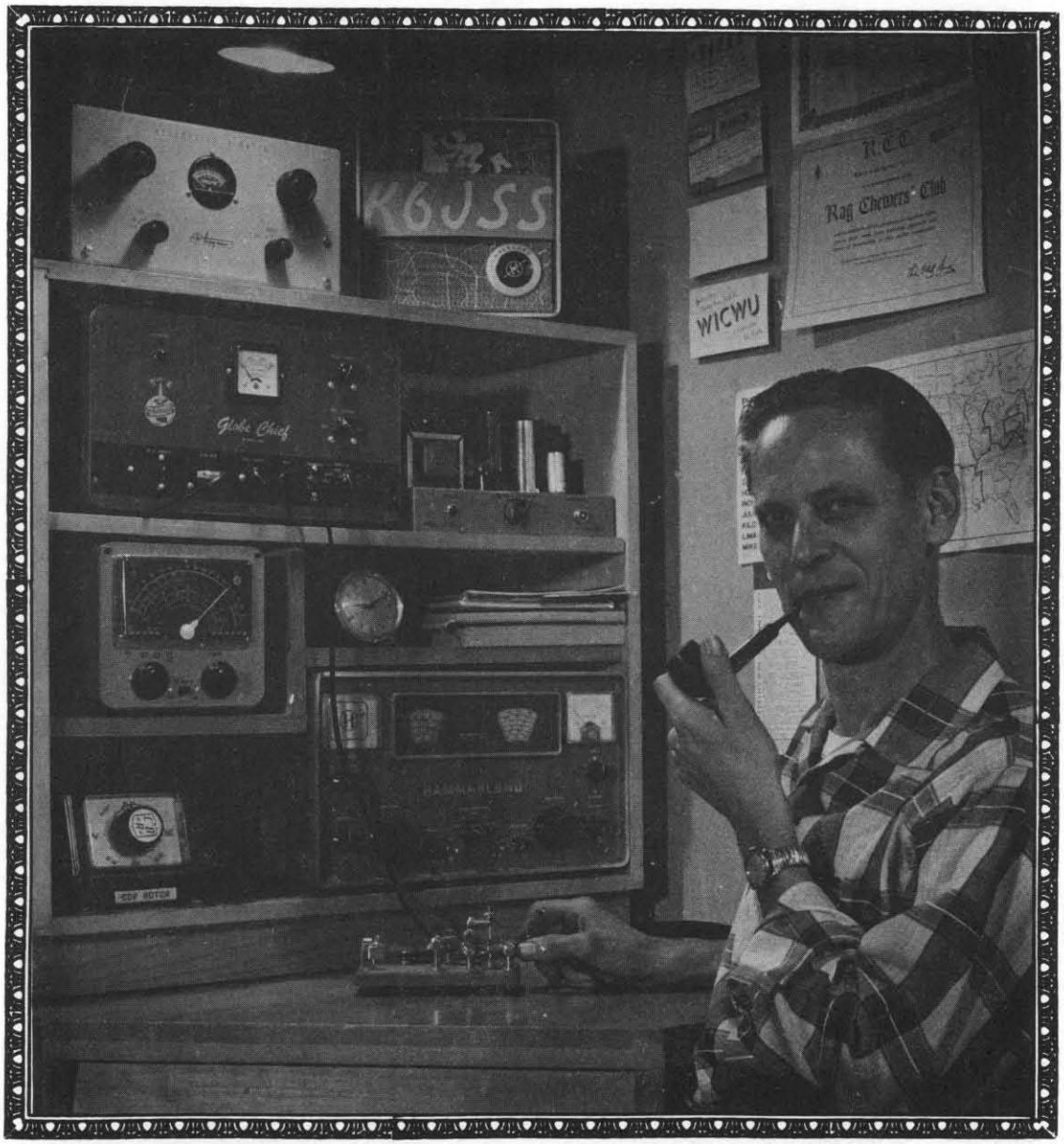
# QRP Quarterly

Journal of the QRP Amateur Radio Club, International

July 1988 Volume XXVI Number 3




**Harry Blomquist, K6JSS**
**QRP ARCI #1**
**1916–1988**

# QRP ARCI News

## Nominations Now Open For Board Of Directors

The terms of office of four members of the Board of Directors expire on December 31, 1988.

Any member of QRP ARCI may place his/her name in nomination for one of these positions on the Board by sending a brief biographical sketch to the Secretery/Treasurer of QRP ARCI. The sketch should include a definitive statement of the candidate's goals and interests in QRP. A ballot for these positions will be published in the October QRP Quarterly and the election completed by December 1, 1988.

The Directors whose terms will expire are Richard H. Arland, K7YHA; Michael E. Bryce, WB8VGE; Christopher J. Page, G4BUE; and Roger Rose, W5LXS.

Those wishing to have their names placed on the ballot should send their resume to Bob Brown, NM7M, QRP ARCI Secretary/Treasurer, 504 Channel View Dr., Anacortes, Washington 98221, U.S.A. All biographical sketches must be received no later than August 15, 1988 to be included on the ballot.

## From The Editor
## Paula Franke, WB9TBU

Life continues to be interesting here. Fortunately, the major crises that befell me during the first quarter of this year have managed to resolve themselves and things have mellowed out considerably.

I was happy to meet so many of the members who attended the Dayton Hamvention in April. More than 115 people signed the register at the hospitality suite, and it was just about impossible to sit down and talk with everybody there, but I gave it my best shot!

Interest in homebrewing appeared to be on the upswing, evidenced by the wide array of homebrew gear on display and in use. John Westphal, W9YNA brought an impressive display of two-fer improvements. We hope to have a series of articles in the near future. Get those soldering irons ready!

A pleasant surprise was several commercial exhibitors who unveiled various QRP-related gear at the Hamvention. Digitrex sold out its entire stock of 40 meter receivers, Ramsey Electronics had an inexpensive 40 meter receiver kit that conveniently had an empty spot on the circuit board that just happens to be able to accommodate a two-fer, and Rich Littlefield and Radiokit unveiled a neat little transceiver that was loaned to the hospitality suite in the evenings. Kantronics also loaned new equipment to the suite. Next year we need to bring more antennas.

As usual, Dayton was exhausting (staying up talking until 4:30 a.m. probably had something to do with it). The flea market was relieved of every crystal socket it had to offer and conversation revolved around what to do next year to make the gathering even better. Personally, I don't think I can handle much more. More than a month has passed and the enthusiasm is still high.

Mark your calendars now for April 28-30 for Dayton, and June 2-4 for Dallas: a double header!

## President's Message
## Jim Fitton, W1FMR

It has been six months with the new QRP ARCI team at the helm. There have been periods of elation, and disappointment, learning and forgetting. Elation at the creativity and enthusiasm of the members and disappointment at my own failure to anticipate a problem or to recognize an outstanding effort. Learning about what makes a team work well together, and forgetting about your mistakes are important in this business.

QRP-Dayton is over for another year, and there is a feeling that strong friendships and commitments have been forged that will work well for us into the future. We met hundreds of other QRPers at the club booth, and socialized with and learned from the likes of Doug DeMaw, W1FB and Adrian Weiss, W0RSP.

We attended inspiring QRP forums at the Hara Arena and examined and operated the most creatively built homebrew gear that I've ever seen.

The giant flea market has to be seen to be believed. Most of all, the best of QRP-Dayton, in my estimation, was the enthusiasm of QRPers themselves. Most that I met were members of G-QRP, MI-QRP and QRP-ARCI, or wanted to be. Also, congratulations to the newly formed St. Louis QRP Society! Met at Dayton were Keith, KC0PP, Ron, KO0Z, Eric, NF0Q and, on the Boston, Mass. repeater, N0IET.

Thanks again to the Two-fer team that provided the club with nearly $1000 to be used to fund activities next year at Dayton and Dallas, and seed money for future homebrew project kits.

The current active membership is around 1,300 and participation is way up in the nets and contests. Please remember the sprints and try the first Sunday band plan on every Sunday to contact other members. The club goal for the next year is to get as many QRPers as possible to increase their electronic knowledge and operating skill by constructing and using home made equipment. It is important to know where to find other QRPers when testing out a new home brew transmitter or receiver.

Thanks to all that volunteered to help the club and you should be hearing from an officer soon.

Have a fantastic summer and I will look for you on the nets, sprints and contests.

Things with The Quarterly continue apace. My boss at the newspaper has just purchased a scanner for the Macintosh system here at work. (I've been telling him for months what a great investment it would be for the newspaper!) The nice thing is that it will scan clear, typewritten copy, compare what was scanned to the various type fonts in its memory, and convert the hard copy to a text file that can be edited and formatted on the screen. Another time-saver!

I find myself in need of more technical articles, particularly anything to do with the Two-fer or Neophyte, as well as simple afternoon and weekend projects. Let's hear from you!

The QRP ARCI is a non-profit organization dedicated to increasing world-wide enjoyment of QRP operation and experimentation. QRP, as defined by the club, is 5 watts output CW and 10 watts output PEP.

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# Milliwatt QRP Transmitter Using Digital ICs

by Paul Levesque, KB1MJ
14 Wesley St.
Dedham, MA 02026

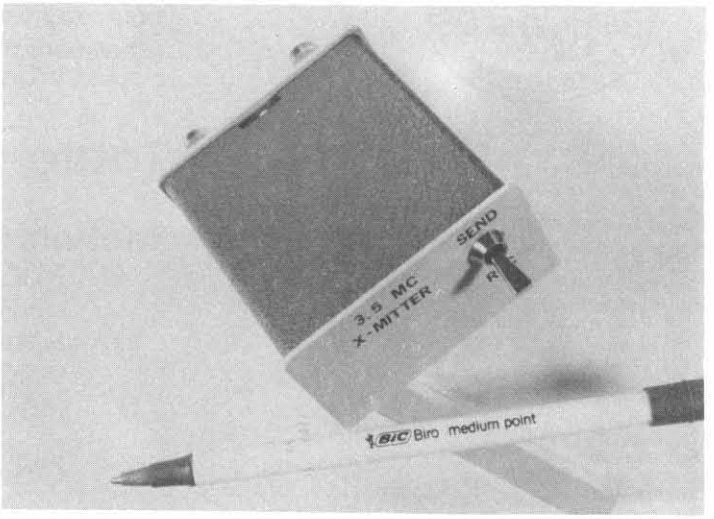
Motivated by the desire to design a small and cheap QRP CW transmitter, I evaluated what could be achieved through the use of simple digital integrated circuits. The result is a small (3"x3"x2") crystal controlled unit which will provide 3/4 watt on 80/40 meter bands and approximately 400mW on 20 meters. Results have been quite good with dozens of QSOs with US hams as well as a few DX contacts on 40 meters. This has been accomplished using simple dipole antennas connected without a tuning unit or balun to the output. If you were one of the over 30 stations I worked during the fall QSO Party you were listening to this little rig!

### Circuit details:

One section of a 74HC02 CMOS quad NOR GATE, U1A, is connected as an inverter and used in the familiar Pierce Oscillator circuit. The VXO capability ranges from over 10 kHz at 14 MHz to approximately 1 kHz on the 80 meter band.

