

Next Meeting

Due to the ongoing IAM strike at Boeing, the September general membership meeting was cancelled. The next scheduled general membership meeting is set for Saturday, October 11. An earlier e-mail was sent to club members about a potential field trip to the Jim Creek Naval radio site on that same date. If you didn't receive the e-mail and are interested in going on the field trip or need some more information/details about it, please contact Dwayne Broderson, W7GD. Depending on the interest level for the field trip, we may need to schedule a separate meeting date for October, if necessary.

Upcoming Operating Activities

This month features state QSO parties for Tennessee (7th and 8th), Colorado, South Carolina, and Washington (20th and 21st), and Texas (27th and 28th).

Also, other major events this month include the North American Sprints (CW and SSB), ARRL VHF QSO Party and the CQ WW RTTY Contest.

K7P Special Event Station

On October 18th and 19th, BEARONS in conjunction with the Stanwood-Camano ARC will be running a special event to commemorate the re-opening of Cama Beach State Park on Camano Island. The plan is to have two SSB stations and a third station to run CW and provide SSB back-up. All three stations will be located on Camano Island for this event. An announcement for the event can be found on the ARRL website. Both the BEARONS and SCARC websites have dedicated pages providing the details of the operation and they will be updated as more information becomes available. The special 1X1 callsign K7P (Kilo Seven Park) was obtained for this event. The link for the BEARONS K7P webpage is:

<http://mysite.verizon.net/evernhamms91/K7P.htm>

Salmon Run 2008

This year's rendition of the Washington State QSO Party, aka Salmon Run, will be held on September 20th and 21st. BEARONS is the defending club category champion and we will be working the QSO Party from the QTH of Dwayne Broderson, W7GD, on Camano Island (Island county). There are some rule/op category changes for this year's event. For WA clubs, there are two categories – multi-op single transmitter or multi-op two transmitter. All ops must be club members and the operations must be mixed-mode only.

ARRL Newsletters

Are you subscribed to any of the newsletters that the ARRL publishes? If not, here's a list of what's currently available:

The ARRL Letter – published weekly, contains a news summary of all things amateur radio related.

The Contester's Rate Sheet – edited by local ham Ward Silver, NØAX. Published every two weeks, it contains a comprehensive contest calendar with articles and technical content.

The ARES E-Letter – a monthly publication – it is a source of news of the Amateur Radio Emergency Service.

The VE E-Express Newsletter – published 4 to 6 times per year, this document keeps Volunteer Examiners up to date on the ARRL VEC program and other items of interest to VEs.

BEARONS VE Testing

There will be a VE test session on Wednesday, September 24th at 6:30PM at the Everett Activities Center.

KN7T Elecraft K3 Kit Build

About a year ago, I began the process of trying to figure out what new HF rig I wanted to buy to upgrade my current hamshack with a definite emphasis on CW contesting. After comparing features, prices, etc. on a number of available radios from Yaesu, Kenwood, Icom, Ten Tec, and Elecraft, I decided to go with the Elecraft K3. I ordered my K3 at the end of February 2008 and finally received it at the end of July. The K3 is available as a pre-built radio or as a solderless "kit". I ordered my K3 in the kit form. The basic K3 is configured as a 10 watt output HF rig that covers 160 through 6 meters. It is also offered in a 100 watt version or you can purchase an add-in amplifier module at a later date if you want to bump up the power on a 10 watt version K3. I opted to go with the 100 watt version of the radio. Other options that I ordered were crystal roofing filters for 2.7 kHz, 1.0 kHz, and 400 Hz, an internal antenna tuner (covers all bands 160-6), I/O and transverter interface, dedicated sub-receiver with two crystal roofing filters (2.7 kHz and 1.0 kHz), the digital voice recorder, temperature compensated crystal oscillator (TCXO), and a Heil ProSet. As of this writing, the sub-receiver and DVR options are on backorder and have not yet been received. In addition, there are other crystal roofing filter options available, including ones for FM and AM/SSB modes if you are partial to operating any of those.

