

# KB7ARA

*Kamiak Butte Amateur Repeater Association*

Winter 2013 Edition

## KBARA Gazette



**I HOPE THIS FIRST NEWSLETTER OF THE NEW YEAR FINDS EVERYONE WELL AND RESTED FROM THE HOLIDAYS. HOPEFULLY YOU RECEIVED EVERYTHING YOU WANTED IN THE WAY OF AMATEUR RADIO GEAR FOR CHRISTMAS.**

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### 2012 Marks All-Time High for Amateur Radio Licenses from ARRL Letter

As 2012 came to a close, ARRL VEC Manager Maria Somma, AB1FM, had a good reason to cheer: The number of radio amateurs in the US reached an all-time high of almost **710,000**. "2012 was definitely a banner year for the number of Amateur Radio operators here in the US," she said. "It is amazing to see these new numbers and to know that Amateur Radio is experiencing such a healthy trend."

In looking at new and upgraded licenses, as well as licensees per ARRL Division, Somma also crunched the numbers looking for growth within each license class -- and all of Amateur Radio - - over the last 40 years. "This is an all-time high for Technician, General and Amateur Extra class licensees," she said. "When looking at the three current license classes, the number of Technicians, Generals and Amateur Extras peaked in December at 345,369, 163,370 and 130,736, respectively."

Somma explained that the total number of US amateurs in the FCC database also continues to grow each year: "As of December 31, 2012, the number of licensees reached an all-time high of 709,575; year-end totals were 702,056 for 2011 and 696,041 for 2010. The number of licensees increased at an average rate of 21 per day, while the number of US licensees has increased by 7 percent since 2008!" More than 3000 new licenses were issued in 2012 than in 2011, while upgraded license activity remained steady in 2012.



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Even though KBARA is not on Twitter, it is a great tool for hams to make schedules for QSO's.

## *From the Desk of our President*

Hello and Greetings.

I hope this newsletter finds you well and full of family friends and great hamming. Winter is underway and those cold days and nights are certainly warmed by the great conversations and QSOs on the KBARA System. Many thanks to the owners and tech folk who keep this system running. It's this kind of dedication that really makes being a member such a value. And speaking of Members, thanks! Without you it wouldn't be a club. And a special thanks to those who added that little extra to the repeater fund. Your donation will go a long way in funding the system we all enjoy.

The conversations of late at Frankie Doodles Saturday mornings has certainly been lively and has included many great ideas for the club and members. We'd like to hear from you. Have an idea for a "net"? Have technical questions, additions or ideas? Check in, your comments count. And speaking of "check in's" the 7AM net continues with even more members and guests. Averages range from 35 to 40 plus, but it's always nice to have more. What makes a good net? Topics? Questions? Trivia? Let us know! The net controls are here to make the net a "must" on your AM commute. Special thanks to Dave KL7M for the use of the Alaska Reflector Channel 5. This is such a great opportunity to promote KBARA on the WWW.

As 2012 came to a close, the number of radio amateurs in the US reached an all time high of almost 710,000, according to ARRL VEC Manager Maria Somma. New and upgraded licenses are the highest they've been in 40 years. It's a great time to dust off the rigs, get involved, join a net and make that contact. If you want to expand your ham horizons KBARA is here. Our club membership includes some very talented and experienced "elmers" to get you started with the equipment and knowledge to get that station and antenna installed tuned, tweaked and ready to work. Just ask.

Till next time, good Hamming and "73"

Duff Johnson  
WA7BFN



# How To Put Up An Antenna Tower

Reprinted from World Radio, April, 1989

"I am writing in response to your request for additional information on my recent accident. In block No. 3 of the accident reporting form, I put "poor planning" as the cause of the accident. You said in your letter that I should explain more fully and I trust that the following details will be sufficient.

I am an Amateur Radio Operator. On the day of the accident I was working alone on the top section of my new 80 ft. antenna tower. When I had completed my work I discovered that I had, over the course of several trips up the tower, brought up about 300 pounds of tools and spare hardware. Rather than carry the now unneeded tools and hardware down by hand, I decided to lower the items in a small barrel by using a pulley which, fortunately, was attached to the gin pole at the top of the tower.

Securing the rope at the ground level I went up to the top of the tower and loaded the tools and hardware into the barrel. Then I went back to the ground and untied the rope, holding tightly to ensure a slow descent of the 300 pounds of tools and hardware.

You will note in block No. 11 of the accident report form that I weigh 155 pounds. Due to my surprise at being jerked off the ground suddenly, I lost my presence of mind and forgot to let go of the rope. Needless to say, I proceeded at a rather rapid rate up the side of the tower.

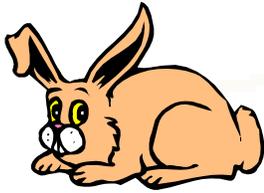
In the vicinity of the 40 ft. level I met the barrel coming down. This explains my fractured skull and broken collarbone.

