



2016 Christmas Luncheon ★ December 17th

by Glen Ahlborn, K1RR

We had our annual Christmas party at the Longhorn BBQ in the Spokane Valley. It seemed to be well attended, with people from the Kamiak Butte Amateur Repeater Association, as well as the Inland Empire VHF club, and others. It was nice to see Jim and Anne there who made the trip from their new location in Battle Ground, Washington. As we do every year, we shared great conversation with good

food. Due to the amount of snow and cold weather, the attendance was down a little bit from the previous year, but I think everyone who showed up had a good time. We will look forward to another great party next year!



73,
Glen, K1RR





A few words from our President

KBARA Members,

I want to start out by wishing all of KBARA a Happy New Year. Hope the cold winter weather and snow is not getting you down to much. Even though warm weather seems far away we can start looking forward to the usual spring and summer events.

Thank you every one for being patient as we had continued delays when ordering a new antenna for the backbone repeater. With the 220 backbone repeater with a new antenna the system sounds better than ever. Again delays in antenna delivery delayed the new antenna for the 38 repeater. It was installed about the time the weather made a turn for the worse, especially at the repeater site. By the time the hardline could be ordered there was no way to get back to the repeater site. We are all waiting for spring to complete this project. I want to thank all of our repeater owners for their hard work to get the system back up and running.

First there is one amateur radio winter event that I have been hearing about lately is Winter Field Day. This year it takes place on January 28th and 29th. If you are interested in doing field day in the cold check out <http://www.arrl.org/news/winter-field-day-is-just-ahead> and <https://www.winterfieldday.com/>.

When we thaw out from doing field day in the snow we have the Puyallup Hamfest coming up on March 11th. As usual KBARA will be in attendance. Start planning now if you wish to attend. See the hamfest flyer later in this edition.

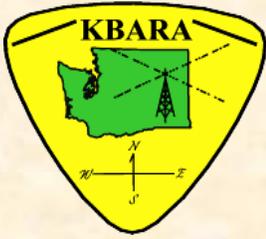
Other events coming up of course are Summer Field Day where we usually gather at Valleyford Park and our Annual Hamout and Meeting. I am still researching locations. We may end up being back at Rotary Park in Oldtown, but I will keep you posted.

As a closing note it is membership renewal time once again. Please renew on our web site by using the Paypal link or use the membership renewal form later in this edition. Please don't forget our repeater fund.

