

Mt. Baker Amateur Radio Club

K7SKW & K7ZC

Presents

A Guide For New Amateurs



Field Day – 2003

Amateur Radio

Amateur Radio is a hobby where one person has the means of communicating with others. Many modes are available to use when communicating with other hams such as, Morse Code (CW), Phone (Voice), Teletype (RTTY), Slow Scan TV, and now digital. Many hams talk only to other hams near them or those they know. Some enjoy talking to people all over the world and some enjoy both. Others transmit with low power (QRP).

Many hams enjoy experimenting with electronics. Some may never make a contact with another ham. They simply enjoy building and testing their electronic projects. There are many, many ways to enjoy our hobby.

“Elmer’s”

In Amateur Radio the definition of an “Elmer” is a person who is willing to help somebody else, a guide or mentor.

This help may consist of some or all of the following:

1. A demonstration of his ham station
2. Introducing literature pertaining to Amateur Radio to an interested person
3. Help a fellow ham choose the proper equipment and explain how it works.
4. Helping an interested person learn Morse Code, amateur electronic theory, and apply for a new license.
5. Assisting with antennas and antenna support construction projects.
6. Teaching new hams how to work DX and what Contesting is all about.

How does a new ham get this help? Maybe you have a friend or neighbor that is a ham. Ask that person the questions you are thinking about. If not, you might want to turn to the Mt. Baker Amateur Radio Club. There are many hams (Elmer’s) in the club that are willing to help you out. Club members help each other all the time with many kinds of projects.

Operating Techniques

There are many ways to use Amateur Radio today. All of the modes require a person to be considerate and think about all the people that are either listening to you or waiting to use the frequency. Listening 90% of the time and talking 10% of the time is a good way to start, whether you intend to transmit on a local 2-meter repeater or HF. When transmitting on the HF bands, one must remember, the whole world might be listening to what you say. Listen for some time before transmitting. Conditions on the HF bands are considerably different than on the VHF/UHF bands. You may only be able to hear one side of a conversation on the HF bands. Ask several times if the frequency is busy before calling “CQ” or calling another ham. Remember, you might be on the other side sometime, having a conversation with someone when another ham just barges into your conversation by accident. Be respectful to all others on the bands and treat them the same way you would like to be treated. Listening and adjusting to the established ways in amateur radio will allow a new ham to be accepted sooner. Remember, messages of a commercial nature are not allowed on amateur radio. You may not call a plumber to fix your plumbing or call a radio station to enter their contest using amateur radio. Do not abuse this rule.

If you want to join a conversation in progress, transmit your call sign between the other stations transmissions. The station that transmits next should acknowledge you. Don’t use the word “Break” as this word usually suggests an emergency. All stations should stand by for those that have emergency traffic. This is true whether on HF, VHF, or UHF.

Here I must insert this comment; if you have upgraded from the 11-meter band, leave the jargon behind. Most hams find CB lingo distasteful and scowl when it is used. There is no place on the ham bands where this lingo is acceptable. This jargon identifies you as a neophyte and not ready to identify with the ham community. Talk as if you are talking on the telephone.

Don’t forget to sign your call every 10 minutes.

Repeaters

Repeaters are devices that enable hams to talk longer distances than they could normally by using two radios directly. A repeater is usually placed on a mountaintop so it can cover more area. This way a person can talk to somebody else on the other side of the mountain. Without the repeater they would not be able to communicate. Many digital modes are available by using a repeater. Of course, repeaters are not always needed to communicate on 2-meters. Many use simplex (transmit and receive on the same frequency) to talk with each other everyday. This is a preferred method for most hams when possible. Most hams make contact on a repeater and then move to a simplex frequency to finish their conversation.

Many new hams start out with a radio that operates on the 2-meter band. They can use a handheld, mobile, or base station radio to talk to other hams. All of these radios have provisions built in so they will operate on frequencies corresponding with the repeaters.

Frequencies used by some of the local repeaters may be listed at the back of this booklet.

Here is an example of repeater frequency and offset:

King Mountain: the repeaters transmit frequency is 147.160 MHz and it listens on 147.760 MHz

Mt. Constitution: the repeaters transmit frequency is 146.740 MHz and it listens on 146.140 MHz

Lookout Mountain: the repeaters transmit frequency is 146.740 MHz and it listens on 146.140 MHz

Sumas Mountain: the repeaters transmit frequency is 145.230 MHz and it listens on 144.630 MHz

As an example for the King Mountain repeater, you would set the receive frequency of your radio to 147.160 MHz and your transmit frequency to 147.760 MHz, a plus (+) offset. This allows your radio to receive the transmit frequency of the repeater.