Slowed only slightly, I continued my rapid ascent, not stopping until the fingers of my right hand were two knuckles deep into the pulley. Fortunately, by this time I had regained my presence of mind and was able to hold tightly to the rope in spite of my pain.

At approximately the same time, however, the barrel hit the ground and the bottom fell out of the barrel. Devoid of the weight of the tools and hardware, the barrel now weighed 20 pounds.

I refer you again to my weight in block No. 11. As you might imagine, I began a rapid descent down the side of tower. In the vicinity of the 40 ft. level I met the barrel coming up. This accounts for the two fractured ankles and lacerations of my legs and lower body.

The encounter with the barrel slowed me enough to lessen my injuries when I fell onto the pile of tools and hardware and, fortunately, only three vertebrae were cracked. I am sorry to report, however, that as I lay there on the tools and hardware, in pain, unable to stand, and watching the empty barrel 80 ft. above me, I again lost my presence of mind I let go of the rope."



**IT'S TIME FOR THE  
2<sup>nd</sup> KBARA  
HIDDEN TRANSMITTER HUNT  
(Bunny/Fox/T Hunt)**



**SUNDAY MARCH 24 2013**

Having been the first to find last December when Glen (KF7QLH) was the fox, it's now my turn to hide out and let you find me. Hi, I'm KD7AAT John.

With hunters coming from all directions, a central location for starting the search will be fair for all. The parking lot at the old Comp USA on Division just north of the river at the split across from Wendy's should work out just right. Meet there around 12:45p and be ready to go.

Here are the rules and info about the hunt.

Glen our KBARA secretary will take a list of those that show up. That way we can include your name in the club newsletter. If your name isn't on the list and you end up being the first to find you will be disqualified. This way everyone has a fair chance. Make sure you get your name on the list.

I will start transmitting on 146.540 (146.560 if 40 is busy) at 1pm using 45 watts for the first few minutes. This will give everyone a chance to get a signal to work with. After that I will drop down to 5 watts until I am found.

If I have not been found within 30 minutes, I will start throwing out subtle hints as to my location. Hidden words in a sentence or maybe something about the area where I am. I will be parked on an asphalt road/street in plain view.

That's it. Find me if you can, be safe, obey traffic laws and may the best sniffer find the fox.....

For the first to find will be a \$10 gift card from Frankie Doodles!!!!

# Vanity Call Signs by John Dempster, W7OE

Many Amateur Radio operators have chosen to get a Vanity Call Sign. The following links provides everything that you need to know to go thru this process.

<http://www.ae7q.com/>    <http://www.vanityhq.com/>

You may apply on line or by mail but I will recap what you should do (or not do) to get your Call Sign.

- (1) Make sure that your License Class allows the requested Call Sign. Novice Class allows 2x3 (e.g. WA7BLV), Technician and General Classes additionally allow 1x3 (e.g. K7HPT), Advanced Class additionally allows 2x2 not beginning with the letter "A" (e.g. KC7JC), and Extra Class additionally allows 2x2 calls beginning with "A", 2x1, and 1x2 calls (e.g. AA7UE, AK2O and W7OE). There are a few exceptions. "Territorial Calls" (Alaska, Hawaii, Guam, etc) are only issued to current territory residents and 2x2 calls beginning with the letter "A" can be issued to Advanced Class territorial operator (e.g.,AL7BB), and 2x2 calls beginning with "W" can be issued to Technical and higher classes (e.g. WH6JD).
- (2) 2x1 and 1x2 Calls are almost impossible to obtain unless you live in a "Territorial" region. If you want a 2x1 Call they are readily available if you wish to move to the corresponding territory. Once you get the Call (e.g. NH2V) you may move back to the lower 48 states and keep the call (as some have actually done). There are literally hundreds of people waiting for the non-territorial 2x1 and 1x2 calls and will apply the day it becomes available. It then becomes a lottery as to who gets the call.
- (3) You must wait 2 years and 1 day after expiration or cancellation of the Call before you can apply. Early applications are dismissed by the FCC. There are exceptions made for close relatives of a Silent Key and Clubs. You must also pay the fee (currently \$15.00).
- (4) 2x3 Calls beginning with "X" in the suffix are not issued except to Experimental Stations (e.g. WA7XYZ), and Calls that are deemed deregulatory or distasteful are not issued. Try to find them on the database if you want examples. Also, KA2 thru KA0 2x2 calls (e.g. KA7AT) are excluded since at one time they were assigned to U.S. personnel in Post-WW2 Japan. Yes, I have worked some of them in the 1960's.