73,

Scott, KA7FVV,

President KBARA

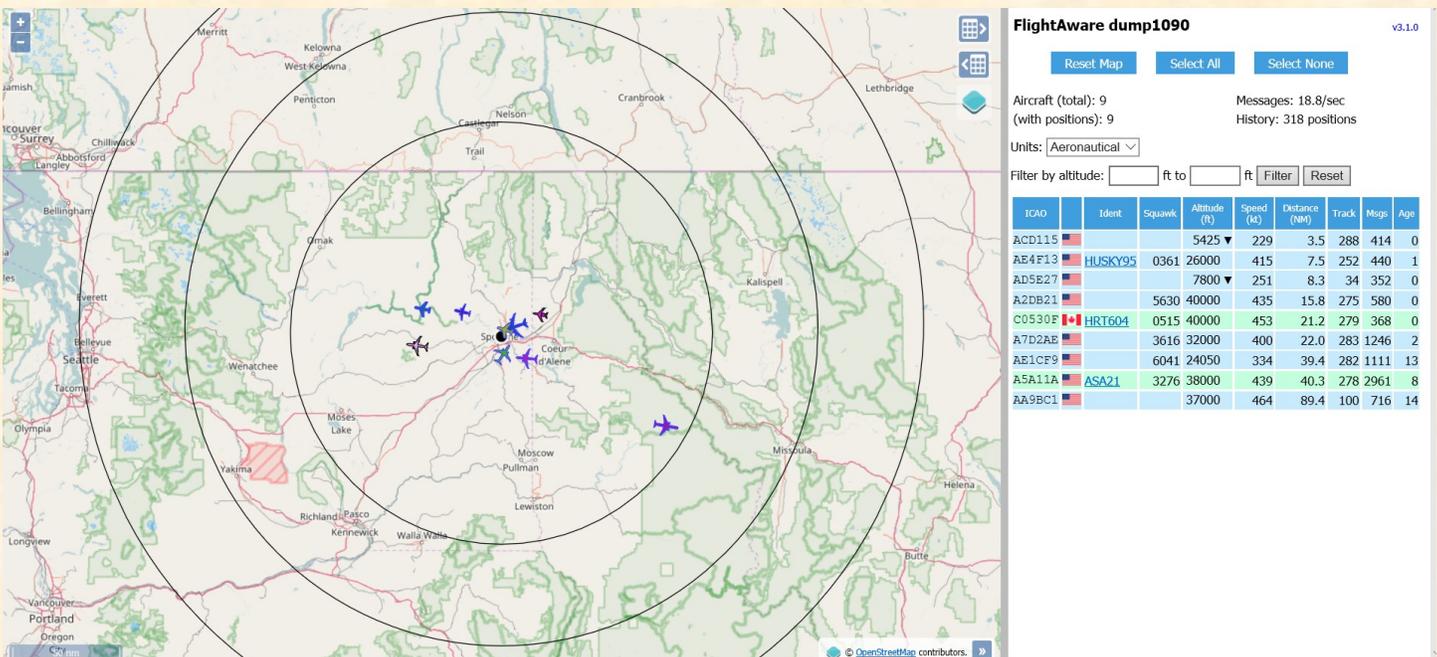


ADS-B Aircraft Transponder Reception

By Scott, KA7FVV

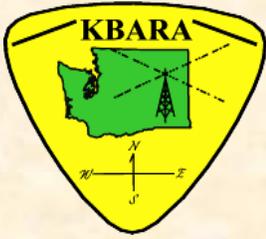
Automatic Dependent Surveillance—Broadcast (ADS-B) aircraft transponders transmit aircraft data on 1090 MHz. Using radar and ADS-B together allows for more accurate tracking of aircraft position. The ADS-B data can be received by anyone with the use of a RTL-SDR dongle and a raspberry pi (RPI) computer. The RTL-SDR dongle is a USB thumb drive sized receiver originally designed to receive television in European countries. It has been discovered that these make excellent broadband receivers when used with SDR programs like SDR#, HDSDR and SDR Console. They work great at the 1090 MHz frequency needed for ADS-B reception.

There are several programs that allow decoding of the ADS-B signals but the most popular that can be used with a RPi is PiAware by Flightaware. Once setup with a RPi with PiAware, RTL-SDR dongle or equivalent sold by Flightaware and an appropriate antenna and a Flightaware account the received data is sent to Flightaware and used for their flight tracking accuracy. Aircraft location, speed, altitude, the transponder squawk code, distance from receiving station. One additional data point is called Multilateration (MLAT). This is a way for the PiAware software to locate aircraft that do not have ADS-B transponders but are still broadcasting data on the ADS-B frequency. This



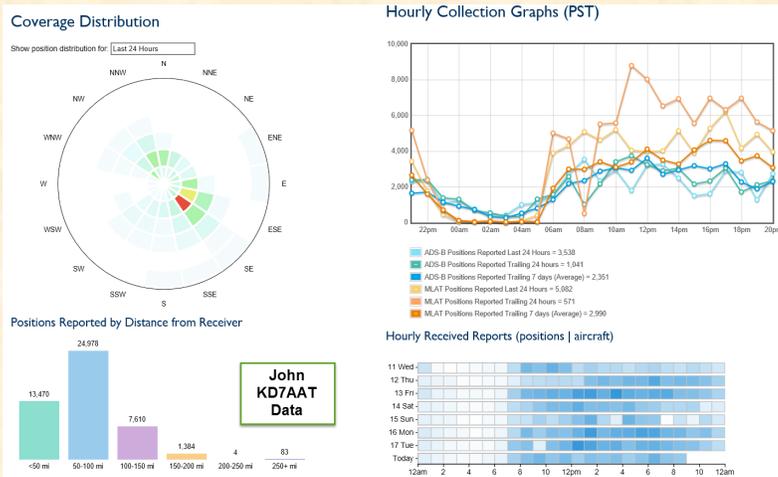
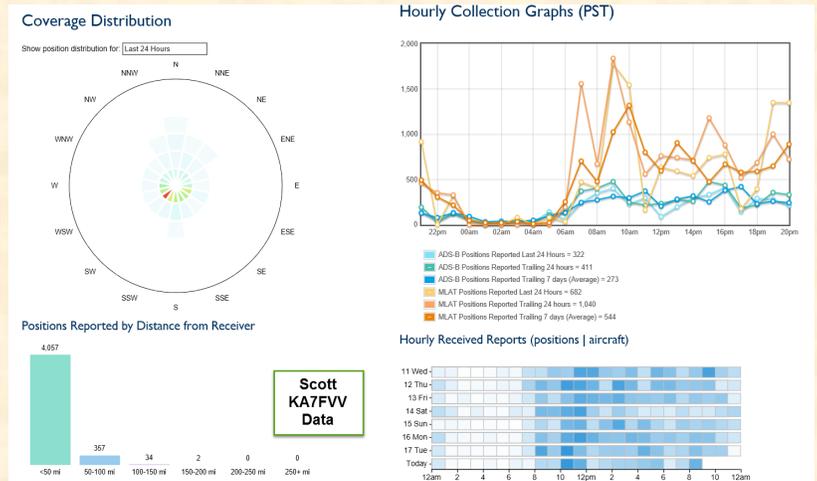
requires the use of three or more stations by using time distance of arrival (TDOA) or triangulation. Similar to how GPS satellites determine your location.

