KANIAK BUTTE AMATEUR REPEATER ASSOCIATION
KBARA

The KBARA Gazette

Volume 4, Issue 3 **November 1997**

President's Corner

Greetings,

Recently another repeater within the KBARA system changed hands, the Lookout Pass repeater. We want to commend Neil Gallup, N7LVO, and John Dempster, W7OE, for assuming the responsibilities of this new ownership. And we especially want to convey our gratitude to Art Gemmrig, WB7AUK for his time, energy and financial resources in establishing and maintaining this fine communication system.

Next, several members have suggested KBARA, as a club, affiliate with the American Radio Relay League. In researching this, it seems numerous benefits would be available to the group: ARRL-sponsored liability insurance, "being associated with over 2000 like-minded clubs with similar goals", and referrals of prospective radio amateurs to the group. In addition, KBARA would be supporting an organization which very actively represents the Amateur Radio community before Congress. In order to affiliate, though, at least 51% of KBARA members must be voting members of the ARRL. In order to determine that, and whether you favor this suggestion, we are asking that you please mark the appropriate boxes on the contribution form contained in this newsletter. Also, we welcome any comments you may have.

Lastly, I'm sure you are quite aware that our 2-meter and 70-cm bands are being sought after by the Low-Earth-Orbit satellite groups ("little Leos"). So far the FCC has sided with the Amateur Radio community, in effect saying that we would make better use of the frequencies than they. But let's not forget we are still under the microscope. For that reason, and for the joy and pride of this hobby, we may want to direct ourselves toward consistently using good operating practices, common courtesy and consideration toward others, and just plain simple kindness. We will all benefit from this.

73,
Betsy Ashleman
N7WRQ

Up late?
Can't sleep?
Check into the
NIGHTCRAWLER'S RAGCHEW NET
More effective than sleeping pills!
More fun than counting sheep!
Details inside...

A note from the
ARRL Eastern Washington Section Manager

"At the ARRL Board meeting on Connecticut on July 18-19, 1997, among items discussed and placed as a motion was a study on the issue of compliance with Amateur Radio band plans. The level of compliance with band plans is eroding to the detriment of Amateur Radio, and it was adopted to have the ARRL petition the FCC to amend the Part 97 rules to add the following sentence to Section 97.101(a): "Amateur operators should be familiar with, and should abide by, the voluntary band plans that are applicable to the frequency band in which they operate." Notice the words FAMILIAR WITH, and ABIDE BY! All amateurs should have in their possession a copy of Part 97. Also the Repeater Directory has VHF band plans."

Kyle Pugh, KA7CSP
ARRL
Eastern Washington Section Manager

New Repeater Owners

In May, the Pikes Peak repeater, 147.280, located just south of Walla Walla, on the Washington/Oregon border, was sold by Art Gemmrig, WB7AUK, to Rich Hebel, AA7P. Since the repeater is technically not quite on Pikes Peak, it will be called the **Blue Mountain Repeater**. All of the Hebel family are hams: Besides Rich, there's his XYL, Denise, KC7ORO, his daughter Cathie (14), KC7OQR, and his son George(13), KC7OQS.

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New Repeater Owners

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In September, the Lookout Pass repeater, 147.02, located on the Idaho/Montana border, was sold by Art Gemmrig, WB7AUK, to Neil Gallup, N7LVO and John Dempster, W7OE. We're told it is actually on "Rump Mountain"... John, Neil: What's the deeper significance of that??!!

Minutes from the Kamiak Butte Amateur Repeater Association Annual Business Meeting

The meeting was called to order by N7WRQ, Betsy, at 11:12am at Edgecliff Park in Spokane. Introductions were the start of the meeting and all had a chance to say hello, including the current elected officials and the new owners.

The minutes from last years meeting were read by N7VBW, Glenn, Secretary for the group. The group approved the minutes as read and they were entered into the records. A detailed report of the treasury was also read and approved as read, and also entered into the records.

At this point each owner of the machines were asked to give a report of the condition of each machine. WB7AUK Art, went first with a report of the condition of the 147.02 machine on top of Look Out Pass on the Idaho, Montana border. To start with, the 80 foot tower is currently laying on the ground due to the Ice Storm earlier in the winter. The antenna which was laying buried in the snow has been put in side the building for safe keeping. Art has also told us of someone in the Montana area that has donated a tower for the site. A tower party is being planned for the not-too-distant future.

W7OE, John who is the owner of the 147.38 machine on Mica Peak said that all is well up there on the Mica site. John is also part owner of the 147.36 repeater on Stensgar Mountain North of Spokane along with KB7WTO, Royal. John also said that this repeater is doing just fine. He did make a comment about the number of flies inside the building at Stensgar.

W7OE also added some information about the 146.74 machine on Kamiak Butte which has been silent for a while. It seems that the transmitter portion of the repeater is out and will have to be brought back to Spokane for work. It was also explained that the people who control the hill top have built a new tower and will be removing the old one. The KBARA antennas will have to be moved and at the request of those in charge of the hill, it must be done by someone who is licensed and bonded for that sort of thing. Jim Colville has been approached on the matter and he has graciously agreed to deal with this for the group. The dollar amount is unknown at the moment but we hope he will be kind to us.

AA7P, Rich, who is the new owner of the 147.28 machine on Pikes Peak near Walla Walla has already had his share of problems. The controller on the machine went South on him shortly after his purchase of the machine. He has already taken care of the problem and is looking forward to working out some of the minor problems that have plagued the system for some time now with emphasis on the 220 back bone.

WB7AUK, Art was asked about the Auto-Patch that runs off of the 147.36 repeater. He said that there were some problems with the 220 link between the hill top and his place and that until he can get to the hill top he won't know for sure what is wrong. He also brought up the previous problem of someone keying up and dialing 911 and letting it hang. If he gets the machine working properly again and the person or persons that were doing that before start again he may consider shutting down the Auto-Patch permanently due to malicious interference. The general consensus is that the Auto-Patch is something that the supporters would like to see stay on-line.

Editor's note: Since the Annual Business Meeting early this summer, a great deal of work has gone into repairing and upgrading the repeater system. Details of this effort are addressed elsewhere in this newsletter.

