

**Northern Colorado Amateur Radio Club**

P.O. Box 272956  
Fort Collins, CO 80527-2956

# **The Tribander**

**The monthly Newsletter of the Northern Colorado Amateur Radio Club**

**Club Meetings are held on the 3<sup>rd</sup> Saturday of each month.**

**Firehouse Restaurant**  
1163 Main Street  
Windsor, CO 80550

**All are welcome and encouraged to attend.**

# NCARC Club Information

## Club Officers

<b>President</b>	<b>Dan Magro</b>	<b>W7RF</b>	<b>(970)295-4200</b>	<a href="mailto:w7rf@radiodan.com">w7rf@radiodan.com</a>
<b>Vice President</b>	<b>Tom Jungmeyer</b>	<b>K1TJ</b>	<b>(970)484-8329</b>	<a href="mailto:tom@completetowing.com">tom@completetowing.com</a>
<b>Secretary</b>	<b>Dave Langenberg</b>	<b>KC9FOO</b>	<b>(773)612-8435</b>	<a href="mailto:dave@thelangenbergs.com">dave@thelangenbergs.com</a>
<b>Treasurer Membership Chair</b>	<b>Willis Whatley</b>	<b>WA5VRL</b>	<b>(970)407-6599</b>	<a href="mailto:whatley@frii.com">whatley@frii.com</a>
<b>Interference Coordinator</b>	<b>Larry Arave</b>	<b>W7LRY</b>	<b>(970)206-1281</b>	<a href="mailto:larv@outdrs.net">larv@outdrs.net</a>
<b>Newsletter</b>	<b>Chris Howard</b>	<b>W0EP</b>	<b>(970)493-2309</b>	<a href="mailto:chris@yipyap.com">chris@yipyap.com</a>
<b>Technical Chair</b>	<b>Eric Slutz</b>	<b>N0EAS</b>	<b>(970)282-3752</b>	<a href="mailto:eric@redginger.com">eric@redginger.com</a>
<b>Hamfest Chair</b>	<b>Matt Kassawara</b>	<b>KG0W</b>	<b>(970)433-2123</b>	<a href="mailto:battery@writeme.com">battery@writeme.com</a>

## NCARC Repeaters

<b>W0UPS: 145.115 MHz</b> – (144.515 MHz Input) 100 Hz CTCSS Subtone (1* on, 0* off) Autopatch <b>Echolink Node 4236</b> (40-32.926N, 105-11.898W, 7229 ft) Horsetooth Mountain, west of Fort Collins, CO
<b>W0UPS: 447.275 MHz</b> – (442.275 MHz input) 100 Hz CTCSS Subtone Autopatch (40-32.926N, 105-11.898W, 7229 ft) Horsetooth Mountain, west of Fort Collins, CO
<b>W0UPS: 224.520 MHz</b> – (222.920 MHz input) 100 Hz CTCSS Subtone (40-32.926N, 105-11.898W, 7229 ft) Horsetooth Mountain, west of Fort Collins, CO
<b>W0UPS: 146.625 MHz</b> – (146.025 MHz Input) 100 Hz CTCSS Subtone (40-50.266N, 105-3.017W, 5600 ft) SW of the Rawhide Power Plant, 17.5 miles north of Fort Collins, CO
<b>W0UPS: 146.850 MHz</b> – (146.250 MHz Input) 100 Hz CTCSS Subtone (1* on, 0* off) (40-18.310N, 104-35.884 W, about 4985 ft) SE of Greeley, CO <b>New location</b>
<b>W0UPS-5: 144.390 MHz</b> – APRS Digital Repeater (40-32.926N, 105-11.898W, about 7229 ft) Horsetooth Mountain, west of Fort Collins, CO
<b>W0UPS: 448.025 MHz</b> – (443.025 MHz Input) 100 Hz CTCSS Subtone <b>ARES Rptr</b> (40-26.650N, 104-59.370W, about 5192 ft) Budweiser Event Center on I-25 at MM259