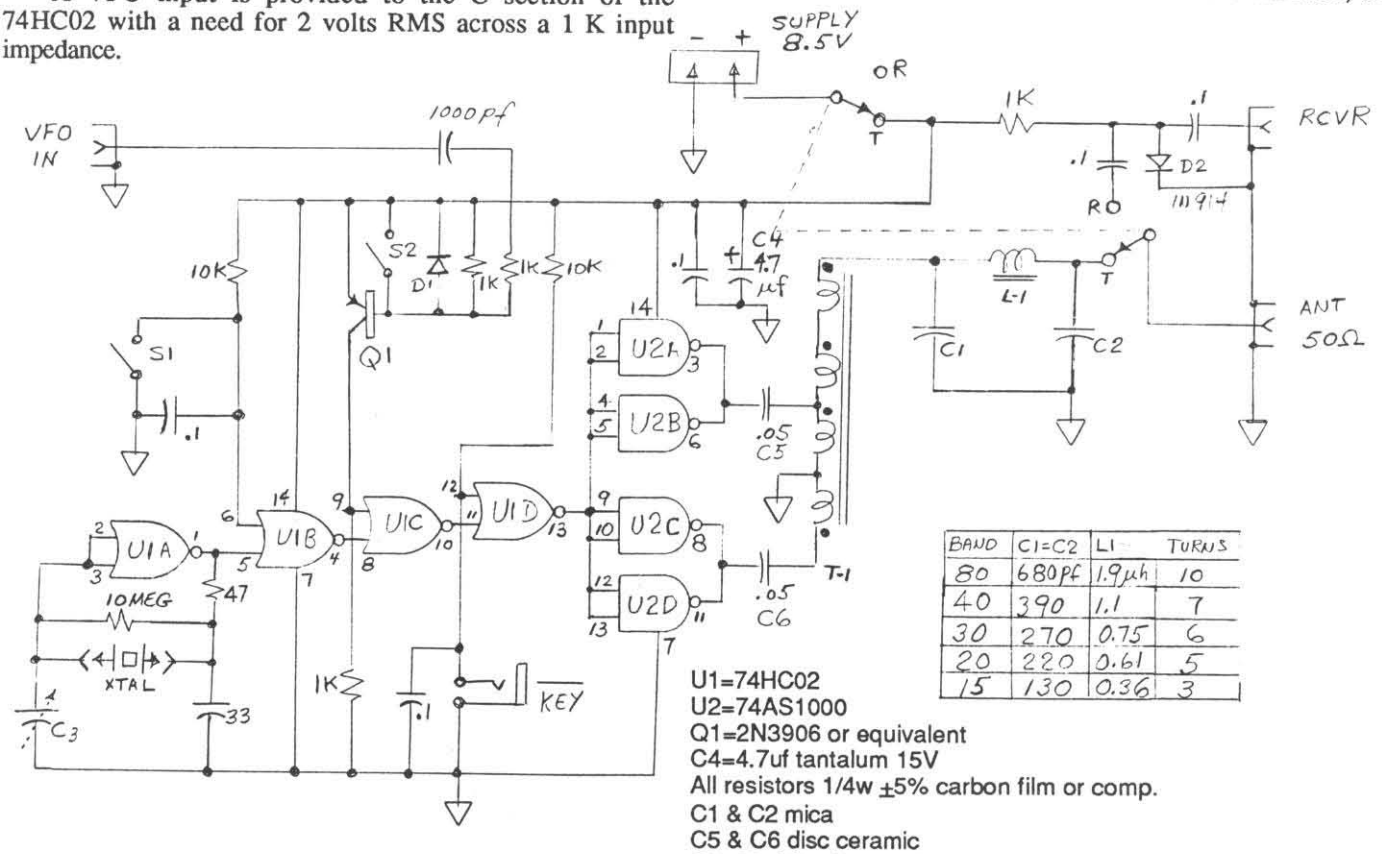
The oscillator is allowed to run continuously and keying is accomplished as a gating function in one of the buffering sections of the 74HC02, U1D. The keying waveform is not wave-shaped and I feel it does not need to be on such a low power rig. Comments solicited during QSOs indicate no key clicks and good keying quality.

A VFO input is provided to the C section of the 74HC02 with a need for 2 volts RMS across a 1 K input impedance.




**The completed transmitter is really very portable!**

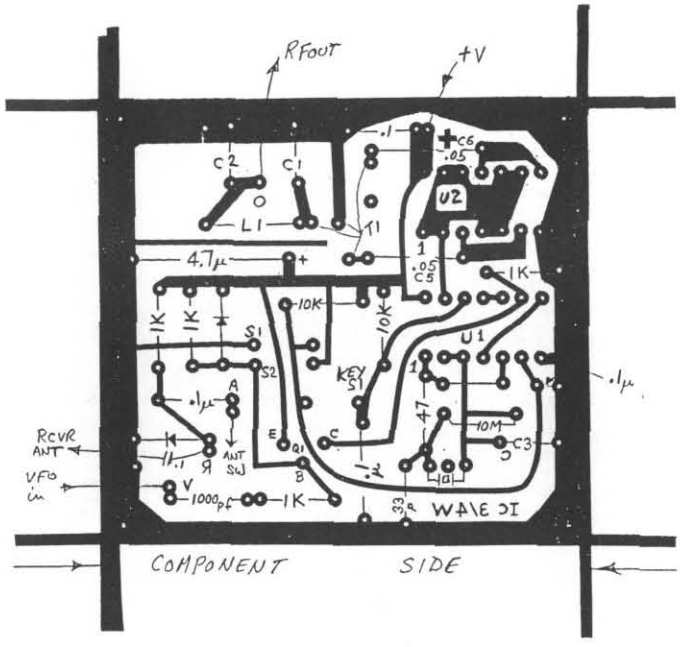
The "final" is a quad, two input NAND Buffer, 74AS1000. The output impedance of a single section was measured and found to be approximately 15 ohms. If one parallels two sections, 7.5 ohms results which is close match to the impedance presented by a 9:1 matching transformer driving the conventional 50 ohm load. By quadfilar winding the transformer, one can drive the additional winding with U2C and D, the other two sections of the 74AS1000, and




| BAND | C1=C2 | LI | TURNS |
|---|---|---|---|
| 80 | 680pf | 1.9µh | 10 |
| 40 | 390 | 1.1 | 7 |
| 30 | 270 | 0.75 | 6 |
| 20 | 220 | 0.61 | 5 |
| 15 | 130 | 0.36 | 3 |

U1=74HC02
U2=74AS1000
Q1=2N3906 or equivalent
C4=4.7uf tantalum 15V
All resistors 1/4w ±5% carbon film or comp.
C1 & C2 mica
C5 & C6 disc ceramic
C3=33pf fixed or 50pf variable for VXO
S1 & S2 shown in VFO position: close both for internal crystal osc.
T-1=10 T. quad-filar on ferroxcube 266T125-3D3
L-1=See table for number of turns on T37-2 toroid

**3/4 watt IC Transmitter**

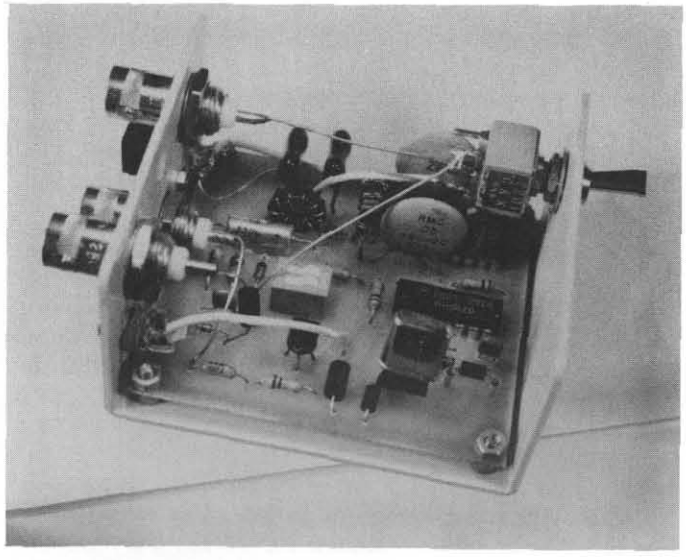



increase output capability through push/push operation. It follows that tight twisting of the four windings is required for optimum performance. A small glue-on heat sink is also desirable to minimize the temperature rise in the final stage.

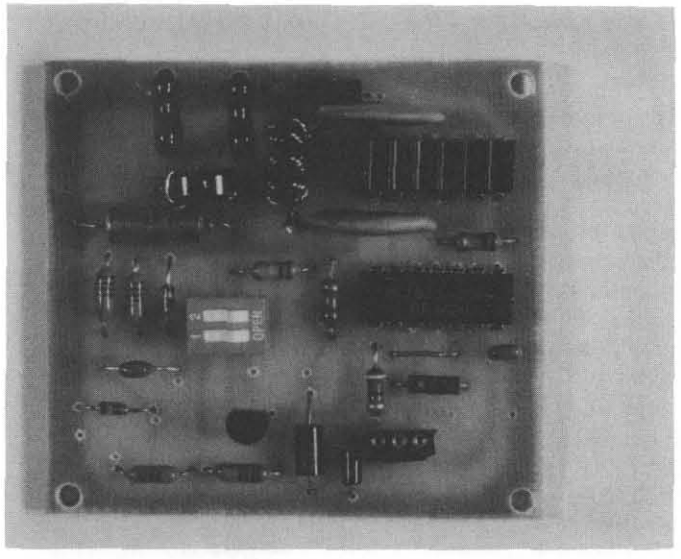
The three element low-pass filter, C1, L1 and C2 provide harmonic deduction to at least 20 db below the fundamental which is more than adequate for a 3/4 watt output since it results in less than 10 milliwatts at any of the harmonics.

Output power is proportional to supply voltage and high VSWR conditions are not harmful to the 74AS1000 which nicely survives "key down" temperature rise. An output of approximately 1/2 watt can be achieved with the data sheet maximum supply voltage of 7.0 volts. I have explored the safety margin* available for operation at higher voltages and find operation at 8.5 volts to be safe and to produce an output of 3/4 watt into a 50 ohm load on 80 and 40 meters. Operating beyond maximum rating is not claimed to be good engineering practice, however, results to date with a regulated 8.5 volt supply and a small heat sink on the final have been excellent. I have no doubt that the safety margins provided by the IC manufacturers processes are entirely adequate for long term reliable operation. Silicon diode D2 is turned on during transmit and shuts the receiver input on order to limit feedthrough to the receiver.

** [I found the breakdown voltage for National's HC process to average 20 volts. TI's 74AS1000 ICs in several date codes measured in excess of 12 volts in my curve tracer (average 14 volts).]*



**Final installation of the board into the enclosure.**



**Component placement is relatively simple and very neatly done.**

### Constructional details:

A printed circuit layout has been made which can be duplicated with etch resistant ink. One can also be built using prototype circuit board or made up of perf-board using the so called "ugly construction". I may fab and produce boards if there is enough demand. The layout yields a board which is approximately 2-1/2" square and will fit nicely into simple two piece metal enclosures such as the Radio Shack #270-251. Component values are for the most part non-critical except those associated with the oscillator inverter section of the 74HC02. Component size is important if the PC board layout provided is to apply. The output coupling capacitors should be of the older disc type and not monolithic in construction since the RF current, even at this power level, demands a low equivalent series resistance. Since the only change from band to band is the values in the low pass filter, it is entirely practical to use small filter plug-ins. A band switching approach is also possible and would require a bit larger enclosure.

Should questions arise I will be pleased to reply by mail, however, please send a self addressed stamped envelope.

