

May 2018

(www.k7id.org)

P.O. Box 1765 Hayden, ID 83835-1765

REGULAR CLUB MEETINGS:

Monday, May 14, 7:00 p.m.
Search & Rescue Bldg
10865 N Ramsey Rd.
Hayden, Idaho
Topic: Baluns
Presenters: Tom, W7UAT
Refreshments: ???

VE Testing
Monday, May 14, 5:30 p.m.
10865 N Ramsey Rd.
Hayden, Idaho

Monday, Jun 11, 7:00 p.m.
Search & Rescue Bldg
10865 N Ramsey Rd
Hayden, Idaho
Topic: Making QSL Cards
Presenters: Larry, K6SPP
Refreshments: ???

VE Testing
Monday, Jun 11, 5:30 p.m.
10865 N Ramsey Rd
Hayden, Idaho

Upcoming Events

**Field Day June 23-24, 11 a.m.-
11 a.m.**
Details to follow

Hamfest, July 14
Details to follow

QRM FROM THE PRESIDENT

Larry Telles, K6SPP

I started writing my column out a couple of days ago when the sun was shining. I even had the top down on my convertible. Well, I'm finishing it with the rain pouring down. So much for thinking that we could get outside and work on those antennas, that had been out of limits from a long winter. April is now in our rear-view mirror and I hope sunny days ahead.

This last thing I would like to comment on was our last April KARS activity. That was STEM on the campus of North Idaho College on the nineteenth. We set up a table in the large second floor exhibit room. With the help of Lenny N7MOT, Dave KF7YWR, Jim AD0AZ, Adam N7ISP, and Rod K7ZBE we had our DMR demonstration ready just after the doors opened. There were a lot of people coming past our booth as well as other exhibitors dropping by. A lot of technology was displayed in that room. We made a lasting impression on several young people.

The month of May should give us a good amount of time to plan for Field Day in June. This year it will be June 23-24, 1800 UTC Saturday and running through 2059 UTC Sunday. You will be hearing more about it at the next two KARS meetings. It is a chance for new Hams to sit and listen to what a contest is made of. At the same time, a "newbie" can operate under the K7ID call sign. You might come out and give it a try, I think you will love it!

Our meeting night on May 14 has our own Tom Macy W7UAT as guest speaker. His subject is a very important one, "Baluns." That subject might have come up if you are new to Ham Radio. If you are thinking about antennas, you might need a balun. A balun coil is a type of transformer: it's used to convert an unbalanced signal to a balanced one or vice versa. Balun isolate a transmission line and provide a balanced output. I hope you don't miss Tom's presentation.

Rod K7ZBE, Jim AD0AZ, and myself are going to meet with the people who run Gizmo. We are trying to get a location where we can conduct some Saturday afternoon presentations for Amateur Radio Operators. The first in a series would be "Soldering 101." Stay tuned.

If you are not doing anything on Thursday mornings between 8 and 10 p.m. The KARS club has an informal coffee and doughnuts get-together in a vacant store front next to the Mall Food Court in the Silverlake Mall. A bottomless cup and a pastry are only a dollar, and the conversations are free. The subjects we discuss go from soup to nuts.

On May 8th I am having cataract surgery on my right eye, but I will be at coffee and doughnuts plus the meeting. I will be the guy possibly with a patch over my right eye. Hope to see you on Thursday of at the next meeting.
73, Larry Telles, K6SPP
p.s. 73 is singular, not plural.

April 2018 Meeting Minutes

The April 9, 2018 KARS meeting was held at the Search & Rescue Building located at 10865 N Ramsey Rd. Hayden, Idaho.

The meeting was called to order at 7:03 pm by Club President Larry Telles (K6SPP). The Pledge of Allegiance was led by Adam Crippen (N7ISP).

Attendance: Thirty two members and four visitors were in attendance.

VE Testing: Four people tested and the results were as follows:

Passed Technician	3
Attempted Technician	1

Minutes: Jim Petersen (AD0AZ) moved to accept the March 2018 minutes; Mike Slothower (KG7KSJ) seconded; the motion passed by member vote.

Treasurer's Report:

March 2018

Checking	\$2,696.42
Savings	\$2,452.13
Petty Cash	\$ 96.63
Drawing Change	\$ 20.00
TOTAL	\$5,265.18

Income: Savings interest (\$0.07), 50/50 Raffle (\$6.00), Memberships (\$86.00)

Expenses: Flowers – North Idaho Fair Booth (\$350.00), USPS PO Box (\$102.00), Cups and Napkins for General Meetings (\$2.71)

Jim Petersen (AD0AZ) moved to accept the Treasurer's report; Adam Crippen (N7ISP) seconded; the motion passed by member vote.