This is a brief synopsis of what is explained in better detail in the above links. Good luck getting that Vanity Call! I got mine in 1996 (on the first day available on the current wave) and of the 25 listed W7OE was third on the list. After the first day it became almost impossible to get a 1x2 call. Its great being old!

## New Icom ID-51A Dualband D-Star radio is approved by FCC

The long wait is over for the dualband cousin of the popular ID-31A UHF D-Star radio. The week of January 14th word from Ray Novak, National Amateur Marketing Manager for Icom America, that the new radio had passed FCC approval and would be shipped to retailers in the US. Within a couple days amateur radio retailers like HRO, AES and Universal Radio updated their websites announcing the availability. Those who had reserved their radio with HRO should be receiving them in the near future. Those who did not may have to wait a little longer. The radio sports the same style as its UHF cousin, the ID-31A. Built in GPS for quick selection of the closest D-Star repeaters when the updated repeater list is loaded from the microSD card. In addition to the dualband capability it also had FM/AM broadcast, AM aircraft receive capabilities. Detailed information on both of the mentioned radios can be found at [www.icomamerica.com](http://www.icomamerica.com).



## **KBARA D-Star Repeater Status Report** by Randy Wilkinson-KF7RVY

The KB7ARA D-Star repeater, formerly owned by Pat-K7HRT, has been purchased by Glen-KF7QLH and myself, Randy-KF7RVY, with some financial backing from silent partners and generous contributions to the repeater fund for operation. Just a few months prior, the club voted to accept this D-Star repeater as a KBARA repeater and allow it to use the club call-sign. In November 2012, Randy, Glen and John-KD7AAT, went over to Pat's location and packed up the repeater cabinet, all the feed lines, the antennas and even the tower. We strapped all the equipment on Glenn's flatbed truck. We didn't get done until after dark. We brought the entire setup, cabinet, computers and antennas over to my place until we could figure out what to do with it. The following Saturday, after a delicious breakfast at Frankie Doodles, a bunch of us met over at my place to check out all the equipment. Primarily I wanted to know if the antennas were suitable for powering the repeater on in my garage. Thanks to Mark-K7HPT for bringing his antenna analyzer and helping to make that determination. Everything seemed to be good to go. Over the next day or two, I placed the 440 MHz antenna temporarily on the roof. I hooked it all up, I double checked all the connections, and I turned it on. It was back on the air. I left the TX power switch in the low power position, just for safety.

The D-Star repeater system consists of the following components:

- A 440 MHz digital repeater module
- A 1.2 GHz digital repeater module
- A 1.2 GHz simplex data module
- A digital repeater controller
- A 440 MHz cavity duplexer
- A 1.2 GHz cavity triplexer
- A 70 amp power supply
- A computer to act as the Internet gateway
- A computer for configuration of the system
- All housed in a heavy duty cabinet on caster wheels

Also included are two high gain vertical antennas each with about 40 feet of hardline with lightning protection.

Just to make sure that I wouldn't be interfering with any other nearby signals, I worked with the local frequency coordinator to arrange for approval to operate at this location. Approval was subsequently granted.

I'd like to say thank you to Glen for being willing to co-own this repeater with me. And also thanks to Betsy and Jim for helping to give us a jump start. Also a huge thanks to John-KD7AAT for helping us to relocate the repeater on that day in November.

Our intention is to find a location within the Spokane area that will allow amateur radio operators to access the D-Star repeater and take advantage of all the digital repeater features. We are currently working with a potential site host that could give us exactly that. We're not ready to announce yet who the host might be until we can work out some details. One of the difficulties is access to a high-speed Internet connection at the repeater site. Since the D-Star repeater is primarily meant to be an Internet connected repeater, it wouldn't be of much use without a high-speed Internet connection. So, if all goes well, we should be able to use the KB7ARA D-Star repeater by springtime.

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## **What can you do with D-Star?**

Using your D-Star transceiver you can have a conversation with another local ham who also has a D-Star transceiver, and since the connection is digital there will be no background noise, interference or hiss. When you press the talk button on a D-Star transceiver your voice audio is converted to a digital stream almost instantly, and is transmitted to the repeater digitally over the radio. Along with your digitized voice, your call sign is encoded into the stream. That means that every transmission includes your call sign even if you don't say it. When you hear a transmission on your transceiver, you can look at the display and you will see the

callsign of the person transmitting. Normally your transmission is received by the repeater and re-transmitted over the air to anyone listening to the same repeater. However you can also cause the repeater to connect to another D-Star repeater anywhere in the world. Then, when you talk, your voice will be heard not only on the local repeater but on the remote repeater as well. There are also D-Star reflectors that are similar to IRLP reflectors, which allow many repeaters to join together so everyone can hear each other and join in the conversation.

Since all transmissions are digital and include the originating callsign, digital amateur radio can do many new tricks. For example, you can set your radio to only break squelch when someone is calling for you. Or, you could set your radio to not break the squelch for transmissions coming from a certain callsign.

