REPEATER RAG

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April, 2023

Denver Radio League's
Quarterly Newsletter

From The Editor

Modern ham radios come in one color: Black. Visual pizzazz is confined to a color LCD screen. Inside their cases are rows of tiny immovable parts.

Equipment from the 60s and 70s like Collins, Heathkit, Drake and E.F. Johnson had two-tone cases and chromed knobs. Under the hood were parts that moved when knobs turned.

Today's rigs are technically superior to those of old: Higher efficiency, better frequency stability, heightened sensitivity, and more versatility. They deliver more bang for the (inflation adjusted) buck. Next-gen transceivers may live under the desk like a linear or power supply.

I miss the style of classic amateur radio equipment. As incredibly functional as my modern transceiver is, I'll never admire it for its sensual appeal.

Jim KEØNRE
Editor

To submit an article for publication, email it to the Editor: KEØNRE@ARRL.NET

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Visit our website for up-to-date information

http://denverradioleague.org

In This Issue

FCC News

On December 8, 1941 in the interests of national security, the Federal Communications Commission issued Order No. 87, the day after Pearl Harbor was attacked.

The order halted all amateur radio station operations and they stopped issuing amateur station licenses. The fear was that enemy aircraft would receive amateur radio transmissions and use those signals to navigate towards their intended targets in the United States.

Eighty years ago this May, the FCC announced adoption of General Order No. 115 reinstating all amateur radio operator licenses which expired after December 7, 1941 and extended them for a period of three years.

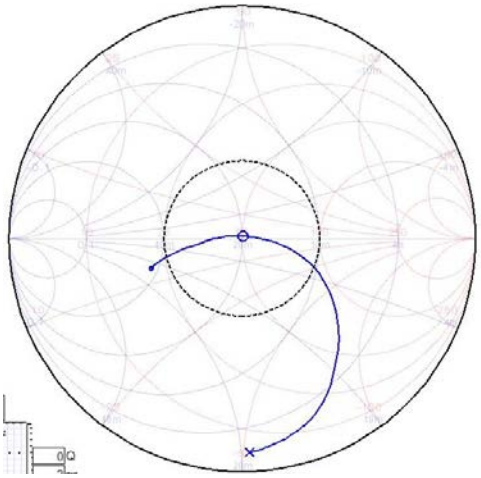
In the same order the FCC provided that all amateur operator licenses expiring between May 25, 1943 and December 7, 1944 inclusive, also be extended for a period of three years beyond the expiration date on each license.

The FCC was quick to act at the onset of WWII and nearly as quick to compensate Hams for the loss of their operating priviledges as the end of the war neared. But it wasn't until 1946 that Hams regained the use of all their HF bands.

January Meeting Summary

Bemis Library was closed for chemical decontamination work. The DRL met instead on Zoom. We took the opportunity to further plan for our first ever participation in a Winter Field Day event.

A description and photos of that event appears beginning on page 11 of this newsletter.



Preview of April 20 Meeting

Dave KC7MP has longed to work the 160 meter band since he got his ticket. His rigs are capable but, like so many of us, limited space prevented him from erecting a huge antenna. Now, Dave's finally found a way to get hundreds of feet of wire in air and get into the ether. Come learn how he did it.

We'll also start plans for Summer Field Day on June 24-25.

Morse Code Class

DRL's Morse code class took a hiatus since the Winter holidays. Code classes will resume soon. They're held at 8:00 pm immediately following the Thursday DRL Fun Net. Contact Dave KC7MP for more information. His contact information is available for lookup through QRZ.com.

A ●−	J ●−−−	S ●●●
B −●●●	K −●−	T −
C −●−●	L ●−●●	U ●●−
D −●●	M −−	V ●●●−
E ●	N −●	W ●−−
F ●●−●	O −−−	X −●●−
G −−●	P ●−−●	Y −●−−
H ●●●●	Q −−●−	Z −−●●
I ●●	R ●−●	

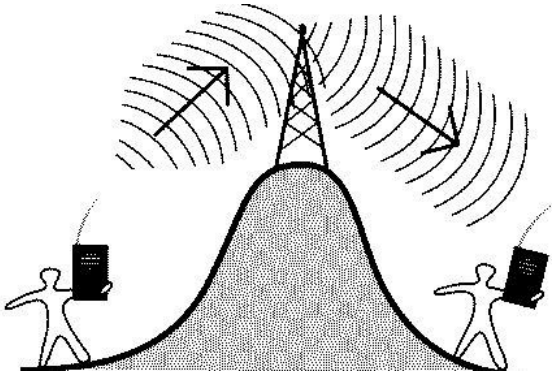
Repeater Update

Maintenance and Repairs

The 146.880 repeater is back on the air and as good as or better than ever!

