

SHORT SKIP



Fireworks Ride Packet / Winlink lessons learned

Amateur Radio Emergency Service (ARES) members Donald Kerns (AE6RF), "Cap" Pennell (KE6AFE), Greg Peters (KG6DPC) and Dan Selling (N6RJX) experimented with portable packet using the WinLink system during the recent Santa Cruz County Horsemen's Association (SCCHA) Fireworks Endurance Horse Ride. Using communications van two's (Com2) packet station and Donald's portable packet station they were able to send normal internet email back and forth between the ride's staff and a veterinary check deep in UCSC's outback. They used local Winlink RMS nodes provided by "JV" Rudnik (K6HJU), the Santa Cruz County Amateur Radio Club (K6BJ) and Dave Wells (K6DLW) that automatically convert between 2 meter packet radio signals and the Winlink amateur radio email system.

Familiarization / training

Since packet radio is not a part of our normal day-to-day operations, it took a little effort to get Com2's packet station up and running. Dan and Greg got it working with a bit of coaching from Cap our local packet guru. Donald had left his portable packet station intact from recent use at another horse race, so it came right up; however, he was slow in getting it on the air due to set-up being interspersed with other event activities.

It took a couple of exchanges to get used to the periodic polling nature of the system. It was a bit of a change from the "immediate" response that we're used to. Things quickly settled down into a four times per hour operating tempo.

Continued page 3

Something Old, Something New...

Something old, something new, something borrowed something blue -an old nursery rhyme but also often the theme at our CAKE sessions.

The first picture is the underside of a WW2 HF receiver called an AR88 built by RCA in 1940 and shipped to England for the war effort. I owe a lot to my first encounter with this 70 yr old beauty. It is very rare to work on any piece of equipment designed and built for the highest possible performance, maintainability and ruggedness and where cost was not a consideration. I should mention it weights about 95 lbs.



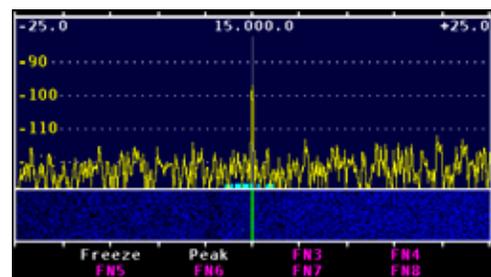
For something new, here is a fine example of a solid-state home-brew project under construction by Tom KW6S. Note the compact RF board, internal 48 V switching power supply and space for filters and an antenna tuner. Clearly the work of a professional amateur.



Something borrowed is this capacitor checker from the Heathkit era and like the AR88 it has maintained its value and usefulness. I was sceptical of some rather small electrolytics rated at 500 V and wanted some reassurance that they would be reliable. In a matter of seconds this tester showed that indeed the cap was happy at 500 V (but not at 600 V) and indeed had a value of 4 uF as marked. Not something one needs every day so great to have access to one.



The blue item has to be the Elecraft P3 Panadapter which is the latest Thoroughbred from the Elecraft stables. It's not your grand-dads adapter but a software defined receiver- no computer required. You can be sure that more software function will be added over time. Here is the actual view of WWV on 15 MHz, Note the brilliance, spectrum and waterfall and precision readout, For color please visit the K6BJ website



Discover the Fun of 6 Meters

September is here, and according to ARRL Contest Branch Manager Sean Kutzko, KX9X, that means the VHF bands are getting a workout: "If you've never experienced the fun of VHF+ operating, the ARRL September VHF QSO Party is a great place to start. With many HF radios now offering at least 6 meter SSB/CW capabilities -- and some offering 2 meters and 70 cm as well -- any amateur with a Technician class license or higher can experience long-haul communication on the VHF bands."

"September is known for good tropospheric propagation," Kutzko said, "as opposed to June, which is known for sporadic-E, or E-skip. As the summer winds down, the sporadic-E season comes to an end and good tropo conditions flourish. A modest station -- say a 50 to 100 W SSB/CW transceiver and a small Yagi on 2 meters -- can, with favorable conditions, make QSOs several hundred miles away. If conditions are excellent, QSOs of more than 1000 miles are possible." When operating on VHF, Kutzko explained that your Maidenhead grid square is the common geographical information exchanged.