## Nets

<b>ARES District 10 Information Net</b>	<b>Thursday</b>	<b>7:00 pm</b>	<b>145.115 MHz</b>
<b>ARES Statewide Net</b>	<b>Sunday</b>	<b>8:30 pm</b>	<b>145.310 MHz</b>
<b>Central Colorado Traffic Net</b>	<b>Daily</b>	<b>7:30 pm</b>	<b>145.310 MHz</b>
<b>220 MHz Informal Net</b>	<b>Monday</b>	<b>7:00 pm</b>	<b>224.520 MHz</b>
<b>Tech Net</b>	<b>Wednesday</b>	<b>7:00 pm</b>	<b>145.115 MHz</b>

## Web Page

<http://www.ncarc.net>

**Notice: NCARC Name Badges are available for only \$10 each.**

Just send your name; as you want it on your badge to **W5WIW** Willie Williams, 434 Magnolia Ct, Eaton, CO 80615, [W.I.Williams@msn.com](mailto:W.I.Williams@msn.com). It can be your full name, your first name, or your nickname and your call sign. Mail your payment for the Name Badge(s) to the NCARC P.O. Box (or bring it to the club meeting) and allow 3 to 4 weeks for processing. To view a sample of the name badges, just come to the club meeting. Willie also has shirts, patches, mugs, caps, jackets and other NCARC goodies available.

**Upcoming Events**

January 16 Northern Colorado ARC Winter Hamfest (Fort Collins, CO)  
February 7 Aurora Repeater Association Swapfest (Brighton, CO)  
May 28-30 2010 Rocky Mountain Division Convention (Casper, WY)

**Remember New Club Dues Schedule**

Club dues will be due on Jan 1st and Paul Rulon will be taking care of this. You may pay the monthly amount for the year according to when you joined or wait until you are due and pay the remainder of the next year. Either way, it works out the same. Once we are done with this year's transition, everyone will be due on Jan 1.

**New officers were elected for 2010 as follows:**

- President - Matt Kassawara KGØW
- Past Pres (board member for 1 yr. term) - Dan Magro W7RF
- Vice Pres - Willis Whatley WA5VRL
- Secretary - Jerry Williams KE5IMP
- Treasurer and Membership - Paul Rulon KDØBER
- Trustee - Steve Henry N7GN
- Control OP - Tom Jungmeyer K1TJ
- Interference Officer - Chris McNair KDØEGE

Hamfest chair and Newsletter Editor are still up in the air.

**New 900 MHz Repeater**

K1TJ/R 900 MHz repeater on the air on at 927.950 -25MHz offset and 100Hz pl. This is in the testing stages at my house but should get located on a high point soon. Look at <http://www.qsl.net/kb9mwr/projects/900mhz/plan.html> for more information about how to get on 900 MHz cheaply and easily. I have modified Motorola MaxTracs, Kenwood TK-931s and TK-981s without allot of difficulty. I might have a few MaxTracs for sale at or about \$50 each working on the ham band. If not, watch eBay, the Kenwood TK-931 and TK-981 are the simplest to program and they may work pretty well without any other modifications. The TK-931 and the MaxTracs will have less receiver sensitivity unless you change the front end filters but still very usable.

Thanks, Tom  
K1TJ

**Web Links about Batteries****Lithium Ion Info:**

[http://powerelectronics.com/portable\\_power\\_management/battery\\_charger\\_ics/proper\\_care\\_extends-li-ion-battery-0425/](http://powerelectronics.com/portable_power_management/battery_charger_ics/proper_care_extends-li-ion-battery-0425/)

**Lead Acid/Gel Cell Info:**

[http://www.windsun.com/Batteries/Battery\\_FAQ.htm#AGM](http://www.windsun.com/Batteries/Battery_FAQ.htm#AGM)

## Editor's Notes

After arriving at our new QTH and getting some of the household goods unpacked I tackled the problem of putting up some sort of antenna. It just so happens that I was the happy recipient of a store-bought G5RV which came to me by random drawing at the HamCon convention this past May in Estes Park. I also happened to have some 4 ft. stackable aluminum pole sections. A couple of trips to Lowe's and Wal-Mart for rope and tent pegs (concrete form stakes 2' long) and I soon had that G5RV up at 20 ft. And it has stayed up for the past month.