KB7WRT, David, asked about KBARA Patches for jackets and hats. It seems that he has had some experience with this in the Walla Walla area and would like to see KBARA adopt something like this to show support for the system. He explained that there was a $75.00 set up fee but that there was no minimum to purchase. A motion was put to the floor that David, KB7WRT investigate the possibilities and costs and report to the group at the September Walla Walla Hamfest. It was seconded and voted upon and carried.

WA7YCP, Karl, put out a plea for technicians for the owners so that what a machine goes down it might get back up and running a little faster. He also brought up Net Night. It seems that along with KBARA having the regular Net on Wednesday night at 7:00 pm there are others out there as well. The Tri-State group has there weekly net on the same night at 8:00 pm along with a Tech Net over the Evergreen Intertie also at 8:00 pm. Karls' system also has a Net on at 8:00 pm on the very same night. Karl was wondering if KBARA would consider moving the Wednesday night Net to another night or time. It was discussed and nobody wanted to move the KBARA Wednesday night net to another time or day.

AA7P, Rich, made a request of a seminar or tutorial on how to work the KBARA system as well as the Evergreen Intertie at some of the Hamfests. It would be good education for the 'New Hams' who are just coming into the

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Minutes from the ANNUAL BUSINESS MEETING

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hobby as well as some of the rest of us who don't know how to use it the way it was intended.

Motions during the meeting:

The motion: The Kamiak Butte Amateur Repeater Association will donate $500 as seed money to the 1997 Original Spokane Hamfest.

Amend Part II (Membership) of the Bylaws thru change in Standing Rules. The Motion: Repeater owners and licensed amateurs residing at the same residence that are members of the immediate family shall have full member privileges for as long as they own the repeater and are part of the KBARA system. This Motion was moved, seconded and carried by majority vote.

Amends Part V (Association Officers) of the Bylaws thru change in Standing Rules. The motion: The day to day affairs of KBARA shall be governed by elected Officers consisting of the President, Vice President, Secretary and Treasurer. The majority of the Officers shall have full power to make decisions, but may not authorize expenditures of more than $500.00 for any one action, with the exception of repeater sites rental, without notifying the members of the need for a large expenditure. The members shall be informed of these proceedings on the Wednesday evening KBARA net. This Motion was moved, seconded and carried by majority vote.

It was also discussed that the donor of the tower about to be put into service on the Lookout Pass location be granted a Life Membership.

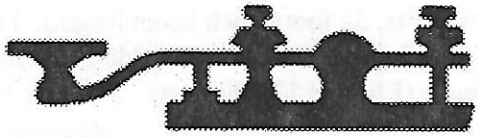
The floor then opened for further nominations for elected offices. KB7WRT, David added his name to the list of Nominees for Vice-President. Elections were then held by Secret Ballot with the votes counted by KA7SUZ, JoAnn and N7VBW, Glenn.

The results of the voting are as follows:

President:	**Elizabeth (Betsy) A. Ashleman**
Vice President:	**Royal D. Moore**
Secretary:	**Warren H. Westerman**
Treasurer:	**Julius (Bozo) B. Bosold**

After the announcements of new officers, a volunteer for Net Manager of the Wednesday Night Net stepped forward. KC7ORO, Denise Hebel will be taking on those duties. Other appointed positions will be announced later.

The meeting was closed at 12:32 pm and the picnic was started.



VHF MOUNTAINTOP AND WEAK SIGNAL DX

by
John Dempster, W7OE

In 1976, after 12 years of using HF exclusively, I purchased my first two-meter FM transceiver. Like many others of that era, I thought of Amateur Radio as synonymous with HF radio. Most of us began as Novices and quickly upgraded to General Class, bypassing the Technician Class license. Most of us considered VHF as a experimental wasteland with limited propagation - a sort of purgatory used to punish those into passing the 13 WPM code test. However, during a weak moment I was talked into buying a used Heathkit FM transceiver. Naturally, as an HF DXer I wanted to determine the maximum range that I could achieve with this unobtrusive-looking radio.

A logical place to begin this quest for two-meter DX should be atop a mountain. My first efforts were on Chuckanut Mountain near my home in Bellingham, WA. My observation of TV propagation suggested that 100 miles would be a distance that would be difficult to surpass. To my amazement, I could access repeaters 150 miles away with only 10 watts. My high location allowed me to make those 100-kilowatt TV stations look wimpy. I did a lot of experimenting but 150 miles seemed to be my limit.

A job transfer led me to relocate to Spokane, WA in 1987. By that time I had one of those fancy Kenwood FM transceivers (that didn't require crystals) and a 160-watt "brick"[1]. I drove to the top of Mount Spokane and noticed something terrible: RF desense[2] generated by the radio equipment at the top of the mountain. I noticed, however, that the noise diminished as I descended the mountain and as I moved away from the RF. After some jockeying for position I found a "hot spot" at the 5500 foot level of the mountain facing the west. I could access repeaters in Seattle and Portland so my range increased to 275 miles. At the time I ran my 160 watts into a 5/8-wave mag mount vertical. I also enjoyed listening to Seattle-area FM broadcast radio stations.

The real fun began when I purchased a transceiver with two-meter SSB and CW capability. I also purchased a small 4-element yagi and a 200-watt "brick". This arrangement allowed me to easily contact stations in western Washington and western Oregon. These were not mountaintop stations but were mostly modest home stations at sea level. Sometimes this was achieved with as little as one watt at my end. I was also able to contact another mountaintop station (8000 feet) at Crater Lake, Oregon -- 419 miles away.

Due to my obsessive-compulsive nature *(editor's note: we hadn't noticed, John...)*, my station evolved to

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VHF Mountaintop and Weak Signal DX

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include bigger beams and more power. I now use a 24-element two-meter Yagi on a 52 foot 9 inch boom giving me 17 dBd gain. Fortunately, this beam comes in eleven five-foot sections so it may be hauled by my pickup truck and assembled at the site in about two fun-filled hours #!@?. I have also upgraded to a 350-watt amplifier so my Effective Radiated Power (ERP) is now 17,500 watts. I can now routinely contact stations 400 miles away on two-meter SSB and CW from my various mountaintop locations.

During the last VHF contest I operated from the Look-out Pass Repeater site on Rump Mountain and I provided many stations in western Washington with their first Montana contact on two meters as well as with a new grid square. It was exciting to have become the "DX" being chased and being listed on an Internet DX cluster. I was even forced to move off 144.200 MHz (the calling frequency) to 144.250 MHz to accommodate the pile-up.

