



# ROUNDTABLE

### PRESIDENT'S MESSAGE

By Bryan Steinberg – KB0A

I've been traveling the past few weeks through the Pacific Northwest and Northern California. These days I cannot help but be on the lookout for ham towers with beams and cars with antennas. And, I did spot them, however not as frequently as one would think, or hope. While we were camping in some of the towns I would do a quick search to see how many hams live there and if there were any local clubs. In one instance I found there were 80 licensed amateurs in a town of about 5000 residents. That is just under 2% of the population. Which is a pretty good ratio, as those things go and compared to the nation, in general. However, there was only one club across a couple of cities on the coast. All in all, I believe we are pretty lucky with our situation in the Denver metro area. We have a number of clubs to choose from – general, technical, QRP, repeater, etc. – and a very active community to interface with.

I want to thank Steve, KF0RW, for his presentation last month on amateur radio and emergency communications. Unfortunately, I missed the meeting but I've received great reviews especially about Steve's ability to present a different view of this topic. At our November meeting Steve's on tap again for our presentation. He will discuss more details about the MotoTRBO radios and some of the important features.

You will find more info on last month's meeting highlights and the November meeting plans later in this issue of the RoundTable.

We still are looking for additional topics and writers for the RT. If you are interested in writing an article please let us know. We can help you do it if the task seems a bit daunting. Also, if you have a topic that you would like us to cover in an article let us know that, too. This is your newsletter so we want to keep it relevant and interesting.

Remember to keep our December holiday meeting in your plans. Like last year we will meet at the Golden Corral in Sheridan, on Santa Fe just South of Hampden. More info and a meeting agenda will be in the December issue of the Roundtable. We will have a topic of more general interest for the rest of the family.

Well that's about it for this month. I'll look forward to seeing everyone at the November meeting, or at the 285 TechConnect TechFest on November 3<sup>rd</sup>.

Until next time...

Bryan, KB0A

### INSIDE THE ROUND TABLE

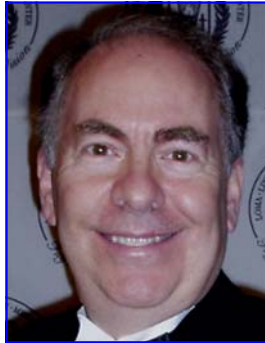
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## OCTOBER MEETING - WHAT'D I MISS

By Bill – W6OAV

There were 36 attendees this month. Gerry, W0GV, began the meeting with introductions. He then covered the work performed this month on the MotoTRBO repeater at Station 4. Following this, he gave the details on the Christmas party and the Hamcon Colorado 2013 event.

The meeting was then turned over to Steve, KF0RW. Steve gave a very interesting presentation on emergency communications. Some of the topics Steve covered were:



- Communicators must take part in emergency exercises that are as realistic as possible. Being able to operate radios is one issue but doing it under duress, such as being in an environment containing serious injuries, is another issue.
- Communicators must understand the different colors used in emergency situations to categorize injured people. For example, code red indicates a victim who needs immediate medical aid and is very seriously injured.
- Communication procedures to use in a disaster situation need to be refined and not “ham like”. Rather, communications should be in the same style that public safety utilizes. For example, keep it short and pertinent and remember others, such as the press, are monitoring.
- Overview of the various complex computer controlled communication systems used in emergencies and how they can interface via various gateways. Being complex they are prone to failures.
- The root of the ham’s value is that ham communication systems are somewhat simple. Thus, they are very reliable. Also, hams can build impromptu networks on the fly. Hams have the ability to establish ad-hoc communications.
- Hams should be prepared both with knowledge and equipment.

- The background of JCTF (Joint Communications Task Force – part of Denver 911), its purpose, membership requirements and its relationship with other ham organizations, such as ARES.
- The various types of systems used by various ham emergency groups. For example, ARES uses analog systems and JCTF uses digital MotoTRBO.

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## NOVEMBER MEETING ANNOUNCEMENT

Is digital radio in your future? The November meeting presentation by Steve, KF0RW, will cover the following topics. You will learn even more about digital radio technology.

Answering the question: “Can analog do this?”.

