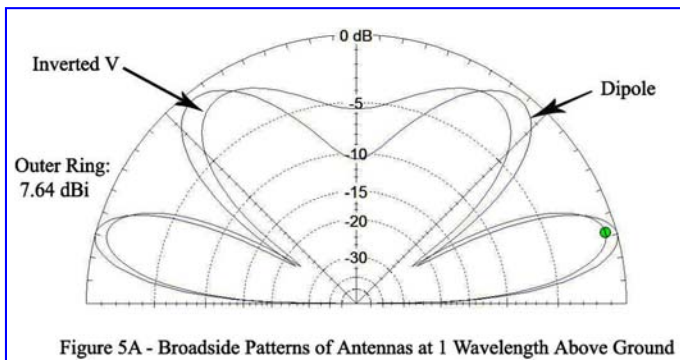


Figure 5A - Broadside Patterns of Antennas at 1 Wavelength Above Ground

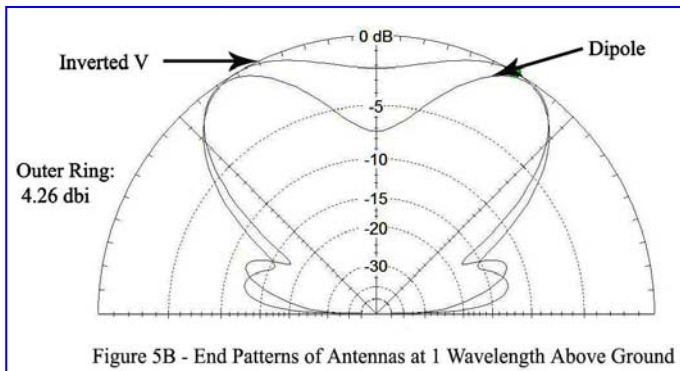


Figure 5B - End Patterns of Antennas at 1 Wavelength Above Ground

A disadvantage of the inverted V is that it is a bit noisier than the dipole. This is due to the fact that the sloping wires tend to respond to vertically polarized signals. Since noise tends to be vertically polarized, the inverted V responds to these signals. However, most users haven't noticed a noise level increase over a dipole that presents a problem with receiving weak signals.

INVERTED V CONSTRUCTION NOTES

The recommended apex angle of an inverted V is 90 degrees. However, any angle between 70 degrees and 110 degrees is acceptable. If the angle is greater than 110 degrees, the inverted V takes on the characteristics of a dipole. If the angle is less than 70 degrees, the pattern becomes very distorted and inefficient.

The standard formula for a dipole is $460/\text{MHz} = \frac{1}{2}$ wavelength (ft.). Some folks use the formula $450/\text{MHz} = \frac{1}{2}$ wavelength (ft.) for an inverted V. If the ends of your inverted V are fairly close to the ground, I recommend using the dipole formula and then trimming the ends of the inverted V to achieve the desired resonance.

As with a dipole, a current balun or RF choke is recommended at the feed point.

DRC/TSA HAM STATION REPORT

By Bill – W6OAV

The DRC/TSA ham station project is progressing very nicely. This month the following was accomplished in the time order shown below:

- Doug, N4ATA, and Bob, KB0BZZ, picked up cubical dividers that were donated to the TSA.
- Bob and Jack, N0QHF, installed the cubical dividers which provide a nice isolated cubical for the ham station.
- Doug, N4ATA, donated a corner computer table which he assembled in the new ham station cubical.
- Bob installed wall mount connector panels into which he terminated the coaxes.
- Jack and Bob pickup up four chairs and a file cabinet donated by N0QOP.
- Bob inspected our new antennas to see if they had survived the fierce wind storm that occurred earlier. All survived.

A big THANK YOU goes to all the above folks.

KB0MQQ COMES TO THE RESCUE

By Bill – W6OAV

Last month the *Roundtable* published a notice that the DRC was looking for a working HF transceiver for the DRC/TSA ham station. Lloyd, KB0MQQ, came to the rescue by donating a Yeasu FT-850! Thank you very much, Lloyd. The transceiver will be put to good use.

COLD?

Knowing what to do could save a life!

FROSTBITE

Frostbite is damage to body tissue caused by that tissue being frozen. Frostbite causes a loss of feeling and a white or pale appearance in extremities, such as fingers, toes, ear lobes, or the tip of the nose. If symptoms are detected, get medical help immediately! If you must wait for help, slowly rewarm affected areas. However, if the person is also showing signs of hypothermia, warm the body core before the extremities.

HYPOTHERMIA: LOW BODY TEMPERATURE

Warning signs - uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness, and apparent exhaustion.