Upcoming Events:

April 19, 2018: North Idaho STEM Expo will take place in the North Idaho College Student Union Building from 10 AM to 1 PM. The KARS Club will have a booth at the event.

June 23-24, 2018: Field Day. Set up will take place on Saturday morning 6/23 at Majestic Park. The Club has an Extra-level license so an Extra-licensed ham will need to be present in order to use the Club license privileges.

August 22-26, 2018: North Idaho Fair. Plans are to set up both HF and DMR stations.

Idaho QSO Party: Ed Stuckey (AI7H) gave a report on the Idaho QSO Party that was held March 10-11. Ninety-two people sent in logs. They have been processed and handed off to the Treasure Valley Radio Association who will be sponsoring the Idaho QSO party next year.

KARS Trailer: Jim Petersen (AD0AZ) reported that he went to four RV Dealers to see if they had any equipment they would be willing to donate to the Club but found no takers. An 8' x 14' utility trailer should be sufficient.

Idaho STEM: Ed Stuckey (AI7H) reported that the Idaho STEM Academy in Rathdrum received a grant from NASA to build a satellite. They need a Part 5 experimental station license and were seeking letters of recommendation to obtain the license. The KARS Club and the ARRL made a recommendation to the FCC to grant the experimental license. No response has been received yet. The launch is planned for the end of May from Vandenberg.

Mitch Killebrew (KB7BYR) announced that the technician class question pool will expire on June 30th.

Repeater Committee Report: Adam Crippen (N7ISP) presented estimated costs for the installation of a third repeater to add to the current system. A location has been found on Little Blacktail Mountain that the Club can use at no cost. Adam contacted the frequency coordinator and learned that there are UHF and VHF frequency pairs available. Some upgrade will be required at the existing site on Mica Peak. The approximate cost for installing the new repeater and doing the upgrades at Mica Peak is \$4,000. Adam recommended that the Club secure two pieces of equipment that were identified for the new repeater because they are available at a good price: duplexer and isolator. He also recommended getting a VHF frequency pair.

Mark Avakian (N7MA) moved to chase the frequency pair and secure the duplexer and isolator (estimated cost \$700). Gary Roth (KE7IAT) amended the motion to include incidental costs such as shipping. Carl Critz (AG7MS) seconded. The motion passed by member vote.

Evening Presentation: A panel consisting of Mark Avakian (N7MA), Ed Stuckey (AI7H), and Tom Macy (W7UAT) took questions from the members and visitors regarding antennas.

Raffle Results: 50/50 \$7.50 Larry Telles, K6SPP (claimed)

Membership \$159.00 Ed Stuckey, AI7H (claimed)

Mike Slothower (KG7KSJ) moved to adjourn; Adam Crippen (N7ISP) seconded. The motion passed by member vote and the meeting was adjourned at 8:50 pm.

Annual Armed Forces Day Crossband Communication Test Set for Saturday, May 12

The Military Auxiliary Radio System (MARS) will sponsor the traditional military/amateur radio communication tests to mark the 67th annual Armed Forces Day (AFD) on Saturday, May 12. Armed Forces Day is May 19, but the AFD Crossband Military-Amateur Radio event traditionally takes place 1 week earlier in order to avoid conflicting with Hamvention. Complete information, including military stations, modes, and frequencies, is available on the US Army MARS website (<http://www.usarmymars.org/events/armed-forces-day>).

The annual celebration is a unique opportunity to test two-way communication between radio amateurs and military stations (authorized under §97.111 of the Amateur Service rules). It features traditional military-to-amateur crossband SSB voice, CW, practice using legacy interoperability waveforms, and the opportunity for participating hams to utilize more modern military modes, such as MIL-STD Serial PSK and Automatic Link Establishment (ALE). Military stations and Amateur Radio stations are authorized to communicate directly on certain 60-meter interoperability channels.

These tests give Amateur Radio operators and shortwave listeners (SWLs) a chance and a challenge to demonstrate individual technical skills in a tightly-controlled exercise scenario, and to receive recognition from the appropriate military radio station. QSL cards will be available for stations successfully contacting participating military stations.