- Large, full-color display with a flexible menu-driven interface. Icons and large easy-to-use navigation buttons ease message reading and menu navigation.
- Day/Night Mode on display has improved resolution for easier viewing even in broad daylight. It also features a night mode that makes the screen easier to read in dark environments.
- Loud front-facing speaker and Intelligent Audio feature automatically adjusts the radio volume according to the environment’s noise level.
- Bluetooth Audio and Data embedded into the radio and enables connectivity with wireless accessories, including Motorola’s unique Operations Critical Wireless earpieces designed for rugged and reliable communications. Share real-time information easily by connecting radios to Bluetooth-enabled data devices.
- Use text messaging when discretion is required or routine communication needs to be delivered without interrupting workers or guests.
- IP Site Connect compatible. IP Site Connect is a digital solution that uses the Internet to extend the voice and data capabilities of MOTOTRBO. Use it to link up to 15 sites for communication among geographically dispersed locations, to create wide area coverage or enhance coverage at a single site with physical barriers. More hookups with C-Bridge! Bridge networks together.

*(Continued on page 3)*

## OCTOBER TECH COMMITTEE REPORT

BY BILL – W6OAV

(Continued from page 2)

- Certified as intrinsically safe by FM approvals when purchased and equipped with an FM battery for use in hazardous environments.
- Transmit Interrupt enables a user to interrupt another radio conversation to deliver critical communication exactly when and where it's needed (upgradable at additional cost).
- Locate mobile work teams using integrated GPS.
- Features the industry's largest application developer program to enable a wide variety of customized applications including: location tracking, Bluetooth data, email gateways, dispatch, telephony, man-down and work order ticket management.
- Capacity Plus single-site digital trunking system compatible (upgradable at additional cost). Maximizes the capacity of your MOTOTRBO system. Use it to enable a high volume of voice and data communication for over a thousand users at a single site without adding new frequencies.
- Linked Capacity Plus compatible. Linked Capacity Plus is an entry level, multi-site digital trunking system configuration for the MOTOTRBO platform. It leverages the high capacity of Capacity Plus, with the wide area coverage capabilities of IP Site Connect to keep your staff at various locations connected with an affordable high capacity, wide area trunking solution (upgradable at additional cost).
- Tightly sealed against wind and dust, and submersible in up to one meter of water for 30 minutes (IP57).
- Emergency Button can be optionally programmed to send an alert to a supervisor or dispatcher during an emergency situation.

### Voter System Redesign

Goal: Find a site east of Denver which will provide good coverage into the Denver Metro area and which will support the voter system:

- **Several members of the technical committee are looking for a suitable site.**

### Existing Voter System "Tune up"

Goal: "Tune up" the existing test voter configuration consisting of the Station 4 central voter site and the N1ETV remote receiver site:

- **Work still in progress.**

### Noise at Station 4

Goal: Reduce the power line noise affecting all systems.

- **Xcel was out on Oct 2<sup>nd</sup>, cleaned up the noise on a couple of poles. KB0A met with them and walked the line with the tech as he checked the noise. When Xcel finished all the noise was gone from line but the HF receiver at Station 4 still showed noise at 10 over S9. There was nothing else Xcel could do. WW0LF will use a spectrum analyzer to attempt to identify the source of the HF noise.**

### New MotoTRBO Repeater

Goal: Tune up MotoTRBO repeater duplexer at Station 4:

- **On Sept 24<sup>th</sup>, WW0LF, K0HTX and KB0A, installed a new length of 7/8" heliax and a new dual band base antenna at the top of the tower for the MotoTRBO repeater. All worked out fine. WW0LF will check the old heliax which was showing "weird" impedance readings on 70cM and the Cellwave 70cM antenna which was showing a short.**
- **The board will discuss replacing the dual band antenna with a signal band antenna. In either case, the duplexer will be re-tuned.**

### Upgrade 448.625 Repeater

Goal: Replace S Com 7k with S Com 7330 and write a program for the 7330.

- **This is an escalating issue since D13 ARES (Denver) uses the 145.49 repeater for their emergency activities. KB0A will write a program for the 7330 which will allow splitting the repeaters thereby leaving 448.625 still available during a D13 activation.**

(Continued on page 4)

**Please Note!**  
**The Denver Radio Club Meeting**  
**time has changed!**  
**General Meeting start time is**  
**changing to 7:00PM**  
**The Elmer Session will still start**  
**at 6:30PM.**

*(Continued from page 3)*

**Station 4 Maintenance**

Goal: Implement weed control (install ground cover and layer of rocks) and paint shed:

- **Depending on weather should be done in early November.**

**Upgrade 448.625 Repeater**

Goal: Replace Syntor repeater with a Kenwood repeater.