One very powerful feature of D-Star is called callsign routing. Whenever you key your transceiver your call sign is encoded in the digitized audio stream going to the repeater. All of the D-Star repeaters around the world connect to a central system every 10 minutes and report the call signs that have been heard. Using callsign routing, you can tell your transceiver that you want to talk to a certain callsign and your voice audio will be automatically routed through the Internet to the repeater where that callsign was last heard.

The KB7ARA D-Star repeater includes a 1.2 GHz linked repeater that can be used by those that own a high-end ICOM transceiver with this capability. It also has a 1.2 GHz simplex data transceiver that allows those who own a compatible transceiver to use a 128 kbps Internet connection over their radio. Most people in Spokane will use the 440 MHz repeater for normal digital communication.

## **What can't you do with D-Star?**

The first thing KBARA members want to know is will this D-Star repeater be linked to the other KBARA repeaters? The answer is no. All D-Star transmissions must include the originator's callsign encoded digitally in the transmission. There is no way to include the originator's callsign when the transmission comes from an analog repeater like the other KBARA repeaters.

## **What does it take to get started with D-Star?**

In order to convert your voice audio into a digital stream in real time, a special integrated circuit is used. ICOM is the only manufacturer making amateur radio transceivers that use the special integrated circuit. None of the technology or the integrated circuit is proprietary, however only ICOM has chosen to manufacture transceivers that include the special integrated circuit. Also, the transceivers need to have

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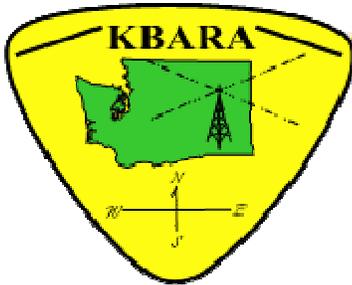
the capability to allow you to specify the callsign to route to, or the repeater to route to. These special abilities makes the transceivers cost a little bit more. As time goes on and more amateur operators purchased D-Star transceivers, the price should go down. Especially if another manufacturer decides to sell D-Star compatible transceivers.

There are other ways to talk on D-Star repeaters and reflectors without purchasing a D-Star transceiver from ICOM. For example, a device called a DV Dongle contains the special integrated circuit to encode your voice and callsign so that you can join D-Star conversations using your computer, smart phone, or even your Raspberry Pi miniature computer. There's even a device called a DV Access Point which would allow you to use your D-Star transceiver within a few hundred feet of the access point even if there is no D-Star repeater nearby.

For most people, the easiest way to get started with D-Star, is to purchase an ICOM transceiver that has D-Star capability. The newest D-Star transceivers make using D-Star very easy.

### **What's next?**

If we can work out the details we should be able to place the new D-Star repeater in a location that allows most people in the Spokane area to use it. We'd like to have it in place by the spring of 2013. If you are considering purchase of a new transceiver in 2013, you might want to look into a transceiver that includes D-Star capability, especially if you're interested in making contacts around the world using only your simple D-Star transceiver.



## Proposal for locating the KB7ARA D-Star digital repeater at a suitable location for wide coverage in the Spokane area.

### Executive Summary

The Kamiak Butte Amateur Repeater Association (KBARA) is assisting the owners of a new digital repeater system, to find a permanent location for a new amateur radio repeater that would provide wide coverage in the Spokane area. The KB7ARA D-Star digital repeater is an amateur radio repeater co-owned by two members, and is endorsed and supported by the Kamiak Butte Amateur Repeater Association. This new repeater system is actually two digital repeaters and a data transceiver housed in a single cabinet. This repeater system has been built using professional quality components that are less than one year old. There is one 440 MHz band digital repeater for voice communication, and one 1.2 GHz band digital repeater for voice communication as well as, a 1.2 GHz data transceiver for digital communications on a simplex frequency. The repeater system includes two professional quality antennas, one for 440 MHz, and the other for 1.2 GHz. the repeater cabinet also houses a professionally assembled duplexer for the 440 MHz repeater and a triplexer assembly for the 1.2 GHz repeater. The repeater system has already been assembled, tested and operated at another location for a few months.

This is a digital repeater and is intended to be connected to the Internet. Therefore it needs a location that includes a high-speed Internet connection. The Internet connection allows it to connect to other similar digital repeaters throughout the world. It also allows users who have the appropriate transceiver in the Spokane area, to have a relatively slow Internet connection using the repeater's Internet connection, and therefore, your Internet connection. In order to be useful as an inter-connected digital repeater, the Internet connection must allow incoming connections through the hosts system's IT firewall. It must also allow the repeater to initiate outgoing Internet connections. These connections are done on specific TCP/IP ports that are dictated by the repeater manufacturer, ICOM. The repeaters owners and operators also need to be able to connect to the repeater controller through the Internet to perform management functions.