## Turn It Down When You Turn It On!

# Harry Blomquist, K6JSS
# QRP ARCI #1
# 1916-1988

*Just a note to let you know that my husband Harry Blomquist, K6JSS passed away April 4 at the V.A. Nursing Home in Menlo Park.*

*He had had a long battle with diabetes and then Parkinson's Disease. He was buried at the National Cemetery at San Bruno.*

*He was always so proud of his QRP club, though unable to participate lately.*

***--Jean Blomquist***

The announcement the passing of our founder Harry Blomquist, K6JSS came as a sad message over the QRP WSN on April 19, even though many of us had been aware of his grave condition for some time. Still, it gave cause for some sober personal reflection on the precious gift of life and how we choose to spend it! How many of us can say the world is a better place for our having been here? Harry left a legacy in QRP ARCI that has, and will continue, to add countless hours of joy and enrichment to the lives of low-power radio enthusiasts throughout the world for as long as there is ham radio.

The vast majority of our members have never had the pleasure of working or knowing Harry as his declining health over the past seven years or so had pretty well curtailed his air time, although he did continue to monitor the QRP frequencies as his circumstance allowed and he derived a great deal of pleasure in watching ARCI prosper and grow. Perhaps a brief personal look at Harry will add understanding for those who missed the opportunity to know K6JSS.

Harry was born in Philadelphia in 1916 and was one of eight children. Like so many youngsters caught in transistion during the great depression, Harry was compelled to assume the "provider" role at an early age. Harry's interest in radio was kindled in the National Guard as soon as he was able to join and provided additional family income as well as the communication skills that would shortly be called upon by his country.

Harry's active military career would be both distinguished and abbreviated and began shortly after the outbreak of the war in Europe when his unit was called to active duty as part of the Army Signal Corps 103rd Cavalry. The hard-hitting 103rd CAV went on to earn its reputation in many of the major campaigns throughout the European theater. Harry's luck took a definite up-turn just before D-Day when he met his English bride-to-be, Jean. The couple continued to correspond after the war and were ultimately married and settled in America.

The Blomquist's were living in Japan just prior to the Korean conflict and once again Harry was pressed into service until his abbreviated medical separation from the Army in 1956. Harry's career was laced with personal bravery and sacrifice: rising from the rank of private to lieutenant colonel on battle field commissions, he was a two-time recipient of the Bronze Star for exemplary conduct in ground combat, as wells as the Purple Heart with two oak leaf clusters. One begins to see the image of a giving man of substantial caliber.

After his discharge, Harry and his family settled in California where he embarked upon a career in research photography with several NASA contractors. It was around this time that he began to focus his radio interest in QRP.

Harry received his amateur license shortly after World War II and his second son, Rick, recounts his father's mentalist approach to amateur radio, always stressing personal skill and being the best he could be in everything he attempted. Though none of his sons went on to pursue radio as a hobby, Rick still recalls the countless hours he spent with his father in his combination darkroom/radio shack where he worked up the early club graphics and newsletters, two facets of the newly formed club that he particularly enjoyed.

Harry was a social ham as opposed to say, a contester, preferring to rag chew by CW to all other modes. He strived for straight key perfection with his favorite instrument being a key he liberated from a German Panzer during WWII. There was a strong artistic flair to Harry that was obvious. He was a dedicated home-brew advocate, constructing all his own gear, right down to the component parts in many cases.

Harry was indeed, the essence of a QRPer and so it was no wonder or accident that a man like Harry would step out of the crowd in 1961 and give focus and direction to a scattered tradition and belief when he formed the "QRP Amateur Radio Club International." Harry's little club has changed dramatically since its inception and will continue to change as we adapt and grow. However, Harry's basic belief in personal skill in lieu of power will remain our intrinsic value. My world is very definitely a better place for his having stayed here a while.

**--Fred Turpin, K6MDJ**

Yep, Harry, K6JSS and I go a long way back to those old days of 1961. Harry was the president, treasurer, editor and janitor. When the load became more hectic and the "QRP News!" required more time than he had, I volunteered for the job of editor. Thus I was one of the first officers at that time.

It was my job to receive mail from other members, from all over the U.S.A; condense their information to a few lines; type the copy, single space, using full width as much as possible, proof the copy, make corrections and then mail the copy to another ham somewhere in the south part of the U.S.A. He would do his part as a volunteer to keep the ball rolling. In quick time, "QRP News!" would arrive a the QTH of all members.

Perhaps those were the "good old days", home-brew gear, tubes, low power, crystal controlled and CW, coupled with patience and remembering "The Amateur's Code" by Paul M. Segal.

K6JSS and "his little club have come a long way. I thank you Harry, for your courage in not giving up.

**--C.E. Atkinson, KA7FZX (ex. K7BUE, KH6IMR; charter member ARCI #14)**

Harry's station equipment has been donated to the Santa Clara Emergency Service station at the San Jose Red Cross. As Harry had not been able to do more than monitor for the past few years, the members were not personally acquainted with him.

Harry was very proud of the QRP club and followed club activities with avid interest. The pleasure that the organization provided and the dedication you all share in the challenge of QRP operation were a constant source of joy and amazement to him.

**--Ham Clark, KG6JII**

# DXing With Loop Antennas

**By Jay Sturdivant, KV7X**
**PO Box 3027**
**Bellingham, Wash. 98227**

In 1987 I used four antennas for my QRP DX endeavors. Each was put up and used until Mother Nature put it to rest. The four were a Butternut vertical used as a groundplane; a 20-meter loop, diamond shaped and fed with coax; a 20-meter dipole at 45 feet; and a 40-meter diamond loop fed first with coax and later with 300-ohm line.

The groundplane lasted 2 1/2 months until wind and rain of the great Northwest twisted the radials together and around some cedar boughs. However, it was still useable on 40 meters on those times it wasn't raining. The weather, especially the drought of the summer, played games with my operating throughout the year.

The 40-meter loop was put up, and the vertical taken down. The loop was slung over the top branch of a tree and worked fairly well until the rains returned. To keep it going, I needed my tuner, which was borrowed by Ben, NV7A, for use on his boat. I wasn't thrilled about just having 40 meters with which to chase DX!

The 20-meter diamond loop was hung from the same tree as the 40-meter model and was pulled up by a nylon rope to 45 feet. I made sure the antenna was clear of the branches. The coax was removed from the 40-meter loop and attached to the 20-meter one, and I was back in business. Both loops were oriented northeast/southwest.

The 20-meter loop turned out to be a real workhorse. With April being the best month for Europe, I had stations from there giving me 589 reports. After working a DX contact, I would sit back and call "CQ DX" without signing "QRP." The log just kept filling up. I was in QRP/DX heaven!

**"My family didn't see a lot of me from that point on."**

The Butternut vertical was ground-mounted behind my trailer for the spring QRP contest, but it produced no DX, so I removed it afterward. Twenty meters was staying open longer hours after dark here in the Northwest, and our now-famous drought had begun. DX stations like UL7, UL8 and UA9 were worked with ease along with most of Europe. However, the highlight for May was snagging 5A0A in Libya, and a ZS6 was worked after 0600Z.

My family did not see a lot of me from that point on.

June came and went, bringing such goodies as 4Z4UW, IS0ESG, YJ0ARW and, of course, SP5EXA/JW and KH6LW/KH7.

A big break from the drought came in June, bringing two days of wind, rain and thunder before the drought returned for the rest of the summer months. While local officials were talking about rationing water, I was out in the yard eyeing the tree which supported my beloved 20-meter loop. The storm had broken the wire on one side where the feedline was connected.

I rejoined the family, and we went on a family picnic, using up all but a day of my work vacation. On that day, the remains of the loop were made into a 20-meter dipole. Another nylon rope was put in an adjacent tree, and my third DX antenna was hauled into place at 45 feet up on July 1.

I was rewarded immediately with a QSO with FY5YE and a 579 report, but I took the dipole down after only a month and despite the fact it worked well. By now, Europe was coming in only during the morning hours, and the QRO types were getting restless. QSOs with Europe were 559 or less, but I was still doing very well, snatching away some QSOs from those KW types. KY0T/CU7 was the only new country in July, and even I was getting restless at this point.

My tuner had been returned by this time, and a gleam returned to my eye for the old 40-meter loop. The first week of August, I tried a few combinations of feedlines in hopes I could use the 40-meter loop on 40, 20, 15 and 10 meters.

I worked VE6BMA, who told me about his loop, which had a quarter-wavelength of open wire spaced at 4 inches and then a length of 75-ohm twinlead. Since 75-ohm line is pretty scarce these days, I settled on 300-ohm line all the way from the tuner to the loop. I found most odd multiples of a quarter-wavelength multiplied by the velocity factor at 28 MHz worked fine. This arrangement has been in use since early August, and my tuner's SWR is only up to 3-to-1.

August brought two new countries on 20 meters: UO5ODA and KG4AN. While my 40-meter loop does not out-perform the 20-meter loop to Europe, it is far superior to my dipole and the groundplane in that direction. The Caribbean also is easily worked now.

This antenna has real clout on 15 meters. Europe has been worked several times -- something that couldn't be done with the groundplane. Several Central and South American stations were worked during the April 10-meter DX contest. The biggest thrill so far with the 40-meter loop was during the CQ WW contest, when Europe was worked four times on 40 meters! I've worked Europe twice more with a fuller QSO format than the contests afforded.

Having this four-band DX rake, I settled into September wondering just where the QSL cards were. Every DXer, even QRP ones, spend a mopment or two before opening the mailbox on that subject. Some call it praying. By now, VK stations were being heard and worked. In October, I netted my first EA6 and YB0 of 1987. The highlight of the fall QRP contest was a two-way QRP contact with HI3JEI on 40 meters.

November treated me well with VP8BNW, BY5RA, D44BC, 7J1ADX/JD1 and a two-way QRP exchange with GM4UYE. I finally logged an LX station, and a ZS was landed on 15 meters. The first of December brought another BY and lots of South American stations. J37AE was my 104th country for 1987. I worked him Dec. 17.

For my birthday on Jan. 7, 1988, I was rewarded with 110 cards from the bureau!

*(Editor's note: On Feb. 10, 1988, Jay worked ZS1QD with 5 watts output on 40 meters to complete WAC QRP. For more information on diamond loops, see the ARRL "Antenna Compendium.")*

**Classified Ad Policy**

The Quarterly will accept short "classified ads" from its members who desire to sell equipment and other items of interest. They will be printed on a space available basis. Send information to the editor labeled "QRP Quarterly Classified".

# PROPAGATION AND DX

Bob Brown, NM7M
504 Channel View Dr.,
Anacortes, Washington 98221

The January installment of Propagation and DX ended midway in a discussion of propagation programs for the PC in the ham shack. Using the recent 3Y DXpedition to Peter Island off the Antarctic Continent, the discussion began with the simple features involved, the distance and beam heading needed for a QSO with that rare one. Then we got down to how computer programs provide information as to when there might be openings to 3Y-land. The first method is the older, empirical one using control points 2000 km from each end of the path. The problem is to find a way to calculate the critical frequencies at those points; by having done that, the lowest of the two is taken as the maximum useable frequency.

The earlier control point method did not introduce radiation angles into the calculation. That would be acceptable if both the transmitter and receiver sites had no obstructions close at hand in the direction of the great circle path. However, if hills or mountains stand in the way, the control point method gives MUF's which are too high, predicting openings which wouldn't exist with significant radiation angles.