To give you a better idea of just what this particular transceiver is capable of, here's a partial list of features:

- Both main receiver and the dedicated high performance sub-receiver (option) can be equipped with up to five roofing filters each, featuring bandwidths as narrow as 200 Hz.
- The dedicated sub-receiver option allows diversity reception using two separate antennas.
- 32-bit IF DSP for signal processing which also includes stereo audio output and other binaural audio effects
- PBT and programmable DSP/crystal filter presets
- Built-in 8-band transmit AND receive equalization
- Built-in digital mode demodulation with text decoding/display on the front panel LCD (decodes CW, RTTY, and PSK-31)

- CW-to-RTTY or CW-to-PSK31 text decode/encode for digital mode QSOs without the need for an external computer.
- Auto CW/data signal spotting and manual fine tune display
- Dual VFOs with independent modes, bands, and filter settings
- 100 memories with alphanumeric labels, including 4 quick-memories per band
- Dedicated message play controls for CW, data, and voice modes
- Real-time clock and calendar with programmable alarm and auto power-on
- Utility selectable displays show voltage, current draw, RIT/XIT offset, front panel temperature, PA heat sink temperature, etc.
- Firmware upgradeable via internet
- Front AND rear microphone and headphone jacks
- Optional RX antenna in/out, transverter in/out, and buffered IF outputs

The basic K3 10 watt transceiver is priced at about \$1400 for the kit version and about \$1600 fully assembled and tested. The 100 watt version starts at \$1850 for the kit and \$2090 for a fully assembled and tested unit. All of the other available options are priced separately. As ordered, with options, my K3 kit carried a price tag of right around \$3600. The current waiting time for K3s from initial order to delivery is averaging just shy of 4 months so there is a bit of a wait if you want one. It should also be noted that the dedicated sub-receiver and digital voice recorder options also have wait times associated with them. The sub-receiver option is now available and Elecraft is currently filling backorders. The digital voice recorder is not yet available but has an estimated availability of Fall-Winter 2008.

After receiving my K3, I was anxious to start building the kit. The kit packaging is really a thing of beauty and precision – if anyone remembers how the old Heathkits were packaged – Elecraft takes that to a whole different level. At the bottom of this article there is a photo showing the kit packaging. All of the various sub-assemblies, boards, hardware, etc. are packaged as groups for easy access and logical flow during kit build-up. Elecraft was thoughtful enough to include extra hardware just in case anything was missing from the regular packaging. All of the aluminum chassis pieces were individually wrapped in protective paper to keep them from getting scratched or marred – a nice touch. The assembly manual comes with a

correction sheet and I would highly advise that you spend the time to incorporate the noted changes to the assembly manual BEFORE you begin building the kit. It took me a full evening to incorporate the necessary changes so plan accordingly. This may vary depending on which version of the assembly manual you end up getting. The operating manual is the same way, it comes with a correction sheet and you should incorporate those changes prior to using it. I believe that Elecraft now offers an updated operating manual that is shipped with the current kits so your mileage may vary on that as well.

The circuit card assemblies are packaged in anti-static bags as they are ESD sensitive and great care must be used when handling them. I would consider it mandatory that you have an anti-static mat equipped with a wrist strap and a good ground system to utilize during the kit build. I bought a nice sized anti-static mat from Vetco in Bellevue for this purpose. The main RF board and the front panel board have firmware loaded into them. The packaging for both boards will indicate which version of firmware is loaded in each. I would suggest that you record those numbers in the assembly manual for future reference if needed.

The K3 utilizes hundreds of SMD components, many of which are multi-pin devices. This is one of the reasons that the K3 kit was offered as "solderless", since many hams aren't equipped or skilled in the handling and installation of SMD components. All of the circuit boards are 100% tested before packaging and shipment.

No special tooling or test equipment is required for the kit build. It would be helpful to have a basic volt-ohm meter available during construction, however. I don't consider a VOM to be special equipment and most everyone should have one of these around the shack anyway.