I dug out the TenTec Century 21 first (which just goes to show that I really am a CW man in my heart of hearts) and I was on the air in time for the ARRL CW Sweepstakes. I had some fun but soon decided that a direct conversion receiver isn't the best tool for contesting. A bit later I was able to unearth my Kenwood TS-820 which is a bit better receiver for crowded band conditions and has 4 times the output power. And that's how I dove into the CQ Worldwide DX CW contest this past weekend. I've actually got quite a few DX contacts in my log now, nowhere near DXCC, but like I say I'm having fun at it so don't burst my bubble.

There is something seriously cool about direct conversion receivers. Paul (kd0ber) sat by me at Field Day last summer as I used the Century 21 and I tried to explain to him about picking out a signal as I slowly turned the tuning dial, listening as the tone started high like a whistle then went down to a rumble then to nothing (zero beat) then back up on the other side to eventually be a whistle and then nothing. It gives me a kick anyway, even if not everybody feels it.

The whole thing about zero beat and transmitter/receiver offset I find interesting. If you only operate SSB you can pretty much ignore it. Just tune in whoever you're talking to and if they sound normal you probably sound normal, or close anyway. And I admit that single-signal reception is a wonderful thing. But that direct conversion effect is a glimpse into the inner workings of frequency mixing and something that I don't think many new hams understand, I know I didn't.

You ever get up in the middle of the night and go to the bathroom? When you're done you turn out the light and try to find your way back down the hallway without killing your shin on a coffee table or piano bench or something. And you can see things a bit if better if you don't look directly at them because the bright light has desensitized the center of your retina.

Frequency mixing is like that. The sound you hear tuning across a signal with a direct conversion receiver is the frequency difference between the incoming signal and the oscillator in your radio. When there isn't any difference than you don't hear a thing: zero beat. To actually hear the signal you have to tune off to one side a bit. Now, if you transmit off to one side then the other guy will try to go a bit off to one side of your signal. And on the next round you go off to one side a bit more, and on it goes as the pair of you inchworm across the band. No good. So you zero beat, then you use a bit of receiver incremental tuning (RIT) to put your ears a bit high or low from where your mouth is operating. He and you both transmit on the same frequency but you listen slightly somewhere else.

In a modern single-signal radio (like the TS-820) the internals of the radio already have decided what the receiver offset is going to be. As you tune across a signal you only hear half of the picture, the rest is filtered out. The problem then becomes figuring out how to put your transmitter exactly on the frequency you want. Radio designers usually give you a hint by setting the sidetone audio frequency to be the same as the receive/transmit offset. (Still talking about CW here.) If you can get the received signal to sound with the same note as what you hear when you transmit then you are close.

The reason this comes up at contest time again is this: the signals are so jam packed into the band, and everyone just gives their callsign and that's it. Someone calling "cq test cq test" in that mess has his narrow filters turned on and is listening for responses in a pretty small frequency range. As a responder I've got to know where I'm putting out my signal or it is going to be outside of his filter. He won't hear me; or if he does I'll sound like I'm talking to someone else. As radios get more sophisticated with their roofing filters and drop-dead DSP filters the problem just gets worse. Those of us with 1 kc tic-marks every 1/8<sup>th</sup> of an inch on an analog dial can be off by 300 Hertz and totally out of the picture. If we know how to zero beat with the radio that we are using then we can plant our little signal, whisper our sweet nothings right into his ear.

On this TS-820 I flip the VOX/MAN switch to MAN and my keyer sounds the sidetone without actually keying the radio. So I flip that switch and hold the dits down: dit dit dit dit... and tune until my dit sounds like the other guy's dits and I've got it. I flip back to VOX and my keyer is ready to key the radio. On the Century 21 there is a "zero beat" button that removes any offset from the receiver. I push the button, tune until the other station's signal goes completely away, then release the button. I touch up the RIT to get whatever note is pleasing to my ear. I think the zero beat button method is easier. But I'm kind of odd that way maybe.

