

Musings on the KBARA Annual Meeting, Etc.

The 43rd KBARA annual meeting has come and gone, with its most important business completed during these difficult times, keeping the old radio club alive and well for another year. We again attended a most pleasant Valleyford Park, with the weather perfect for the occasion. It was great to see old friends, and meet new ones. Elected President was Dave, K7DSR. Our Secretary, Harry, W7HEE and Treasurer, N7WRQ stayed in their offices. Scott, KA7FVV accepted another three year term as Director. Some weeks later, a new Vice President, Jim KM7H, was appointed by the KBARA Directors. Thanks so much Jim for “stepping up the plate.” Speaking of which.....we are in need of a Tuesday morning net control as well net controls for the Wednesday evening net. Please give it some thought.

Thanks everyone for your continued support of KBARA, and hear you on the air.

73,

Betsy N7WRQ



MOE Checkin's Net Controller Award

We had not awarded the MOE Checkin's award in a while. Dennis, KF7UTH is the proud recipient of the award this year. Dennis just retired as our President for the past three years and has been our regular Thursday morning net controller for a very long time.

Dennis thank you from all of KBARA, for your dedication to the club. Now as a past President and continuing net controller.

Scott, KA7FVV, KBARA Director





KBARA Technical Update

by Jim, N7WRR & Scott, KA7FVV

It has been a busy quarter since the last newsletter update getting things done before the deep snows come to the sites. A big thank you to all the people who helped keep the system going, and especially to our new president, Dave K7DSR and Scott KA7FVV. Stensgar 147.36 is now back on line again, Lookout Pass 147.02 is working well and linked into the system at last, the Mica Peak 147.38 and Pikes Peak 147.28 are working well with the work done on them earlier in the year and the West Twin repeater 147.32 has been doing fine other than the occasional hitch with the IRLP link.

The Stensgar 147.36 repeater. I tried buying a new repeater for Stensgar and had located a new Kenwood but to get the software from Kenwood to convert it from narrow band FM to wide band was going to take at least a month so canceled the order and bought a used Motorola Quantar from Jeremiah KD7DMP and had him convert it over to work for 147.36. This cost more, but with the forest fires raging wanted Stensgar up again ASAP. On 8/24 the Quantar was installed at the site by Jeremiah and me, however after leaving the site, the link went down. On 8/28 Dave K7DSR and I went to Stensgar and were met by Jim KM7H. We soldered a new 9 pin connector on the cable from the link radio to the controller and it has been running fine since.

When at site with Jeremiah he checked out all the system with his service monitor and we found the antenna resonates at 156.15 MHz, and has a high SWR at 147.36. This could be part of why the repeater shuts down as the isolators that protect the radio would get fairly hot during transmit. He also found quite a bit of RF noise at site that may de-sense the radio; this along with the antenna mismatch is probably why the 147.36 doesn't receive stations as well as it should. So I have bought a filter to be installed between the duplexer and receiver. Also we plan to use the old Elk Butte antenna which we removed from Lookout. We are hoping we can get it installed in the near future before the snow flies.

The Lookout 147.02 repeater is working well and linked into the rest of the KBARA system at long last. On 8/25 Scott KA7FVV, Dave K7DSR and I installed the link antenna, hard line, polyphaser, MTR2000 link radio, Triplite and grounding, but were unable to get the MTR2000 link radio working with the controller. Scott, Dave and I returned on 9/16 to remove the antenna from the old Lookout site and work with the MTR2000 link radio, getting communication with the controller except for the COR. So we could get into Mica, but could not get audio back to the 147.02. We finally found the conversion circuit board for the MTR2000 was the problem. Scott order a new modified board from ICS. Dave refurbished the old antenna which was made for 147.02 and on 10/5 Dave K7DSR, Gordy KG7HYE, John W7OE and I returned to site and switched the 2m antennas. On 10/7 Dave and I returned to site and finished the antenna installation and tried to use an Alinco 440 radio to as a temporary link while we waited for new circuit board. However with its wide front end we were picking up feed from the translator station at the site so did not link it in, not wanting that noise going through the rest of the system. Finally on 10/17 Scott KA7FVV and I returned to site with the new circuit board, set the audio levels in the controller with help from Mark K7HPT. Everything worked great! However, there was an error message sent out on the 147.38 at Mica when Lookout was keyed up. So the next day Bill KG7SJR went up to Mica with me to change the link radio to Lookout from port 4 to port 3 on the controller. This took care of the problem.