While there will be some contest activity on FM simplex (especially near large population centers), Kutzko said that most long-distance VHF+ QSOs are conducted on CW or SSB; that means horizontally polarized antennas: "A dipole for 6 meters is only 9 feet, 4 inches long and is an easy construction project," he explained. "Try to get the dipole in the air as high as possible, but even 15 feet off the ground will make some QSOs. If you have an antenna tuner that can handle 6 meters, you can try loading up another of your antennas on 6 meters with reasonable success. For 2 meters and 70 cm, a horizontal loop will work nicely for SSB and CW contacts." But remember: SSB and CW QSOs use horizontally-polarized antennas, while FM uses vertical polarization. You can find plans for simple VHF antennas at the Technical Information Service area of the ARRL Web site, in the Antennas chapter of The ARRL Handbook, or in the VHF and UHF Antenna Systems chapter of The ARRL Antenna Book.

Kutzko advises that there are a few things to know about operating on 6 meters: In the US and Canada, there is a "calling



Aug 28 '10

Our session was as intense and as interesting as always. We congratulated Don K6GHA on his promotion to Extra, he will naturally retain his Dad's old call. In his usual pro-am manner Don described his experiments with various techniques for removing oxidation and protecting aluminium (OK OK I know but I am a slow learner) in restoring a TH7DX beam.

Dallas K6KEB is working on his CW and showed a very cute QRP (0.5 Watts) transmitter by K1SWL sold by Small Wonder for \$29. It would be fun see what distance we could achieve, don't grin I understand the record is 8500 miles !

I was struck by the contrast between old and new. Larry WB6MVK had a collection of very old pictures of past years showing the activities of guys at Cabrillo College, field-day on the beach and some very fine home brew stations. There we saw Frank K6BDK in the 60s crew-cut and to our delight in walks the man himself and was very interested in a book on sloper antennas.

frequency" on 50.125 MHz USB. Many stations monitor this frequency to listen for band openings. Stations can call CQ on the calling frequency; if somebody answers, the stations will find a new frequency on which to conduct their QSO. It is considered poor etiquette to monopolize the calling frequency for QSOs.

Activity will be centered on 50.125, 144.200, 222.100 and 432.100 MHz. These are the calling frequencies; it's bad etiquette to monopolize them. But Kutzko said that most SSB activity will take place between 50.125-50.250 MHz, and CW between 50.100-50.080 MHz. If conditions are exceptional, Kutzko said you may hear signals above 50.250. But Kutzko advised that the frequencies between 50.100-50.125 MHz are a "DX Window," meaning it is reserved for QSOs between W/VE and DX

In contrast to antiquity (no offense Frank) David WS2I brought a MPS430 micro-controller board made by TI. This is an integrated development environment with USB connectivity for which he paid the special price of \$4.35- amazing! I understand there is a tutorial on U-Tube describing a controller that could guarantee beer at your preferred temperature.

Chuck W1WUH brought a selection of technically oriented magazines and it was exciting to see the convergence of interest in professional and amateur circles such as DSP radio design, LT Spice etc etc. Talking of DSP, the Elecraft P3 high performance panadapter is in fact an end-to-end SDR design with the noise and dynamic range performance close to that of the K3 itself. What does that tell you about the prospect of an all-digital Kn ?

Ron W6WO produced graphs showing how his home-brew vertical for 40 meters has been turned into an auto-tuned multi-band antenna covering the bands from 160m to 12m. A Steppr vertical ? No thanks !

Finally we did some brain storming on what we could do as a club to increase value and interest of our members. I hope to see some follow up discussion and actions.

After 4 months away it felt good to be back

—Ron W6WO

stations, so please do not make stateside-to-stateside QSOs in that range.

Because VHF+ antennas are relatively small, Kutzko said that many amateurs operate from portable locations, such as a hilltop or a campground. Others operate the contest as a "rover," operating from their car or truck while transmitting from multiple grid squares over the contest period. "Tracking rovers during the contest is almost as much fun as the contest itself," he said.

