There is more to Ham Radio than Emergency Communication

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Many folks obtain their Technician license with the sole intention of having a capability of personal communication in an emergency or to be part of an emergency communications group by being a member of ARES/RACES, Red Cross, or their church emergency communications network and for checking into nets. This certainly is a good reason to obtain the license and is in fact the reason we are allocated the valuable spectrum by the FCC that we enjoy, but there is a lot more to the Hobby of Amateur radio than emergency communication.

VHF and UHF activities for a Technician license holder with a hand held, mobile or Base station all mode radio

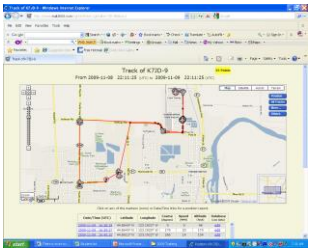
Public Service Events

There are a number of public service event organizers that ask for amateur radio communications (Usually but not always through ARES/RACES). These events can be fun and give you a front row seat to the event. Examples in Spokane county would be Bloomsday, Lilac Parade, Frozen Flat Lands Bike Race, Autumn Century bike race, and many more. Attend the ARES/RACES meeting or go to the ARES/RACES web site at http://www.spokares.org for information on these local events.

Hidden Transmitter Hunting

On VHF and UHF there are activities like hidden transmitter hunts, sometimes called fox hunts or “bunny hunts” where the “bunny” is the hidden transmitter. This activity allows us to test our skill should we need to find an interfering signal. Hidden transmitter hunts provide friendly competition and the winner usually becomes the “bunny” for the next hunt. The Inland Empire VHF club runs monthly “bunny” hunts during the good weather months in spring-Summer-and Fall. Attend their meetings or go to their web site at http://www.vhfclub.org for more information.

APRS Location - Tracking

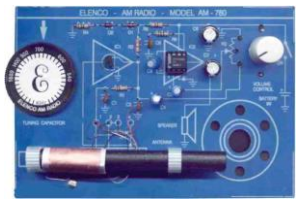


APRS (Automatic Position Reporting System) is a fun aspect of the hobby that allows you to be tracked as you drive around. With an APRS transmitter in your vehicle or carried on your person folks can track your progress or location. Place an APRS system in your vehicle as you travel about or as do on my annual "pilgrimage" to Hamvention in Dayton Ohio. An old hand held or mobile and about $125 worth of additional new hardware from Byonics and you can be on the air. If you have an old GPS with an output you can put together for less. Check the Byonics web site at http://www.byonics.com for more information.

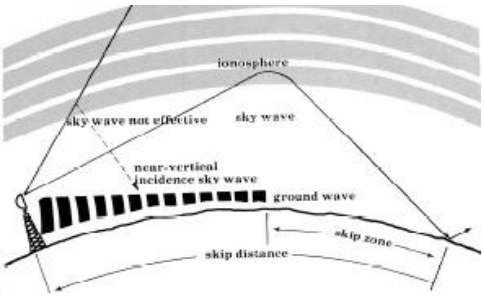
Building equipment and accessories from kits or from scratch

A fun portion of the hobby for some is experimentation and building things. Because the wave length is short it is easy to experiment with and build antennas. Whether it is a simple ground plane antenna or a beam there is a lot of information on how to build them from readily available materials such as wire, copper pipe, and PVC pipe with old tape measure elements. There is a lot of information on building antennas in the ARRL antenna handbook and on the web.

In addition to building antennas there are a number other electronic kits available if you want to try you hand at building something. One source of kits for the hobbyist is Ramsey Electronics (http://www.ramseyelectronics.com).



HF (High Frequency) Skip and other long distance communication



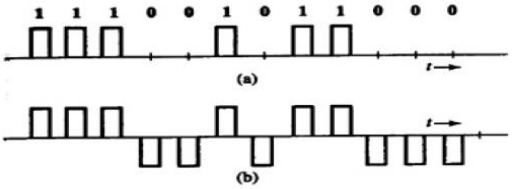
As a Technician class license holder you have the 6 meter band available (50-54MHz). The 6 meter band frequently opens up and allows communication beyond line of site. You also have limited SSB privileges in the 10 meter (28.300 to 28.500) with a maximum power of 200 watts. In addition if you want to try your hand at Morse code there are HF band segments available for CW to the Technician license holder.

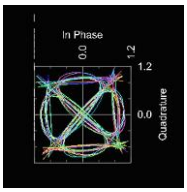
Many of today's HF radios (like the ICOM 706 and 7000, and Yaesu FT857and FT897) offer FM/AM/SSB/and CW on the 6 meter, 2meter and 70 cm bands and full HF band coverage from 180 to 10 meters in a single radio. If you plan to upgrade to General or Extra these could be a good first radio with the VHF/UHF bands for your Technician class license and ready for HF when you get your General License.