A digital repeater system is different from an analog repeater in several ways. Voice audio is encoded by the user's transceiver into a digital stream that includes the user's callsign and other routing information. The digital stream is transmitted over the air and received by the repeater. The repeater determines where the digital stream should be routed, whether it simply goes out over the air to all listeners in Spokane, or routed through the Internet to a distant repeater that could be anywhere in the world.

On behalf of the repeater owners, the Kamiak Butte Amateur Repeater Association is requesting that you consider hosting this new digital repeater at your location if you have space for a single rack cabinet, a suitable high-speed Internet connection and a suitable place to mount the two antennas. If you can host this new repeater at your site, Spokane area amateur radio operators would realize a tremendous benefit, and it would enable additional means for emergency communication if the need arises. Thank you for your consideration. Please read on for further details.

### About KBARA

KBARA is a support group for several privately owned linked Amateur Radio repeaters. The system covers an area from NE Washington to NE Oregon, and from western Montana to central **Continued**

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.

### **About the Repeater Owners**

All of the repeater components are co-owned by two local amateur radio operators, Randall Wilkinson –KF7RVY, and Glen Alborn-KF7QLH, who are both elected or appointed officials in KBARA, and who will be solely and legally responsible for the operation of the repeaters and compliance with all applicable FCC part 97 and rules. KBARA's involvement is limited to financial and technical support.

Randall Wilkinson-KF7RVY, is a Registered Professional Engineer and resident of the Spokane Area for almost 20 years. He works for a local Architecture and Engineering Firm in Spokane. He is currently the appointed IT official for KBARA.

Glen Ahlborn-KF7QLH, is a Spokane area metals recycling business owner and operator. He is an involved member of the community. He was born and raised in the Spokane area and is also the Secretary of KBARA.

Both owners are enthusiastic about amateur radio operation and currently hold GENERAL class amateur radio licenses.

### **About the Repeater Equipment**

All of the repeater components are housed in a single standard 19 inch wide cabinet that is mounted on castor wheels. The repeater components are composed of high quality repeater equipment manufactured by ICOM in almost new condition. The system includes a heavy-duty power supply, and a Gateway computer that allows it to communicate with the Internet. The value of these repeater components would total up to about \$7500 if they were to be purchased new today.

The Gateway computer, which is a necessary component of this digital repeater, has been purpose built for this application and is 100% solid-state, with no moving parts. It should be serviceable without requiring maintenance for many years. See APPENDIX A for specific details about the repeater cabinet size, power requirements, Internet connection requirements, and other specifications.

KBARA supports other analog repeater systems throughout Eastern Washington, North Idaho, and Montana. These other analog repeaters are linked together using high-frequency RF links to form a large linked repeater system for amateur use. This new digital repeater system will NOT be connected to the other linked analog repeaters. The digital repeater system is not compatible with analog amateur radio transmissions. Digital repeater transmissions must include each operator's callsign, digitally encoded within each transmission.

The repeater uses the callsign KB7ARA, which is the callsign for the Kamiak Butte Amateur Repeater Association, and is used by permission from the callsign trustee, Mr. Ken Crosswhite-KD7DDQ.

The frequencies used by the repeaters have been coordinated with the local frequency coordinator, Mr. Doug Rider, of the Inland Amateur Coordination Council, and have been authorized for use by this equipment.

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## **Installation and Operation of the Repeater Equipment**

Each of the two antennas used by this repeater equipment are professional grade, high gain units suitable for heavy-duty mounting and withstanding harsh winter conditions on a mountain-top. Each is a fiberglass vertical collinear type, about 9 feet tall. Antenna feed lines have been professionally assembled from hardline coaxial cable and include heavy gauge lightning grounding suitable for connection to the central grounding system within your building.

Space needed for the repeater cabinet would be limited to just the cabinet itself. See APPENDIX A for space requirements.

KBARA members are accustomed to helping repeater owners install their equipment, antennas and feedline. Members are usually eager to help. If possible, this would be our preferred method to install the repeater and antennas. None of the members are certified tower climbers. If necessary, KBARA can arrange for professional installation of the antennas and feedline using certified professionals.

While all of the repeater equipment is in like new condition, and the Gateway computer has been purpose-built for low maintenance, the owners will need to access the repeater equipment occasionally. Access to the equipment for routine maintenance during business hours would certainly be acceptable. Ideally, the owners could have access to the repeater equipment on weekends occasionally. The owners both have full-time jobs and are normally not available during business hours.