EchoLink. Dan KG7ZCW got EchoLink going, but has recently decided to no longer to host it and it is off line again. So we are looking for someone to step up in hosting it. We have all the equipment [radio, antenna, computer, and IRLP/EchoLink control board] and need someone with internet and a path to Stensgar.

West Twin 147.32 repeater is working great. We have not had any power outages or IRLP glitches that have taken us off the air in sometime.



KBARA Technical Update

by Jim, N7WRR & Scott, KA7FVV

Stensgar Pictures



Lookout Pictures





Yet Another Rabbit Hole

by Dale W7HLO

For some time now I've been toying with the idea of doing some experimenting with LoRa. For those who are unfamiliar with LoRa it is a specialized spread-spectrum modulation scheme developed to allow sensors out in the field to get data back to a central collection point. The technology has the capability to send packets of data several miles with extremely low power requirements so that the sensors can be battery powered. This winter I plan on putting sensors in some bee hives to send temperature, humidity, and hive weight data back to our house.

A discussion on a recent DMR net got me going down a LoRa rabbit hole called TinyGS. It turns out that there are high school and college aged folks throughout the world who are building small satellites called Cube Stats which by definition are no larger than 10cm on a side. Many of these builders are utilizing LoRa as a means of getting telemetry data back to earth.

As you can probably imagine, students in any given part of the world would normally only be able to receive the telemetry data when their satellite is overhead. To solve this problem and organization called TinyGS was born. Now people all around the globe are building satellite ground stations utilizing LoRa and then transmitting any data accumulated back to a central server where the developers of the satellite may retrieve it.

The TinyGS community has made this process truly simple. There are a variety of small boards available that have the same processor as an Arduino, programmed with the same IDE, and include a LoRa transceiver chip from a company called Semtech. The community has developed some very sophisticated software that is downloadable from Github.

I purchased a complete board for about \$20, flashed the software into it, built a simple $\frac{1}{4}$ wave ground plane antenna for 70cm and powered it up. In addition to controlling the transceiver, the software performs the following functions:

- Connects to my WiFi network

- Checks the central server every hour for firmware updates and if any are found downloads and installs it.

- I configured the software to know my location so the central server can figure out which satellite is going to pass overhead next. The server then commands my station to change frequency, spread, bandwidth, etc. so that it might be able to hear that next pass.

- Throughout each 24 hour period my station is frequently looking for first one bird and then another. When it picks up a packet of telemetry it forwards it on to the central server.

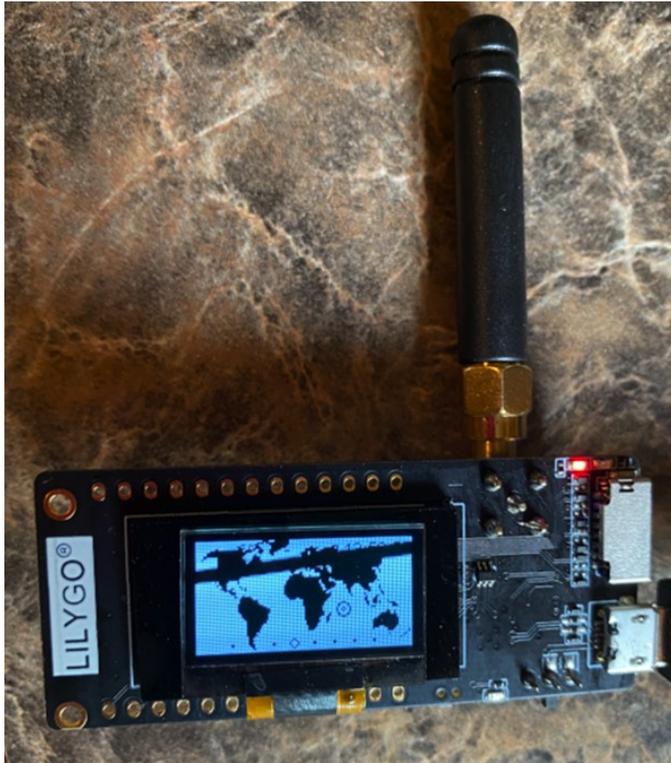
- The board I purchased also has a webserver and sets up a webpage that I can monitor to see which bird it is watching for, the communication parameters that have been set, and a log of what was sent between it and the server.