Aside from mountain topping, I have also had the pleasure of working two-meter Aurora. This involves pointing the beam north to the Aurora Borealis and bouncing the signal to stations as far away as 500 miles, an eerie experience because the CW signals were raspy and very distorted. This was probably the most exciting experience I have had in over 33 years as a Radio Amateur.

Two-meter satellite communication has also been a lot of fun. I have contacted stations as far away as Europe using two-meter uplinks to these orbiting repeaters. I have even done this mobile using a 5/8 wave mag mount antenna. Most satellites will only accept CW or SSB transmissions so an all-mode transceiver is required for this activity.

I have yet to achieve any meteor scatter or sporadic-E contacts on two-meters. Meteor scatter occurs when the signal is reflected from the ionized trail left by the meteor as it enters the atmosphere. These contacts usually last for a few seconds at most and are good up to 400 miles. Sporadic-E propagation occurs when "clouds" of charged particles form in the E-layer of the atmosphere approximately 50 to 100 miles above the earth. Sporadic-E propagation is common on the ten- and six-meter bands but is somewhat infrequent on the two-meter band because these clouds require a much higher density to reflect these higher frequency signals. Sporadic-E propagation allows for contacts up to 1500 miles apart and a few Amateurs in the Midwest have worked all 48 coterminous states on two meters by using sporadic-E propagation.

My next goal is a two-meter Moonbounce (EME or "Earth-Moon-Earth") contact. I am hoping to work one of the "Big Guns" with their giant antenna arrays during the EME contest is mid-October. These arrays are so large that only barking dogs can destroy neighborhood serenity to any greater degree. This is Big League stuff on VHF and UHF with my station being just a peanut whistle by their standards. Some larger stations run over one-million watts ERP.

Ultimately, I would like to phase a pair of 24-element Long-Boom Yagis fed by a kilowatt. This would provide 100,000 watts ERP yet would still be small potatoes compared to some of the Big Boys. Of course those potatoes grow to the size of watermelons at mountaintop locations.

In conclusion, VHF and UHF can be very enjoyable, whether it involves talking on a repeater with a hand-held or working Moonbounce with a kilowatt and a 150-foot diameter parabolic dish (as used by VE3ONT). I would recommend that you explore as many options as you can and plenty of folks will be happy to give advice and offer assistance. I know, I'm still new at much of this and I have gotten a lot of help from many of the more seasoned VHF operators. By the way, I haven't gotten rid of my HF gear yet, but I do notice that on weekends it sometimes collects a little dust.

[1] A "brick" refers to a type of linear amplifier used to amplify, or increase the power of, the output from a transmitter. This type is called a brick because it is usually packaged in an extruded aluminum box about the size and shape of a brick.

[2] For those who may not be familiar with the term, "desense" is a condition that occurs when a receiver is operating (usually in close proximity) to a powerful transmitter. The strong signal from the transmitter overloads the receiver, which reduces the receiver's sensitivity. Desense is very common at repeater sites, which are often crowded with commercial and amateur stations. It can also occur on your antenna tower at home.

Two-Meter Moon Bounce On A Budget

by
John Dempster, W7OE

As mentioned in my other article, I planned to enter the Moon Bounce (EME) contest in mid October. Since at this time the presses have not begun rolling, I am able to give the results of my effort in this newsletter.

Friday, October 17, had finally arrived. I rushed home from work and was able to set up my antenna by moon rise and enter the contest. I was using an Icom IC706, a Mirage B1030 amplifier, and an M2 2M8WL Yagi (24 elements, 52 foot 9 inch boom length). I ran 350 watts into the 17 dBd gain antenna, yielding an effective radiated power (ERP) of 17,500 watts. My coax was

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Two-Meter Moon Bounce On A Budget

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very short so I did not consider line loss in this equation.

My setup would be barely enough to be heard by the Big Guns with their massive antenna arrays on two-meters. My antenna was on a 10 foot mast and I elevated my beam 15 degrees from the horizon. This would give me about an hour window of opportunity before the moon was too high in the sky and outside my vertical beam width.

I listened. Nothing but noise. I tuned from 144.000 MHz to 144.030 MHz. Again, just noise. I tuned down the band again. Wait a second! I heard a weak signal on 144.016! "CQ CQ CQ de KB8RQ" ... yes, I could hear a signal. Because of the distance, if he can hear me, it will take six seconds from the time I stop sending before I can hear his response. I called him several times. He kept responding to other stations.

I tuned around some more. "CQ de K5GW" on 144.008. No luck with him either. Oh no! My antenna fell down! In my haste I did a poor job guying the mast. Fortunately, only a couple of elements were bent -- the fall was cushioned by the tall grass. Now what should I do? I straightened the elements, and fortunately Betsy, N7WRQ, returned with some hamburgers.

It takes something very important to get me to ignore a good hamburger, and while the hamburgers got cold I convinced Betsy and Lee, W7MW, to hold the mast and orient the antenna for me while I operated some more. As a benefit, I promised them both curly hair-dos. I heard four or five stations but they couldn't hear me. By that time the moon was too high in the sky for Betsy and Lee to maintain their balance so we called it quits.

That night I lay awake thinking about what I had done wrong. Bingo! Doppler Shift! My signal was too weak for me to hear my own echos, so I was unable to zero beat the other station like I do with satellites. I simply transmitted on his frequency, figuring that the Doppler Shift would be minor. Wrong! At moon rise, due to the earth's rotation, the moon is moving toward me. The earth rotates at about 1000 mph at the equator, so at our latitude this rate would be about half of that or 500 mph (0.14 mps). My signal will increase in frequency by 0.14 mps/ 186,000 mps x 144 MHz, or by 0.1 KHz at the moon. The reflected signal is increased by another 0.1 KHz when received again at the earth. I therefore should transmit 0.2 KHz below the other station's frequency (on my receiver) to be heard on his frequency (on his receiver). The moon's orbital speed is insignificant because its relatively great distance puts its orbit at virtual right angles to my position. What a stupid mistake I had made: my signal was probably outside the passband of the other station's receiver. I'm new at this EME stuff - I'm just like the new ham who forgets to offset the transmit frequency to access the repeater.

All was not lost. I still had Saturday night to redeem myself. At least I felt confident that I would hear some signals. I spent four hours Saturday securing my beam in an open field near my house. Again, I elevated the beam 15 degrees with respect to the horizon. Drat! Clouds were moving in.