A DRL Rescue Party visited Warren Peak repair and replace ailing devices. A additional benefit is that the 145.050 packet system is seeing great use.

Read more about what transpired on page 7.



DRL FUN NET

The DRL Fun Net airs Thrusdays at 7:30 PM on the 146.880 repeater. We discuss anything related to amateur radio. You don't have to be a DRL member to participate. All licensed hams are welcome to join in.

DRL REPEATERS

Since 1967, the Denver Radio League has operated repeaters for the benefit of the Denver amateur radio community. Today, we operate and maintain four repeaters covering most of the Denver metro area. Repeater use is restricted to properly licensed hams.

VHF

145.050 MHz, packet only
146.640 MHz, -600 kHz, 100 Hz CTCSS
146.880 MHz, -600 kHz, 100 Hz CTCSS

UHF

445.600, -5 MHz, System Fusion, Wires-X

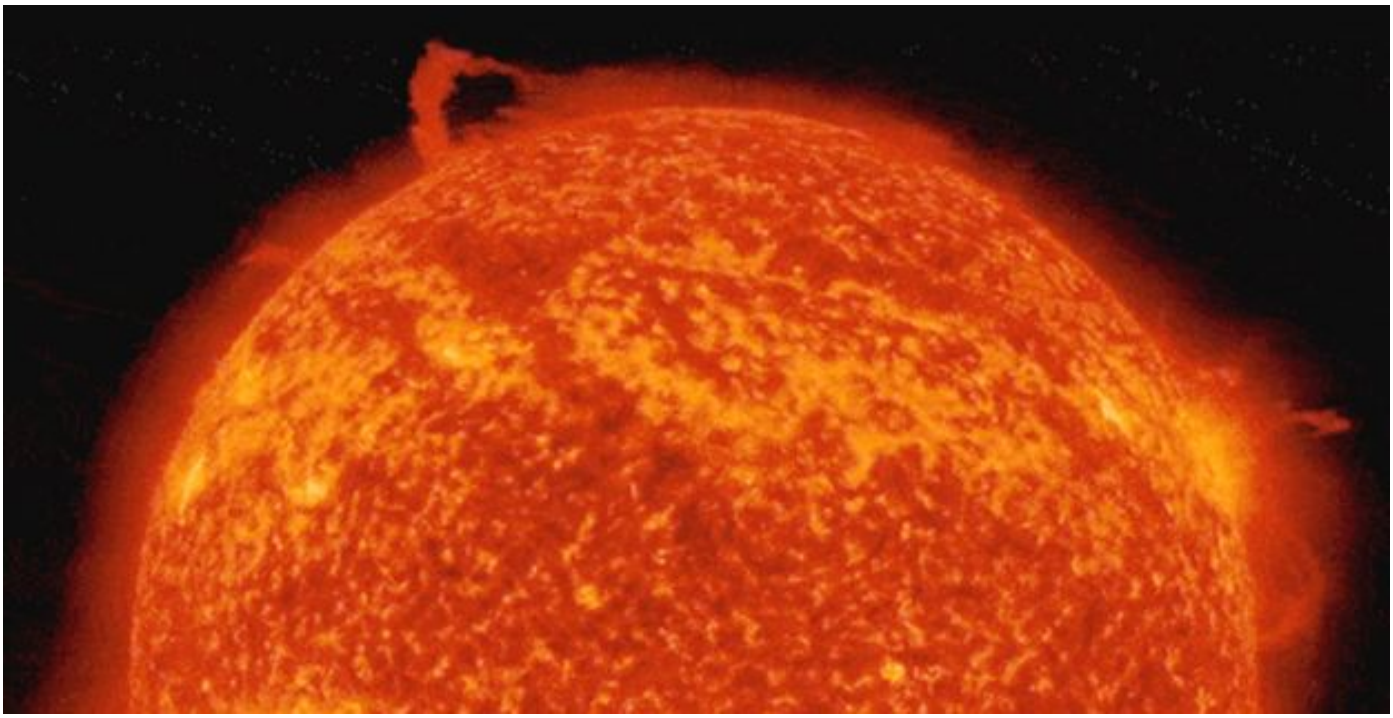
For additional information concerning location and coverage maps for each repeater location, refer to the DRL website:

http://denverradioleague.org/repeaters

If you detect a problem with our repeaters, contact a Board member to report it.