Here is a snapshot of the circuit board I purchased: (next page)

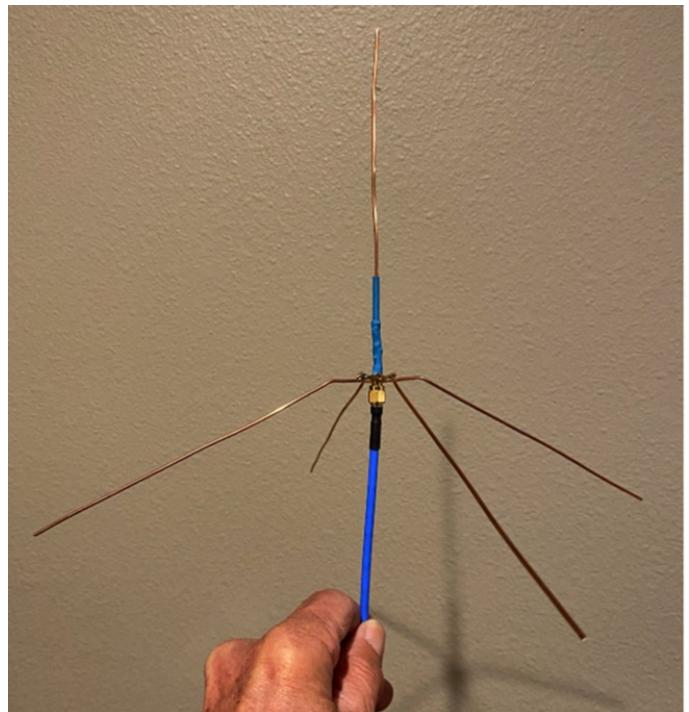


Yet Another Rabbit Hole

by Dale W7HLO



Note the rubber duck antenna that came with it. I replaced that with a DIY ground plane antenna made out of some scrap 14ga wire and a bulk-head SMA connector.





Yet Another Rabbit Hole

by Dale W7HLO

And here is a snapshot of the webpage the board creates:



Groundstation Status

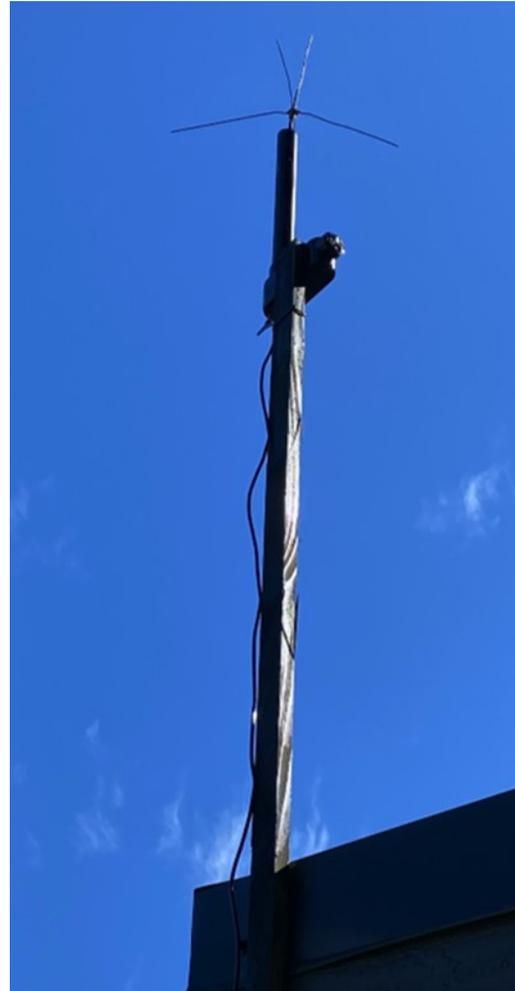
| | |
|-------------|-----------|
| Name | W7HLO_1 |
| Version | 2105260 |
| MQTT Server | CONNECTED |
| WiFi | CONNECTED |
| Radio | READY |
| Test Mode | DISABLED |