The ARRL September VHF QSO Party runs from 1800 UTC Saturday, September 11 through 0300 UTC Monday, September 13. Be sure to use those extra bands on your transceiver and get in on the fun you've been missing on 6 meters and up!

—From ARRL Newsletter

"Reading the mail"

Both ends quickly wound up using the K6BJ-10 Winlink RMS node. While which node used doesn't make any difference to the Winlink system the users found it convenient to be on the same node and frequency. With the volume just slightly turned on, Donald could hear packet traffic and get a tip-off that email might be waiting for him. The K6HJU-10 and K6DLW-10 nodes were also used to provide additional exercise.

Two different software packages were used. Com2 used a package that sent its traffic in plain text. By observing the raw packet traffic using a monitor program Donald could read the messages being sent even before they formally got to him. Donald was using the PaLink program, which uses a normal email client such as Thunderbird or Outlook Express. PaLink compresses the traffic prior to sending it. The compression saves transmission time, but eliminates the ability to read the plain text as it is sent over the radio link. This raises interesting possibilities for emergency communication...

Event staff usage

Greg and Dan printed messages as they came in from the field and handed them off to the event staff. Packet allowed the event staff to have much more complete and current information than voice methods. The information was also computer printed rather than hand written, a nice bonus. The event staff used the information to locate horses and keep track of the leaders. Some staff members found the horse tracking information more engaging than our normal tactical communications. A clear case of "give the customer what they want."

Looking back at the event, it was clear that packet communications were a useful addition to our communication toolkit and we and the event staff need further discussions to make it even more helpful next year.

-Donald



By Art Lee WF6P
CHATTER

Boy! Ham radio can be hazardous to your health. With carpenters and painters working on my termite ridden old house, I decided to help. It would be easy to cut some tree branches away from the house, and clear vines wrapped around my as yet uninstalled beam antenna. Standing on the ground with a saw on an extension pole, I did a fine job with the small stuff. With darkness falling, I had only one more branch to go. My XYL Donna, AB6XJ, would assist by pulling on a rope attached to the fairly large tree limb. For this, I set up my nine-foot stepladder, donned my safety helmet, gloves and goggles. With an electric Sawsall in hand, up the ladder I went. One leg of the stepladder suddenly sank in a gopher hole and down the ladder I went. I would have been OK as there was a flowerbed to land in - except - my head hit the fence a crashing blow. I had flung my arms out, the heavy saw bouncing off the fence, scaring not only my loyal helper, but my next door neighbor as well. Donna was all set to call 911 after she let out a shriek. The little gal next door likewise yelled out, "Are you OK?" I wasn't, but said that I was. My neck took the brunt of the fall and the muscles still ache. Fortunately, my helmet saved me from serious injury. My tennis game was effected in that the toss for my serve was painful.

A couple of days later I had to move my other inop beam antenna (I have two) for the painters. The beam elements were strapped to my tool shed. There were a couple of screws to remove from a galvanized metal restraining bracket. As the last screw came loose, the entire antenna array dropped free from the shed. The sharp metal bracket flipped down on my hand, cutting deep into my index finger. Ouch. Donna thinks I'm accident prone these days. A week prior to the tree trimming a 23 foot long beam fell on my wrist, leaving a deep cut and perhaps a broken wrist. Gratefully, xrays proved this was not the case. To counter her argument, I say that if you don't do anything at all, you can't get hurt!

On the positive side however, was this. As I was engaged in an 0830 QSO with an Op in Alturas, CA, carpenter Eric Bergstrom (ex-Coast Guard radioman) was copying our CW in his head. He was replacing trim on the house just outside my shack. He loves it. As stated last month, I presented him with a spare CPO and Bencher paddle. He has been sending messages to himself and wants to get his ham ticket. I have an ancient Yaesu HF rig that I will loan him for his CW listening. As a former Coast Guard radioman, he probably knows most of what is on our General class exams. I'll be happy to bring him up to speed on current amateur requirements.

Howard G. Lister (SK). Died in Placerville on August 25, 2010. Howard and wife Millie attained their Novice licenses at Cabrillo College in the late 1980s. Both were ardent sailors and often checked in on the various Maritime Mobile Nets while cruising on their trimaran Manitau. They collaborated in writing Chubasco, a book describing their adventures at sea. If my memory is correct, their vessel was a total loss in a grounding off Mexico.