The kit contains a vast array of fastening hardware, including different sizes and lengths of screws, washers, spacers, and nuts. Take the time to inventory all of the items in the kit to ensure you have everything that is needed prior to starting the build. I spent one whole evening doing the kit inventory but it is time well spent and eliminates future aggravation over any possible missing items. As it turned out, I was missing a couple of screws but the extra hardware bag included with the kit

contained sufficient spares and so it was no problem.

Assembly of the kit is straightforward and the assembly instructions are clear and concise. Take your time and be sure to check off each step as you complete it. I would recommend that you not work on the kit if you are tired or otherwise distracted simply to avoid missing details during assembly. It took me about a week of working a couple of hours per night to complete the assembly. I think Elecraft estimates that kit build takes approximately 10 hours – that seems reasonable to me. It took me longer but I worked at a slow pace. I didn't really find any major "gotchas" during the build and the toughest part for me was getting the front panel attached to the main RF board. There are several interfacing connectors that have to be lined up as well as chassis and mating fastener holes so it's a bit of a balancing act to get everything to come together at once during that portion of the assembly. Follow Elecraft's advice in the assembly manual about loosening up some of the mating fasteners – it will likely make things come together easier during front panel installation. One thing to be aware of is that when you are installing the front panel board into the aluminum faceplate, there is a washer that has to be preset on the backside of the faceplate before the board goes in. There have been some complaints that the washer provided is not thick enough to provide adequate support for the back of the faceplate where the headphone jack protrudes through. I found this to be true on my K3 as well. It may be worth your while to locate a couple of thin trim washers of the same diameter and have them on hand during this step. If you don't, the existing washer without the extra shim needed will rattle around and cause noise, not to mention that the necessary support function that it is supposed to provide will not be there. If that happens, it is possible to deform the front panel if you tighten the headphone jack nut down too tight so be mindful of this.

Since I did not receive the sub-receiver option when the K3 arrived, it will necessitate disassembling the K3 to install it once it does arrive. The same will apply when the DVR finally becomes available. Elements of the sub-receiver and DVR mount behind the front panel and so it must be removed from the radio for installation of those components. You may wish to consider that if you order a K3 when deciding on shipment/delivery

options once Elecraft contacts you for shipping confirmation. A number of K3 users have successfully installed the sub-receiver option after their K3 was already built so it shouldn't be a problem if you decide to build the kit now and get the sub-receiver later.

Some may wonder "what is the purpose of the sub-receiver anyway?" In short, it provides a second, high performance receiver that can operate completely independent of the main receiver and use a separate antenna if so desired. For those into contesting, you can appreciate the functionality of listening to a different band at the same time you are working contacts using the primary receiver. While not true "SO2R", it is a close approximation. This functionality manifests itself in the form of diversity receive – the ability to listen to the main receiver in one ear and the sub-receiver in the other ear at the same time when using stereo headphones or headset. You could also use the sub-receiver while working split operation to find and monitor the frequency which the DX is tending to work instead of having to use the VFO A/B switch to try and locate the DX listening frequency. This is a VERY handy feature.

It should be pointed out, however, that the basic K3 without the sub-receiver can still work split frequency operation, just like any other modern transceiver. In the basic configuration, VFO B is a tap of the main receiver instead of being a fully dedicated and independently controlled second receiver – that's the main difference. The sub-receiver can be turned off when not in use and VFO B then reverts to being a tap of the main receiver. Most hams probably don't need or won't want the dedicated sub-receiver as it is a fairly pricey option. In short, the sub-receiver option is likely to only appeal to those hams heavily into contesting or hardcore DX chasing.

The fit and finish of the K3 kit is really something to behold – Elecraft has really set a new standard along these lines. There are no excessive gaps where mating chassis panels come together and the whole radio really has a quality look and feel. The circuit cards are works of art and the integration of the front panel controls definitely has the user in mind. There have been some complaints about the K3 not being able to select a particular band with a single button push. This is true, you either have to cycle through the bands with a rocker-style touch switch or you can directly

enter the desired frequency, your choice. I don't find the exclusion of individual band buttons to be a burden. I suppose it may also be possible for that feature to be incorporated as part of a future firmware upgrade?