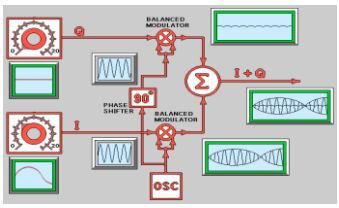
Adding a computer adds more VHF/UHF fun

If you have a computer you can do more with your radio. First is the difficult job of entering 50 to 100 frequencies with offsets, tones and power levels that can be made easy with software and a programming cable that is available for most radios.

Digital Communications







There are a number of ways to tie your computer to the radio to do digital communications. Digital communication modes allow you to type and exchange messages between other amateur stations by typing your message or reply into your computer and reading the other stations reply on screen. This is a great mode for those who have "Mike Fright".

Packet Radio

Packet radio where you can send written communication to another radio, like sending a wireless e-mail anywhere in the world through an internet back bone, or local peer to peer (direct radio to radio)) communication with another station. There are lots of references on the web for packet radio and how to build your own interface from the computer to the radio. There is some excellent Packet software that can be downloaded for free on the web (WinPack and Packet engine and more, search on Packet Radio)

WinLink 2000 Global radio link email system

WinLink *2000 (WL2K)* is a worldwide system of volunteer resources supporting e-mail by radio, with non-commercial links to internet e-mail. These resources come from Amateur Radio, the

Military Affiliate Radio Systems (MARS), and other volunteer organizations. The system provides valuable service to emergency communicators, and to licensed radio operators without access to the internet. The all-volunteer Winlink Development Team (WDT) is committed to continuous improvement using modern computer and networking technology with the most efficient and effective radio mode *Winlink* s and digital protocols for local, regional and long-distance applications.

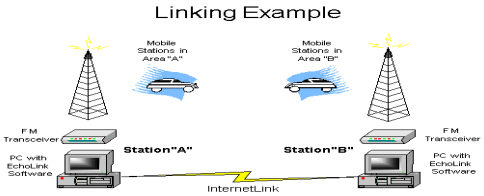
To use the WinLink 2000 system, you must hold an Amateur Radio license or be a member of a supported organization or agency. Use of the system and all software is free of charge for those who qualify. A simple modem is all that is required to operate Winlink 2000 log onto http://www.winlink.org/ for more information.

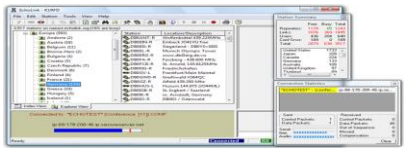
Amateur TV


You can send live full motion TV on the 70 cm and higher frequencies. It takes an old Camcorder as the camera, an ATV transmitter that is available from PC electronics for about $500, and an old cable ready TV as the receiving station. There are lower cost cameras and transmitter boards available to mount in your model airplane, car or boat. These small lightweight transmitters have been attached to balloons and have sent back images from near space altitudes. Fast scan TV is only allowed on the 70 cm and above bands because it takes 6MHz of bandwidth to transmit.

You can also send slow scan TV (single frames) on VHF and HF in the same bandwidth you send SSB voice transmission. Your normal HF or VHF multiband transceiver and a computer along with a camera and simple interface is all that is required.

ECHO Link

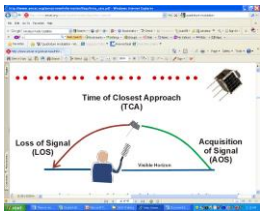


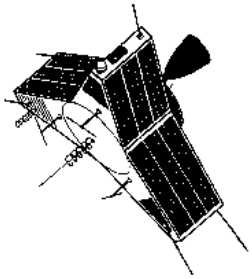


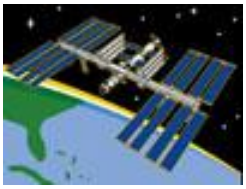
EchoLink® software allows licensed Amateur Radio stations to communicate with one another over the Internet, using voice-over-IP (VoIP) technology. The program allows worldwide voice connections to be made between radio stations, or from computer to a radio station, greatly enhancing Amateur Radio's communications capabilities. There are more than 200,000 validated users worldwide in 162 of the world's 193 nations — with about 4,000 online at any given time. Go to http://www.echolink.org/ for more information.

With your hand held transceiver and operating through an Echo link station you can communicate around the world from a local repeater to another repeater on the other side of the world. No additional equipment required.

Satellite and Space Station communication







Amateur radio satellites contain transponders or repeaters that can relay voice communications. Digital satellites are capable of transmitting, receiving, or relaying digital information. Information on amateur satellite communication can be found at http://www.amsat.org/amsat-new/index.php

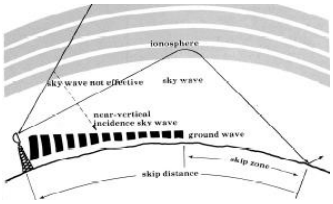
The International Space station has a licensed amateur radio operator and a VHF amateur radio transceiver for scheduled contacts with schools and for random contacts with amateur radio operators when onboard schedules allow.