Repeaters are NOT PUBLIC DOMAIN. Repeaters are installed by individuals or a group to support a particular purpose or activity and for the common interests of their owners. When you operate on them, you are actually operating through someone else's duly licensed and coordinated station.

Volunteers maintain repeaters and they do not get paid for this job. It would be a nice gesture to say thanks and tell them you appreciate their efforts. Above all, don't call one of these members and demand they fix a repeater that is not working. They more than likely know about the problem anyway.

Digital Radio - Combining Amateur Radio and the Internet

Voice Over Internet Protocol (VoIP)

There are several Internet based Amateur Radio applications using **VoIP**. Two of these are the Internet Radio Linking Project (**IRLP**), and **Echolink**. Both of these protocols are supported in Whatcom County, with IRLP being accessible through the King Mountain repeater (147.160+, 103.5 tone).

In effect, IRLP allows the linking of amateur radio repeaters to the Internet on a worldwide basis. Utilizing a series of control tones, an Amateur can "bring-up" any one (or more) of the hundreds of other IRLP enabled

repeaters throughout the world. In addition, "reflectors" exist which may be thought of as full-time party lines, which include many international participants at any particular moment.

As with all Amateur Radio modes, there are both technical and procedural aspects that need to be learned prior to beginning operations. In addition to the URLs listed below, interested Amateurs are encouraged to join the monthly MBARC Digital Group meetings, held the third (3rd) Tuesday at 7:00pm at the Ferndale Library. In addition, control operators are often available for on-the-air help on the King Mountain repeater.

Packet Radio

A system that uses a computer to send out packets of information via Amateur Radio

Local packet radio frequencies may be listed in the back of this booklet

Amateur radio, through packet radio, offers about the same capability as the Internet. The Amateur Packet Radio system utilizes a network of amateur radio stations, connected using free radio waves, to transmit and receive digital information.

This radio network provides:

1. Packet Bulletin Board Systems (BBS) to store and relay personal messages and bulletins; Keyboard-to-Keyboard connection for direct chat between amateur stations.
2. DX Packet Cluster systems to announce band openings and DX stations heard on HF bands.
3. RACES/ARES/NTS and Emergency Communications for life and safety messages.
4. Networking and computer file transfer.
5. Satellite Communications for worldwide station-to-station links.

Automatic Position Reporting System (APRS™)

APRS™, first introduced by Bob Bruninga, WB4APR, in 1990, is a specialized subset of the packet radio concept. It has been developed as a tactical tool to allow the tracking and display of position and status information of both fixed and moving assets. For example, in a civic parade, it can show the position (and speed) of the LEAD car, the MAYOR'S vehicle, AID and FIRE units, the LAST vehicle, etc. In a Search & Rescue situation, it can show the INCIDENT COMMAND location, individual SEARCH TEAM positions and the areas that they have covered, CONTAINMENT points, etc. These locations and status information then can be transmitted and superimposed on city, street, or topographic maps and displayed on multiple computer screens.

APRS differs from tradition packet in several important ways:

1. APRS uses an unconnected (no handshaking) protocol; it is not error-free.
2. APRS activities are primarily local in nature.
3. APRS sometimes uses Digipeaters to augment local coverage.
4. APRS can use the Internet to allow remote viewing of local conditions.
5. APRS traffic is limited to position (GPS), status, and very short messages.
6. APRS has a special category for weather reporting stations.
7. APRS (in the USA) shares one National frequency (144.39 MHz simplex).

While the APRS concepts are beautifully simple, the application of APRS concepts to local situations can be beautifully complex. That complexity can be fascinating and any licensed Amateur can participate.

For more details about Digital Radio, see the following websites:

<http://www.qsl.net/k7skw/Packet/1index.htm>

<http://www.tapr.org/tapr/html/pkcf.html>

<http://www.nwaprs.org>

www.irlp.net

Agreements

The United States has a reciprocal agreement with Canada. This agreement allows us to use our radios in Canada and Canadians can use their radios in the U.S. When we identify our radio transmissions in British Columbia, we must sign our call followed by “Portable VE7”.