The other method used in approaching the MUF problem is similar to that involving control points but radiation angles are included in the calculation at the outset; moreover, critical frequency information is developed for centers of the first and last hops of the path rather than 2000 km from each terminus. After that, however, the MUF for oblique incidence is selected in the same manner and the lower of the two critical frequencies taken as the MUF for the path as a whole. Given that idea, how does the calculation proceed? Well, this method treats the question like the physics problem that it really is instead of in an empirical manner. But at the start, the method requires the input of the minimum radiation angle set by the surroundings. Given that, the path is then broken up into N hops, where N starts at 2 for real DX. With input on the sunspot number or solar flux, the height of the reflecting layer is calculated. Once that height is established and the number of hops specified, the program calculates the radiation angle required. If it is above the minimum angle specified at the beginning of the program, all well and good; if not, the number of hops is increased by one and the radiation angle re-calculated. Once the requirement of the minimum angle has been met, the geometrical calculation halts.



There are programs currently in use which follow this procedure and like the MINIMUF series mentioned in the last article, they contain an algorithm for calculating the critical frequencies. However, the data on which the algorithms are based comes from vertical incidence soundings of the ionosphere taken at a large number of ground stations all over the world, at different times of day, seasons and sunspot numbers. These data have been organized into an Atlas of Ionospheric Characteristics by the International Radio Consultative Committee (CCIR) of the ITU and then presented numerically using an analysis based on modified magnetic dip coordinates. As indicated earlier, that type of coordinate system is more appropriate for ionospheric problems than one using simply geographical coordinates.

The Atlas from CCIR Report 340 provides a mass of information which has to be reduced to a size and scope that will lend itself to the techniques appropriate to PC's. Thus, the method was to develop charts showing values of foF2 at each hour of local time for intervals of 5 degrees magnetic dip latitude, different months and sunspot numbers. Once a data set had been established, the next problem involved developing an algorithm that gave a reasonable numerical fit to the data.

The programs that follow this method are from Europe, using F-layer algorithms developed by Mr. Raymond Fricker of the BBC External Services and adapted by Hans Bakhauizen of Radio Netherlands to help their SWL's follow HF propagation conditions. The programs are three in number: MICROMUF, MICROMUF 2+ and MAXIMUF. The differences between them involve the number of mathematical functions used to t fit the foF2 data set; thus, MICROMUF uses only one main function to describe the variations of foF2 while MICROMUF 2+ uses 14 functions and MAXIMUF uses 26 functions. Obviously, with the parameters of 26 functions to work with and adjust, MAXIMUF provides a better fit to the data set and, by the same token, a better prediction of the MUF for a given set of conditions.

It should be noted that the data used to develop these algorithms was limited, both in time and geographical coverage. Thus, it was taken at the equinoxes and solstices and the algorithms adjusted for a best fit; then a seasonal parameter related to the subsolar latitude was developed so that any other month could be treated by the calculations. The other feature of the data set worth noting is that it was taken only from the Northern Hemisphere; this resulted from the lack of experimental data from the vast expanses of the oceans in the Southern Hemisphere. Since the geomagnetic field at ionospheric altitudes is not really symmetrical, from one hemisphere to another, this proves to be a factor which contributes to the uncertainties in MUF predictions. Be that as it may, with F-layer algorithms based on the CCIR data, Fricker went on to work out not only MUF programs but also a hop-testing program, IONPRED. The latter goes right to the heart of the propagation problem on HF bands, testing for the modes on a given frequency which are open in the course of a day from point A to point B and then calculating the signal strength at the receiver for each occasion, given the power of the transmitter. Originally, this program was written for commercial broadcast stations with transmitters in the 100-500 kW range and antennas with gains of 18 dB or so but given access to the source code, it was possible to bring the program down to ham proportions, even to QRP power levels! In its use, the principal problem with a program of this type is that it is long and with the iterative hop-testing, it does take quite a bit of time to make a run. As I said earlier in connection with gray-line DX programs, "Bring your

lunch!' On the other hand, with a fast computer and by compiling the program, a short snack will be sufficient.

Enough of this theoretical talk; let's get down to cases, the 3Y DXpedition to Peter Island. So let's see what the various programs have to say for the possibility of working them with QRP from my QTH here in the NW corner of the US. First, we'll put in a SSN of 10, take the month of February and then see when the MUF is above our QRG, say 14 MHz. For the various programs, we obtain the following results:

| Program | MUF above 14 MHz |
|---|---|
| MINIMUF 3.5 | 14 UTC - 03 UTC |
| MICROMUF | 17 UTC - 01 UTC |
| MICROMUF 2+ | 17 UTC - 01 UTC |
| MAXIMUF | 17 UTC - 01 UTC |

On that score, the programs give results which are not too different. But if you look at the peak MUF's and when they occur, that's another matter:

| Program | Peak MUF, Time (UTC) |
|---|---|
| MINIMUF 3.5 | 25.0 MHz, 19 UTC |
| MICROMUF | 19.8 MHz, 21 UTC |
| MICROMUF 2+ | 19.2 MHz, 19 UTC |
| MAXIMUF | 17.3 MHz, 23 UTC |

So what's a QRP'er to do? If he goes on MUF data, MINIMUF would have him sitting behind the rig for 14 hours, listening for that 3Y to show up. Okay, the Dutch programs are a little better, say 8 hours. Or he could put all his effort in an hour or so when the MUF is greatest on that path. When you get right down to it, sitting there will surely find the opening, if it exists, but it may put you to sleep too, spinning the dial back and forth for hours on end. The better way of coming up with the answer is to go the the hop-testing program, IONPRED, and see what it says; that should find the opening and let our QRP'er be more economical in the use of his operating time.

With the hop-testing program, MUF considerations are included when an opening is found; after that, it is simply a question of signal strength based on the mode, power levels and antenna involved. To illustrate the point, suppose those 3Y's were operating "barefoot" into a 3-element Yagi and that our QRP DX'er is using an antenna with similar gain. With 100 watts from 3Y-land, IONPRED says our QRP'er should hear something like a S-6 signal on 20 meters around 0000-0100 UTC; that's the good news, pinpointing when the 3Y would be coming through. The bad news is that our QRP'er, when he uses his 5 watts going the other way, would come through at a S-3 level at Peter Island; considering the pile-ups that were involved, the chances of squeaking through to nail that one would be pretty slim. Just to wrap this up, let me say that we did hear the 3Y's at this QTH, at that time and with that sort of signal level; however, we weren't able to get through to them. That's QRP'ing in a crowd, just plain rough and often frustrating. But then again, you win enough of those pile-up confrontations to keep your interest up.

For those of the DX persuasion, there's no doubt that an educated ear can keep you in tune with the DX scene and if you subscribe to one of the DX publications, you can learn what DX can be expected on the bands and when. But note, however, that is usually based on past experience. If something new and different is coming up and you want to get at the head of the line, where QRP'ing is almost on an equal footing with the Big Guns, then a propagation program can be of assistance to you.

So what program to use, that's the question. While I have a high regard for the role of MINIMUF in getting all this started on PC's, I feel that the earlier version, MINIMUF 3.5, and even its later revision, MINIMUF-85, are really not competitive with the other programs I've mentioned. On one hand, it is the question of radiation angles in the prediction process, on the other hand it is the level of mathematical and physical sophistication in the programs. In both of those instances, the MINIMUF series comes up short. True, they show most of the right moves at the right times but they tend to be quite exaggerated when it comes to magnitudes. The other programs, on the other hand, seem to be on the more conservative side, at least in my experience. Thus, they also show all the right moves at the right times but not to the full extent; indeed, I would judge them to be about 5% low when it comes to MUF's. While in my heart of hearts I prefer the hop-testing program, IONPRED, I have to admit it is just too slow for most applications. Given that, the best way out is a signal strength program such as MINIPROP, by Sheldon Shallon, W6EL. It has all the basic ingredients one needs for DX'ing: E-cutoff, MUF from MAXIMUF and a signal strength calculation for pure F-layer hops. MINIPROP can run on MS-DOS or CP/M. If you can't handle those systems, let me know and I'll get you a BASIC listing of MICROMUF 2+. That'll get you on your way with your computer, DX'ing that is!

### Subscription Renewal

Subscription renewal is $10 ($12 for DX) for four issues. The renewal date appears on the mailing label following the QRP membership number, i.e. 4174-3/88 means that member number 4174's subscription will expire with the third (July) issue in 1988. Renewals and new member appplications must be received by the first of the month prior to the next publication to receive that issue, otherwise service will not begin until the publication of the following issue.

### Membership

The initial QRP ARCI membership fee of $12 ($14 for DX) covers lifetime membership plus the first four issues of The Quarterly. The membership and renewal form is located inside the back cover.

## Classified Ads

For Sale: Heathkit HM-9 kit SWR bridge/wattmeter. New in original sealed carton, never opened, unassembled, brand new. $32. Bob Welch, W8MCJ, 7107 Old Prose Ct., Dublin, Ohio 43017. 614-764-8813.

Morris coil winder, with instructions, will handle #22 or smaller wire. Winds RF chokes, spider web, honey-comb, and other small coils. $17

HW-7 with AC power supply, instruction book, RF amplifier. $70.

SASEs with inquiries, please. L.M. Flake, K8KIR, Rt.1 Box 913-C, Munisung, Michigan 49862.

For Sale: Complete QRP station, TenTec 509 Argonaut, 208 CW filter, 210 power supply, 215 microphone, MFJ 16010 ST tuner, $350. Charles Bright, WE0R, 4115 Buckley Ct., St. Louis, Missouri 63125. 314-544-5884.

# Filter Mods For The HW-9

**by Cam Hartford, N6GA**
**1959 Bridgeport Avenue**
**Claremont, CA 91711**

The HW-9 has proven to be a very able and welcome successor to the HW-8. With its superhet receiver and full complement of WARC bands, it packs lots of features into a small box. After a year of QRP contesting, portable operating, and a crack at Field Day, however, I had identified a few areas in which the HW-9 could use some improvement. Apparently I am not alone, for there have already been a number of modification articles published for this rig.

My first area of concern was the IF Crystal filter. This is a CW-only rig, so I expected a good bit of selectivity in the IF. I was disappointed to discover that the filter had a very broad passband, broad enough in fact that SSB signals were easily copied. Even with the narrow audio filter turned on, a strong CW signal outside of the audio passband, but inside the IF passband, would pump the AGC and make it difficult to copy the desired signal.

A call to Heath brought a new filter, but no change in performance. I peeled open the original filter and found it contained two three-terminal devices that were later identified as monolithic resonators. Referring to Hayward's article in QST, I reworked the capacitances around the resonators and was able to narrow the bandwidth of the device, but due to the characteristics of the resonators, I always came up with a passband that had two distinct peaks, separated by about a kHz.

Feeling that I had reached the limit of my knowledge, I decided to punt and enlist Wes' help. He very graciously agreed to look into the situation. I sent him the old filter plus a schematic, and the results were just short of dramatic.

The filter, as it turns out, is fairly broad and not very well terminated. Wes' measurements showed that it has a bandwidth of about 3 kHz, with no way of making it into a cw filter. To quote his letter to me, "It is, however, a reasonable filter to use in a simple SSB receiver or transmitter... Don't throw the filter away, but don't use it in the HW-9."

Wes then obtained three 8.83 MHz crystals, and with the help of his computer model, transformed them into a real cw filter, seen in Fig. 1. Very conveniently, the filter uses standard values of caps, and has 50 ohm end terminations. The 3 dB bandwidth is about 450 Hz, with good steep skirts, making it a real fine CW filter.