To listen to amateur radio conversations on satellites or communicate with the International Space Station a hand held transceiver and a directional antenna are all that are required. To communicate over an amateur radio satellite a separate transceiver and dual band directional antenna may be required.

HF activities with a General or extra license and an HF radio

You do not need a 50 foot tower, beam antenna and 1500 watt transmitter to operate on HF and make many contacts. If you are a serious contest operator you may want a tower, antenna and a high power linear amplifier, but for most of us this is not needed. Simple wire dipoles and a 100 watt transceiver are very effective for the HF bands.

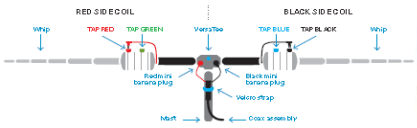
Direct contact with someone thousands of miles away



HF communication with skip propagation allows your signal to be reflected from the ionosphere one or more times allowing communication around the world without any intervening

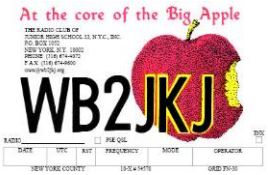
infrastructure. Propagation conditions are continually changing throughout the day and are also affected by solar activity, meteor showers and many more factors. HF operators understand these changes and how to use them to make long distance contacts.

QRP Operation



One activity on HF is QRP, or Low power operation, where your station is transmitting 5 watts or less. You will be amazed what you can do with a simple Dipole or Budipole antenna and a small battery operated CW or SSB radio. There are many kits available for QRP transceivers if you want to try your hand at home brewing a radio. Visit http://www.ac6v.com/qrp.htm for more information on QRP Operation.

DX



DX stands for long distance communication and communication with as many different countries or locations as possible. DX Operators collect QSL cards to confirm their contact with that station. This activity usually requires directional antennas and 100 watts or more of power. There is a local club in Spokane that focuses on the art of DX communication. Their web site is http://www.sdxa.org/ .

Contesting

Contesting (also known as *radiosport*) is a competitive activity pursued by amateur radio operators. In a contest, an amateur radio station, which may be operated by an individual or a team that seeks to contact as many other amateur radio stations as possible in a given period of time and exchange information. Rules for each competition define the amateur radio bands, the mode of communication that may be used, and the kind of information that must be exchanged. The contacts made during the contest contribute to a score by which stations are ranked. Contest sponsors publish the results in magazines and on web sites.

There are contests to see how many contacts by grid square we can contact on VHF/UHF with directional antennas and a high location, like driving to the top of Mt Spokane to operate. These are usually a 24 to 48 hour events and are competitive. Anyone can participate regardless of their contesting experience. Even if your only make a few contacts folks will be glad to talk with you because they are looking to add more contacts to their score. These are a great way to get

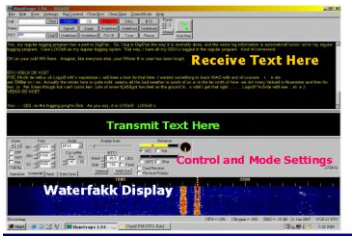
over “mike fright”. These contests are listed in the ARRL magazine, QST, and on the ARRL web site. www.arrl.org .

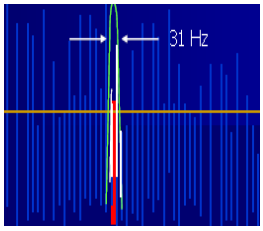
Pactor

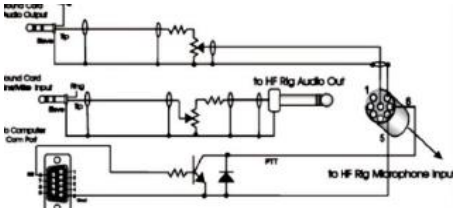
PACTOR is a radio transmission protocol used by amateur radio operators, marine radio stations, and radio stations in isolated areas to send and receive digital information via radio. PACTOR is one of the fastest, most accurate, and most efficient ways to send digital data by radio. A robust network of stations that use PACTOR has been established to relay data by radio to and from the Internet, extending Internet access to sea based and other isolated users.[

PACTOR can provide one on one worldwide communication, without any intervening infrastructure. You don’t need a tower and beam to experience PACTOR.

PSK31







Another digital mode is PSK31 (more commonly used on HF bands but can be used on any band) which allows typed message communication between stations using extremely small bandwidths of approx 31 Hz. Again free software is available on the web and modems can be purchased or can be built to work with the directly with the computer or its sound card. PSK31 is easy to do and a great way to make contacts even when Voice transmission can’t get through because of high noise levels.