Modem Configuration

| | |
|------------------|--------|
| Listening to | Norbi |
| Modulation | LoRa |
| Frequency | 436.70 |
| Spreading Factor | 10 |
| Coding Rate | 5 |
| Bandwidth | 250.00 |

Last Packet Received

| | |
|-------------|---------|
| Received at | Waiting |
| Signal RSSI | 0.00 |



I put the board inside of a waterproof, electrical junction box, added a short piece of tubing to support the coax, mounted it onto a 1x2 and attached it to the corner of our chicken coop.

If you go to www.tinygs.com and click on the menu in the upper left corner you can search for my station (W7HLO) and see how it's doing. Also if you zoom in on the initial map you can see I'm the only ground station in Eastern Washington.

While there isn't much more for me to do with this project, I did learn more about LoRa, had some fun for a very small amount of money, and feel like I'm contributing to a worthwhile project.

Kamiak Butte Amateur Repeater Association
Annual Meeting Minutes August 15, 2021
Valleyford Park, Valleyford, WA

The 43rd annual KBARA meeting was called to order by Treasurer, Betsy Ashleman N7WRQ, at 1:00PM, with twelve members in attendance.

Last year's minutes were read by John Dempster W7OE, Technical Director, and approved by the members.

The Treasurer's report was reviewed. The club had 91 members; a bank balance of \$7,566.07; revenues totaled \$2,976.00; expenses \$3,617.10; memberships \$1,080; extra donations \$1,896.00. The expenses of renovating the Lookout Pass repeater were less than expected due to donations of equipment. The report was approved by the members as read.

Under new business, reports of the repeater sites were given. Scott Harvey KA7FVV said West Twin was working smoothly with only a few "hiccups" due to connectivity and that Jim Fielder WA7VFQ was helping maintain that site. Jim Ashleman N7WRR reported that Mica Peak now had excellent coverage with the new equipment installed; links to Naneum Ridge & Lookout Pass had yet to be completed; with the change in site management by the government KBARA continued to work with the Air Force to maintain antennas on the site; Stensgar continued to be down until a new repeater could be acquired; Pikes Peak was reprogrammed in April to correct a long "tail", and now seemed to be working well.

Dan Carter KG7ZCW reported on EchoLink, saying that all equipment except the radio had been replaced. He was hopeful all would be running shortly.

The Spokane Hamfest report was presented by Dave Carleton K7DSR. The event would be held 9/25/2021 at University High School. Due to uncertainty regarding Covid and the event, the usual raffle would not be held this year. The members approved donating \$200 seed money to the Hamfest, hosted by six different clubs of which KBARA is one.

The members approved a lifetime membership for John W7OE for contributing his time, money, energy to KBARA over the last 30 years.

The members approved the Moe Check-in award be given to Dennis Roberts KF7UTH for his dedication to the club as President these last few years and as a net control for the 7AM net.

A new copper j-pole antenna, donated by Tom Faust KG7DQP was given to the Spokane Hamfest to be awarded to a new Ham at the ARRL testing session held at the event.

The next annual meeting will tentatively be held Sunday, August 21, 2022 at Valleyford Park, WA.

The officer & director elections were held, with Dave K7DSR being elected as President, Harry W7HEE as Secretary, Betsy N7WRQ as Treasurer, and Scott KA7FVV as Director (a 3 year term). The position of Vice President was not filled.

The meeting was adjourned at 1:52PM.