Image courtesy of NASA

SOLAR TRENDS



Sun-nado!

A huge filament of plasma broke lose from the sun's surface and is circling its north pole like a vortex in the image above. The significance of this is a mystery to physicists.

Something odd happens every 11 years at the sun's 55 degree latitudes. Solar scientists know it has something to do with the reversal of the sun's magnetic field that also happens once during every solar cycle, but they have no clue to its cause. They know this phenomenon moves toward the pole one time, disappears and then comes back three or four years later in exactly the same region.

Scientists know that the sun's polar regions play a key role in the generation of its magnetic field, which, in turn, drives its 11-year cycle of activity. Precisely how this may drive each solar cycle needs more investigation.

Meanwhile, sunspot numbers and the solar flux index (SFI) have retreated from their spectacular January numbers. SFI is hovering around the mid-100s. That still makes for good propagation though not as good as most of us would like. SFI exceeded 200 in late winter. Maybe we'll see it hit that level again in a few months.

Solar cycles tend to wax faster than they wane. Assuming that pattern continues for Cycle 25 we should see the best HF

propagation conditions is a little over a year.

Meteors Scatter

We've heard of meteor scatter communication but few of us have deliberately tried to do it.

A popular way to increase VHF contact range is to reflect radio signals from the ionized trails left by neteors burning up in the Earth's atmosphere. Trails appear at an altitude around 60 miles and only last for 0.1 to 2.0 sec. But if two hams can see the same piece of sky, they can leverage meteor scatter to briefly communicate using short repeated messages.

WSJT-X supplies the MSK144 mode that's designed specifically for making meteor scatter contacts.

MSK144 is a Minimum Shift Keying FSK signal. It transmits 144-bit packets at a baud rate of 2,000 bps. As with FT8, QSOs are carried out with alternating transmit and receive sequences lasting 15 s. Successful meteor scatter contacts can be made with 100 W and a wire antenna.

The highest MSK144 activity levels are found on 6 meters. The conventional 6 m calling frequency is 50.260 MHz.

Best meteor activity is midnight to 10 am local time during the months of May through September are the most favorable months.

This article is a very good resource for gaining more knowledge and getting started:

http://pnwvhfs.org/conference/2019/pdf/Intro-to-Meteor-Scatter-by-Barry-K7BWH-v4.pdf

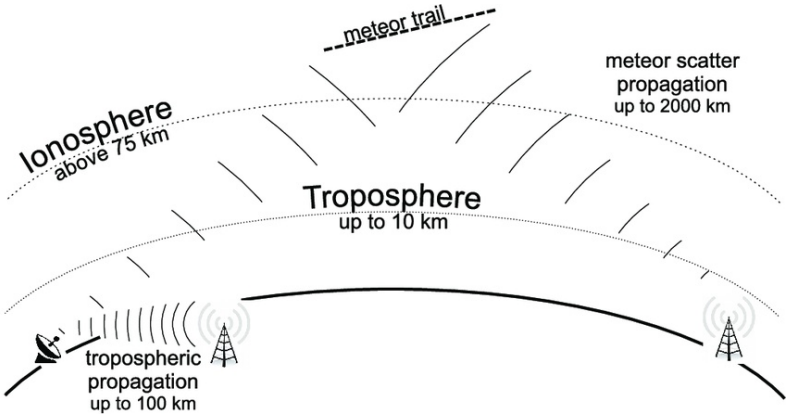
Radio amateures in England are getting serious about learning more about meteor scatter. To find out more about what they're doing and how, go to their website:

https://www.meteornews.net/2022/10/26/uk-radio-meteor-beacon-project/

Here are more links on the topic:

https://k5nd.net/2022/08/harnessing-meteors-for-vhf-qsos/

https://www.parkerradio.org/community/general/simple-guide-to-meteor-scatter-msk-144/



CURIOSITY CORNER

We're Amateurs So There's Always More To Learn

DRL's 88 repeater had been going progressively "deaf" for most of 2022. Eventuallly, it became useless at distances more than a mile or two from it. What was wrong? Was it a simple fix?