Setup up is easy. RPi with Raspian installed and follow the instructions on the Flightaware web site for the PiAware install. Once setup it will run headless. There is no GUI in PiAware but you can see the information from your own stats page.



ADS-B Aircraft Reception continued...

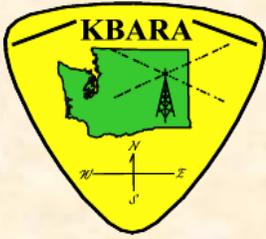
As in any radio installation the antenna is an important part of the setup. The short antenna that comes with the dongle will do in a pinch. It is a little long for 1090 MHz. Cutting it to 68 mm makes it closer. What you need is gain at this frequency. Building a collinear antenna gives the most gain and it is cheap and a fun project. I built mine and it ended up being about 8 feet long. Mine is in my attic at a 45 degree angle since it won't stand vertically since there is not enough room. Next move in the spring will be outside.



Enough technical jargon. John, KD7AAT and I have both setup these receiver station. I have had mine running for almost three months non-stop. John's has been running for almost a month. Both have the home built collinear antennas. John's is outside above roof lever so he has a great clear view. He is also in a very busy air corridor between San Francisco and Los Angeles. Please see the following pictures. My RPi 2 is in a case with a monitor built in. Monitor is off unless I need to make changes to the system.

For more information and links please visit my web page at <http://www.ka7fvv.net> and visit my Scanner and SWL Page.





Heathkit Clock Build

By Duff, WA7BFN

Like many of us who enjoy electronics and ham radio, the Heath Company of Benton Harbor Michigan, was the starting point in a rich and varied hobby we enjoy today. Many of the Heathkits of the 60s and 70s are still in operation today as a testament to a company that provided a much needed path to affordable rigs and equipment for our shacks.

The Heath Company was founded in 1926 when Edward Bayard Heath founded the Heath Aeroplane Company and introduced his first kit, the "Parasol". A small airplane for the common folk. Over the years, the company expanded into many areas, but is probably recognized best for the "Heathkits" a favorite activity for many electronic enthusiasts whose interest ranged from ham radio to hi-fi/stereo gear and household electronics. I remember my dad tinkering away building one of the first color tv kits. What fun! It was always fun to receive the NEW Heathkit catalog and the excitement of the new kits and creations introduced.



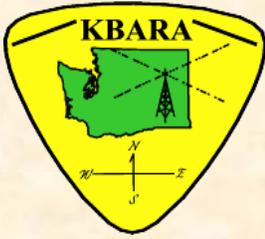
Through tough times and company changes the Heath Company called it quits in the mid 80s. I'm sure I was not the only one sorry to see them go.

In the early 2000s Heathkit appeared again. A small company out of California, purchased the rights to all the manuals, and designs and is now in the process of once again developing and selling new kits in the Heath tradition.

One of the more successful kits of over 30 years ago was the famed Heathkit "Clock". Many, to this day, still adorn a place in our homes. It has now been re-introduced as an updated, instantly historic design. The Heathkit Most Reliable Clock. As in the past, I noticed a rather small ad in QST announcing the new kit. I mentioned to my better half, that after all this time Heathkit was "back". Thinking nothing more of it, I was pleasantly surprised this Christmas with a first production run of the model. I was truly impressed. The



Manual, parts layout and packaging was just as it was many years ago. Accurate in all the details, it won't let you fail. Out came the muffin tins, soldering iron, and various tools needed to complete the task. And in just a few pleasant evenings, My old/ new clock is in operation with an appropriate 10 minute timer for long "AAT" QSOs. Hi hi. Remember the thrill of powering up a newly completed kit, seeing the tubes light up, the display come on and noise from the speaker? Well It's still there in all the satisfaction of a job well done.