- **To be discussed at the next tech committee meeting.**

**Who's New In The DRC**

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. 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 7pm. For new hams we have the Elmer session which starts at 6:30pm before the regular meeting.

More information can be found on the Denver Radio Club website at <http://www.w0tx.org>.

Barbara K. Stuart	KD0SYD
Blake Huber	KD0SQ
Ed Mills	Pending
James Gates	KD0SYL
Nathan Lackey	Pending

**QUESTION OF THE MONTH**

**Question**

I'm planning a cross-country trip and there are more than 200 repeaters between my departure and my destination. That is a lot of data to put into my radio, and I would like to lower the amount of programming work to get ready for this trip. How can I tell which repeaters are the most active in each city and rural area?

Many of the Denver & Central Front Range repeaters that I have programmed into my radio's scanner never have any traffic. I have heard the term "paper repeaters" used to describe these repeaters that never have any traffic. Are these repeaters nonexistent, or are they real hardware that would power up to life in the event of a crisis? Should I take these "never used" repeaters out of my radio's memory?

**Answer**

If you are travelling it might be tough to figure out which repeaters are active in a distant city. You can try to do some searching on the web for amateur radio clubs in each major area you are passing through. Those with current information on their website will probably have active repeaters. When I travel I usually put all that I can find into my radio. I've stopped doing manual radio programming a long time ago. I use the RT Systems (<http://www.rtsystemsinc.com>) software for my radios. I also use the ARRL TravelPlus for Repeater. This is basically a computerized version of the ARRL Repeater Directory. The RT Systems software integrates the data from TravelPlus so that you can enter a bunch of repeaters with minimal or even no typing. Most radios have enough memories to handle the quantity. The ARRL TravelPlus software is \$49.95 (\$19.95 for annual upgrades) and the RT Systems software is \$49.00 per radio with the USB cable for connection to the computer.

Regarding the Denver/Front Range repeater issue I would say that you can either: 1). Go with the more active repeaters, such as those of the:

- Denver Radio Club (DRC)
- Castle Rock Repeater Assn (CRRG)
- Colorado Connection
- Rocky Mountain Radio League (RMRL)
- Pikes Peak Radio Amateur Association (PPRAA)
- Boulder Amateur Radio Club (BARC)
- Northern Colorado Amateur Radio Club (NCARC)
- Aurora Repeater Association (ARA)

These are active clubs with repeaters that are, usually, on the air as listed in the directory. This list should cover you along the Front Range from South of Colorado Springs up to the Wyoming border.

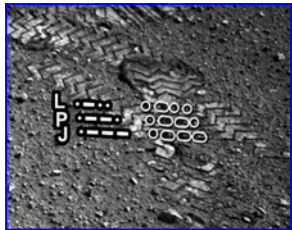
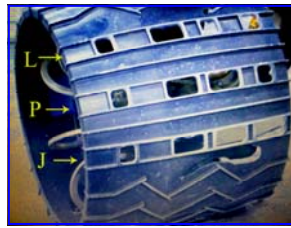
Then try to activate the repeaters you have programmed, remove/delete those that you cannot reach.

I hope this answers your questions.  
Bryan, KB0A

# MORSE CODE GOES TO MARS!

By Bill – W6OAV

Would you believe that NASA's Curiosity rover is leaving the Morse code characters "JPL" in its tracks as it travels? Well, it does. The photo at right shows the slots on the wheel that leaves the characters as shown in the photo below.



Do you suspect that there must be a couple of hams involved in the Curiosity project?

The following article from the NASA web site explains why these Morse code characters are being used.

NASA's Curiosity rover took its first test stroll Wednesday Aug. 22, 2012, and beamed back pictures of its accomplishment in the form of track marks in the Martian soil. Careful inspection of the tracks reveals a unique, repeating pattern, which the rover can use as a visual reference to drive more accurately in barren terrain. The pattern is Morse code for JPL, the abbreviation for NASA's Jet Propulsion Laboratory in Pasadena, Calif., where the rover was designed and built, and the mission is managed.

"The purpose of the pattern is to create features in the terrain that can be used to visually measure the precise distance between drives," said Matt Heverly, the lead rover driver for Curiosity at JPL.