Another problem area in the rig is the IF amp which follows the diode ring mixer and precedes the crystal filter. This amp must provide a proper termination for the mixer, and the JFET chosen for the job won't do this. A better choice is a bipolar transistor with high standing current and heavy negative feedback, such as the one in Fig. 2. Wes has used this circuit successfully in other applications, such as the Progressive Receiver, November 1981 QST. A 2N3866 will do well in this circuit, but needs a heat sink because of the fairly high standing current (50 ma. or so). I had to reduce the value of the 100 ohm resistors in the schematic to 47 ohms to get the 50 ma. standing current.

I etched a small circuit board to hold both the amp and filter. After removing all the unneeded parts from the main transceiver RX-TX circuit board between the SBL-1 and the IF chip, I mounted the new filter board just above the main circuit board, suspending it on its power and signal leads. Power is provided by picking off the +R voltage at the point where L304 used to be. It was necessary to do a little experimentation with the value of the capacitors in the BFO to get the passband of the filter back to where it should have been. W7ZOI suggests building a separate oscillator so that one can be used for the BFO and the other for the offset oscillator for the transmitter. I chose rather to stick with the Heath method of using one oscillator to do two jobs by pulling it off frequency when the rig is keyed. It may be easier to build the separate oscillator to more easily obtain the correct offset for transmit.

After installing the new filter and post-mixer amp, I noticed a very distinct improvement in the receiver. The IF now has a true CW passband, and with the audio filter switched in, the selectivity is on a par with that of some much more expensive commercial gear. The effect of the new post-mixer

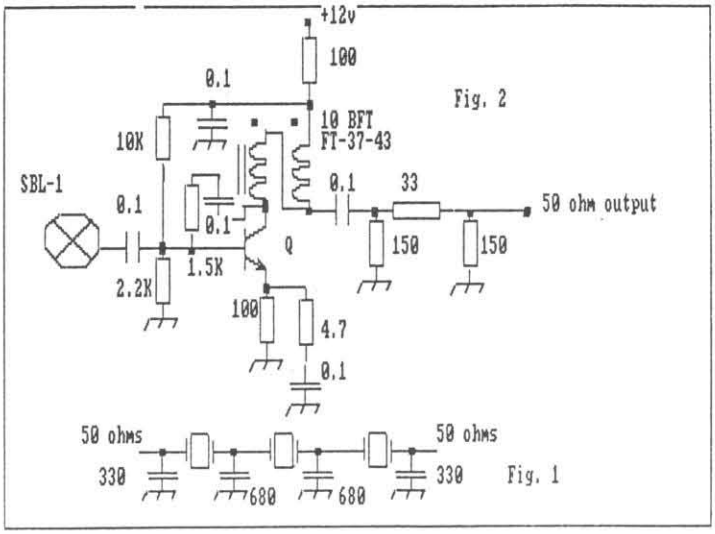



Fig. 2

Fig. 1

amp is also quite gratifying. Prior to the change, I attempted to operate in a North American Sprint, which is a contest populated mostly by full gallon CW ops. The HW-9 fell apart in the face of these monster signals. After the operation, however, the patient's dynamic range and selectivity were much improved, and I was able to operate the entire Sprint to the tune of 100+ QSOs. Quite a worthwhile improvement.

Another area that needs to be attended to is the audio filter. Wes pointed out to me that some of the values in the narrow audio filter are poorly selected. Indeed, in my schematic, one section of the filter uses 15 Megohm resistors and 100 pf capacitors, whereas the other section uses 1.5 Megohm resistors and 1000 pf caps. The latter combination is preferred, for it gives rise to much less noise than the former.

I was at the point of pulling the offending parts from my rig and replacing them when I discovered that both sections of the filter had the same (and proper) values. Perhaps a change was made in the production run for my rig without the change being noted on the schematic. In any case, it is a simple change to make, so I suggest that you check the actual values of the parts in your rig to see if they are the preferred values, and don't depend on your schematic.

In addition, the op-amp used in the audio filter is an LM-324, which uses a class B output in each section. A 2.2K resistor to ground from each output will force it into class A, thus reducing any cross-over distortion that may occur under some circumstances.

I'd like to thank W7ZOI for his time and helpful suggestions. While this is not a step-by step construction article, I believe the ideas presented herein will provide the experimenter with some very useful ways to help turn the HW-9 into a really fine little QRP rig.

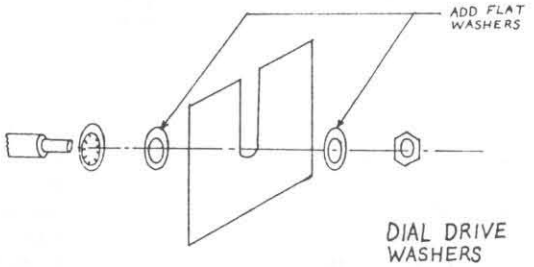
# Preamp and Filter Mods for the HW-9

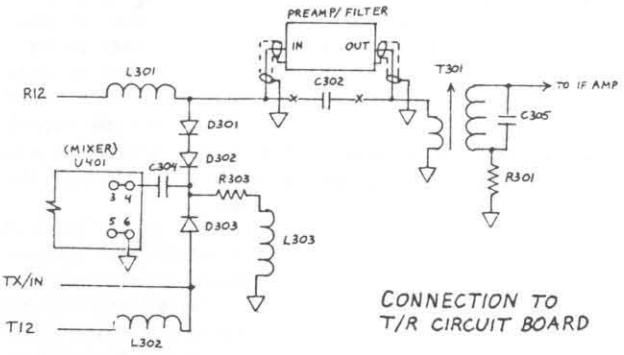
by Tim Groat, KR0U
1709 Cottonwood St.
Broomfield, Colorado 80020

The HW-9, like its predecessors in the Heathkit QRP series, can benefit from some improvements. The superhet receiver, in particular, is capable of performance rivalling many "big rigs" if you give it a little help. Dick McIntyre (K4BNI) published his modifications in the April 1985 QRP Quarterly, and I recommend you look those up too (especially the part on the dial drive).

**More on the Dial Drive**

Even after fixing the capacitor shield as described by K4BNI, I was still plagued with slipping and binding of the dial drive. Further examination revealed that the vernier mechanism would shift around as the nut was tightened, because the hardware catches on the sides of the mounting slot. To cure this, place thin flat washers between the mounting bracket and the lock washer and nut. I used washers from Radio Shack 1/4 inch phone jacks, which were thin enough so that everything still fit together.



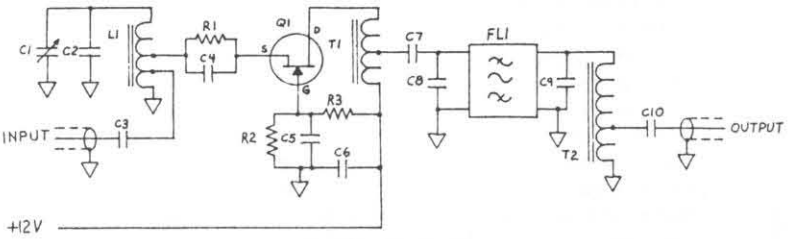

**Audio Filter**

The LM324 used at U304 in the audio filter loads down the high impedance filter network. This can be corrected by replacing the LM324 with a TL084 (or another FET input quad op-amp), which has much higher input impedance. No other modifications are necessary to use the TL084. The FET amplifier is also quieter than the LM324. Denton Bramwell (K7OWJ) warned me that the values shown on early schematics for the first filter stage are wrong: the first stage resistors and capacitors are identical to those in the second stage.

**IF Preamp and Filter**

The HW-9 IF filter has a bandwidth suitable for SSB, not serious CW. Strong signals outside the audio filter passband can reach the AGC detector and make the desired QRP signal disappear. To improve the performance, I installed a better filter early in the IF circuit.

Fortunately, the IF frequency of the HW-9 is the same that Kenwood uses in many of their transceivers, so suitable filters are widely available. Additional IF gain will be necessary to make up for the added filter loss. A J310 FET in a common gate preamp provides about 14 dB gain, good noise figure, and is resistant to overload by strong signals (don't use an MPF102 in this circuit: it has a lot less gain than the J310). The preamp and filter are connected between the mixer and the original IF amplifier and filter. A tapped coil circuit matches the preamp input (75 ohms) to the mixer output. It is adjusted for peak signal strength.




HW-9 IF FILTER BOARD
10-24-87 KRØU

Installation of this modification requires some home-brewing skills. I used copper-clad perf board, with the copper ground plane relieved for the leads by a Vector pad cutting tool (#P138A). The board is mounted to the right side of the chassis above the T/R board. It is connected by removing C302 from the T/R board and connecting the new circuit with RG174 miniature coaxial cable: input to the upper left lead of the C302 outline, and output to the lower right lead. Two new holes must be drilled near T301 for grounding the coax shields. Power for the preamp can be picked up by soldering a wire to the left hand lead of C355.

With the new filter in place, selectivity is comparable to my "big rig". The benefits are most apparent when the band is crowded, such as during contests. You need precise tuning to make good use of this selectivity, so be sure to get your dial drive into good working order.

**Preamp and Filter Parts List**

C1 9-35 PF trimmer
C2 100 PF mica or NP0
C3-C6,C10 .01 UF
C8 18 PF mica or NP0 *
C9 27 PF mica or NP0 *
R1 390 ohm
R2 4.7 K
R3 27 K
Q1 J310 or U310
FL1 Kenwood YK88C, or other 8.8307 MHz CW filter for 470 ohm circuits
L1 26 turns 26 AWG on Amidon T50-2 core (2.7 uH) taps at 5 and 6 turns from ground end
T1 21 x 2 (bifilar) turns 30 AWG on Amidon FT37-61 core
T2 7 x 3 (trifilar) turns 26 AWG on Amidon FT37-61 core

** These values are for filters which require 15 PF terminating capacitors. If you use a filter needing another termination, the capacitors must be changed accordingly.*

continued next page

# Ham Radio From A Condo--

## Operating Restrictions Don't Have To Be Restrictive

**By Robert S. Whittle, VE7DCI**
**304-1145 Hilda Street**
**Victoria, B.C. V8V 2Z5, Canada**

Condominium living for many hams means the end of the line. It need not be so.

Push your books and postage-stamp collection aside for a moment and consider this: If you can accept operating with reduced power, pretzel-shaped antennas, interior wiring, compromise grounding and the ominous presence of tv sets above, below and around you and still be willing to persevere, you can live in your condominium and still enjoy our hobby.

I live in a 30-unit condo of cedar shake design, four stories in height and in a residential area of Victoria. My third-floor suite, with its small balcony, faces south with no adjacent buildings to obstruct the view.

Our building council permits no outside antennas, so I have strung antennas along the inside edge of the balcony ceiling. Their ends curved downward and inward and sometimes curl as length dictates. The antennas are barely visible from the street and in no way detract from the decor of the building.

What kind of antennas do I use? I have tried just about all types (vertical, dipole, trapped, etc.) that could be accommodated within the balcony. Some were too obvious and could not be retained. Others (some verticals) proved difficult to tame with respect to SWR and interference on tv. Remember: This environment is hostile, and there are hidden resonances all around.

I settled finally on a simple, half-wave dipole trimmed to my operating frequency. Start with the conventional formula to figure the length and then throw away the book. When you begin trimming a dipole for resonance -- especially if your antenna curves, bends and curls, as mine do -- you'll be more than surprised at the snipping that must be done. This is particularly true if you use a coaxial dipole.