Heathkit Clock Build continued...

Postscript, The Heathkit Most Reliable Clock is a superbly manufactured kit. With clear concise instructions for soldering, identifying parts and description of how it works, and is my recommendation for newcomers and oldsters alike to visit or "re-visit" the joy of electronic kit building.

PPS; if you decide to start the project, hope you do, I'd be happy to help you along in the adventure.

73s

Duff , WA7BFN



Please remember to renew your membership

Name: _____

Call Sign: _____

Address: _____

City/State: _____ Zip: _____

Telephone: _____ Amount Paid: _____

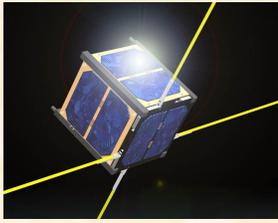
E-Mail: _____ ARRL Member #: _____

Would you rather receive the newsletter via computer, instead of receiving it in the mail? YES NO

Dues are a minimum of \$15.00 per year for individuals and \$20.00 for a family (all must be living at the same address). 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. And any additional amount going toward the Repeater Fund will be graciously accepted. To support **KBARA**, please send your contributions to:

KBARA, PO Box 30801, Spokane WA 99223-3013

Please visit our **KBARA** website for more information: <http://www.kbara.org> Also renew on our website with PayPal.



Satellite Update

by Scott, KA7FVV

Since last October when I published information on two FM Satellite SO-50 and AO-85 we have had a new FM Satellite launched.



BY70-1

Mode V/u FM Transponder

VHF Uplink: 145.920 MHz FM - **67.0 hz tone**
UHF Downlink: 436.200 MHz FM

Doppler Adjustment:

AOS: 436.210 436.205 MID: 436.200 436.195 LOS: 436.190

Satellite is very sensitive to up and downlink Doppler shift tuning

Satellite was launched by the Chinese along with two earth observation satellite and due to upper stage rocket issues they were launched into an elliptical orbit of about 294 x 141 currently. It should have been a 500 mile circular orbit. Satellite is expected to reenter in no longer than a couple of months.

YL Net - 7-7:30pm, Tuesdays

The YL net was started about a year ago, primarily for women hams however everyone is welcome to check-in. There was a very successful YL net years ago and we'd like to reestablish that net once again. It was started because there seems to be a lack of women who tend not to check into our nets that might have an interest but are afraid to talk for fear that they might say something wrong. There are no right or wrong topics, except for you know....

I know, I know that work thing tends to get in the way however we would like to encourage all women to check in. The net covers various topics such as; book, movies, your favorite recipe, family, even radio. If you have a favorite recipe you would like to share or a book your reading, tell us about it.

If you have a spouse, child or friends that would like to get a taste of ham radio, this is a good spot to get them on the air to see the joy in "Ham Radio". Third party check-in are always encouraged and welcomed. Don't be afraid, check-in. See you on the radio....

For more information, contact Debby, W7TSE at (509)690-4624 or Andrea, KF7SLW.



Upcoming Hamfests and Events

Courtesy of N7CFO.com

March 11. Mike & Key 35th Electronics Show & Fleamarket. *This is an ARRL sanctioned event.* Puyallup fairgrounds exhibition hall, Puyallup, WA. <http://www.mikeandkey.org/flea.htm> [Flyer in PDF](#). (1MB)

March 18. Microhams Digital Conference, Redmond, WA. *This is an ARRL sanctioned event.* <http://www.microhams.com/mhdc/>

April 8. Richmond Amateur Radio Club Swap Meet. Vancouver, BC. http://rac.eton.ca/events/detail.php?event_ID=1840v

April 8. Yakima Hamfest. Yakima, Washington. Selah Civic Center, 216 South 1st Street, Selah, WA. *This is an ARRL sanctioned event.* <http://yakimaamateurradioclub.com/yakima-hamfest/>

April 21. Idaho State Convention. Boise, ID. *This is an ARRL sanctioned event.* <http://voiceofidaho.org/> Contact: Larry Bickham , WA7ZZS. (208)453-1666, wa7zzs@arrl.net

April 22 & 23. Communications Academy. South Seattle Community College, Seattle, WA. *This is an ARRL sanctioned event.* <http://commacademy.org/>