Military stations will transmit (USB, unless otherwise noted on the schedule) on selected military frequencies and will announce the specific amateur frequencies they

are monitoring. MARS stressed that frequencies used for the test will not impact any public or private communications and will not stray outside the confines of the exercise.

An Armed Forces Day test message will be transmitted utilizing the Military Standard (MIL-STD) Serial PSK waveform (M110) followed by MIL-STD Wide Shift FSK (850 Hz RTTY), as described in MIL-STD 188-110A/B. [Technical information](http://www.n2ckh.com/MARS_ALE_FORUM/MSDMT.html) regarding these waveforms is available. (http://www.n2ckh.com/MARS_ALE_FORUM/MSDMT.html) The AFD test message will also be sent at 0300 UTC in CW.

Those who want a QSL should complete the request form on the MARS website. (<http://www.usarmymars.org/events>) (ARRL News)

Apparent First 2200-Meter Transatlantic Contact by US Radio Amateur Reported

In late March, Paul Kelley, N1BUG, of Milo, Maine, completed what may have been the first transatlantic 2200-meter contact by a US radio amateur under Amateur Radio rules. Signals in this part of the spectrum and lower previously have spanned the Atlantic in one direction, and Canadian radio amateurs have reported transatlantic contacts on the band dating back several years.

“To the best of my knowledge this is the first transatlantic two-way QSO from the US on 2200 meters under Part 97 operation,” said Kelley, who told ARRL that he gravitates toward the more challenging, “weak-signal” aspects of Amateur Radio and has been experimenting and DXing for 37 years now.

“2200 meters is my new passion, and I am having a lot of fun with it!” he said. I had been dreaming of - and working toward - a transatlantic QSO on 2200 meters for some time. Recently, I asked Chris Wilson, 2E0ILY, if he would be interested in trying to work me on DFCW60 mode. Chris and I have heard each other on WSPR, but he does not hear me well enough yet for a JT9 or other digital QSO. Chris agreed to try DFCW60 - dual-frequency CW, 60 second dit length.”

This was not a quick contact. It took *four* nights to complete, using night-by-night sequencing. Kelley called that “the minimum possible time” for such a contact, which included an exchange of complete call signs, signal reports, and acknowledgements. Kelley said they used the TMOR reporting system, borrowed from the moonbounce world.

“The QSO was completed at 0020 UTC March 28 when I received ‘R’ from Chris,” Kelley said.

He noted that the weather did not cooperate on his first night of transmitting, with snow squalls affecting antenna tuning. “Fortunately, I have a remotely controlled variometer at the antenna,” he told ARRL. “Otherwise, I could not have kept the transmitter going - or alive - that night. For over 2 hours, I had to tweak it almost every key down - roughly every 90 seconds.” Things calmed down to the point where he only had to adjust it every 10 to 15 minutes.

Kelley’s 2200-meter station consists of a QRP Labs Ultimate 3S transmitter, a home-built single FET 200 W class E amplifier, and a 90-foot top-loaded vertical antenna. “This gives me no more than 0.5 W EIRP, probably less,” he said.

For receiving, he uses a 30-foot “low-noise” vertical, homebrew band-pass filter, preamp, and a modified Softrock Lite II software-defined radio receiver kit, with the local oscillator modified for coverage on 2200, the front-end filter modified, and additional filter sections added. (ARRL News)

Crew Member Dies in Missouri Broadcast Tower Collapse

PAUL/ANCHOR: We begin this week with a cautionary tale about towers and tower safety - this one from a tragedy outside a TV station in Missouri. Here’s Christian Cudnik K0STH with more.

CHRISTIAN: The 2,000-foot tall tower of a local public TV station in Webster County, Missouri collapsed on the 19th of April, killing one worker and injuring three others. The crew was conducting maintenance outside Ozarks Public Television station KOZK when the structure toppled. Several members of the crew were on the tower, about 105 feet off the ground, when the collapse occurred. The worker who was killed had been trapped beneath the tower’s debris.

The station is a Public Broadcasting System affiliate operated by Missouri State University. Stations in the region have assisted by helping restore service to the station. Local authorities are investigating to determine the cause.

For Amateur Radio Newsline I’m Christian Cudnik K0STH.