I use separate dipoles for each band. For 40 and 30 meters, a coaxial dipole winds and weaves around the balcony, but it can't be seen! On 10 or 12 meters, a conventional wire dipole incorporating a does the job. Yes, it's a little inconvenient having to juggle antennas for each band change, but remember we are dealing with condo living.

Each dipole is fed with RG-58U which drops at a 90-degree angle to the balcony floor below and then follows the railing baseboard through a window to my Kenwood TS-440S.

Interference of some nature is likely to be the major problem. We condominium dwellers live in a veritable nest of wires. I have to contend with some 40 television sets of various makes and ages all around me. Two of my sets are within three or four feet of my transmitter, and the third, which is my wife's, is separated from my operating position only by a partition. One blur on that screen, and it's duck-and-run time! I figure, though, if I can keep these three screens clean of interference, I can operate.

I started with the usual high-pass filters at the tv sets. They proved to be of little help, but be sure to try them anyway. And don't forget the low-pass filter at the transmitter output. I wouldn't be without one.

Another trick I found effective, since my building is wired for cable tv, was to install a signal-splitter at the antenna input of the offending set. I attached six or eight feet of tv cable and then made a coil of three or four turns at the far end. Slowly move the coil around the tv stand, placing it above, below or at the sides of the set, until the screen suddenly clears of the interference. This takes patience. Lots of patience. And make notes of the location, since the setting might not work on other bands.

If this doesn't work, try other approaches. Be willing to experiment, and don't be afraid to abandon the orthodox. For instance, I found that simply by moving the tv power cord from the lower receptacle of the AC wall outlet to the upper receptacle cleared up the offending pattern! Ponder that one, if you will.

Also try wrapping the AC line cord around a ferrite bar or a toroid. And don't ignore the transmitter. Shortening or lengthening the feedline normally would make little difference, but in a condominium setting, it might. Coil three or four turns of coax where it enters your rig, where it connects to the balun or both. None of these various suggestions is original, but alone or in combination, they could solve your problems.

Grounding is another concern for the condominium dweller. For me, a 20-foot drop to the pavement below was no solution. The layout of our unit made it impossible even to try a connection to the bathroom waterpipes (a bad ground at best). I compromised by laying sheets of ribbon copper obtained from a local marine supply house beneath the balcony carpeting. This became my ground, and although it perhaps was best suited to operating a vertical, it was the best I could do. Perhaps you can come up with a better idea.

Most of my on-air testing was done at the 10- or 15-watt level in order to be certain I caught any interference pattern. Any attempt to run higher power probably would overload most of the 40 tv sets I mentioned earlier. Once I saw that my signal was clean, I backed the power down to 5 or fewer watts output and hit the air. Most of my operating is in the 3-to-10-watt range.

Another major worry in the close quarters of condominium living is stereo systems. There are at least eight to ten in my building -- perhaps more -- and I have had trouble with getting into one of them while operating on 15 meters. I cleared up the problem by ducking out and using other bands. I know what you are thinking, but there are no easy answers. Of course, there are established ways of dealing with this kind of interference; I took the easy one. I've only been a ham 41 years, and my octogenarian philosophy is: if you can't push the rock away, walk around it. I do believe, however, that at 5 watts or fewer, interference should be negligible.

Now, let's say with all the precautions taken and checks positive, you are set for action. Ten meters is springing to life. Glancing at your monitor, you press the key. Herringbones! *&#@*! Easy. Start again. Change the filter, maneuver the coil or wind another, shorten this, add that and check, check check.

Really, though, it serves you right for living in a condominium. Of course, you always could return to your books and stamp collection, but life wouldn't be the same again!

*(Suggested reading: "The 'No Antennas' Antenna," 73, May 1981.)*

### Filter Mods & Instability, continued

**10 and 12 Meter Instability**

When I installed the accessory band pack, I found that spurious emissions occurred when operating at rated power on 10 and 12 meters. Signals were found many MHz away that would not go away until output was reduced to a low level.

I have not yet found a way to cure this. I'm presenting my list of what DIDN'T work in hope that somebody out there can find a solution.

Applying ferrite beads to the bases of PA transistors Q405 and Q406 cut the output greatly on all bands, rendering that technique impractical. Adding more low and medium frequency bypass capacitors in parallel with the existing PA bypass capacitor had no effect. Installing a ferrite bead on the base of the driver, Q404, was also ineffective. The wire from D404 to D403 was removed to check for faulty isolation in the T/R switch, this also had no effect on the instability.

If you have the answer to this one, please drop me a line. Ten meter conditions are on the rise, and I'm itching to take advantage of them!

# Product Review:
# A&A Engineering MOuSeFET Transmitter

by Tim Groat, KR0U
1709 Cottonwood St.
Broomfield, Colorado 80020

The A&A kit is based on Mike Masterson's designs, published in the December 1986 issue of QST and October 1987 QRP Quarterly. The kit can best be described as an aid for the homebrewer. It demands more skill and initiative of the builder than does a Heathkit, but not so much as starting from scratch. There is no step-by-step instruction manual; documentation consists of the schematic, parts list, and board layout. You will need the QST article for the details, particularly circuit tune-up. If you don't have that issue of QST, a reprint is available from A&A for $1.

**What You Get (And What You Need)**

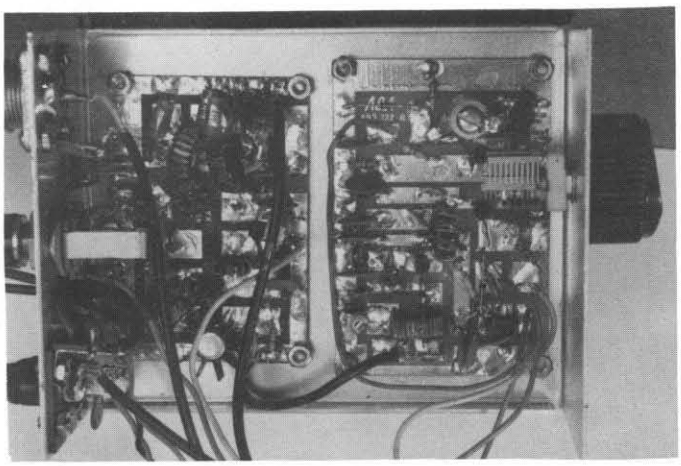
The kit includes both circuit boards shown in the QST article, all the electronic components, toroid cores, and magnet wire. I found one discrepancy: the length of #28 wire was not quite enough to wind all the toroids. While it isn't part of the rig per se, I also noticed the lack of static protection for the power MOSFET's gate. I put the transistor in a static-safe package first thing, and left it there until installing it on the power amplifier board. You are expected to provide the rest:

Chassis
Tuning Knob
RF and accessory connectors
RG-174 Coax
Hook-up Wire
Nuts, Screws, Washers, etc.
Solder
Insulating Washer for TO-220 transistor
Coil Cement (preferably, polystyrene "Q-Dope").

I was able to find everything locally for under $20.

**Construction and Tuning**

The circuit boards are built prototype style, with parts soldered to islands on top of the boards (no holes for the leads). It is necessary to proceed carefully; the adage "check twice, then cut once" applies. Without parts outlines printed on the board or step by step directions, you must be extra careful to get each component in its proper place. I used the normal order of transmitter construction: build and check the oscillator first, the amplifier next, and the final alignment only after all the parts were mounted in the chassis.



The boards are neatly assembled into the chassis.

The ceramic core for the VFO coil had no terminals for the winding, so I attached solder lugs to it to hold the ends of the fine magnet wire and ran larger solid wire from there to the circuit board. Rigid assembly is essential to prevent mechanical instability and microphonics in the VFO!

Tuning is mostly a matter of squeezing and stretching turns of the coils. I found the output stage coils were easier to handle with a single larger wire (#22) than with the two strands of #28 that are specified; the stiffer wire is less prone to slip once it is adjusted. Nevertheless, it is advisable to cement ALL the coils to keep them in tune. I also found that the doubler tuning must be checked at both extremes of the VFO tuning range for equal power output. It is a sharp tuning circuit, so a small tuning error can greatly affect output power. VFO coil adjustment is very sensitive, so the final setting should be done only when all the parts are mounted in the cabinet.

**Performance**

The evaluation unit worked as advertised as soon as I had it built and tuned up. Measurements are for the 40 meter evaluation kit, and may differ for other versions (especially the 80 meter kit, which has a much different VFO circuit). Warm-up drift (fig. 1) was minimal, settling to within the 10 Hz resolution of my frequency counter in just a few minutes. Fre-

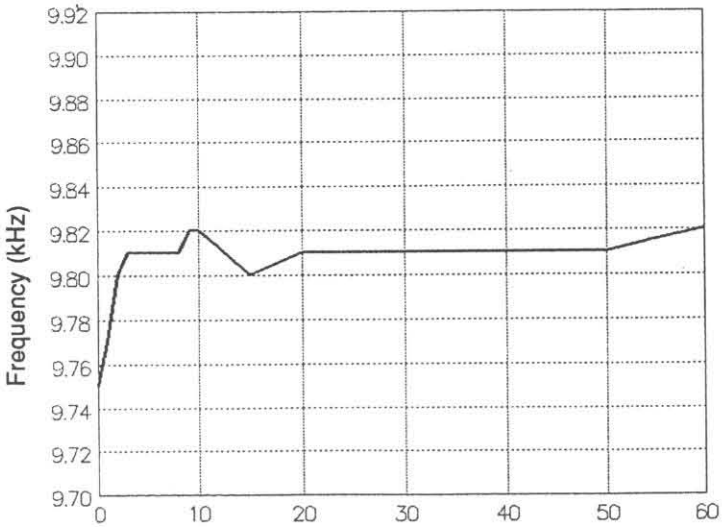



Figure 1

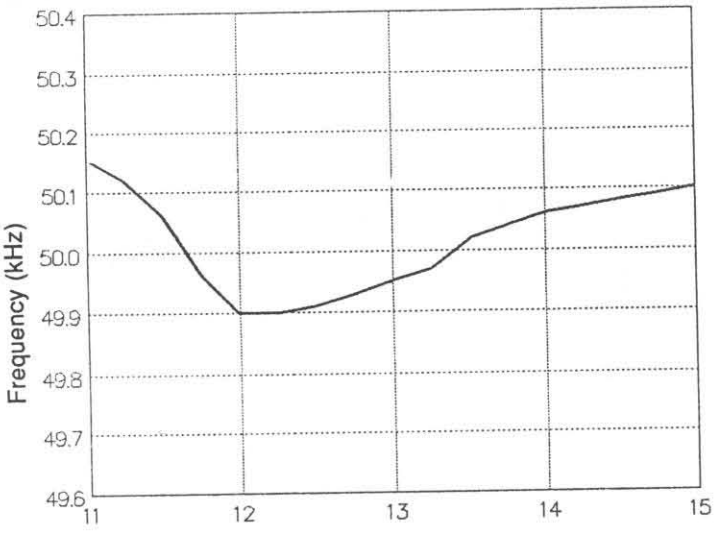



Figure 2

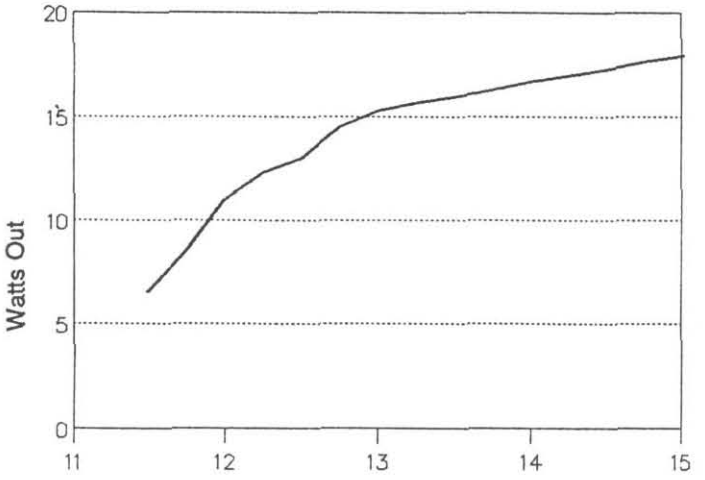



Figure 3

quency shift with input voltage (fig. 2) is +/- 100 Hz from 11.5 to 15.0 volts, with most of the change at the lower end of that range. Power output into a 50 ohm load (fig. 3) ranged from 18 watts at 15 volts to 12 watts at 12 volts, as specified, but fell off rapidly at lower voltages. Power supply current (fig. 4) is a steady 2 amps from 15 to 13 volts, and falls off at lower voltages. Overall performance is best in the 12 to 14 volt range, which is fine for a regulated power supply but not quite enough to allow for poorly regulated sources (such as a weak storage battery).