Tuning your radio

One thing that is very irritating to hams is someone tuning or testing their radio on the air. Using a dummy load is the proper way to tune up or test your radio or amplifier equipment. When tuning up on the air, your transmitter emits a tone that can cause interference on the band.

DX'ing and Contesting

The DX bug often bites the new ham quickly while operating on 10 meter CW. Lots of rare and exciting contacts can be made on this band as well as all the other HF bands. Many contacts can be made with modest power and humble antennas. Be mindful of changes in propagation and sunspot activity. One day you might not be able to communicate with fellow hams in the U.S. The next day you will be able to communicate with hams all over the world. When learned, patience and operating skills are huge advantages and required when working DX successfully. Spending most of your time listening makes you a successful DX'er. When listening for a DX station, one should start at one end of the listening range and slowly tune through the range looking for a DX station. Depending on conditions, this may take a considerable amount of time. Listen for a signal hiding behind a stronger signal. Many DX stations are not able to afford the expensive equipment we use. They may be using very low power and small wire antennas. Their reduced signals are often hard to find. To make it easier for us to hear the DX station, the DX station may work split. This means this person will transmit on one frequency and listen on several different frequencies. His listen frequencies are those of his choosing and usually 5 – 10 KHz above his transmit frequency. Listening carefully to what the DX station says will help you to determine where he is listening. If you call on his frequency and he is working split, you will cause interference on his transmit frequency. This in turn makes others irritated and then results in ‘on the air’ conflicts.

Most DX'ers collect cards from the stations they work. This is called QSLing and the cards received from a DX station will confirm that you have worked that station. Awards are given for working over 100 different countries. Many other awards are available for those that are interested. DX websites are shown below:

www.qrz.com;

<http://oh2aq.kolumbus.com/dxs/>;

www.dxc.ve7cc.net/



Station - KC7GX

Contesting is the act of making as many contacts with other amateurs as possible during a given period of time via Amateur Radio. Contesting is the challenge of competing against other amateurs, whether here or all over the world. There are many kinds of contests from Field Day to the ARRL International DX contest. Field Day is a competition among amateurs of the U.S. and Canada. It is aimed at sharpening our skills for operating and setting up equipment in times of need. The MBARC club participates in this contest every year in late June. Other contests such as CQ Worldwide, ARRL International DX, and CQ WPX contests are competitions between the world and U.S. hams. Some hams build contest stations where they have many hams operating during the contest. Some enjoy just contesting from their own station and by themselves. Some contesters are very serious about their hobby and others just contest to have fun. Points are made, scores are given, and trophies are won after the contest is over. There are many DX'ers and Contesters in Whatcom County that are active and available to help those that may be interested. If you are interested, contact the Mount Baker Amateur Radio Club.

DX & Contesting Terms

Dupe – In contesting; a duplicate contact on the same band

DX – Long Distance

DXCC – The ARRL DX Century Club awards program

Dxpedition – A temporary operation from a location that seldom see Amateur Radio activity

EME – Earth-Moon-Earth or Moonbounce

Meteor Scatter – Communicating by bouncing signals off the ionized trails of meteors

OM – Old Man - referring to a male

Pileup – A chaotic situation that occurs when many stations are calling one station simultaneously

Shack – A room where Amateurs keep their radio equipment

Vertical Antenna – An omni-directional antenna

XYL – Ex Young Lady – refers to a married female

Yagi – A beam or directional antenna, usually rotatable and has multi elements

YL – Young Lady – refers to a Young Lady

73's – Best Regards



Station - KC7GX

Rag Chewing

Rag Chewing, the art of carrying on an interesting conversation with other hams. This aspect of our hobby has been honed into a fine art by hams. Most of them probably assemble on 75-meter phone, but they can be found on most bands. Subjects are limitless, but traditionally hams avoid politics and religion, except those that are interested in starting conflicts. Many rag-chewers gather in groups (nets), taking turns with their assertions and opinions. Much can be learned from listening to and taking part in these chats. Opinions on the quality of various amateur products, methods of antenna construction and performance, new electronic data, weather info, and DX opportunities can be very useful information. Even DX'ers can be found rag chewing now and then. Many hams set schedules with each other to rag-chew.

Try to resist the temptation to editorialize. Nothing sounds worse than some blowhard that has all the answers, regardless of the question.