Fortunately, Betsy, N7WRQ gave me a computer printout of the moon's position at moon rise, but it would have been a lot easier if I could see the moon.

Moon rise occurred at about 8 PM and I could see the moon through the clouds. The moon rose right where I had the beam pointed - those computers sure work well, maybe I'll get one someday. Barb, KB7WTN, and Royal, KB7WTO, showed up to watch. I adjusted my RIT by 0.2 khz to compensate for the Doppler shift. I tuned around, and on 144.028 MHz I heard "CQ CQ CQ de W5UN W5UN W5UN". My calculations were right on the money. This is exactly where W5UN is supposed to hang out. He also has one of the largest 2-meter EME Amateur stations in the world. If I couldn't work him, I couldn't work anybody. I called him. I waited six long seconds and he came back with "KA7OE?" I sent "W7OE" several times again. He responded with "K7OE? de W5UN". We're getting closer. I sent "W7OE" again several times. He responded with "W7OE de W5UN O O O O ("O" means both calls copied). I sent "W5UN W7OE O O O O". He responded with "W7OE de W5UN RO RO RO RO" (acknowledging my successful copy). I then sent " R R R R W5UN W7OE" and he responded with " R R R R W7OE de W5UN 73 SK". Wow! My first EME contact! I later worked KB8RQ and SM5BSZ. I later heard F3VS but the moon was getting higher in the sky and I only got a "W7?" from him and he disappeared as the moon left my beam width. That was around 9:15 PM. I turned the equipment off and told Royal "the party's over".

I learned several things from this experience. (1) It is possible to work EME on a budget. I had a basic transceiver, an inexpensive "brick" amplifier, and a single Yagi antenna. I had factory preamps in the transceiver and the amplifier and no preamp at the antenna. I did not use a tower or a rotator other than my arms. Fortunately, the stations that I worked were kind enough to spend orders of magnitude more than I spent so little guys like me could get in on the action. (2) My neighborhood covenants restrict outdoor antenna use. No big beams or towers. When they throw you a lemon make lemonade. I found a

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Two-Meter Moon Bounce On A Budget

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location that was ideal for EME: a long open field away from power lines allowing for several dB of ground gain when the moon is near the horizon. (3) If I fail at something, I can later achieve success by analyzing my mistakes. I completely forgot about the Doppler Shift Friday night. Saturday night was a success because I did not give up but I took the time to think through the situation and find my mistakes. Once corrected I found success. (4) Never rule out the possible. EME is something that I thought I would just read about and not actually do. That type of thinking was one of my bigger mistakes.

What's It Mean?

by
Rich Hebel, AA7P

In John's (W7OE's) stories, he uses a number of terms that sound familiar, yet can often be a source of confusion to hams. Especially when talking about "high-gain" antennas and VHF/UHF communications, hams should understand terms such as dBd, gain, and ERP. So let's review these...

"dBd" refers to "decibels of gain relative to a perfect ½ wave dipole in free space," a mouthful of words that can seem intimidating. Not so! dBd is important because it is a common and useful rating of antenna performance, and it is easy to understand.

What's a decibel? Just a unit of comparison. For instance, decibels are used in comparing one antenna to another. If you say that one antenna has 3 db of gain over another antenna, you're saying it has twice the gain of the other antenna. What's gain? We'll get to that in a moment!

The following chart shows some typical comparisons, and their value in decibels:

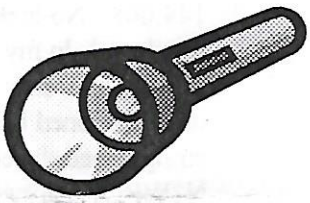
Gain

Comparison	Expressed as decibels "dB"
100 times as great	20
10 times as great	10
2 times as great	3
Equal	0
1/2 as much	-3
1/10 as much	-10
1/100 as much	-20

What's the "gain" of an antenna? To answer that, let's talk about light bulbs. Yes, light bulbs! The familiar "screw-it-in" light bulb. This type of light bulb shines light pretty much in all directions, so we can call it an "isotropic radiator". All "isotropic radiator" means is that the light is shining (radiating) just as brightly in all directions (isotropic). Yes, it doesn't shine through the base of the bulb, but we can ignore that in this discussion. So, the power put into the bulb is evenly distributed as light – with an even "intensity" of light in all directions.

Now, suppose we find a point out outside of the light bulb where the light level has dropped off, say, by one half. How many dB is that? Look at the chart, and you'll see it is –3 dB. If we connect every point that is at –3db from the light – all the points where the light has dropped off by one half - we would find that we created a sphere, or ball, with the light bulb at its center. This is the "pattern" of light, or radiation, of our light bulb. Isotropic radiators have a perfect sphere for a pattern: They radiate power equally in every direction.

Now let's consider a flashlight, one that uses the same type of light bulb as the one above. What's a flashlight useful for? Pointing light in a particular direction. So the light from a flashlight is "directional": All of the light tends to be pointed in one direction. It produces a "pattern" of light that looks like a baseball bat, instead of the sphere we see in our isotropic radiator.



Yet, if we take the flashlight apart, we can see that inside is one of our little light bulbs – our "isotropic radiator." What's going on? A combination of mirrors and lenses inside the flashlight collects the evenly scattered light from the "isotropic radiator" and focuses it into a narrow beam – the "pattern" of our flashlight radiator – pointed in a particular direction. Now we can talk about "gain".

Let's measure the light at a distance of 1 foot from the surface of our bare light bulb (our isotropic radiator), and also measure the light at one foot from the surface of that same bulb in the pattern of the flashlight. Which measurement would be greater? The flashlight, because the flashlight collects all the light that is scattered around by the bare bulb and focuses it all in one direction. And because the flashlight delivers more light at the measurement point than the bare bulb does, we can say the flashlight has "gain" relative to the bare bulb.

Well, gain is not "free." The gain comes at a cost: all of the light is shining in one direction. This makes a flashlight fine for shining in a certain direction, but makes it useless for lighting up a whole room. So there's an important tradeoff: you can have high gain and a limited "pattern", or you can have low gain and a broad pattern. All of this applies to antennas, too.

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WHAT'S IT MEAN?

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With antennas, the gain and directionality affect the signal that is transmitted, but also the signal that is received. So, in the direction of the pattern, a directional antenna is more powerful and more sensitive. And in directions that are "off" the pattern, the antenna is less powerful and less sensitive.