Respectfully submitted,

Betsy Ashleman N7WRQ

KBARA Treasurer

KBARA INCOME & EXPENSES
6/30/2020 to 6/30/2021

| DATE | DESCRIPTION | DONATIONS | MICA PEAK | STENSGAR | STENSGAR | LOOKOUT | PIKES PEAK | WEST TWIN | PAYPAL | OTHER | ENDING | |
|----------|------------------------------|------------------|------------------|-----------------|-----------------|----------------|-------------------|------------------|---------------|--------------|----------------|------------|
| | | | 147.38 | 147.36 | 223.90 | 147.02 | 147.28 | 147.32 | FEEES | | BALANCE | |
| 07/26/20 | Feed line, connectors | | | | | (\$775.50) | | | | | | |
| 07/28/20 | Donations | \$35.00 | | | | | | | | | | |
| 08/09/20 | PayPal subscription | | | | | | | | | (\$107.88) | | |
| 08/11/20 | USPS box rent | | | | | | | | | (\$106.00) | | |
| 08/26/20 | WA State filing | | | | | | | | | (\$10.00) | | |
| 09/05/20 | Connectors, coax, PolyPhaser | | | | | (\$416.60) | | | | | | |
| 09/09/20 | Donations | \$15.00 | | | | | | | | | | |
| 09/30/20 | DNR lease | | | | | (\$100.00) | | | | | | |
| 10/06/20 | Donations | \$30.00 | | | | | | | | | | |
| 10/27/20 | Donations | \$220.00 | | | | | | | (8.20) | | | |
| 10/27/20 | Donations | \$15.00 | | | | | | | | | | |
| 11/03/20 | Fuel | | | | | (\$19.55) | | | | | | |
| 11/09/20 | Donations | \$115.00 | | | | | | | | | | |
| 11/09/20 | DNR lease | | | | | (\$100.00) | | | | | | |
| 11/15/20 | MTR2000 UHF repeater | | | | | (\$665.14) | | | | | | |
| 11/15/20 | Bank check supplies | | | | | | | | | (\$84.57) | | |
| 11/16/20 | Donations | \$515.00 | | | | | | | | | | |
| 11/24/20 | Donations | \$250.00 | | | | | | | | | | |
| 11/27/20 | Donations | \$100.00 | | | | | | | (3.81) | | | |
| 11/30/20 | ARRL insurance | | | | | | | | | (\$300.00) | | |
| 12/07/20 | Donations | \$75.00 | | | | | | | | | | |
| 12/15/20 | Donations | \$80.00 | | | | | | | | | | |
| 12/29/20 | Donations | \$241.00 | | | | | | | (9.12) | | | |
| 12/28/20 | Donations | \$20.00 | | | | | | | | | | |
| 01/04/21 | Site rent | | | | | | (360.00) | | | | | |
| 01/11/21 | Donations | \$200.00 | | | | | | | | | | |
| 01/19/21 | Donations | \$30.00 | | | | | | | | | | |
| 01/25/21 | Donations | \$40.00 | | | | | | | | | | |
| 01/27/21 | Donations | \$175.00 | | | | | | | (7.81) | | | |
| 02/02/21 | Donations | \$120.00 | | | | | | | | | | |
| 02/10/21 | GoDaddy 2 year sub | | | | | | | | | (\$399.98) | | |
| 02/22/21 | Donations | \$15.00 | | | | | | | | | | |
| 02/24/21 | Donations | \$100.00 | | | | | | | (4.42) | | | |
| 03/08/21 | Donations | \$15.00 | | | | | | | | | | |
| 03/15/21 | Donations | \$15.00 | | | | | | | | | | |
| 03/31/21 | Donations | \$315.00 | | | | | | | (10.96) | | | |
| 04/07/21 | Donations | \$30.00 | | | | | | | | | | |
| 04/08/21 | Coax, connectors | | | | | | (67.02) | | | | | |
| 04/20/21 | Donations | \$15.00 | | | | | | | | | | |
| 04/28/21 | Donations | \$75.00 | | | | | | | (3.08) | | | |
| 06/03/21 | Donations | \$55.00 | | | | | | | (2.20) | | | |
| 06/14/21 | Antenna repair | | | | | (\$52.46) | | | | | | |
| 06/29/21 | Donations | \$65.00 | | | | | | | (2.80) | | | |
| | | | | | | | | | | | | |
| | BEGINNING | DONATIONS | MICA PEAK | STENSGAR | STENSGAR | LOOKOUT | PIKES PEAK | WEST TWIN | PAYPAL | OTHER | ENDING | |
| | BALANCE | | 147.38 | 147.36 | 223.90 | 147.02 | 147.28 | 145.32 | FEEES | | BALANCE | |
| | | \$8,207.17 | \$2,976.00 | \$0.00 | (\$100.00) | (\$119.55) | (\$1,909.70) | (\$427.02) | \$0.00 | (52.40) | (\$1,008.43) | \$7,566.07 |