Direction Finding

CHAPTER FOURTEEN

Direction Finding

1. Aerial systems previously considered consist of a vertical wire and "earth," but an aerial can also be made in loop form, illustrated in Fig. 58A. A loop aerial is

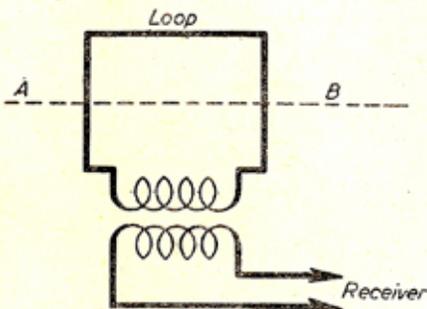


Fig. 58A.

directional. When the loop is in the position of Fig. 58A, the currents set up in it by a station along the line AB will be at a maximum; if the loop be rotated 90 degrees, so that it is at right angles to line AB, then the current will

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be zero. Thus position Fig. 58A gives maximum signal strength in the receiver, and position of Fig. 58B gives minimum or zero strength.

2. This is the basic principle of direction-finding, for when we get the strongest signal we know that our loop is pointing towards the station sending the signal. Maximum strength is too broad, however, to give an accurate bearing, so that in practical work minimum or zero

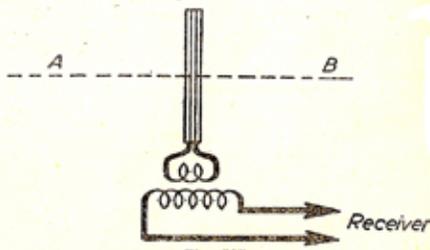


Fig. 58B.

signal strength is used and is sharply defined—the loop pointer being displaced 90 degrees to enable us to directly read the bearing.

3. The loop pointer works over a 360-degree circle; zero degrees corresponding to North (see Fig. 59). For a ship or aircraft installation, the line 0—180 degrees on the scale corresponds to the fore-and-aft central line of the craft, bearings then being relative to the ship's head or aircraft's nose.

4. We have, let us suppose, found the bearing of a certain aircraft by the loop to be 90 degrees, but from

DIRECTION FINDING

Fig. 58A it should be plain that we do not really know whether the bearing is 90 degrees or the RECIPROCAL of 90 degrees, i.e. 270 degrees. If necessary, the SENSE of the bearing can be found by adding the input from an ordinary vertical aerial to the receiver, when there will be one minimum only during a complete swing, which minimum indicates the true direction of the station. (It is impracticable to find the absolute bearing straight away by the "sense" method, because both maximum

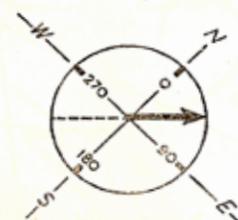


Fig. 59.

and minimum signal strength when on "sense" are too broad for accuracy.

5. Knowledge of the bearing, though useful, does not indicate the POSITION of the radiating station. On the ground, however, this may be found by taking a bearing simultaneously at two stations which are some distance apart, as illustrated in Fig. 60, the point of intersection giving the position of the craft. A higher degree of accuracy is possible when three ground stations are employed.

6. Practical D/F operators must be aware of certain

SCCARC Board - 2010

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MONTEREY BAY REPEATER ACTIVITY