PAUL/ANCHOR: This story is a reminder as well to all of our listeners to please follow safety precautions when doing any tower work. Whether commercial broadcast or amateur, you can’t be careful enough! (KYTV-Springfield) (AR Newsline)

Ham Radio Gets Prime-Time TV Role, Sort Of

CHRISTIAN/ANCHOR: Finally, we ask: What’s happening here? Amateur radio’s in the movies and now amateur radio’s on one more TV show. We’ll let Don Wilbanks AE5DW explain.

DON: As anyone who’s ever been in a ham shack knows, you don’t need to be able to see something to expect great things from it. Take radiowaves, for instance. You can’t see them but on a good day with good band conditions they can deliver the world.

So what’s the deal with Dan Conner? The character on the American TV series “Roseanne” is hiding something from his family and we the audience can’t see it either. On the April 17 episode of “Roseanne,” the recently revived situation comedy on the ABC Network, Rosanne’s husband Dan has some kind of amateur radio rig tucked away in the garage that he’s fixing. (show audio: It’s like that ham radio Dad tinkers with in the garage. If it was gonna work it would’ve worked by now. Dad just got that radio working. He’s got a friend in Duluth that’s 102.”) Could Dan, portrayed by actor John Goodman, secretly have gotten his ticket? Is he carrying the legacy of the character Mike Baxter from TV’s “Last Man Standing”? That popular show was cancelled on the same network not long ago. Well, we didn’t see Dan’s rig in this recent episode but like radio waves, Santa and The Tooth Fairy, that doesn’t mean we can’t believe in it. Perhaps the reality of one more ham radio operator on TV is out there just below the noise floor....so we’ll keep tuning in, listening and watching.

As anyone who’s ever been in a ham shack knows, you don’t need to be able to see something to expect great things from it. Take radiowaves, for instance. You can’t see them but on a good day with good band conditions they can deliver the world.

For Amateur Radio Newsline I’m Don Wilbanks AE5DW (ABC-TV, CARSEY-WERNER PRODUCTIONS)

Virginia Radio Amateur Completes Contacts on All 29 Ham Bands

Brian Justin, WA1ZMS, in Virginia, saved the lowest band for last. On April 11, he completed a CW contact on the new 2200-meter band with K3MF in Pennsylvania, wrapping up a sweep of completed contacts on all 29 Amateur Radio bands. Justin is a bit of an old school guy - he worked K3MF on CW, and now he’s awaiting a QSL card. A *paper* QSL card.

“Wow!” Justin told ARRL. “Not an easy QSO. Had to use TMO reporting, but we did it as if it was an Earth-Moon-Earth QSO.” In TMO reporting, T = Signal just detectable; M = Portions of call copied, and O = Complete call set has been received. Justin used his Icom IC-7300 for his receiver. “I needed the AGC on to keep the static crashes from blowing my ears off,” he recounted. His antenna for both receiving and transmitting was a 160-meter dipole fed as a Marconi T antenna against ground. “A 2.5 mH variometer built on a 5-gallon bucket is used to tune the antenna to resonance,” he explained. “Ground impedance at 136 kHz is around 40 Ω, so most of the RF is lost as heat in the Earth.” Justin said it took several hundred dollars’ worth of ground rods and copper wire to attain the 40-Ω ground impedance, given soil conditions at his location.

“I started with 100 W,” Justin said. “K3MF had trouble hearing me - his QRM was 20 dB over S-9. So we set up a new sked. I added the kW amp on my end, and as soon as I hit 600 W, all of the smoke detectors in the house went off from the RF.” He said he had to stay at 500 W for the contact. Reception was a challenge as well. “All light dimmers need to be off, so I can hear anything,” he said. Input to the antenna system is one thing on 136 kHz. Effective radiated power (ERP) is another. Justin’s ERP was 500 mW, just 3 dB below the FCC limit for the band.

Justin said he started working his way through the bands at the high end of the spectrum, those allocations above 24 GHz. “By the time 2002 came around, I had managed to have built enough millimeter-wave gear to complete formal QSOs, with QSL cards, on all the bands at the time,” he told ARRL. “On the bands above 24 GHz, I had to build two stations and pass one off to K2AD, W4WWQ, or WA4RTS to be on the other ends of these VUCCs and QSOs.”

To consider it a valid contact, Justin said he used the New England Weak Signal Group (NEWS) guideline of at least a 1-kilometer distance on each band. “While at first this seems very easy, very few hams have even had a QSO across a benchtop on bands like 134 GHz, much less over 1 kilometer,” he said.