It turns out that if an antenna has, say, 3 dB gain over another antenna, it enjoys that gain both in the transmitted signal and in the received signal. Again, the more directional the antenna, the more "focused" the pattern, and the higher the gain in the direction of the pattern.

Of course, directional antennas don't use lenses and mirrors to get their directionality, but they do have features on them that act in a similar way. For instance, you may recall that Yagi antennas have parts called "reflectors" and "directors". These parts help concentrate the signal from and to the "driven element," which is really just a dipole. That's why a Yagi antenna has gain over a plain dipole.

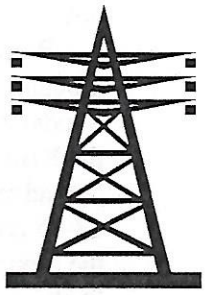
So, when John is trying to work stations using "moonbounce" he is not interested in receiving signals from everywhere. He's really interested in aiming his antenna at one spot: the moon. So he wants a very directional, high gain antenna. He needs the gain so he can "focus" enough power at the moon so the signal bounced back can be heard by other hams on earth. It's a long way to the moon. But he also needs the gain to make his antenna very sensitive to the weak signals being bounced back from other hams.

Another benefit of John's highly directional antenna: Because the antenna pattern is so focused toward the moon, it is fairly insensitive to signals coming from anywhere else. So, noise and interference from elsewhere have less of a chance of drowning out the weak signals John is trying to receive.

So what's John talking about when he uses the term dBd? He's talking about gain relative to a dipole – that's what the last "d" stands for. A dipole is a type of simple, standard antenna. dBd is a common way of rating an antenna's gain, and you will see it in sales literature for antennas. You will also see dBi, which is gain relative to an isotropic radiator.

If antenna "A" is rated 3 dBd, and antenna "B" is rated 3 dBi, which antenna has a higher gain? Antenna A. Why? Because antenna B is rated relative to an isotropic radiator, while antenna A is rated relative to a dipole, which is an antenna that already has a little over 2 db gain over an isotropic radiator. So antenna A will have a little more than 2 db greater gain than antenna B. Whether the 3dBd antenna is "better" than the 3 dbi antenna is another matter, and will depend on whether you need a more directional antenna or not.

What about antennas that are just rated in dB? Be suspicious about the numbers! Saying "this antenna has 6 db gain" is like saying "this water is 6 degrees warmer." Warmer than what? 6 dB gain over what? Unless you know what the reference is – isotropic radiator or dipole – the gain figure is meaningless. Antenna manufacturers often play games like this when selling their wares, so beware!



And what about John's incredible 17,500 watts of power? Well, it's true. In fact, unless he has some significant loss somewhere, he probably is putting out somewhat more power than that. The important thing to remember: John is talking "Effective Radiated Power" - actually "Effective Isotropic Radiated Power" or EIRP.

EIRP is the power you would have to pump into an isotropic radiator to generate the same level of power, at a particular point, as the directional antenna generates at that same point. His amplifier is still putting out 350 watts, but because his antenna is "concentrating" all of that power in a very narrow beam, the power measured in that beam is very much higher. If John was going to try to send the same level of signal to the moon using an isotropic radiator as an antenna, his amplifier would have to pump out 17,500 watts. A BIG amplifier, and not legal either!

One final point: Where you can, you should use gain in an antenna rather than running more power from an amplifier. The multiplying effect you can get from a gain antenna can produce surprisingly high EIRPs – BIG SIGNALS – and you don't produce as much interference as you would with a higher power amplifier. Remember, we should all use just enough power for a solid QSO. That's the rules, and it's just good operating discipline.

Editors's note: Now, some readers will see I've taken a few liberties in the above explanation, but the basic concepts are true. Yes, an "isotropic radiator" is an imaginary device – there can never be a perfect isotropic radiator or dipole. And there are certainly other considerations than gain in directional antenas, such as bandwidth.

Nightcrawler's Ragchew Net

by
Tom Barber. KC7SHQ

The Nightcrawler's Ragchew Net originally started in April 1997 and was born from an idea of KC7QOR (Bud) in Walla Walla, and K7VRO (Jim) in Spokane. The idea was to have someone available on the repeater to serve the motoring "ham" during the late hours of the night and early hours of the morning.

Before it was an official net, it sometimes lasted until 4:00am. Currently, the Nightcrawler's Ragchew Net meets Sunday thru Friday evenings from 11:00pm to 1:00am on the KBARA system. It is an open net conducted in a "round table" fashion. It is a friendly net and we average 12-15 check-ins nightly. Discussion topics can be anything the group wants to share and have sometimes been very lively, especially when the subject of CW gets brought up.

Each Net Controller would like to invite all Hams to join them on their net. Come and meet them on the following nights:

Each Net Controller would like to invite all Hams to join them on their net. Come and meet them on the following nights:

KBARA Nightcrawler's Ragchew Net

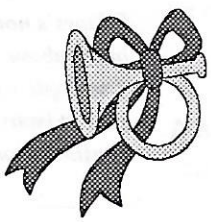
Sunday	KC7JAM	Jerry	Spokane
Monday	KB7WRT	David	Walla Walla
Tuesday	KC7SHQ	Tom	Spokane
Wednesday	KC7PHM	Laura Lee	Post Falls
Thursday	VE7AGT	Chuck	Trail B.C.
Friday	KC7JIX	Dave	Walla Walla
Saturday	11:00 pm to 12:00 midnight		

All nets: 11:00pm to 1:00am

It's been my pleasure to get to know this bunch of hams who are the Net Controllers for The Nightcrawler's Ragchew Net.

I assumed the responsibility of Net Administrator when Bud and Jim both decided to explore other avenues. I have really had a good time running this net and look forward to the net getting larger and better. If you would like to be part of this net or would like to volunteer as an alternate net controller, you can contact me and let me know when you are available.

73 and may all your signals
be rare DX,
Tom



KBARA System Operating Tips

Carefully Speaking...