Santa Cruz County	K6BJ 146.790- PL 94.8 Santa Cruz (linked to KI6EH) KI6EH 147.945- PL 94.8 Watsonville (linked to K6BJ) K6BJ 440.925+ PL 123.0 Santa Cruz (not linked) • SCCARC Net Monday 7:30 PM 146.79- /147.945- /147.180+ linked • SCCARC 10 Meter Net Monday 7:00 PM 28.308 MHz USB
ARES Net	SC County Wide ARES Tuesday 7:30 PM on 147.180+ PL 94.8 and 443.600+ PL 110.9 linked
San Lorenzo Valley	WR6AOK 147.120+ PL 94.8 Ben Lomond • SLV Net Thursday 7:30 PM
Loma Prieta	AB6VS 440.550+ / AE6KE 146.835- PL 94.8 (linked for net) • LP ARES / LPARC Net Tuesday 7:15 PM
Monterey	K6LY 146.97- PL 94.8 / 444.700+ PL123 (linked for net) Monterey • Monterey Co. ARES Net Wednesday 7:30 PM K6LY 146.970- (PL 94.8) • NPSARC Net Wednesday at 8 PM on K6LY/R
LPRC	WR6ABD 146.640- PL 162.2 / 442.900+ PL 162.2 (winsystem.org) • LPRC Net Tuesday 8:00 PM 146.640-(PL 162.2) • Amateur Radio Newline broadcast Tuesday

• Santa Clara Valley Section Traffic NET Tuesday 9:00PM 146.640- (PL 162.2)

FOR MORE INFO SEE: <http://www.k6bj.org/freq.html>

SCCARC Calendar of Events

ARES Meeting (prior to club meeting)	Friday	Sep 17
SCCARC Meeting	Friday	Sep 17
Cake Meetings	Sat	Sep 11 25
Board Meeting	Thursday	Sep 23
Short Skip articles due	Mon	Oct 4
SCCARC Meeting	Friday	Oct 15

MONTHLY MEETINGS.

The SCCARC Meets at 7:30 PM, on the **THIRD FRIDAY** of the each month (except December). Meetings are at Dominican Hospital, Education Center, 1555 Soquel Drive, Santa Cruz.

NET CONTROL SCHEDULE

(Subject to Change)

9/13	Chris KG6DOZ
9/20	Byron KI6NUL
9/27	Greta KI6NTL
10/4	Phil KE6UWH
10/11	Tom K6TG
10/18	Chris KG6DOZ

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SHORT SKIP

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errors that are liable to be present, and which may broadly be categorized into those due to site (which in the case of mobile stations includes those due to the craft itself), and errors due to outside causes.

7. NIGHT ERROR is the most important of the latter

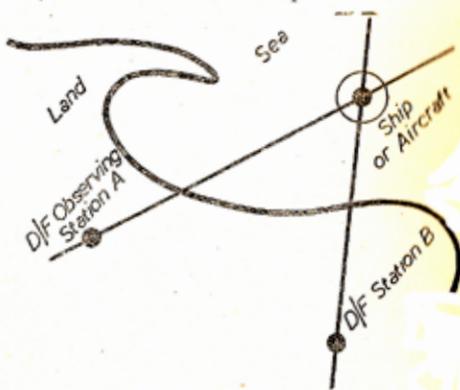


Fig. 60.

class, and is due to changeable conditions in the Heaviside region far above the earth. Night error is so called because it is usually encountered during hours of darkness, most markedly during twilight. The presence of night effect is indicated by the "zero" "wandering" around the scale. The ADCOCK SYSTEM, "leaves out" the top of the loop and reduces night error (see Fig. 61).

DIRECTION FINDING

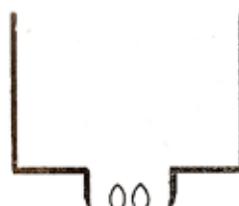


Fig. 61.

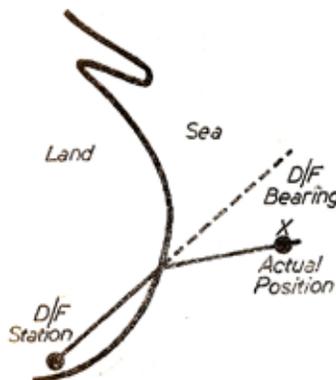


Fig. 62.

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8. If a wireless wave has to cross the coastline at an obtuse angle—see Fig. 62—the coast appears to "bend" it. Thus, in Fig. 62, the wave coming from the aircraft or ship at X is bent at the coast, and at the D/F station it appears to be originating, not at X, but from a station in the direction of the dotted line. This is **COASTAL REFRACTION**.

9. Siting the D/F station so that the ray must cut the coastline sharply is one remedy; where this is impracticable the station will be "calibrated" into good and bad arcs of bearing, bearings within the latter being distrusted.