Tom KD4DT had trekked to the repeater site on Warren Peak during favorable times during Winter. He determined a duplexer in the antenna feed line wasn't performing as it should and purchased a new one to replace it. Snow on the peak prevented DRL members from doing further work until Spring.

Ben KBØUBZ and Dan NØPUF made two trips to Warren Peak on April 7-8 to continue to troubleshoot and fix our ailing 146.880 repeater. Dan and Ben put their heads together and sorted through the symptoms to diagnose what was causing the deafness. Here is what they found.

On their first trip to Warren Peak, they discovered a 20-amp power supply had died. That's the supply that delivers power to the 145.050 packet radio system, the terminal node controller (TNC), and the 146.880's receiver pre-amp.

Without power, the pre-amp wouldn't function. And without the pre-amp's boost, the 88's receiver was unable to

hear weaker signals making the receiver appear to be deaf.

There's not room for two people at the rear of the cabinet housing DRL equipment so Dan bravely volunteered to put his hands on the wires and cables, disconnecting and reconnecting them as efforts progressed.

He disconnected the dead supply and re-wired the packet radio, TNC, and pre-amp to the power supply feeding the 146.880 repeater which, thank goodness, was still working and had enough spare capacity to handle the extra loads.

During their second trip to Warren Peak, Ben and Dan carried up a spare power supply to replace the dead one. Dan re-wired the pre-amp, PACKET radio and TNC to that new supply. Our systems came to life and their ears perked up.

While repairs were underway, Randy NØOEM helped Ben and Dan test the 88 repeater from a distance. The final step was replacing the old duplexer with the new one. Voila!

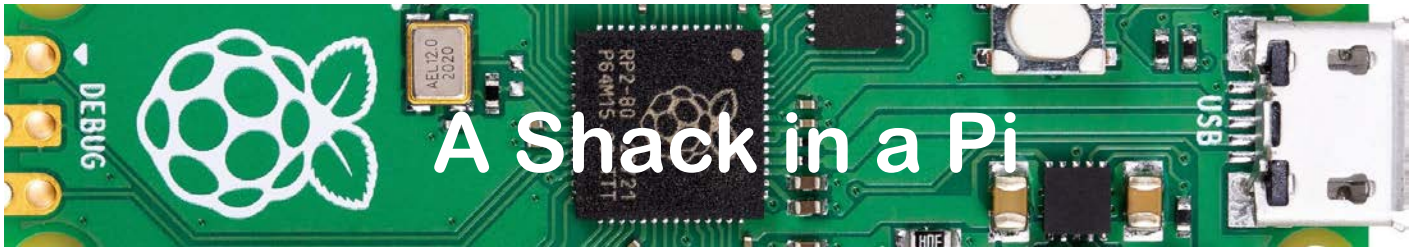
We also want to acknowledge the assistance of DRL members and others who tested the 88 repeater and packet system from more distant sites on succeeding days:

Jack KEØVH

Jim KØUNX

Alan KIØEP

Jim NØTOA



Or... should we say "a Pi in a rig"? The line between computer and radio blurs month after month.

Here is a fully functional transceiver that's powered by a Raspberry Pi. It's available now at https://www.hfsignals.com/index.php/sbitx-v2/

The sBitx comes fully assembled or in kit form. Already have a Raspberry Pi 4 at home collecting dust? You can order the kit without one, insert your own Pi 4 and save a few bucks.

The sBitx is nephew to the uBitx taking capabilities and feature to a higher level. Not only does it do CW and voice, it also natively does RTTY, PSK31 and FT8. And the list of sBitx features doesn't stop there. Packing more power than run-of-the-mill QRP rigs, it's light, compact and quiet.

Would you like to have more features? Unlike other commercial transceivers, t's hackable. Customize its control software and make the sBitx look and work exactly the way you want.