Your voice is as much a signature as your call sign when using the KBARA system. Ideally, your voice should be "you" - pleasant and friendly - and your transmissions should be clear and "clean." The KBARA hub repeater, and the 220 trunk, uses "flat" audio - the normal pre-emphasis and de-emphasis has been removed - to allow the system to have high-fidelity audio. This is a unique feature of KBARA. To take advantage of the system, especially now that it is working so well, keep these tips in mind:

- Speak in a normal tone of voice, and keep the microphone off the front of your mouth. Overdriving the audio, by speaking loudly or holding the microphone too close to your mouth, causes distortion: you're voice will sound like "harsh mush" to everyone on the system.

- One handy way to hold the microphone is to use your thumb to "space" the microphone from the side of your mouth (hold the microphone so that the front is at a right angle to your mouth). This is a good technique, and will also reduce "pop" and breath noise. Combined with a normal, conversational tone of voice, this technique will result in superb system audio.

- Don't use amplified microphones! While these may have their applications in other parts of the hobby, they can only cause problems on a repeater system. In almost all cases the amplified mikes are cranked up to the point of clipping or distortion, and this is clearly heard on the system. Your rig is set up to properly operate with the microphone that was supplied with it. Use it! If you feel compelled to use a "power mike", ask someone on the repeater to monitor your audio while you set the gain. The mike is set correctly when the audio is solid and clear. If the audio gets

(Continued on page 9)

KBARA System Operating Tips

(Continued from page 8)

a harsh "edge' to it, or starts sounding "metallic", back off the gain. At that point, your signal is actually degrading.

- If you are in a noisy environment, perhaps a place of work or driving a truck or machinery, consider investing in a noise-canceling microphone. These special microphones are designed to reject (cancel) audio that is generated more than about 1" from the microphone. If you're worried about punching through your noise, this is the way to go! Unfortunately, regular amplified microphones amplify your voice AND THE NOISE, so you end up with no improvement in your voice audio, but generally a lot more distortion.

Ker-chunk... Ker-chunk... Ker chunk...

Well, everyone has been told "Don't ker-chunk." Right? You know the litany: It causes needless QRM. It ties up the repeater. It cycles all of the repeaters, hastening their wear. It's bad operating practice. But sometimes it seems almost a natural thing to do. And who hasn't done it at one time or the other? It's kind of reassuring to hear that squelch tail, isn't it?

Perhaps you just want to make sure you can get into a repeater. Perhaps you want to monitor without starting a QSO. Maybe you are testing that new handheld...

Here's a tip: Rather than ker-chunk, just state your call sign. That's all. Just your call sign. This lets you accomplish all of the above, but it also does something else: It's difficult for control operator to know if a ker-chunk is caused intentionally by a ham, or whether there might be interference that is bringing up the repeater. By stating your call sign, the control op knows what's going on, and at the same time you can confirm the operation of your rig. Besides, its good operating practice to ID on any transmission.

Always There

by

Chris Kinnear, WB1EPH

CQ CQ CQ
is anybody there?
I'll talk to you now
I know not from where

with a flip of a switch
and the turn of a dial
I can always be found
ready to talk for a while

I send out my call
to see who is around
somewhere out there
a friend can be found

and when emergencies arise
and trouble is near
you can count on us
Amateur Radio is always there!!

Favorite Ham Web Sites

Lots of links...
* http://pw2.netcom.com/~ac6v/index.html
* http://www.qsl.net/k7on/shareware/index.htm

Call sign look up...
* http://www.qrz.com/cgi-bin/webcall

FCC Wireless Telecommunications Bureau
* http://www.fcc.gov/wtb/

Shareware...
* http://www.qrz.com/files/hdn/archive/hamcomm/index.html

ARRL homepage...
* http://www.arrl.org/index.phtml

Send your favorites to KC7ORO, Denise at dhebel@bmi.net

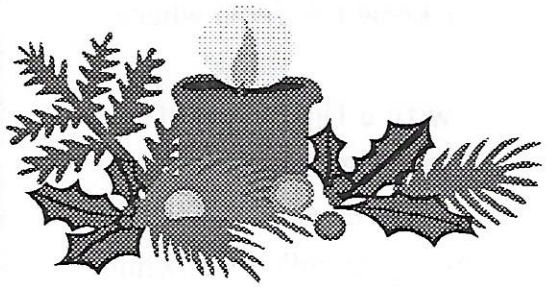
GOOOOOOD MORNING !!! K.B.A.R.A.

by
David Pence, KB7WRT
KBARA Southern Regional Representative

Greetings & Libations to you all. I have the privilege to be your Southern Representative in the Walla Walla area, on the 147.280+ "Blue Mountain" repeater.

Having perceived recent events with different nets and their participants, there have been some hurt feelings. This saddens me, and in my opinion this is not necessary.

So I would speak to you of a thought close to me. The one thing that set the light off in my mind, to want to be a ham operator, is this: We are all brothers and sisters with one common point of interest, communication via radio.



We come in all colors, both sexes, of meager means and greater than meager means. Of simple employment and top of the pay scale professionals, small of stature and some of us not so small :-)>.

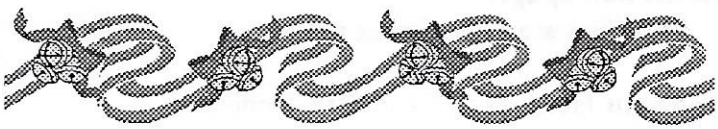
But through it all when one of us is in need of help, there is a pile up of those who are willing to be of service to our fellow ham.☺ I also know that there are three types of ham. The by the book, the socials, and the by the book and social. The main point is that everyone has her or his own style, and their own idea of what is or isn't a good ham operator.

With so many different points of view there is bound to be conflicts of personality, of technique. But I believe that if we all consider the whole, ham radio and not just individual interest, and be true to all others as we are true to ourselves, all will benefit.

It is my hope that these words are given with caring for all - that we all can think of our neighbor and treat all as our selves.

To be the highest degree of ham we can be !!!

73, and may God Bless,
David



NEWS FROM THE "HUB"

by
Karl Shoemaker, WA7YCP

Editor's Note: Karl owns the 223.900 "hub" repeater that ties the KBARA repeaters together. Besides being active in the KBARA system, he operates his own system in the Spokane/Wenatchee areas, which is linked to the K7PP system on the "west side." You can often catch Karl on his 147.200 machine(s) in the evenings.

I'm happy to report some good news. I made a trip to Stensgar Mountain to look over my 1.25 meter hub repeater. In case you aren't familiar with this repeater, it's on 223.90, and has been on the air since the early '80's. More recently it's been used to link the KBARA repeaters.