This driving tool, called visual odometry, allows the rover to use images of landscape features to determine if it has traveled as far as predicted, or if its wheels have slipped. For example, when the rover drives on high slopes or across loose soil, it will routinely stop to check its progress. By measuring its distance relative to dozens of prominent features like pebbles or shadows on rocks -- or patterns in its tracks -- the rover can check how much its wheels may have slipped. If Curiosity has not slipped too much, it can then re-plan the next leg of its drive, taking its actual position into account.

"Visual odometry will enable Curiosity to drive more accurately even in high-slip terrains, aiding its science mission by reaching interesting targets in fewer sols, running slip checks to stop before getting too stuck, and enabling precise driving," said rover driver Mark Maimone, who led the development of the rover's autonomous driving software.

The Morse code imprinted on all six wheels will be particularly handy when the terrain is barren. Curiosity won't be able to read the Morse code symbols in the track marks directly, but it will note that the pattern is a high-contrast feature. This will give the rover the anchor it needs in an otherwise featureless terrain.

"Imagine standing in front of a picket fence, and then closing your eyes and shifting to the side. When you open your eyes, you wouldn't be able to tell how many pickets you passed. If you had one picket that was a different shape though, you could always use that picket as your reference," said Heverly. "With Curiosity, it's a similar problem in featureless terrain like sand dunes. The hole pattern in the wheels gives us one 'big picket' to look at."

NASA's Mars Exploration rovers Spirit and Opportunity also used visual odometry to ensure accurate driving in difficult terrains. Their wheels had been bolted to their landing platform, leaving holes that left distinguishing marks in their tracks. Those marks proved critical for the visual odometry system on Opportunity when it traversed the relatively featureless terrain at Meridian Planum. Opportunity is still trekking on Mars more than eight years after setting down on the Red Planet.

Curiosity likewise has holes in its wheels, only in the shape of Morse code letters.

"Even though Curiosity didn't need to be bolted down, we wanted to have the holes anyway. The mechanical team suggested multiple smaller holes rather than one large one like the Mars Exploration Rovers had, and one earlier design had spelled out letters in a cleat pattern, so I proposed using a Morse code version," said Maimone. "And the rest is history."

There is a good video which shows why and how the Morse code characters are use by JPL at: <http://www.exploratorium.edu/tv/index.php?program=1369&project=2>.

*Don't forget to join in Wednesday nights at 7:30pm for the DRC Learning Net !*

*145.49/448.625 machines*

***NO Net November 21***

# REMEMBER WHEN?

By Bill – W6OAV

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

In the 50's through the late 60's ham "home brewing" of equipment was very common. Parts were readily available and relatively inexpensive. To further "home brewing", and to encourage the use of their products, two major tube and transistor manufacturers provided free bi-monthly "how to" magazines for hams. General Electric provided a magazine titled "G-E Ham News". RCA provided a magazine titled "RCA Ham Tips".

## GE Ham News (1946 -1963)

GE published GE Ham News six times a year. A typical Ham News issue contained articles on building receivers, transmitters, test equipment, auxiliary equipment, etc. Many pictures and diagrams were included to illustrate the text, making "home brewing" easy to do. The magazine also often contained technical articles on such things as the basics of propagation, eliminating parasites, etc. Then there were always the very popular "Q & A" and "Tips & Tricks" columns. Hams could submit items for either of these columns by sending them to the ever popular "Light House Larry". Larry was a cartoon electron tube character with arms, legs and a head. If a question was answered, or a tip published, the submitter would receive a \$10 credit towards GE tubes. The last column in the magazine was always a specification sheet for a particular GE product.



Copies of "G-E Ham" News can be viewed or downloaded at: [http://n4trb.com/AmateurRadio/GE\\_HamNews/ge\\_ham\\_news.htm](http://n4trb.com/AmateurRadio/GE_HamNews/ge_ham_news.htm)

## RCA Ham Tips (1938 to1970)

A typical "Ham Tips" issue contained various types of articles, from instructions for building various types of equipment and antennas to theory articles on such things as The Basics of Propagation, How RF Amplifiers Work, etc. Like the Ham News, many pictures and diagrams were included to illustrate the text, making "home brewing" easy to do. The magazine was free from RCA dealers or cost \$1 a year for eight copies mailed to a ham's home.



Copies of "RCA Ham Tips" can be viewed or downloaded at: [http://n4trb.com/AmateurRadio/RCA\\_Ham\\_Tips/rca\\_ham\\_tips.htm](http://n4trb.com/AmateurRadio/RCA_Ham_Tips/rca_ham_tips.htm)

Many of the tube construction articles may be outdated. However, the transistor construction articles and the theory articles are not outdated. These publications still offer very interesting reading.