| | | | |
|-----------------|------------|---------------|--------------|
| Memberships | \$1,080.00 | Total Income | \$2,976.00 |
| Extra Donations | \$1,896.00 | Total Expense | (\$3,617.10) |



Kamiak Butte Amateur Repeater Association
KB7ARA
PO Box 30801
Spokane WA 99223-3013



KBARA is a support group for several privately and club owned linked Amateur Radio repeaters. The system covers an area from NE Washington to NE Oregon, and from western Montana to central Washington. The KBARA system is also part of the Evergreen Intertie, an interconnected group of repeaters located in western Washington and Oregon. The primary purpose of the KBARA repeaters is to provide a means for emergency communications within the above areas, and secondarily for routine radio traffic. It makes possible a single system of mobile communications coverage, extending the limited range provided by any single repeater operation. The KBARA FM repeaters operate in the VHF bands and are linked by UHF radios and IRLP. The repeaters' frequencies, call signs and locations are as follows:

- 147.380 MHz N7WRQ on Mica Peak near Spokane, WA, owned by Betsy, N7WRQ & Jim, N7WRR
- 147.360 MHz N7WRR on Stensgar (Stranger) Mt. near Chewelah, WA, owned by Jim, N7WRR & Betsy, N7WRQ
- 147.320 MHz (103.5 Hz tone) KA7FVV on West Twin near Moscow ID, owned by Scott, KA7FVV, & KBARA
- 147.280 MHz KB7ARA on Pikes Peak in the Blue Mountains near Walla Walla, WA, owned by KBARA
- 147.020 MHz KB7ARA on Lookout Pass on the Idaho-Montana border, owned by KBARA
- 223.900 MHz AK2O hub repeater on Stensgar (Stranger) Mt. near Chewelah, WA, owned by Karl, AK2O
- IRLP Node #3638 in Spokane WA owned by Glen, K1RR
- IRLP Node #3636 on East Tiger Mt, near Issaquah, WA owned by KBARA
- EchoLink KB7ARA-R (947272) in Reardan, WA owned KBARA

All licensed Amateur Radio operators are welcome to use this open repeater system.

To support KBARA, please send your contributions to: **KBARA, P.O. Box 30801, Spokane, WA 99223-3013**

Name _____ Call Sign _____

Address _____

City/State _____ Zip _____

Telephone _____ Amount Paid _____

Email Address _____ ARRL Member? _____

Dues are \$15.00 per year for individuals and \$20.00 for a family (all must be living at the same address), but any amount will be greatly appreciated. Dues are due January of each year. If they are paid between September 1 - December 31, they will be applied through the entire following year. Also, any contribution to the Repeater Fund will be gladly accepted. For more info, please visit our website at www.kbara.org. See us on Facebook.



Upcoming Hamfests and Events

Courtesy of N7CFO.com

Check the above page for cancelation as events get closer.