Speaking of firmware, the K3's firmware is user upgradeable, utilizing a PC connected to the internet. The K3 connects to a PC through a 9 pin serial cable (pin to pin cable). Elecraft sells a serial-to-USB converter cable if you need one. Be advised that not all serial-to-USB cables will function correctly with the K3 as has been noted by some users. I use a Belkin converter and it has worked so far but I did purchase the Elecraft cable in case of future difficulties. Basically, you download the new firmware from the Elecraft site and you use a software utility provided by Elecraft to do the actual upload to the radio. This utility also has the capability of storing your K3's configuration. This is a very handy feature, particularly if you have to do a master reset of your K3 for some reason. I've done one firmware update to my K3 and it went flawlessly. Firmware updates from Elecraft are fairly frequent and there are still a number of features and functionality planned which has not yet been implemented.

The completed K3 is surprisingly lightweight considering all of the stuff that's packed into it, especially if you only opt for the 10 watt version. The beauty of this radio is that it is compact enough to be a nice choice for portable work and it's power requirements are such that it would be suitable to use with a deep cycle battery if you wished.

Learning to use the K3 is something that you will want to take slowly and deliberately. The operating manual is fairly extensive and is packed with detail so it would be wise to sit down and read through it before you ever sit down to operate the radio for the first time. Many of the functions on this radio are not necessarily intuitive so some up-front knowledge of the radio's features will be helpful and limit the tendency to get frustrated. There are a number of calibrations that must be performed before the K3 is ready for use. You will also have to enable all of the options that you installed in the K3 through a series of menu selections. The front panel LCD is packed with information and some things are easy to miss if you aren't looking for it. The K3 offers regular PTT, VOX operation, and true QSK for the discerning CW

operator. The K3 has a built-in CW keyer that is fully adjustable.

In the unlikely event that you require support from Elecraft, they are very quick to respond to e-mails and there is also an Elecraft e-mail reflector where users and the Elecraft experts and designers can exchange information, offer help with troubleshooting, operating tips, firmware upgrade notices, and a whole host of other subject matter pertinent to all things Elecraft, not just the K3.

After using the K3 for several weeks now, I have gotten familiar with most of the functionality of the K3 and find it very much to my liking. There is so much adjustability to this radio that you really have to have "seat time" in order to fully appreciate and understand how it all works. The DSP filtering and crystal roofing filters can really work wonders in crowded band conditions and the noise blanker in the K3 is second to none. I am anxiously awaiting the arrival of the sub-receiver so I can experience the diversity reception capability.

This radio is NOT for the faint of heart and if you don't like menu-driven functionality or the whole idea of software defined radios, then the K3 probably won't be your cup of tea either. It is not an inexpensive radio even in it's most basic form. One of the more popular features of modern transceivers is a bandscope – the K3 doesn't have one. I've owned radios with bandscope and to be honest, I don't really miss not having it in the K3. It should also be noted that while the K3 will interface with just about any amplifier, past or present, the implementation of an external ALC input to the K3 is a bit clunky with certain older-model

amplifiers. The K3 has the ability to store output power levels by band and this functionality makes it very easy to program the appropriate amplifier drive level without the need for any ALC input at all. The K3 does not require any special interfacing to be able to key ANY amplifier – it can easily handle the high switching voltages and currents present in some older model amplifiers, making it truly "plug and play". The K3 will output band data on one of it's rear panel RS-232 connectors. It does not, however, support the older Icom band switching voltage scheme so Icom amplifier users may wish to note that.

All in all, the K3 really offers a lot of bang for the buck, especially when you consider that its receiver will outperform all currently available amateur transceivers – now that's something to think about.



Here's the completed K3 !!



Here's what the K3 kit looks like when the shipping box is unpacked