By 2003, Justin had confirmed contacts (and paper QSLs) on each band from 1.8 MHz to 300 GHz. He submitted his cards to NEWS, which presented him with a framed award and plaque - the very first “Worked All Bands Award.”

Since then, a few ham bands have changed. For example, the 2.5-millimeter band shifted from 120 GHz to 122 GHz, and the 2-millimeter band moved down from

145 GHz to 134 GHz. “In order to stay current with the award, I built gear for those new allocations as well and made QSOs, VUCCs, and more DX,” he said.

Throughout this process, he earned the first-ever ARRL VUCC Awards for 47 GHz, 76 GHz, 122 GHz, 134 GHz, and 241 GHz, and even went so far as to make the first contact on a less-than-1-millimeter band, 322 GHz. “Many world DX records were made as well along the way,” he said. “The most rewarding one for me was 114 kilometers on 241 GHz.”

When 630 and 2200 meters became official last year, Justin had his work cut out for him. As one of the ARRL WD2XSH Experimental stations, he made quick work of 630 meters, working NO3M on SSB the day after the band opened for Amateur Radio work. His CW QSO on 2200 meters came last week - about 250 kilometers (155 miles). He’s hoping to see the QSL card this week.

(ARRL News)

International Amateur Radio Regulatory Developments Announced

Several countries recently have proposed or instituted changes or announced developments with respect to Amateur Radio regulation.

In China, according to the Chinese Radio Amateurs Club (CRAC), the Ministry of Industry and Information Technology in Beijing has announced that radio amateurs will gain access to a 60-meter band starting on July 1. The latest edition of *PRC Radio Frequency Division Regulations* — released on April 18, World Amateur Radio Day — indicates that radio amateurs in China have been allocated the band 5351.5 – 5366.5 kHz on a secondary basis, and in accordance with the decisions made at World Radiocommunication Conference 2015.

The Nigerian Communications Commission (NCC) has announced that it’s in the process of granting licenses “to qualified persons/companies who are interested in Amateur Radio services and Amateur Satellite services for the purposes of noncommercial exchange of messages, intercommunication, self-training, private recreation, wireless experimentation, technical investigations, etc.” The NCC proposes that licensees must be 18 or older, “be technically competent to operate Amateur Radio Station in line with [ITU-R M.1544-1](#), which covers the basic skills required of an amateur operator,” and pass written and Morse code tests. Three license classes are proposed: Novice, General, and Advanced. The NCC

proposes a modest, non-refundable application plus a “frequency fee” of approximately \$28 for all applicants.

India’s Department of Telecommunications (DoT) has released Amateur Radio license figures for 2017. The *DoT Annual Report* show that 628 new licenses were issued, a record number. The report also notes that 2,594 candidates took the Amateur Radio exam, the discrepancy suggesting the difficulty in getting the government to issue new license, according to Jose Jacob, VU2JOS, of the National Institute of Amateur Radio (NIAR), who pulled statistics from the report. His tally indicates 3,730 new licenses were issued in the past 10 years, and 4,905 were renewed. “The licensing system in the Republic of India has always been very bureaucratic,” Jacob said. “The form-filling exercise involves supplying height, eye color, occupation and details of your father (but not your mother!). In addition, applicants have to go through police checks to prove they are a suitable person to hold a license.” This has meant delays of up to 2 years before a license is granted.

Norway’s Communications Authority (Nkom) is proposing changes to its Amateur Radio regulations, such as allowing 1 kW output at VHF/UHF for Earth-Moon-Earth or meteor scatter operation. The limit for the VHF/UHF bands has been 100 or 300 W. Also proposed is the addition of a maximum allowed power for transmissions from model aircraft, remote-controlled helicopters, or drones of 10 mW EIRP in the 2300 – 2450 MHz band, and of 25 mW EIRP in the 5650 – 5670 MHz band.

Indonesia has adopted a system of online Amateur Radio exams and licensing. The government telecommunications regulator has described the move to e-licensing as “a form of paradigm shift [that] shows the government’s commitment to provide easy, fast, and transparent services.” Indonesia’s President Joko “Jokowi” Widodo, YD2JKW, holds a General class license, while its Vice President Jusuf Kalla, YC8HYK, is an Advanced class licensee.