October 23rd. 2nd annual Winston Tail Gate Swap Meet, Winston, OR. [Flyer in PDF](#), (258K).

~~~~~2022~~~~~

February 19, 2022. Salem Hamfair. Rickreall, OR. <http://www.w7sra.com/>

March 12, 2022. Mike & Key Swapmeet. Puyallup, WA. <https://www.mikeandkey.org/index.php>

April 2022. Comm Academy. Seattle, WA. <http://commacademy.org/>

April 2022. MicroHams Digital Conference. <http://microhams.com/>

May 2022. Spout Springs Repeater Association 2022 Hamfest, Kennewick, WA. <https://wf7s.net/hamfest/> Contact: Claude Landes [wa4n@arrl.net](mailto:wa4n@arrl.net)

June 2022. 4th Annual Tail Gate Hamfest. Spokane, Washington. <https://kbara.org/> Contact Duane, KE7NUB, (509)435-7718

June 3-4-5, 2022. SEA-PAC Hamfest and ARRL Northwestern Division Convention. Seaside Convention Center, Seaside, Oregon. *This is an ARRL sanctioned event.* [info@seapac.org](mailto:info@seapac.org) . [www.seapac.org/](http://www.seapac.org/) .

July 15-17, 2022. Glacier Waterton International Peace Park Hamfest. (Always the third weekend in July) Glacier Meadows Campground, 13 miles west of East Glacier on MT Hwy 2. <http://www.gwhamfest.org/>

July 24, 2022 Chehalis Valley ARC Ham Radio Tailgate Swapmeet. Southwest Washington Fairgrounds, Chehalis, WA. Contact John Ellingson, K7OSK. [k7osk@boatanchor.com](mailto:k7osk@boatanchor.com) . <http://www.cvars.org/>

August 5-7, 2022. 65th Pacific NW DX Convention. Spokane, WA. [Flyer in PDF](#). (170K)

August 2022. Puget Sound Antique Radio Association Swapmeet. <https://www.pugetsoundantiqueradio.com/>

September 2022. N7YRC Tailgate/Swapmeet. Union Gap, WA.

September 9-11, 2022. NWAPRS Summer Gathering. Valley Camp, North Bend, WA. Contact: Thom, [K7FZO@WA7VC.org](mailto:K7FZO@WA7VC.org)

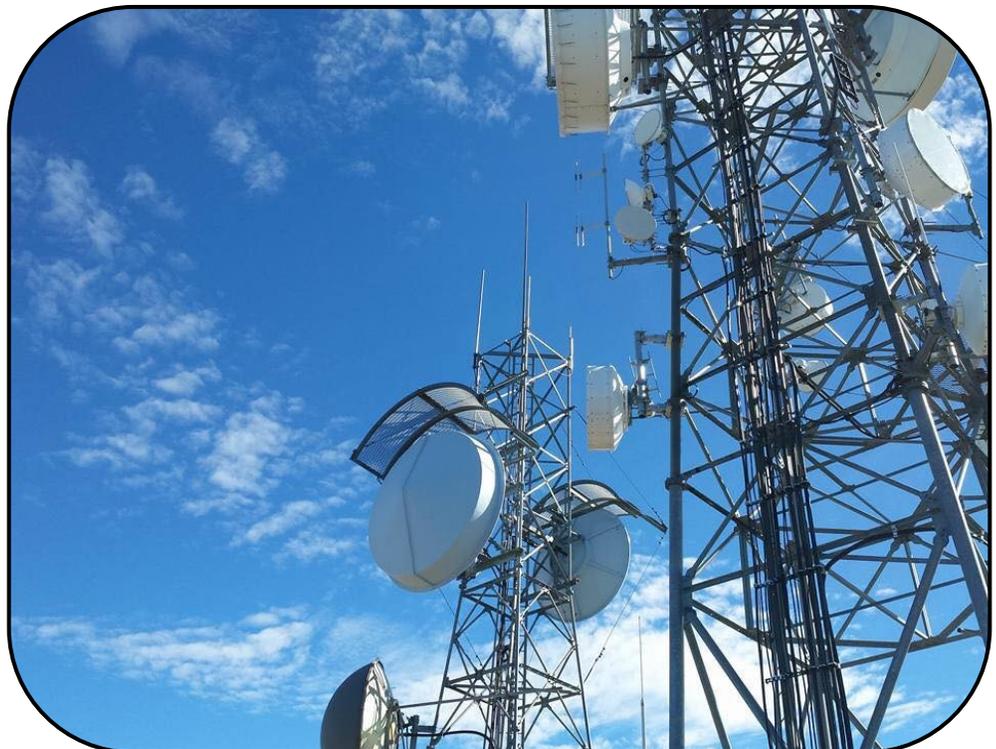
September 2022. Spokane Hamfair.

October 2022. Swaptoberfest. Rickreall, OR. Contact: [info@swaptoberfest.org](mailto:info@swaptoberfest.org)



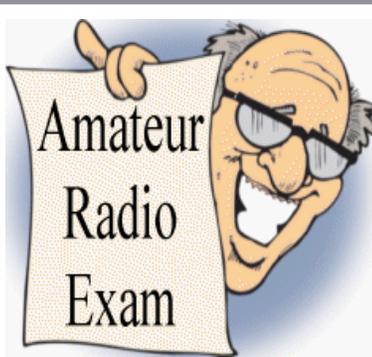
# KBARA Repeaters and Echolink/IRLP Nodes

| Frequency         | CTCSS Tone | Location          | Call sign | RF Link                |
|-------------------|------------|-------------------|-----------|------------------------|
| <b>Repeaters</b>  |            |                   |           |                        |
| 223.90 MHz        | None       | Stensgar Mtn      | AK2O      | Hub                    |
| 147.38 MHz        | None       | Mica Peak         | N7WRQ     | AK2O—223.90            |
| 147.36 MHz        | None       | Stensgar Mtn      | N7WRR     | Hard wired Hub         |