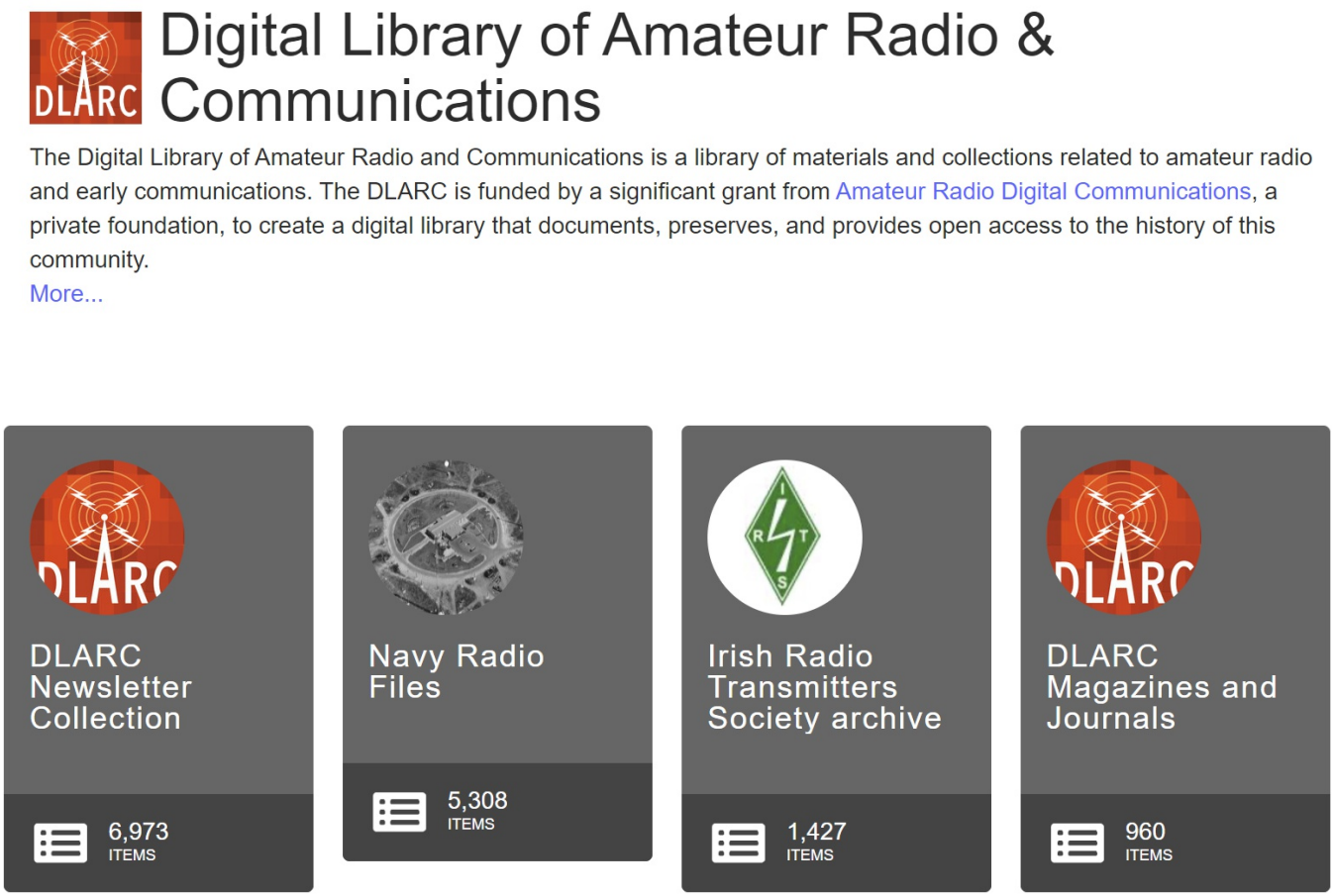
MORE HAM NEWS

Old is new again. The Digital Library of Amateur Radio and Communications (DLARC) is a section of the Internet Archive. It's a library of materials and collections related to Ham radio spanning generations of developments.

This free resource combines archived digitized print materials, websites, oral histories, personal collections and other related records and publications. DLARC is funded by a grant from Amateur Radio Digital Communications, a private foundation, to create a digital library that documents, preserves and provides open access to the history of this community.

Check out the free and ever growing collection at:

https://archive.org/details/dlarc?&sort=-week&page=1



Winter Field Day 2023

Winter Field Day (WFD) is fast approaching. First begun as a test of operators' ability to handle emergency communications under challenging weather conditions, it has since morphed into a fun event. Southern Hams often enjoy pleasant weather in January.

The challenge for those of us in Colorado and lfarther North that time of year is snow, cold, ice and wind. We expected to encounter all four but hoped for the best.

DRL members have enjoyed doing summer Field Days so much that we gave WFD a try this year. Our plan was set up stations in Littleton's Ridgeview Park at 10 AM of January 28. Temperatures began in the high high 20s. Inches of snow covered the ground. The morning sun in a clear sky made it feel warmer.