And I haven't even gotten into how to operate AM with my NCX-5 and it's always-on sideband filter. That's a trip, let me tell you. If I'm still doing the newsletter bit at the beginning of the contest season next fall you may hear about that.

Animated diagram showing the flow of electrons and holes in a bipolar junction transistor while you interactively vary the base voltage:

[http://www.learnabout-electronics.org/bipolar\\_junction\\_transistors\\_05.php](http://www.learnabout-electronics.org/bipolar_junction_transistors_05.php)

(from the emrfd yahoo group)

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### **NCVEC to Release New Technician Question Pool to Public in January 2010 (from ARRL)**

The Question Pool Committee (QPC) of the National Conference of Volunteer Examiner Coordinators (NCVEC) is due to release the new Technician class (Element 2) question pool to the 14 VECs on December 1, 2009; it will be released to the public in January 2010. Each question pool for the three Amateur Radio license classes – Technician, General and Amateur Extra – is reviewed on a four-year rotation. This new Technician class pool will become effective on July 1, 2010.

The new question pool will become effective for all examinations administered on or after July 1, 2010, and it will remain valid until June 30, 2014. The current Technician question pool that became effective July 1, 2006 will expire June 30, 2010. The new Technician pool contains approximately 400 questions, from which 35 are selected for an Element 2 examination. This question pool will contain graphics and diagrams, something new for this element.

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I received a nice article from Jim (n0xda) about buying real estate with ham radio activities in mind. I won't print it all here, but can forward it to anyone interested. Or contact Jim directly if you have questions. Thanks for sending that along Jim!

“Jim Walker – N0XDA - is an extra class ham and is a REALTOR® with emphasis on helping hams find and sell homes in the Northern Colorado Front Range. He is currently the President of the Longmont Amateur Radio Club, a VE, and the trustee of LARC's W0ENO stations.” Office: 601 South Bowen Street, Longmont, CO 80501 (303) 772-9620

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### **ARLP049 Propagation de K7RA (from ARRL)**

This is a follow-up to last Wednesday's pre-Thanksgiving Propagation Forecast Bulletin ARLP048. It was a little early to provide the complete Thursday through Wednesday sunspot, solar flux, and A index that normally appears in Friday's bulletin, so we are including it here at the bottom of this bulletin. The next bulletin will be out four days from now.

Our exciting period of nearly daily sunspot activity ended with the first spotless day on November 23, and the Sun has been blank since then. A look at the STEREO image at <http://stereo.gsfc.nasa.gov/> shows a bright active area perhaps five days over the eastern horizon, but we don't know if that will give us sunspots or not.

As the two STEREO craft move further from earth, the visual gap on the Sun's far side is gradually closing, and we look forward to the time in 2011 when all of the Sun will be visible from STEREO and earth. Currently the gap is about 14.3%.

You can calculate the approximate percentage of the Sun in that dark spot by using the "Where is STEREO?" link on the STEREO home page, which takes you to <http://stereo-ssc.nascom.nasa.gov/where.shtml>. Check the "Separation angle A with B" stat at the bottom, subtract that number from 180, divide the result by 360, then multiple that result by 100 to get a percentage figure.

You can check future dates by clicking on the "STEREO Orbit Tool" link, taking you to <http://stereo-ssc.nascom.nasa.gov/where/>.

When you check February 1, 2010 at 0000 UTC it yields a separation angle of 135.197 degrees. Subtracted from 180 degrees, this yields 44.803, divide that by 360, then multiply by 100, and you get approximately 12.45% remaining on the dark side. October 1, 2010 yields 5.58%, and January 1, 2011 just 1.26% in the dark. Check the arithmetic!

WorldRadio Online posts a new issue on the twentieth of each month, and each has a column on propagation by Carl Luetzelschwab, K9LA. You can download it at, <http://www.cq-amateur-radio.com/WorldRadio.html> and read Carl's article on "The Impact of Deep Solar Minimum on 160m Propagation." Carl's column begins on page 28 of the current December issue. The January 2010 issue should appear online on December 20.