| 147.02 MHz        | None       | Lookout Pass      | KB7ARA    | W7OE—147.38            |
| 147.28 MHz        | None       | Pikes Peak        | KB7ARA    | AK2O—223.90            |
| 147.32 MHz        | 103.5      | West Twin, Moscow | KA7FVV    | IRLP                   |
| <b>Links</b>      |            |                   |           |                        |
| Echolink KB7ARA-R | N/A        | Spokane, WA       | KB7ARA-R  | AK2O - 223.90          |
| IRLP Node 3636    | None       | East Tiger Mt     | KB7ARA    | 145.33 & Ref 9075      |
| IRLP Node 3638    | None       | Spokane, WA       | K1RR      | AK2O—223.90 & Ref 9075 |



**KBARA Membership / Support Information:** The KBARA repeater system consists of several club & privately owned linked Amateur Radio repeaters. It covers an area from northeastern Washington to northeastern Oregon, and from western Montana to central Washington. The KBARA system is also part of the Evergreen Intertie, an interconnected group of repeaters located in western Washington and Oregon. The primary purpose of the KBARA repeaters is to provide a means for emergency communications within the above areas, and secondarily for routine radio traffic. It makes possible a single system of mobile communications coverage, extending the limited range provided by any single repeater operation. The KBARA FM repeaters operate in the VHF bands and are linked by UHF radios. All licensed Amateur Radio operators are welcome to use this open repeater system. Your support would also be greatly appreciated. Please visit this site for more information:

<http://www.kbara.org> for more information about the club and repeaters.



Testing is held the 3rd Wednesday of every month. Brought to you by Glen, K1RR. If you have any questions please contact Glen at [glen@k1rr.com](mailto:glen@k1rr.com) or 509.216.0666.

**Contact Glen for updates on testing during the pandemic**

To support KBARA, please send your contributions to:



**KBARA**  
PO Box 30801  
Spokane WA 99223-3013

Annual support is \$15 per calendar year for a single membership and \$20 for a family membership. Dues are due in January of each year and if paid between September 1 and December 31, they will be applied through the entire following year. Also, any contribution will be gladly accepted to the Repeater Fund. This can also be done via PayPal on our webpage at [www.kbara.org](http://www.kbara.org).

**KAMIAK BUTTE AMATEUR REPEATER ASSOCIATION**

**PO Box 30801**

**Spokane WA 99223-3013**