Anyway, I found the suspected source of our static problem when users on 28 are talking to users on 38 (this direction only). The problem was a noisy antenna, which was 15 years old. We figured that replacing this, along with some minor duplex tuning, would clear it up the static problem. John (W7OE), Royal (KB7WTO) and his wife Barb (KB7WTN) came up mainly for moral support. The only thing John failed to do is persuade me to have one of those smooth chocolate shakes from the South hill as payment for services. Oh well !! It was a problem on my repeater, so I guess I should buy the shake !

The following week , Rod (KC7AAD) and John met me at the site, and we replaced the antenna. So the link signal is now clear and noise-free.

The other report I have is the problem we had on the 1.25 meter link, from 28 users to 38 users. The 1.25 meter receiver at Mica Peak was suffering from "desense", so John and I moved the link antenna to a spot on the hill that was "cold" to desense, but "hot" for the intended signal coming from the Stensgar Mountain hub.

I'd like to hear if we have any more problems with the link that concerns my part of it, namely the North trunk (link) . KBARA may have other problems on the system, unrelated to my part, so a KBARA officer should be notified, if necessary. For example, I understand there was interference from a paging channel that John (W7OE) mentioned went away (I hope it stays away !).

A good time to discuss any system problems would be during net. Also Betsy and I are available on email. My address is kshoe@juno.com.

Just a little tid-bit: Some of you wonder what the 1.25 meter band is... Remember, 220 MHz is no longer a band! Our great government took it away. It's now 222-225 MHz. ...just something to remember about our fragile Amateur bands.

73
Karl

The Last Word

by
Rich Hebel, AA7P

I welcome the opportunity to be your editor for the KBARA Gazette. Denise (KC7ORO), my XYL and ham widow, is my assistant in this effort. You know her from the Wednesday night KBARA net. We want this to be an enjoyable newsletter, something you look forward to, with a little bit of everything: news, people, events, education. Fun!

With that in mind, we'd like to know of anyone's ham stories they would like to share with our membership. You don't need to be a writer – just jot down what you can, and we'll take it from there. And even if you don't have a particular story, tell us what you'd like to see in the newsletter, what you don't like, and how we might improve. Your comments and questions are always welcome.

I recently got a phone call from a ham, who expressed frustration over the lack of membership support among the users (in some case, "complainers") of the system. Well, we can't and won't require users to be members or contribute support. That's up to the judgement and conscience of each user. But the caller had a point…

Last year was a tough year for KBARA, especially with the damage from the ice storms. Yes, some of you have probably been a bit frustrated with repeater system reliability and troubles, and poor link quality. I know. I've seen it render some of the nets almost impossible to conduct. My hat is off to the net managers who struggled to keep things going.

Yet, KBARA is not a public utility. It is supported solely by membership, the contributions of the owners, and especially the hard work of dedicated hams in Eastern Washington who spent a lot of their own, valuable time getting the system back into health over the last several months. Bear this in mind, and remind your fellow hams who use this system.

With most of the system repaired and tuned up, KBARA has the best signals it has had in years. This should be a source of pride to KBARA supporters; it is certainly a fine asset for hams in Eastern Washington. Your support made this possible. We'd like to see more hams become KBARA supporters, and become part of our effort to make KBARA a premier repeater system.

Support doesn't have to be financial. Lending a hand with repeater work can be fun, educational, and a major contribution. Supporting the nets with check-ins and participation helps. And helping new hams use and enjoy the system contributes to KBARA and the hobby as a whole.

I won't underplay the importance of financial support. We are in the middle of our annual membership drive, and we need paid membership. We need you. And we need your help in inviting other hams to use and support the KBARA system. This financial support allows us to keep the repeaters running, and expand KBARA coverage and services. And maybe you'll feel a little better using a repeater system you support.

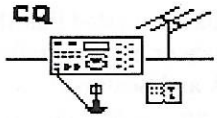
I personally want to thank Karl WA7YCP, Rod KC7AED, David KB7WRT, Paul N7UNG, J.R. KA9TII, George KC7OQS, Denise KC7ORO, and Tim (not a ham yet, but a fine engineer) for their assistance in the major task of getting the Blue Mountain Repeater back in shape. I also want to thank all of the hams who helped with signal checks and other field tests. Your help was invaluable, and it made a big task a lot of fun. I also want you to know the positive comments we're hearing from you lately are appreciated and very satisfying.

On a final note… Betsy N7WRQ mentioned KBARA's possible affiliation with the ARRL. We have a family membership in the ARRL, and I have found our membership to be very worthwhile. I do know there is some controversy over the ARRL, the constituency they represent, the code requirement, and such. Any organization filled with hams is almost guaranteed to have some controversy and conflict – we're that diverse, and we're going through a lot of changes.

At the same time, I've been around Washington D.C. and business enough to know the pressures our congressional delegations feel from powerful business interests. They are immense. And the fact is the ARRL is our only real ally in Washington - the only group that is looking out for our interests.

Don't be misled: Our hobby interests are threatened, and will continue to be threatened. A real simple but serious problem: The value of (and demand for) communications media, whether radio waves or telephone lines, is skyrocketing as resources, such as spectrum, dwindle. The Little Leo incident was an early skirmish in what is likely to be a long war. The ARRL is the only organization hams have to focus our interests in Washington to protect ham radio.

So I am recommending affiliation between KBARA and the ARRL. I have two young hams in my home. I want to make sure they can enjoy ham radio with their children someday.