## **Benefit to the Local Community and to Amateur Radio Operators throughout the World**

Amateur radio operators provide an important benefit to the community when an emergency situation arises. KBARA's bylaws state that its primary function is to provide emergency communication using the repeater system it supports. The individual repeater owners who are associated with KBARA also abide by this mandate. This new digital repeater would NOT be an exception. All amateur radio operators licensed to use the frequencies in use by this repeater, would be encouraged to use this repeater. This includes licensed amateur radio operators from anywhere in the world who would connect to this repeater system through the Internet. The worldwide digital repeater system ensures that all operators are licensed in their country.

Operational guidelines suggested by KBARA are in alignment with the Amateur Radio Relay League (ARRL) which would always give priority to emergency communications. However, when no emergency communication is needed, amateur radio operators would be free to use the system for casual personal communication as allowed by the FCC Part 97 rules. This casual communication is important so that amateur radio operators can become familiar with the use of their equipment.

## **Contact Information**

The below owners and KBARA officials would be happy to explain further as required. The primary contact will be Randy Wilkinson-KF7RVY.

**See table on next page.**



<b>Repeater Equipment Co-Owners:</b>		
Randall Wilkinson-KF7RVY Owner/Control Operator IT Official, KBARA	509-993-7739	randy@hvacware.net
Glen Ahlborn-KF7QLH Owner/Control Operator Secretary, KBARA	509-216-0666	Kf7qlh@kbara.org
<b>KBARA Officers:</b>		
Duff Johnson-WA7BFN President, KBARA	509-838-8486	wa7bfn@msn.com
Scott Harvey-KA7FVV Vice President, KBARA	509-489-2705	ka7fvv@arrl.net
John Dempster-W7OE Technical Director, KBARA	509-499-5317	jdalphamail@gmail.com

## Appendix A – Requirements and Specifications of Repeater Equipment

### Physical dimensions:

Repeater cabinet: 22" Wide, 33" deep, 65" high

Antenna Height: about 9' for each of two

### RF data:

Callsign: KB7ARA

440 mhz band digital voice repeater: RX: 448.125 mhz TX: 443.125 mhz

Make/Model: ICOM ID-RP40000V

25 W max. TX power. 9 DBi gain antenna

1.2 ghz band digital voice repeater: RX: 1273.300 mhz TX: 1293.300 mhz

Make/Model: ICOM ID-RP2V

10 W max TX power. 9 DBi gain antenna

1.2 ghz band digital data simplex: RX/TX: 1249.000 mhz

Make/Model: ID-RP2D

10 W max TX power. 9 DBi gain antenna

Repeater Controller: ICOM ID-RP2C

### Electrical Characteristics:

120v, 5A max.

### Internet Connection Requirements

Internet Connection Wiring: Standard Cat5 Ethernet

Estimated maximum bandwidth to repeaters: 144 kbps

Estimated peak transfer rate: approx 5.0 MB/hr

The following incoming ports must be forwarded to the gateway computers IP address:

40022 Secure Shell for remote maintenance

40000 D-Star Digital voice stream

40001 D-Star Digital data stream

20000 to 20005 D-Star data use

Continued next page

## Repeater Cabinet Photos



The Front of the cabinet shows the four ICOM D-Star repeater components. On top is the 440 MHz digital voice repeater. Below that is the 1.2 GHz digital voice repeater and the 1.2 GHz data transceiver. The lowest component is the Digital Repeater controller. Below that is the Astron RS-70 70 amp power supply. This power supply is oversized to ensure long life. Actual 14.7v amp draw never exceeds 15 A.

The gateway computer is not shown here but does fit within the cabinet.



The front of the cabinet and the rear as well. The rear is where the duplexor and triplexor is mounted. The components protrude from the rear about 4" out from the rear and the antenna feedlines do not allow the cabinet to be pushed up close to a wall.