Thanks to N4TRB for making these magazines available. Thanks to W9UW for pointing out this site to me.

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### YOUR ASSISTANCE IS REQUESTED

Can we help? You bet!

Greetings,

My name is Jeff Demers, N1SNB. I wanted to take a quick moment to tell you about a new program to support youth activity on the HF bands. Chances are, if you were like me, getting on the air after getting your first license was a little challenging. Parents were bugged. Pennies were saved. Numerous compromises, measures were taken to get that first station on the air! My company, Amateur Radio Supplies LLC, of Haverhill, Massachusetts seeks to help a few lucky young hams get on the HF bands and make some contacts! Do you know any deserving young hams? We will be giving away 3 complete HF stations per year in order to support activity on the ham bands, Details at: <http://www.amateurradiosupplies.com/youth-s/222.htm> My sincere hope is to help make sure this program is a success. The more kids we can get on the air, the better! If you have a young ham to nominate, email us. Otherwise individuals are invited to apply right from our website: <http://www.amateurradiosupplies.com>.

Your support is greatly appreciated. The future of ham radio depends on youth activity. Please help spread the word.

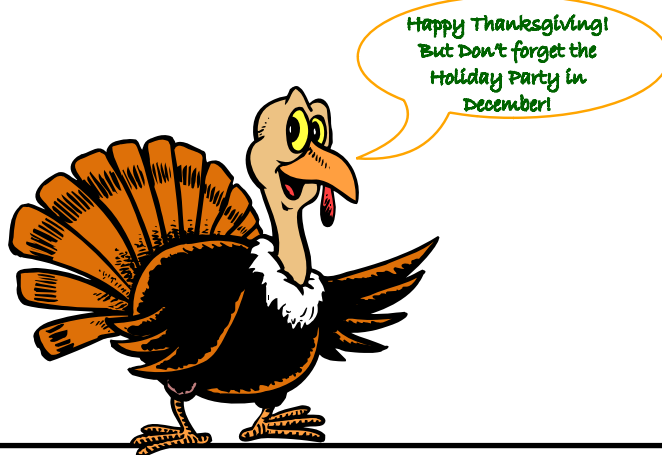
73!

Jeff Demers, N1SNB

President - Amateur Radio Supplies

Note to DRC Members & RT readers:

Due to the fact that many ISP email clients reject documents which contain URLs with active hyperlinks, they are removed from RoundTable articles. However, Adobe reader recognizes URLs and allows users to follow links within a document. If you are using another reader you may need to highlight, copy and paste the link into your browser to view the web content. Editor

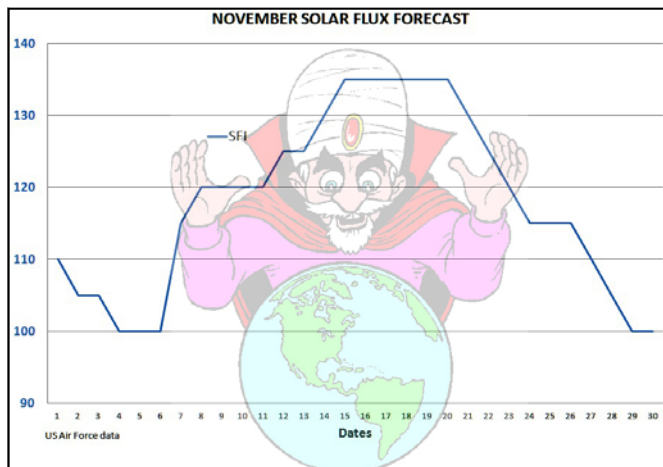
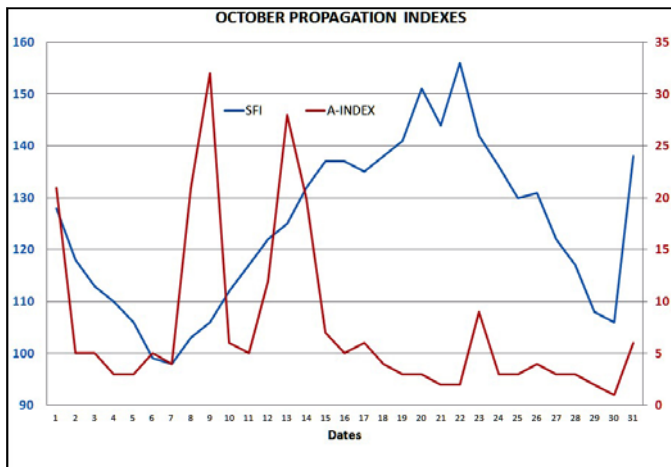


### PAST & FUTURE PROPAGATION CONDITIONS

By Bill – 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. Issues of the Roundtable are available at [www.w0tx.org](http://www.w0tx.org).