Detection - Take the person's temperature. If below 95F (35C), immediately seek medical care! If medical care is not available, begin warming the person slowly. Warm the body core first. If needed, use your own body heat to help. Get the person into dry clothing, and wrap them in a warm blanket covering the head and neck. Do not give the person alcohol, drugs, coffee, or any hot beverage or food; warm broth is better. Do not warm extremities (arms and legs)

(Continued on page 6)

first! This drives the cold blood toward the heart and can lead to heart failure.

WIND CHILL

The wind chill is based on the rate of heat loss from exposed skin caused by combined effects of wind and cold. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature. Animals are also affected by wind chill.

AVOID OVEREXERTION, such as shoveling heavy snow, pushing a car, or walking in deep snow. The strain from the cold and the hard labor may cause a heart attack. Sweating could lead to a chill and hypothermia.



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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
Email: jtbembsvcinc@comcast.net or N4ATA@comcast.net
(Please, put DRC Jacket in subject line)

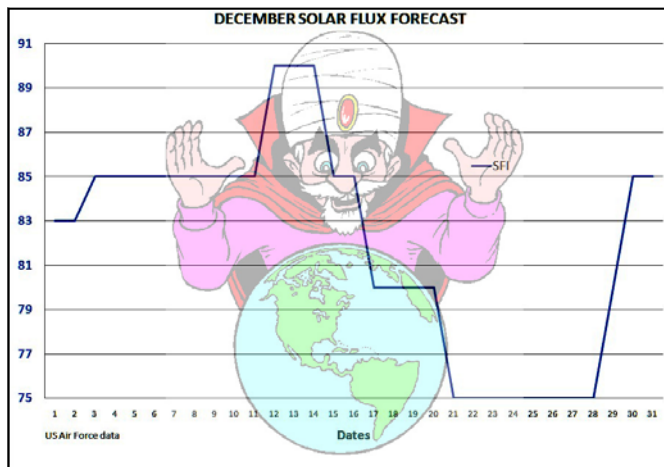
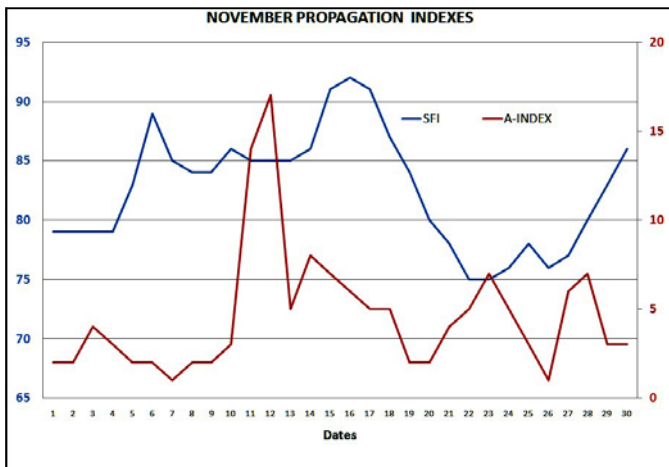
PAST & FUTURE PROPAGATION CONDITIONS

By Bill – W6OAV

This article provides two charts: the propagation conditions for last December and a forecast of next December'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 December. The SFI peak allows the rough forecasting of the reoccurrence of SFI peak in the next December. 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.



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It's Time Once Again For The Annual Holiday Meeting & Dinner

When: December 15th

Where: Country Buffet
8100 W. Crestline Ave.
Littleton, CO

Time: 5pm Dinner / 6:30pm Presentation and Drawing
For map & directions check www.w0tx.org

December 2009				<i>DRC Net Sunday 8:30pm Local</i>		
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 <i>Learning Net</i> 7pm	2 <i>Hanukkah</i>	3 <i>ARRL</i> <i>160m Contest</i> Begins 2200U	4
5 <i>ARRL</i> <i>160m Contest</i> Begins 1600U 	6	7 <i>Pearl Harbor</i> <i>Remembrance</i> <i>Day</i>	8 <i>Learning Net</i> 7pm	9	10	11 <i>ARRL</i> <i>10m Contest</i> Begins Saturday 11th 0000U
12 <i>ARRL</i> <i>10m Contest</i> Ends 2359U	13 	14	15 <i>Club Holiday</i> <i>Dinner &</i> <i>Meeting 5pm</i>	16	17 <i>Wright</i> <i>Brothers Day</i> 	18
19 <i>ARRL</i> <i>Rookie Roundup</i> 1800U thru 2359U	20	21 <i>First Day of</i> <i>Winter</i> 	22 <i>NO Learning</i> <i>Net Tonight</i>	23	24	25
26 	27	28 	29 <i>Learning Net</i> 7pm	30	31 New Year's Eve	

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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 Month. **Editor**