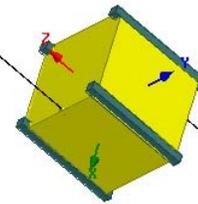


# AMSAT Fox-1 Satellite Project Continues to Progress

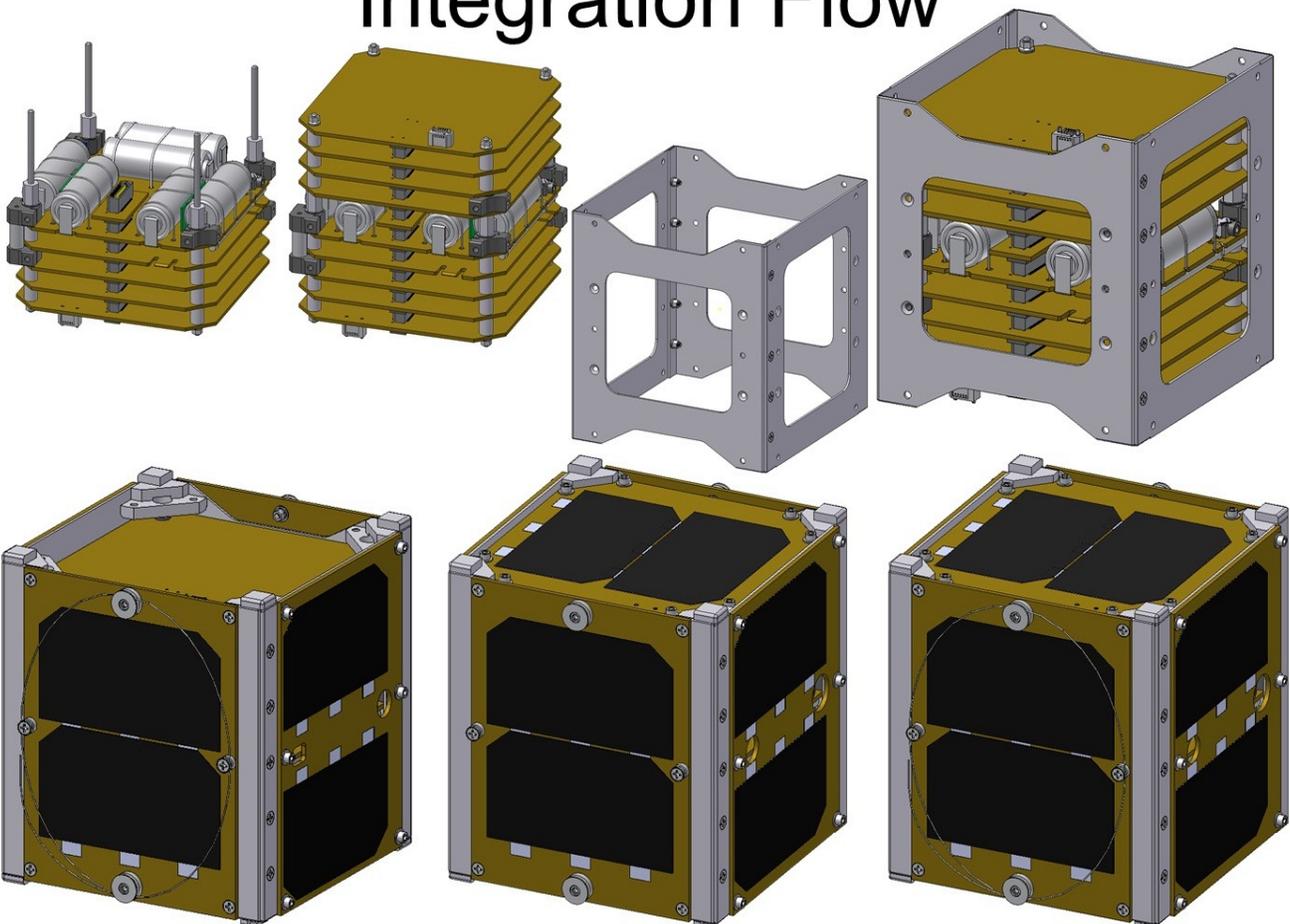
Some new diagrams and design papers are available on the AMSATorg web site related to the new Fox-1 Amateur Radio FM Satellite currently in production to replace AO-51. Fox-1 is being built on the Cubesat design as shown in the integration diagrams below. Progress of the project can be followed at this website: <http://www.amsat.org/amsat-new/fox/>. A four page brochure about the fox project can be found here: [http://www.amsat.org/amsat-new/fox/AMSAT\\_Fox-20120206.pdf](http://www.amsat.org/amsat-new/fox/AMSAT_Fox-20120206.pdf). Launch of Fox-1 is slated for sometime this year

We currently have only two FM Amateur Radio Satellites. SO-50 and AO-27.

SO-50 continues to function well but the ailing AO-27 continues to have problems.



## Integration Flow



## Amateur Radio Testing Schedule by Betsy, N7WRQ



### **Chewelah, WA, ARRL VEC**

Contact: Karl Miller, WX7DX: (509)258-8922 email: wx7dx@msn.com

**Coeur d'Alene (Hayden), ID, ARRL VEC** 2/11/13; Second Monday of every month starting at 5:30PM at the Search & Rescue Building, 10865 N. Ramsey, Hayden, ID 83835.near the South end of CDA Airport; contact John Hollar, Jr., N7JU, (208) 968-0703 email: n7ju@roadrunner.net

### **College Place, WA, ARRL VEC**

2/17/13, 2PM; Walla Walla University, 100 SW 4th 1st Door Bldg, Chan Shun Pavilion, Lecture Hall RM 154, College Place WA 99324-9999, contact Mable Babbitt WB5AVH, (509)525-7003, email: wb5avh@msn.com