Silent for 18 months, it seems as if 25 year old OSCAR-11 has reactivated itself on 145.826 MHz. After its batteries failed, UO-11 remained operational with good signals when its solar cells were exposed to sufficient sunlight.

The UO-11 Control Station at G3CWV came out of retirement last weekend with Clive noting, "I have received two reports from Keith N4ZQ that he has heard UO-11 on 19 November at 13:33 - 13:43, and on 22 November at 13:02 UTC. The frequency is 145.826 MHz. Mode is FM."

Clive says, "I've been receiving good signals from the satellite during the morning passes, when it was not in eclipse. However, on November 27 nothing was heard this morning, so the watchdog timer may have caused the bird to switch off. I would be interested in any reports of reception AFTER 09:30 UTC 26 November."

Since last week, reception reports have been rolling in from around the world:

- KB2M reported he has been collecting telemetry from UO-11 for the last week or so. His files are available for anyone decoding the telemetry.
- KU7Z heard strong signals from UO-11 on November 26 in Utah.
- VK5DG heard UO-11 buzzing away over the west half of VK on November 26 at 0003 UTC.
- NH6VB reported from Hawaii his 706MKIIG and Arrow antenna on a photo tripod, copied a weak, barely above noise level, but it was there.
- ZL2BX says he heard very strong signals from UO-11 during the entire pass on November 22. Up to 60db over S9 almost all pass. (TS-2000, 10 el yagis, preamp at ant). Also same report from VK2AYE.
- W5IU heard the old familiar "buzz" loud and clear on a Yaesu FT-530 HT and a hand held three element Yagi on a November 23 pass over Fort Worth, TX, this morning. It reached full scale on the FT-530 during a good part of the pass.
- K9MSG in Indianapolis reported that on November 24 he heard UO-11 on two passes using a ground plane vertical on a tower. Signals on the first pass were S-2 to S-7 signal level and reception was very noisy. The second pass of that day yielded reception at S-1 to S-3 with 1 to 3 second noise bursts.

Clive wraps up with, "Very many thanks to everyone who sent reception reports of this satellite or posted them to the amsat-bb board. I've been overwhelmed by the number received! I've replied to most, but my apologies if I've missed anyone."

Further details, including an audio clip to help identify the satellite are on Clive's OLD website at:

<http://www.users.zetnet.co.uk/clivew>

[ANS thanks Clive, G3CWV for the above information]

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### Help Your Club – Attend the Hamfest – January 16, 2010, 8:00 AM

I'm sure there will be a need for volunteers to collect tickets, sell food, help with prize distribution, etc. At a very minimum try to attend the club's hamfest. Get a table and turn some of that old dusty junk into rent money (or bring the rent money and buy some new treasures!) Print off a flyer and post it on the bulletin board at work or at church or at the grocery store. Contact Matt, kg0w, to help with volunteer tasks: email [battery@writeme.com](mailto:battery@writeme.com)

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### Final Note

The November 2009 Electric Radio magazine recently came to my door and I sat down and devoured it all as usual. One article in particular was very interesting: Milestones in the History of Amateur Radio: Amateurs Adopt the UV-200 and UV-201 for Prototypical Vacuum-Tube Receivers. The title is a mouthful! But the interesting part was the contents. The first generally available, manufactured vacuum tubes were produced in 1920: the UV-200 and UV-201 from Radiotron. The article includes pictures of both.

The pictures looked familiar. A few years ago I answered some kind of email or internet advertisement. A ham out near east of Windsor (I'm sorry to say I don't remember exactly who it was) had some old tubes, an old tube tester and some cable to give away. That is definitely my song! So I went over and picked them up. The old tubes have been decorating my office ever since and now sit on the windowsill here at my home office at the new QTH. One of those old tubes is a UV-200.

Now we have tiny surface mount parts and software defined radios. Who knows where we will be in another 90 years!