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## UP COMING EVENTS

### NAØTC – 285 TechConnect Radio Club 2012 Fall TechFest

The 285 TechConnect Radio Club (NAØTC) is pleased to announce its 2012 Fall TechFest. This event will be held on Saturday, **Nov. 3, 2012: 9:00am. - 4:00pm.** Check-In: 8:00 - 8:45am at the Lakewood Elks Club, 1455 Newland Street, Lakewood, CO 80214 Pre-register is recommended by contacting k0nnc@arrl.net.

Topics include Homebrewing an HF Software Defined Radio, Doing a Lot with a Little (Low Power Contesting), Yagi Antennas and Antenna Design, D-Star Repeater Installation – Program Management Perspective, Using WSJT FSK441 for VHF Meteor Scatter, and Amateur Radio Emergency Services (ARES).

For more information go to: [www.na0tc.org](http://www.na0tc.org).

## HAMFESTS & CONVENTIONS

The following are the HAMfests & Conventions which have been registered with the ARRL so far. More information can be found on [www.arrl.org/hamfests](http://www.arrl.org/hamfests).

**November 3 – 285TechConnect RC, Fall TechFest**  
Lakewood Elks (Club See information at left.)  
<http://www.na0tc.org>



### 2013

**May 31 – Rocky Mountain Division Convention**  
Rocky Mountain Park Inn, Estes Park,  
Colorado  
<http://www.hamconcolorado.org>



The Denver Radio Club  
Is an ARRL  
Special Service Club  
Support your hobby  
Join the ARRL TODAY



<b>NOVEMBER 2012</b>							<i>DRC Net Sunday's at 8:30pm Local on 145.490 &amp; 448.625 (No PL)</i>
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
				1	2	3 <i>ARRL November CW Sweepstakes Begins 2100U ARRL EME Contest Begins 0000U Ends 2359U Nov. 4</i>	
4 <i>Mountain Standby Time Begins</i> 	5 <i>ARRL November CW Sweepstakes Ends 0259U</i>	6 <i>Election Day Go VOTE!</i> 	7 <i>Learning Net 7:30pm</i>	8	9	10	
11 <i>Veteran's Day</i> 	12	13 	14 <i>Learning Net 7:3pm</i>	15	16	17 <i>ARRL Nov. Phone Sweepstakes Begins 2100U</i>	
18	19 <i>ARRL Nov. Phone Sweepstakes Ends 0300U</i>	20 	21 <i>DRC Meeting Elmer 6:30pm General 7:00pm</i>	22 	23	24	
25	26	27	28 <i>Learning Net 7:30pm</i> 	29	30 <i>ARRL 160 Meter Contest Begins 2200U Ends 1600U on Dec 2</i>		

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## DRC REPEATERS

BAND	Freq / Shift / PL Tone	Additional Information
6m	53.090mHz (-1mHz)	
Packet	145.05mHz<>14.105mHz	
2m	145.490mHz (-) 100Hz PL	<a href="#">Linked to the 70cm - 448.625mHz machine.</a>
2m	147.330mHz (+) 100Hz PL	<b>Local Area, Members Auto-Patch Does Not TX a PL!</b>
2m	147.330mHz (+) 131.8Hz PL	<b>Not in operation at this time!</b>
1.25m	224.380mHz (-) 100Hz PL	
70cm	447.825mHz (-) 100Hz PL	<a href="#">Saint Anthony's</a>
70cm	448.625mHz (-) 100Hz PL	<a href="#">Linked to the 2m - 145.490mHz machine.</a>
70cm	449.350mHz (-) 100Hz PL	<a href="#">Wide area coverage with Echolink Node # 4140.</a>
70cm	446.7875mHz (-)	<a href="#">MotoTRBO Repeater   Slot 1 – DMR-MARC WW, Slot 2 – Local</a>

## EDITOR'S NOTE

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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@arrl.net. **Submission deadline is the 25th of the Month. Editor**