May 6. MARA Hamfest. Wasilla, AK. Matanuska Amateur Radio Association. *This is an ARRL sanctioned event.* <http://www.kl7jfu.com> . Contact: Betty Carrington , KL1XL, (907)376-9549, kl7jfu@gci.net

May 7. Maple Ridge Swap meet. Pitt Meadows, BC. http://rac.eton.ca/events/detail.php?event_ID=1843

May 13. Stanwood Camano Amateur Radio Club Hamfest, Stanwood Middle School, Stanwood, WA. Contact: Fred Laun, w7piq@arrl.net <http://www.scarcwa.org/>

May 19-21. Washington State Search And Rescue Conference. Ferry County Fairgrounds, Republic, WA. <http://www.wasarcon.org/>

May 19-21. River Radio Campout 2017. Pateros WA. Free "dry" camping along the Methow River at Pateros. Always the weekend prior to Memorial Day Weekend. Contact Roger W7CH w7ch@arrl.net (509)687-3919. <http://lakechelanradioclub.webs.com/>

June. 49th Annual Apple City ARC Hamfest. Apple City ARC. Dryden Gun Club. Dryden, WA. <http://www.qsl.net/w7td/> .

June 2-4. SEA-PAC Hamfest and ARRL Northwestern Division Conference. Seaside Convention Center, Seaside, Oregon. *This is an ARRL sanctioned event.* info@seapac.org . www.seapac.org/ . [Flyer in PDF](#). (870K)

June 10. KARS Hamfest. Kootenai Amateur Radio Society. Post Falls, ID. Always the 2nd Sat in June. For information contact Bonnie, KG6QQM, 208-683-2939 or KG6QQM@ARRL.net or John, n7ju@arrl.net

June 10. Port Ludlow ARC Annual TailGate'r. Port Ludlow, WA. <http://www.n7pl.org/>

July. 8th Annual KUH Pigroast. Springdale, WA. Contact Ray, (509)258-7078 cdknray@wildblue.net



ANNOUNCING THE 36th ANNUAL MIKE AND KEY ARC ELECTRONICS SHOW & FLEAMARKET

MARCH 11, 2017 @ 9AM
PAVILION EXHIBITION HALL

WASHINGTON STATE FAIR GROUNDS

110 9th Avenue SW, Puyallup, WA 98371

ADMISSION - \$9 (UNDER 16, FREE w/ADULT)

TWO FLOORS WITH 44,000 Sq FEET OF EXHIBITION AREA (>300 tables)

TALKIN 146.82/22 (PL 103.5)

RADIO GEAR * COMPUTERS * CLUB & INFO TABLES * PARTS
SNACK BAR * FREE PARKING * CONSIGNMENT AREA
OVERNIGHT SC/RV Camping Available * LICENSE EXAMS

Table Reservation Information: (253) 631-3756, ddmdink@gmail.com or n7wa@arrl.net
VE Exam Information: (425) 788 0452, ag7t@arrl.net

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CONTACT NAME: _____ CALL: _____ BUSINESS NAME (IF ANY): _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

TELEPHONE: () _____ E-MAIL: _____

REGISTRATION TIPS

REGISTER EARLY AS TABLES ARE ASSIGNED ON A FIRST COME, FIRST SERVE BASIS AS DETERMINED BY POSTMARK. SPECIFIC LOCATION REQUESTS ARE HONORED ONLY IF THE SPACE IS AVAILABLE. BE FLEXIBLE AND GET GROUP REQUESTS IN EARLY.

EXAMPLE ORDERS: 1 TABLE & 1 SELLER = \$33
1 TABLE & 1 SELLER & 1 HELPER = \$43
1 TABLE & 1 SELLER & 2 HELPERS = \$53
2 TABLES & 2 SELLER = \$66
1 BOOTH & 2 SELLERS \$128

Please note any location/group requests, special requirements, or additional information below:

QTY	DESCRIPTION	\$
	COMMERCIAL BOOTHS @ \$112 EACH SELLER/HELPER ADMISSIONS (NOT INCLUDED) (200 SQ FEET, 4 8'X30" TABLES, INCLUDED)	
	SELLER TABLES 8'X30" @ \$25 EACH SELLER/HELPERS ADMISSIONS (NOT INCLUDED) (INCLUDES ACCESS TO ELECTRICITY)	
	SELLER REGISTRATIONS @ \$8 EACH (LIMIT OF ONE (1) PER TABLE PURCHASED)	
	TABLE HELPER REGISTRATIONS @ \$10 EACH (LIMIT OF TWO (2) PER TABLE PURCHASED) (LIMIT ONE (1) PER INFO TABLE)	
	DAY OF EVENT ADMISSIONS @ \$9 (HONORED @ 9AM, March 11th-SENT BY RETURN MAIL - NO ORDERS AFTER 02/25/17)	
	TOTAL ENCLOSED =	