On the air performance was satisfactory, with favorable reports on the signal quality. The keying was described as slightly hard in a local strong signal QSO; the oscilloscope display confirms this (fig. 5). A small frequency shift is noticeable between the zero-beat mode (amplifier stages off) and transmitting, but this did not cause significant chirp of the transmitted signal (verified with both my own receiver and on the air reports).

**Overall Impression**

The evaluation kit delivered performance that exceeded my expectations, especially for the price. The VFO, in particular, will give most commercial products a run for their money. The power level and VFO control make it easy to scare up a QSO, though it is a bit over the QRP award and contest limit. Overall, it is a good introduction to home-brewing for those who are looking for something more challenging than a Heathkit, but aren't up to hunting the parts and making the boards from scratch.

Kit 127-K40 is available for $49.95, plus shipping, from A&A Engineering, 2521 W. La Palma Unit K, Anaheim CA 92801.

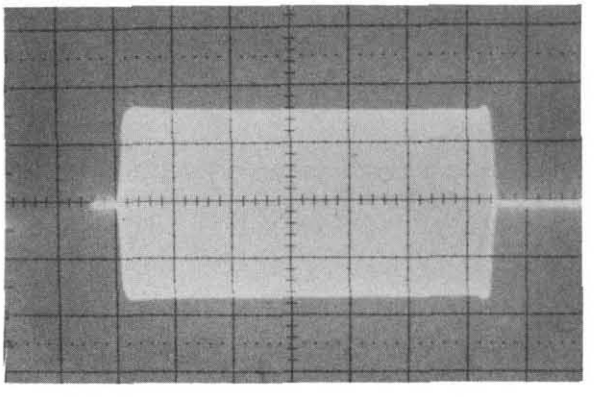


Fig. 5 Keying Envelope horizontal=5MS/DIV

## Product Review:
# Neophyte receiver kit

By Richard McIntyre, K4BNI
PO Box 403
Basye, Virginia 22810

The Neophyte receiver kit featured on the cover of the February 1988 issue of "QST" and described in an article seemed to be an interesting and unique project and offered an opportunity to pair it with the club's Two-Fer transmitter kit.

This "marriage" proved to be an outstanding way of producing a transmitter-receiver combination with good performance and which will not break the budget.

Since the Two-Fer kit has been described extensively in previous articles in The Quarterly, this piece will concentrate on the performance of the Neophyte receiver and the ease with which the two were packaged.

Before deciding to add the Two-Fer transmitter to the package, I was primarily concerned with building and testing the receiver, with the result that there are "before" and "after" photographs of the work. And there have been some changes since these photos were taken, but they will be discussed later.

The thing to remember is this combination offers lots of room for experimentation and enjoyment.

The 80-meter receiver kit was ordered from Penntek Electronics and arrived promptly. Parts and the printed-circuit board were of good quality, andthe kit was complete, including a generous supply of hardware.

A Radio Shack cabinet (270-252) was prepared by strengthening the front and bottom panels with scrap printed-circuit board. This helped in grounding and mounting the VFO capacitor bracket. The bracket was made from printed-circuit board scrap, positioned to fit the dial shaft spacing and then soldered to the printed-circuit board lining the cabinet.

Wiring the receiver's board took about an hour, and I had the receiver aligned and operating in another hour. I first soldered the receiver board vertically (see photos) and as close to the VFO capacitor as possible. Vertical positioning of the receiver board leaves more room for additions to the project later.

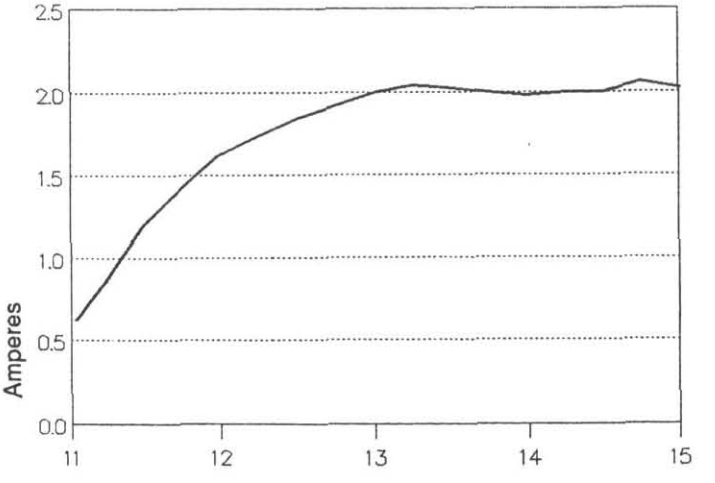
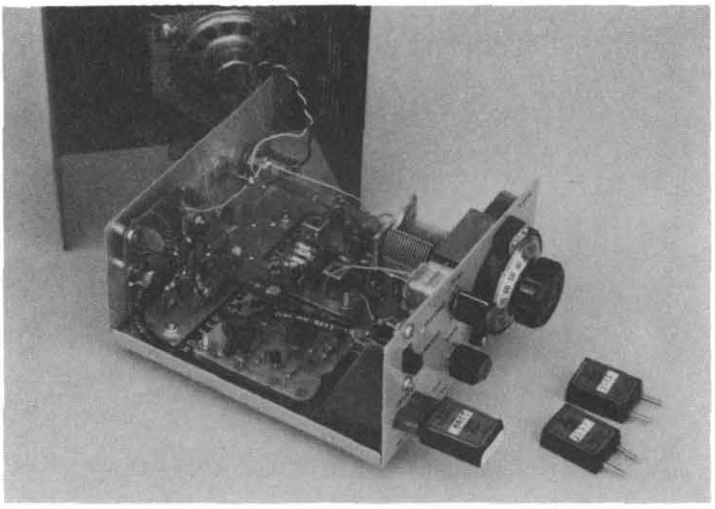



Figure 4



**A happy couple: the club's Two-fer transmitter and the Neophyte receiver kit have been "married" by K4BNI into a compact rig ready to go on 80 meters.**

The Neophyte operated immediately and without problems. This was a welcome experience, since many kits and from-scratch projects seem to require a trouble-shooting phase.

The receiver's performance was just as described in "QST." Of particular note were its stability and absence of microphonics and hum. Selectivity, of course, is not crystal sharp, but on 80 meters, this was not bothersome. An audio filter inserted before the audio amplifier should improve selectivity. Earphone volume is loud, and a speaker is adequate in a quiet situation.

While the kit's paperwork details parts and construction notes, reference to the "QST" article is essential. Although the Neophyte will be a simple project for experienced QRPers, neophyte builders may encounter some difficulty. Identify parts carefully, and solder them with a low-wattage iron. The designer of the receiver says he is ready to help if problems arise.

The basic kit offers possibilities for varied configurations, such as the addition of converters, a built-in power supply, an audio filter and, as shown here, combined with a transmitter to make a trans-receiver. This is why I used a larger cabinet for my project. It also permitted use of a two-inch vernier dial* rather than the one-inch dial which comes with the kit. The larger dial makes for smoother rotation of the VFO capacitor.

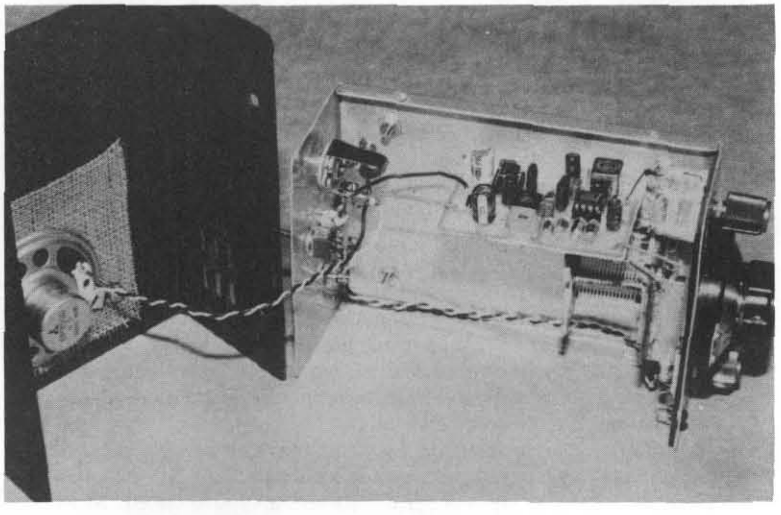
Six volts from four "C" cells will power the Neophyte adequately, and they should last many hours. A 5-volt supply works well also. However, do not use more than 8 volts d.c.! Otherwise -- ZAP!

As can be seen in the "after" photo of my rig, I reworked the unit, laying the receiver and transmitter boards flat, but this, too, is up to the builder. The printed-circuit board in the upper left of the back panel holds a keying monitor, which was copied from the ARRL Handbook. A five-point terminal strip below it holds a simple regulator circuit to reduce the main 12-volt supply to 5 volts to power the receiver portion, thus eliminating the need for a battery.

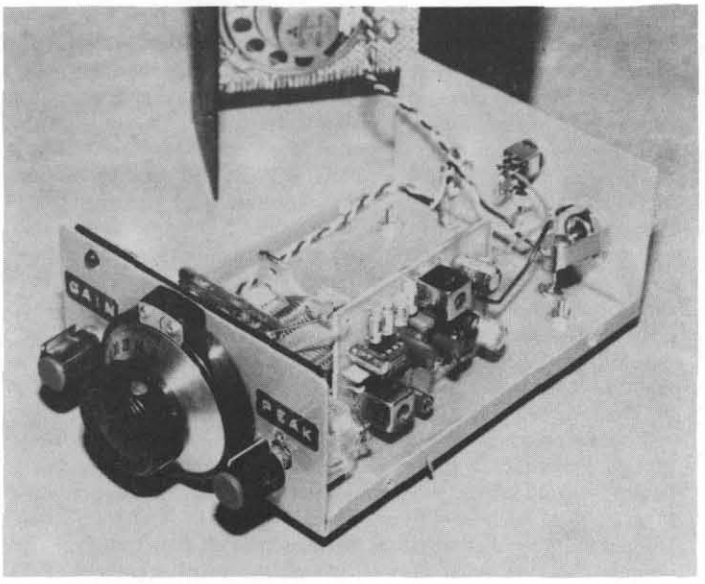
The Two-Fer kicks out almost three watts on 80 meters with no heating problems. After the "after" photo was taken, I replaced the transmit/receive slide switch with a toggle switch, and I may go to some form of QSK with a relay to control power to the transmitter later.