73
Rich, AA7P

KAMIAK BUTTE AMATEUR REPEATER ASSOCIATION (KBARA)

Officers				
President	N7WRQ	Betsy Ashleman	509-448-5821	n7wrq@aol.com
Vice President	KB7WTO	Royal Moore	509-926-2987	KB7WTO@juno.com
Secretary	N7YRN	Warren Westerman	509-235-6865	n7yrn@aol.com
Treasurer	N7DRA	Boso Bosold	509-326-2172	bozo19@juno.com
Owners				
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	W7OE	John Dempster	509-924-6389 (work)	
	WA7YCP	Karl Shoemaker		kshoe@juno.com
	KB7WTO	Royal Moore	509-926-2987	KB7WTO@juno.com
	AA7P	Rich Hebel	509-527-0411	rhebel@keyww.com
	N7LVO	Neil Gallup	509-928-7442	gallupnp@ix.netcom.com
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	KC7ORO	Denise Hebel	509-527-0411	dhebel@bmi.net
	KC7SHQ	Tom Barber		trbarber@mt.arias.net
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	N7WRQ	Betsy Ashleman	509-448-5821	n7wrq@aol.com
	N7DRA	Boso Bosold	509-326-2172	bozo19@juno.com
	KC7ORO	Denise Hebel	509-527-0411	dhebel@bmi.com
	KB7WRT	David Pence	509-525-2529	kb7wrt@telmarcorp.com
Regional Representatives				
Spokane	W7OE	John Dempster	509-924-6389 (work)	
North Country	KJ7KJ	Gordon Reynolds	509-442-3785	
Silver Valley	N7LMA	Bob Phillips		
Southern	KB7WRT	David Pence	509-525-2529	kb7wrt@telmarcorp.com
Roving	N7VXC	Dick Wilcox	509-928-5022	

EVERGREEN INTERTIE Nets

Seattle (K7NWS repeater) and KBARA must be brought onto the East/West trunk in order to participate in the EVERGREEN INTERTIE nets. All of the following originate from the West side:

Weekdays	5:45AM	Weather Net
	4:45PM	Weather Net
Monday	8:00PM	YL Net
Wednesday	8:00PM	Evergreen Intertie Information & Technical Net
Thursday	8:00PM	Computer/Packet Net
Friday	8:00PM	Youth Net
Saturday	9:00-11:00AM	Swap Net
	12:00AM (midnight)	Night Owl Net
Sunday	10:00PM	Astronomy Net

Seattle commute hours: 6:00AM-8:30AM
11:00AM-1:00PM
3:00PM-6:00PM

Seattle has requested that they be brought on-line only for emergency or priority traffic during the above commute hours. KBARA and Seattle are connected on weekends 12:00PM-3:00PM and on holidays all day.

KBARA Nets

Weekdays	7:00AM	Northwest Regional Net
Nightly Net	11:00PM (except Saturday)	Nightcrawlers' Ragchew
Wednesday	7:00PM	KBARA System Net

Membership & Support

Annual support is $15 per calendar year, or $20 for family members at one address. Dues are due January of each year. Dues paid during the last quarter (after September 1) will apply through the entire following year. This applies to renewals, as well as new supporters. We welcome your support and participation in building a strong repeater system. Support can be sent to:

KBARA
P.O. Box 18575
Spokane, WA 99208-8575

KBARA
P.O. Box 18575
Spokane, WA 99208-8575

ARRL Affiliation

We want your input! Please help us by answering the following questions:

	Yes	No
1. Are you currently a member of the ARRL?	☐	☐
2. Do you think KBARA should affiliate with the ARRL?	☐	☐
3. Would you be willing to join ARRL to help KBARA affiliate with the ARRL?	☐	☐

KBARA SUPPORT FORM

Name: _____ Call Sign: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Amount Paid: _____

Support is $15.00 per year for Individuals; $20.00 for Family Sponsorship (all must live at the same address).

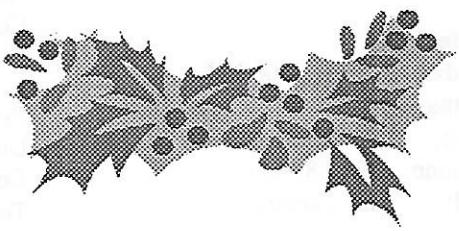
Thank you for your support of KBARA!

Hunting Season

Hats off to those fearless bunny hunters who recently saved the day.

An unintentional carrier interfering with the 147.380 repeater on Mica Peak wreaked havoc with the system for about twelve hours. Several of the local hams pinpointed the location exactly, apparently being undaunted by the huge apartment complex housing the signal. Our thanks to Thom Sletmoen, N7UTJ; Roy Ferrell, KB7HJM; Merle Chavis, W7XM; Barb Moore, KB7WTN and Royal Moore, KB7WTO.

This was an excellent example of the real-world benefit of proficiency in RDF (radio direction finding)!



!!! Please check your name, address, and call sign as shown above, and let us know if there are errors. You can use your membership renewal form (opposite side) as a handy way to let us know. Thanks!!!

N7WRQ
Elizabeth Ashleman
3903 East 48th
Spokane, WA 99223

The KBARA Gazette
P.O. Box 18575
Spokane, WA 99208-8575

AMATEUR RADIO LICENSE TEST SESSIONS

Athol, ID
First Wednesday of every month, 7:00PM
Contact: Bob Swain, N7GHV
Telephone: 208-683-2094

Coeur d'Alene, ID
December,1997 & March, 1998
Contact: Harvey Zion, K7VZ
Telephone: 208-664-3546
E-mail: hzion@nidlink.com

College Place, WA
December 21, 1997
Contact: Mable Babbitt, WB5AVH
Telephone: 509-525-7003
E-mail: wa5zay@televar.com

Colville, WA
December 13, 1997, 9:00AM
Department of Natural Resources
Contact: Rex Kamstra, AB7IZ
Telephone: 509-684-2003
E-mail: ab7iz@plix.com

Ellensburg, WA
Contact: Michael Dunnick
Telephone: 509-925-1680

Ephrata, WA
Contact: Bill Edwards, K7PK
Telephone: 509-754-3847

Goldendale, WA
Contact: James Nadeau, Sr.
Telephone: 509-773-5043

Grangeville, ID
Contact: Elmer Robertson, KJ7XK
Telephone: 208-476-4448

Orofino, ID
Contact: Elmer Robertson, KJ7XK
Telephone: 208-476-4448

Pendleton, OR
December 10, 1997
Contact: Mike Duffy, AA7SL
Telephone: 541-276-6545
E-mail: mduffy@orednet.org

Sandpoint, ID
Second Saturday of every month, 9:30AM
Contact: Russ Arnd, AA7XM
Telephone: 208-265-4534

Spokane, WA
January, 1998
Conifer Village Apartments Rec Rm
N. 504 McDonald Rd, Spokane
Contact: Ron Wheeler, AA7YM
Telephone: 509-922-3284
E-mail: rwheeler@ipeg.com

Tri Cities, WA
Contact: Gordon Anderson, KG7YU
Telephone: 509-588-5410
E-mail: gaa@owt.com

Yakima, WA
Contact: Jo Whitney, KA7LJQ
E-mail: kb7hdx@televar.com