Situating antennas and a shelter close to them was the first item of business. Small trees gave us attachment points for the ends of three wire antennas.

John KI0H brought a sturdy push-up mast that we used to support feed points of the wire dipoles.

Tom attached a series of hamsticks and a J-pole at the top his own mast. Those antennas spanned 80m through 10m.

Matt W0MKM generously provided foldup tables, chairs and a popup canopy shelter. His shelter had three closed sides that blocked much of the wind.

John added a propane heater to help warm the shelter.

Dave KC7MP, Jim KE0NRE, Tom, John and Matt brought HF transceivers giving us one rig for each HF antenna as well as a VHF/ UHF rig.

Our rigs were powered by batteries or an AC portable generator that John brought.

Set up was finished at noon. We promptly began to make contacts by voice, CW and PSK-31 simultaneously across the bands.

Many people who walk through the park that afternoon stopped to talk with us about what we were doing. Most of them weren't familiar with Ham radio or what it was able to do.

Operating with several different operating modes gave us all the chance to see what's involved. Trying a new mode on a rig that's set up for it is a painless way to get your feet wet.

Weather turned worse as the afternoon went on. Snow showers and swirling winds made operating conditions steadily more difficult.

After a few hours and dozens of contacts, we agreed we'd had enough fun for the afternoon and packed away all our gear.

We policed the park to make sure we'd left no trace we had been there.

Despite a few adversities, everyone agreed it was fun and worth doing again. Some of the lessons learned were:

Bright sunlight makes it hard to read information on equipment LCD displays. Adding a hood helps.

Enclosing only three sides of a four-sided shelter works very well to block the wind but ithat arrangement doesn't do much to retain heat.

Meeting Location

Edwin A. Bemis Public Library

The Denver Radio League meets quarterly at the Edwin A. Bemis Public Library which is located at 6014 S Datura St, Littleton, CO 80120. We get together on the third Thursday of January, April, July and October in the meeting room on the lower level.

Our general meeting starts promptly at 6:30 PM and ends at 7:45 PM.

Members and guests are welcome to attend. Consult our website for last minute updates.

https://denverradioleague.org

DRL Board meetings commence at 6 PM, immediately prior to our general meeting.

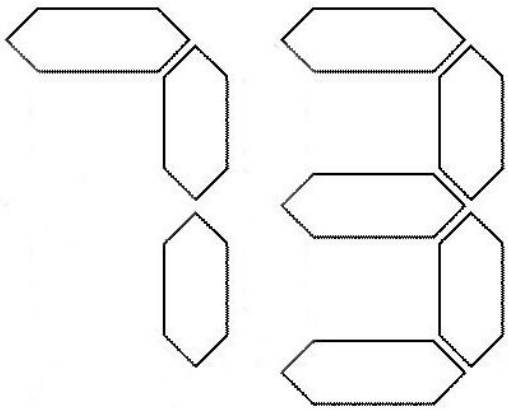
Between meetings, we gather Thursday evenings at 7:30 PM on our 146.880 repeater to discuss anything related to amateur radio. All licensed operators are welcome to join in.

Who We Are

The Denver Radio League was founded in 1969 and has operated continuously ever since. We are dedicated to promoting the art and science of radio communication. DRL is a 501(c)(3) non-profit organization and is affiliated with the American Radio Relay League. We meet quarterly in person and weekly on the DRL Fun Net to share knowledge and experiences and to undertake a variety of radio related activities.

Join or Renew Now

Membership in the Denver Radio League is open to all licensed amateur radio operators. Use the application form on the last page of this newsletter.



DRL Membership Application Form

Name:_____ Call Sign:_____

License Class:_____ (Tech, General, etc.)

Street address (1): _____

Street address (2): _____

City:_____ State:_____ ZIP:_____

Primary Phone #: (_____) _____

Secondary Phone #:(_____) _____

Email address: _____

ARRL Member? Yes No
(ARRL membership helps the club maintain ARRL affiliation)

Denver Radio League dues: $15.00 / year
Membership dues pay for 1 full year of membership

Please attach a check to this form (paying by check is strongly encouraged) made out to:
Denver Radio League (check number_____) and bring to a club meeting or mail to:

Thomas Dall
5630 S. Lowell Blvd.
Littleton, CO 80123
planeup@att.net