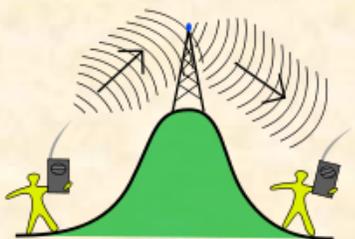
(WALK-IN ONLY) Prefer to pickup Registration packet at Gold Gate NE corner of the Fairgrounds? Check Here ()

SELLER SETUP TIMES

MARCH 10 (FRIDAY) - 2PM TO 7:30PM
MARCH 11 (SATURDAY) - 5:30AM TO 8:30AM

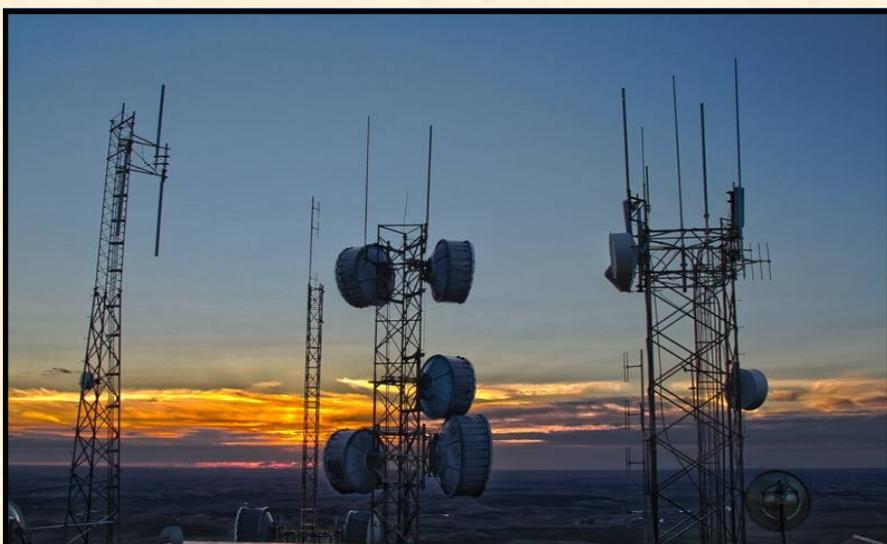
MAKE CHECKS PAYABLE TO: MIKE & KEY ARC MAIL FORM AND PAYMENT TO DIANE DINKELMAN 22222 148TH AVE SE, KENT, WA 98042
ALL RESERVATIONS CONFIRMED BY RETURN MAIL (NO RESERVATIONS TAKEN OR CONFIRMED BY E-MAIL)

INFORMATION TABLE REGISTRATION PACKETS WILL BE AT THE WALK-IN GOLD GATE UNLESS OTHERWISE REQUESTED. CHECK FOR DRIVE-IN: ()



KBARA Repeaters and Echolink/IRLP Nodes

Frequency	CTCSS Tone	Location	Callsign	RF Link
Repeaters				
146.74 Mhz	None	Kamiak Butte	W7HFI	AK2O—223.90
223.90 Mhz	None	Stensgar Mtn	AK2O	Hub
147.38 Mhz	None	Mica Peak	W7OE	AK2O—223.90
147.36 Mhz	None	Stensgar Mtn	AF7JB	Hard wired Hub
147.02 Mhz	None	Lookout Pass	K7HPT	W7OE—147.38
147.28 Mhz	None	Pikes Peak	KD7DDQ	AK2O—223.90
53.75 Mhz	100.0 hz	Kamiak Butte	N7ZUF	Linked
145.19 Mhz	None	Elk Butte	KF7WOR	AK2O—223.90
Links				
Echolink KB7ARA-R	N/A	Spokane, WA	K1RR	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
147.400 Simplex IRLP Node 3282	100.0 hz	NW Spokane, WA	K1RR	IRLP Only



KBARA Membership / Support Information: The KBARA repeater system consists of several 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> and visit <http://groups.yahoo.com/group/evergreenintertie>



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.

KAMIAK BUTTE AMATEUR REPEATER ASSOCIATION

PO Box 30801

Spokane WA 99223-3013