Slow Scan TV

The best way to understand slow scan TV is to imagine it as color fax pictures but sent over the radio rather than the phone. The pictures are transmitted via tones (1200-2300 HRZ) over the air. There are several simple ways to get setup for slow scan TV, the simplest of which use your computer and software with a hardware interface. There are interface circuits which work excellent and cost less than $20 to build or nil if from your junk box.

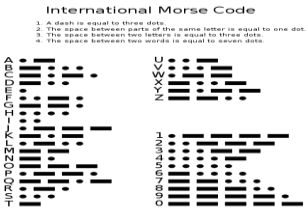
Slow scan has been great fun. You can exchange pictures, picture QSLs with different people in many different countries throughout the world. The quality of the pictures is somewhat dependent upon the computer, (monitor & graphics card), and somewhat on the software, hardware. The better systems support Hicolour which gives typical picture resolutions of 320 x 240 in 32 thousand colors. These pictures are almost photographic quality and are very impressive to say the least.

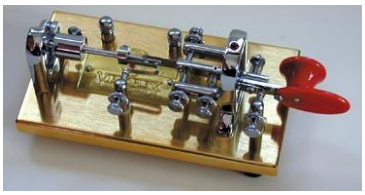
Once you've tried it you will be hooked. Imagine being able to swap mug shots with other Amateurs allowing you to see who you're talking to. You can also send diagrams and schematics over the air. It's great. Tune in to 14.230 MHz and 14.233 MHz on the HF band almost anytime to hear the action. Don't be afraid to break in for info. The SSTV hams are usually very willing to help other interested parties or help you get started in slow scan. Go for it and we'll see you on the air. Go to http://www.kent.net/ve3rdn/ for more information.

RTTY – Radio Teletype

RTTY is a keyboard to keyboard communication means over HF using FSK (frequency shift keying) to send characters using BAUDET code instead of ASCII. It was originally implemented with mechanical radio teletype machines but today is implemented with a transceiver, simple interface and a computer. There are many dedicated RTTY operators and there are national and international RTTY contests.

Morse Code - CW





Morse code operation is still viable today even though you no longer need to demonstrate your ability to send or receive CW. There are many who enjoy QSO's in code. Today experienced CW operators copy received text without the need to write as they receive, and when transmitting, can easily converse at 20 to 30 words per minute (there are 5wpm nets if you want to try your had at CW). Morse Code will always remain a viable means of providing reliable communications during difficult communications conditions.

Getting involved

Want to try a new activity but don't know where to start? You can join in on one of the many nets and ask if someone can help you. Many of the local nets are listed on the Spokane Ham Radio Club Web site(http://www.spokanehams.com)

There are many knowledgeable operators dedicated to helping others in the hobby. They are referred to as Elmer's, ask on the air or at a meeting and you will likely find someone who can help and answer your questions or get you started with a new mode.

The ARRL organization has folks appointed as Technical Specialists (TS's) who are available to answer questions via e-mail. The Eastern Washington (EWA) section web site is at http://www.arrl.org/sections/EWA.html. In the Spokane In the Spokane area there are two TS's Jack Tiley, AD7FO at (ad7fo@arrl.net) and Bear Carson, AC7HI at (ac7hi@yahoo.com).

Training

The VHF club, Spokane county ARES/RACES and KARS (Kootenai Amateur Radio Society) have training as part of their monthly meeting time. Other clubs may also offer training at their meetings, visit their web sites or attend a meeting to find out.

Club Meetings

Spokane County ARES RACES – Meetings are 7 -9 pm the third Thursday of the month at the Sheriffs Training Center in the Spokane Valley (up the ramp next to the less Schwab store in just west of University Ave on Sprague Ave).

Spokane DX Association - Meetings the are held the 1st Thursday of the month at Spokane Librariey. See their club web site http://www.sdxa.org/ for more details.

Inland Empire VHF Club – Meetings are 6:30 to 8:30 pm the second Thursday of the month at the Spokane community college Lairs building in the Little Foot room. Visit their web site at http://www.vhfclub.org .

Lilac City Radio Club - Meets at the Spokane Library at Argone and Upriver Drive on the XXXXXXXXXXXXXXXXXXXXXXXXX of each month.

Spokane Ham Radio Club (formerly the Agilent Site Amateur radio club) – The club members are ex Hewlett Packard and Agilent amateur radio operators. There are no formal meetings. For information on the 145.210 or 443.475 Echo link repeater check their web site at http://www.spokanehams.com/ or make contact with persons listed on the web site (The author is one of them).

Kootenai Amateur Radio Society (Coeur d'Alene, Idaho)(146.98) meets at the CAP building at the Coeur d'Alene Airport on the first Monday of the month of the month. See the **Kootenai Amateur Radio Society** web site at http://k7id.com for more details about their meetings and activities.