### **Colville, WA, ARRL VEC**

Contact Tommy L Howe, (509)684-5565; email: thowe@hotmail.com

### **Kennewick, WA, ARRL VEC**

3/17/13, 5/19/13; 7/21/13; 9/15/13; 11/17/13; 2PM; Boy Scout Office, 8478 W Gage Blvd, Kennewick WA 99336-1075; contact: Michael Tesky, KC7CCK (509)783-6236; email: kc7cck@frontier.com

### **Lewiston, ID, ARRL VEC**

Contact: Emmett McCormick, NA7EM, (208)798-3279, email: na7em@arrl.net

### **Pullman/Moscow, WA, ARRL VEC**

Contact: Tom Storer, KI6DER, (509)334-6979; email: KI6DER@AmSat.org

### **Republic, WA, ARRL VEC**

Contact: Sam Jenkins (509)775-2923; email: samhbi@aol.com

### **Spokane, WA, ARRL VEC**

contact: Mary Qualtieri, AA7RT, (509) 991-2192; email: aa7rt@me.com

### **Spokane, WA, W5YI VEC**

February 19, 2013; April 16, 2013; June 18, 2013; August 20, 2013; October 15, 2013; December 17, 2013; 7PM, Tuesday; 2nd Look Books, 2829 E 29th Ave Ste C, Spokane WA 99223, 509-535-6464 (at 29th Ave & Regal in Lincoln Heights Shopping Center); contact: Betsy Ashleman, (509)448-5821 email: n7wrq@aol.com

Please bring two pieces of identification, one having a photo, radio license, if any, plus a photocopy, & any outstanding Certificates of Completion, plus a photocopy, & Social Security number or FCC Registration Number (FRN), and cash or check made out to the "ARRL" (\$15) or "W5YI" (\$14). If you pass a lower class license, you may sit for the next highest class on the same exam fee. You may retake any failed exam for an additional fee at the same testing session



ANNUAL  
MEMBERSHIP

## Please remember to renew your membership for 2013

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>

## How To Stay Safe On A Public Wifi Hotspots by KHQ News

When in a cafe using a public Wifi signal to surf the Internet on your phone or tablet, people typically don't assume there's a hacker nearby trying to steal your information. But it's that assumption that could get you into trouble.

John Mayovsky with Spokane Computing says you can never assume that any public network is safe. According to John, even if it's deemed secure and requires a password to get in, it's still possible to hack into your device.

John has a few tips to keep you safe. Don't do banking or use your credit card to buy anything on-line when you're on a public network. Make sure your firewall is up. A lot of times people take it down at home when file sharing between devices and forget to put it back up when they move to a public network. You should never assume that a public network is safe. Finally, use more than one password. According to John "Even if they just have your Facebook password, if you're using the same one for everything else, they're pretty much in."

One more thing to keep in mind, John says you're especially susceptible in hotels. While you may think you're alone in the privacy of your room, a hacker could be right next door collecting all of your private information.



**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. The repeaters' frequencies, call signs, locations and owners are as follows:

## **KB7ARA REPEATERS and IRLP Nodes**

- 146.74 W7HFI** Kamiak Butte, near Pullman, WA, owned by Bob, W7HFI, John, W7OE, & Mark, K7HPT
  - 147.02 K7HPT** Lookout Pass on I-90 on the Idaho-Montana border, owned by Mark, K7HPT, & John, W7OE
  - 147.28 KD7DDQ** Pikes Peak in the Blue Mountains, SE of Walla Walla, WA, owned by Ken, KD7DDQ & Jay, N7ZUF
  - 147.36 KF7QLH** Stensgar (Stranger) Mountain, near Chewelah, WA, owned by Glen, KF7QLH, & John, W7OE
  - 147.38 W7OE** Mica Peak, east of Spokane, WA, owned by John, W7OE
  - 223.90 AK2O** Stensgar (Stranger) Mountain, near Chewelah, WA, owned by Karl, AK2O
  - 444.35 N1NG** Mica Peak, east of Spokane, WA, with a 192.8 Hz tone, owned by Mike, N1NG
  - 53.750 N7ZUF** Kamiak Butte, near Pullman, WA, owned by Jay, N7ZUF
  - 443.125 B KB7ARA** Digital Voice D-Star DV A 1293.300 -20, DD A 1249.00 RPS
  - IRLP Node #7141 KF7QLH** South Hill of Spokane, WA, owned by Glen, KF7QLH
  - IRLP Node #3282 KF7QLH** West Spokane, WA on 147.400 simplex, 100.0 Hz tone
- Echolink** courtesy of Randy, KF7RVY. Look for KF7RVY-R.

All licensed Amateur Radio operators are welcome to use this open repeater system. Your support would also be greatly appreciated.

Please visit these sites 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.**

## **KAMIAK BUTTE AMATEUR REPEATER ASSOCIATION**

PO Box 30801

Spokane WA 99223-3013