Thailand’s regulatory authority, the National Broadcasting and Telecommunications Commission (NBTC), has given temporary expanded operating permission during contests. Described as “throughout the 80-meter band and on 6 meters,” the privileges cover 14

weekend operating events. Intermediate and Advanced licensees will be allowed to operate on 3.6 – 3.9 MHz during eight international events, and on 50 – 54 MHz during six VHF weekend events. The “temporary approval” extends through 2018. Previously, Thai hams have been limited to 3.5 – 3.6 MHz on 80, while 6 meters was entirely off limits —*Thanks to The Daily DX, Southgate Amateur Radio News*

U.S. Amateur Radio Gains More Than 30,000 New Licensees

JIM/ANCHOR: We open this week’s report with encouraging news from the ARRL: Hams, we’re in good company! There are now more than 30,000 new licensees among us, as reported by the ARRL’s Volunteer Examiner Coordinator’s office. More than 35,350 candidates sat for exams for new licenses or upgrades and by the end of last December, the amateur radio community was 748,136 strong. Not surprisingly, the largest segment consisted of technicians, with nearly 378,000 ticket holders. According to the ARRL, there were 174,206 general class tickets issued, closely followed by 145,034 in the Amateur Extra Class. Only Advanced Class and Novice - which are no longer being issued by the FCC - showed a drop in numbers.

Expect the bands to be busier than ever. (AR Newline)

COFFEE & DONUTS
EVERY THURSDAY MORNING

8:00 A.M.
To
10:00 A.M.



Community Mtg Rm
Silver Lake Mall
Coeur d’Alene

TALK-IN: 146.980, PL127.3
443.975, PL136.5

Bring a writing instrument **Community Mtg Rm**
has the napkins for our breakfast table engineering!

Deadline for submitting articles, stories, reports, etc., is the 25th of each month for the following month’s newsletter.

Kootenai Amateur Radio Society (KARS) MEMBERSHIP APPLICATION

One year membership Rates:

New Member: \$15.00 Renewal: \$15.00 Family Membership: \$23.00

Two year membership Rates:

New Member: \$28.00 Renewal: \$28.00 Family Membership: \$42.00

Lifetime membership:

Member: \$150.00

Information Update Only

Are You An ARRL Member? Yes / No (Please Circle One)

Callsign: _____ Class: _____ Expiration: _____

First Name: _____ M.I. _____ Last Name: _____

Nickname: _____

Address1: _____

Address2: _____

City: _____ State: _____ ZIP: _____ - _____

PHONE NUMBER: (____) _____

OK to publish phone number? Yes / No (Please Circle One)

EMAIL ADDRESS: _____

OK to publish Email address? Yes / No (Please Circle One)

Do you want to receive the emailed Newsletter? Yes / No (Please Circle One)

Note: If this is a family membership, (all members with the same address), please complete the following section for your family.

Name: _____ Call: _____ Class: _____

Name: _____ Call: _____ Class: _____

Name: _____ Call: _____ Class: _____

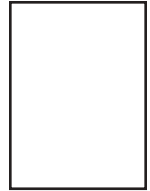
Name: _____ Call: _____ Class: _____

*RETURN THIS FORM WITH YOUR DUES, (CASH OR CHECK), TO THE KARS TREASURER,
OR, MAIL TO: KARS MEMBERSHIP, P.O. BOX 1765, Hayden, ID. 83835-1765.*

(Office use only.)

Cash:		Check #:		Money Order:	
Membership Card:		Roster:		Newsletter:	

KOOTENAI AMATEUR RADIO SOCIETY
P.O. Box 1765
Hayden, ID 83835-1765



DIRECTIONS TO KARS MEETING:

Take U.S. Highway 95 to Miles Avenue (Miles is about 1 mile North of Hayden Avenue). Instead of proceeding west from the corner of Miles and Ramsey, go north about ¼ mile, to the first building on the left (West) side of the road.

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Notice

Propagation is published monthly by the Kootenai Amateur Radio Society (KARS). The club is located in Coeur d'Alene, Idaho and serves the North Idaho and the Spokane, Washington areas.

All opinions expressed in this newsletter are those of the individual contributors and not the radio club as a whole.

KARS operates a voice repeaters on 146.980 and 443.975, and a packet repeater on 145.510 Mhz.

Anyone interested in Amateur Radio is welcome to join. Dues are \$15.00 (individual) and \$23.00 for a family membership. Contact the Treasurer if you wish to join.

If you know of anyone interested in joining KARS, you can notify the newsletter editor as to that parties' email address. A copy of this newsletter will be sent with no obligation to join.

Material can be submitted for publication in Propagation. The deadline for articles, etc., is the 25th of each month for the following month's issue.