Conflicts

If you ever become involved in or hear an, 'on the air' conflict or argument, keep your comments to yourself. Making comments, even if you are correct, just drags you into the conflict. There are a few hams that get into a conflict on purpose and want nothing more than to involve you. This is a game with them, something like those people that create viruses to be placed on the Internet. Do not insert your opinion about somebody's bad conduct. It only adds to the problem. Ignoring them is the best policy. If they don't have someone to argue with, the argument is over!

Some new hams slip into their old, comfortable terminology from the CB radio. I have heard other hams berate someone for using terms such as "standing by on the side" or "10-4". Hams do not use the 10-code, but no one is served by making somebody feel foolish on the air. Hams should lead by example and not by "dragging others over the coals" on the air.

Listen to other hams on the radio and don't be afraid to ask questions. By listening you can avoid conflicts. Most hams remember all too well what it was like to press that PTT switch for the first time. We are all human.

Emergency Services

Helping others in time of need is one of the most important goals we as amateurs take upon ourselves. The RACES group (Radio Amateur Communication Emergency Services) and the ARES group (Amateur Radio Emergency Service) are part of and supported by the Mount Baker Amateur Radio Club in Whatcom County. Both groups are utilized during times of natural disaster, search & rescue operations, and public activities (such as parades, bike-a-thons, & Ski-to-Sea). They provide communications in case of emergencies or when needed. During Ski-to-Sea weekend around 50 amateurs lend their services and equipment to benefit the participants and the community.

RACES has 2 vans fully equipped with radios so they can provide communications where needed for emergencies. There is a complete radio room that can be manned and used in time of need. This room is located at the Search and Rescue Headquarters on the Smith Road. They also have a station in the Whatcom County Courthouse Emergency Operations Center and at the Red Cross building. We have placed 2-meter antennas at various strategic locations around the county, thus enabling us to plug in a radio and be on the air without the time-consuming effort of erecting an antenna. These are all dedicated to providing communications during emergencies and times of need. MBARC, RACES, and ARES members are called upon by the County Sheriff and Search & Rescue to assist in many emergencies and rescue efforts. You do not need to belong to MBARC to join either RACES or ARES groups. These groups work together with community services such as the Red Cross to promote a common cause.

This page is provided as a guide.

Please remove this page and provide information specific to your club and local area.

Direction Finding

Direction finding: the art of locating a radio signal. Different uses for this art are Bunny Hunting (for fun) and transmitter finding (serious when needed). It has been used to find an errant transmitting device, people purposely causing interference, searching for downed aircraft and just fun. Interested hams can contact the MBARC to participate. You will need a special antenna and an attenuator unit. Ask to ride along with participants during the next Bunny Hunt.

Other Systems

There are many other ways to participate in amateur radio. Radio Teletype, Slow-scan TV, Satellite, and Moon Bounce are a few that comes to mind.

In Closing

In closing let me say Thank You for reading this guide. We hope you will find it helpful.

If you have just received an amateur radio license, you have made a wonderful choice for a hobby. It is a hobby you can participate in all the rest of your life. Just ask hams like John (W7KCN), Al (W7EKM), or Dick (N7RO) and I think they will tell you the same thing. It is the best hobby you can have!

An organization that represents all hams is the **American Radio Relay League**. Members from all over the United States support the **ARRL**. The **ARRL** helps members with technical information; they represent all hams in matters brought before the **Federal Communication Commission** concerning Amateur Radio and help in many other ways. For more information on the **ARRL**, check out their website at: www.arrl.org/

ARRL extends a special thank you to the **Mt. Baker Amateur Radio Club** for designing this packet an allowing ARRL Affiliated clubs to use it. This is just another great example of hams helping hams. Visit their web site at www.qsl.net/k7skw or write:

Mount Baker Amateur Radio Club
PO Box 981
Bellingham WA 98227-0981

For more information on Amateur Radio Clubs or mentoring mew hams, please contact:

Norm Fusaro, W3IZ
ARRL Affiliated Club an Mentor Program Manager
225 Main St.
Newington, CT 06111

860-594-0230
w3iz@arrl.org

Special thanks to Doyle Bennink, KC7GX, and all those who provided the information contained in this packet. Without their help there would not have been accurate and up-to-date information.

If you still have questions regarding this hobby or would like to join our club, please contact the MBARC for help at www.qsl.net/k7skw or write:

**Mount Baker Amateur Radio Club
PO Box 981
Bellingham WA 98227-0981**

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Please provide club meeting and contact information as well as local repeaters. Don't forget meeting times and place as well as directions.

Any other information that a new ham will find useful should be provided in these last pages.