I also have eliminated the "peak" variable capacitor in the input circuit to the mixer stage. Since I only operate between 3500 and 3560 kHz, peaking is not necessary.

The Neophyte is a simple but effective direct-conversion receiver that meets "QST" claims as to its performance. It goes together easily and lends itself to varied configurations and additions. It's a fun project and is certainly useable for beginners or old-time QRPers wanting to develop a new rig. I will be glad to answer questions or make additional comments on the Neophyte, but be sure to send along an s.a.s.e.



**Vertical mounting of the Neophyte receiver board provides plenty of room for adding extras to enhance its performance. The Two-fer transmitter kit was added later.**




**The Neophyte receiver kit can be installed easily in this Radio Shack cabinet. Vertical mounting of the board leaves room for accessories, a transmitter, etc.**

**Two-inch vernier dials are available from Dick Smith Electronics, Box 468, Greenwood, Indiana 46142, part number H-3900, $5.95; RadioKit, Box 973, Pelham, New Hampshire 03076, part number S-50, $7.35; and Small Parts Center, 6818 Meese Drive, Lansing, Michigan 48911, part number VD02, $7.25. Prices are plus shipping.*

# Contests

**Red Reynolds, K5VOL**
**835 Surryse**
**Lake Zurich, Illinois 60047**

**Contests for the next quarter:**

| | |
|---|---|
| Summer Homebrew Sprint (CW) | 2000-2400Z July 10 |
| Summer Daze Sprint (SSB) | 2000-2400Z August 14 |
| Fall QSO Party (CW) | 1200Z October 8 to 2400Z October 9. |

Both the Summer Homebrew Sprint and the Fall QSO Party offer bonus points for homebrew and include provisions for a single-band entry. The Homebrew Sprint is a great time for a mini-field day operation. Note that in this sprint both homebrew and commercial gear compete against each other, unlike the December version.

Look over the changes in the rules that will apply beginning with the Fall QSO Party. A number of modifications have been made over the 'old' rules. Both summer sprints will use the 'old' rules published in the April issue of The Quarterly.

Dig out the soldering irons, select your favorite circuit and hunt parts or order a Two-fer kit from KN1H. The December Holiday Spirits sprint requires homebrew gear for a scoring entry. In its first outing last year it proved to be the most popular sprint of all time.

The following is a review of the General Contest Rules (GCR) changes that will become effective with the Fall QSO Party. Note that two sprints, the Summer Homebrew and the Summer Daze SSB Sprints will run under the "old" rules as listed in the April issue of The Quarterly.

The changes involve the power multiplier system, an SSB power definition, a team competition class, a clarification of the new "mixed" class in the Holiday Spirits competition and an explanation of the disqualification rules. An explanation of the antenna multiplier is included.

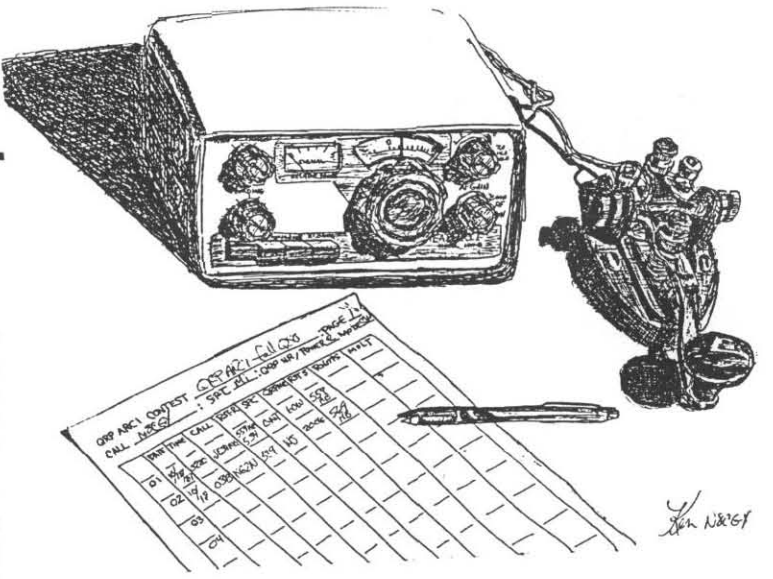
The multiplier for power levels will be "10" for up to and including one watt, and "7" for over one watt up to and including five watts. This will allow the "5-Watter" fellows to compete without the previous low multipliers. This effectively eliminated them from competition. Also, using two multiplier classes brings our contests in line with most other QRP contests.

The power level for SSB has been added as the PEP amount equal to twice the CW levels used in the past. This is actually no change, but a restatement of power level.

The team category is designed to allow competition of groups against each other and does not have any geographical limit. I would expect common interest groups to take advantage of this, such as "Team Texas", "HAH!", and the "Zuni-Loopers". The teams enter only as an all-band entry. The contest manager must be notified of the team members (2-5) before the contest starts. Currently, the team category applies to the Spring and Fall QSO Parties only, but may be expanded at a later date if warranted.

In the Holiday Spirits sprint, commercial transceivers are allowed in the "mixed" category, but only as a receiver or transmitter. For example, if a homebrew transmitter is used, only the receive function of a commercial transceiver may be used for a scoring entry.

The disqualification rules were written because of some entries that were not quite legal. There was no provision to handle these and the result was that certificates were issued to entrants who did not really deserve them. That means that some deserving entries did not receive one. The problem involves a very few entries, but they are consistently high scorers. It is better to prepare for this now than wait until it became a real problem, if it ever does. One individual seems to rely on manufactured QSOs to increase scores and if I revealed how they were used, it would be easy to figure out who it was. Another submits an unusually high score of non-members worked in a different, concurrent, contest (legal) but omits QRP numbers or power level of contact. None of these are valid QSOs. Another problem is entries in a log that were not worked according to the "worked" station. The problem is not bad, but it does affect the certificates.



Disqualification of entries to a QRP ARCI contest will be made on the following criteria:

1. Manufactured QSOs
2. Excessive unverifiable QSOs
3. Excessive duplicates
4. Omitted required data in the exchange or entry
5. Late postmark
6. Failure to respond, in a timely manner, to the contest manager's request for information to clear up a possible disqualification.

Disqualification will apply to the contest for which an entry is submitted only, and will not carry over to the following contests. No disqualification will be made on incorrectly computed scores. In all cases the contest manager will notify the entrant of the items in question to allow a defense before final decision.

The antenna multiplier is very complex. From studies of entries basically on the 20 meter band, both coasts indicate there is not enough difference in antenna performance to warrant a multiplier. In the midwest, antenna performance could be made a multiplier by giving the fellows with a gain antenna a multiplier of 1.2! I think the fellow with a non-rotatable antenna spends all his time working QSOs, while the Yagi user spends a lot of time turning his antenna! As more information is collected, this might change. In any case, the multiplier would have to be by band. An entry using dipoles on 80 and 20 should not get a multiplier on 80 because someone else is using a Yagi on 20 and a dipole on 80. Most of the comments I get are asking for a multiplier for the non-gain antenna, when the real difference in scores has been the time-on-the-air and the disastrous 5-watt multiplier of "2". Rest assured that this situation is under constant review.

# Spring 1988 QRP ARCI QSO Party

## Top Ten

| | | |
|---|---|---|
| 1 | AA2U | 1,919,000 |
| 2 | W3TS | 1,887,420 |
| 3 | KH6CP/1 | 1,138,175 |
| 4 | WD2H | 1,040,130 |
| 5 | W5LXS | 957,440 |
| 6 | NN8B | 884,880 |
| 7 | KA6SOC | 818,520 |
| 8 | W1HH | 746,235 |
| 9 | K3TKS | 674,520 |
| 10 | N3IK | 635,104 |

## Single Band

| | | |
|---|---|---|
| 40M | W1KKF | 143,510 |
| 20M | NF0R | 170,100 |
| 15M | EA3EGV | 58,368 |

The Spring QSO Party is now over and scored with a total of 136 entries, as compared to last year's 127 entries. Again there were a lot of first time entries, and a few were from members who were in the club for several years.

Randy, AA2U emerged as "Top Gun" by a margin of less than 2% over W3TS, both just under 2 million points! The single band winners all posted new record high scores for each band. The entry with the lowest power was WD4DSS running 39 *milliwatts* to a homebrew crystal controlled transmitter on 40 meters!

A change in the results includes the time spent in the contest. This should make score comparisons a little more realistic. The 40% rule was re-evaluated to 25% after reviewing the results of this contest along with previous years' results.

All entrants to the contests are reminded to read the General Contest Rules carefully for the requirements of each contest, especially as the changes become effective with the Fall QSO Party. Thanks to all the entries including notes of thanks and encourage-ment, they are especially appreciated. Blank contest forms can be found in the April 1988 issue of The Quarterly, and may also be obtained by sending an SASE to the Contest Manager.

| Call | Name | Score | Power | Bands/Time | Rig | Antenna |
|---|---|---|---|---|---|---|
| **Alabama** | | | | | | |
| KA4LKH | Barry | 111,540 | .90 B | 20M/7 | Argo 515 | Loop/Vertical |
| KC0ET | Bill | 10,640 | 4.0 | 2/4 | --- | --- |
| W4DGH | Raymond | 6,270 | 3.7 B | 20M/5 | Argosy-2 | Yagi |
| **Alaska** | | | | | | |
| KL7GN | Gordon | 90,524 | 3.5 | 2/8 | TS-940/AT | Inv.Vee/Yagi |
| KZ3I/KL7 | Bill | 22,400 | 3.9 | 3/6 | TR-7-A | Vertical/Yagi |
| NL7DU | Dale | 7,936 | 4.0 | 20M/11 | TS-430-S | Yagi |
| KL7DG | John | 336 | 2.0 | 20M/5 | Argo 509 | G5RV |
| **Arizona** | | | | | | |
| W5VBO | Brian | 93,456 | 1.9 B | 3/16 | IC-735 | Vertical |
| WA7NWL | John | 14,000 | .98 | 2/15 | Argosy | Dipole |
| **California** | | | | | | |
| * KA6SOC | Sue | 818,520 | 1.0 B | 5/23 | FT-757GX | GP/Quad |
| WI6M | Gary | 36,990 | .90 B | 20M/4 | Argosy-2 | Vertical |
| K1EQA/6 | Jay | 34,776 | 1.9 | 2/5 | Argo 509 | Inv-Vees |
| W6YVK | Ev | 24,000 | 2.5 S | 3/2 | Argo 509 | Dipole/Yagi |
| W6DNY | Virgil | 13,980 | 5.0 | 3/6 | TS-930S | Dipole/Yagi |
| W6PRI | Bill | 780 | .90 | 40M/1 | --- | --- |
| W6SIY | Keith | 560 | .25 | 40M/6 | HB RX/TX | Dipole |
| **Colorado** | | | | | | |
| KR0U | Tim | 203,960 | .90 S | 4/5 | HW-9/mod | Vertical |
| W0KEA | Phil | 44,528 | 5.0 | 2/6 | TR-7 | Vertical/Yagi |
| **Connecticut** | | | | | | |
| * KH6CP/1 | Zack | 1,138,175 | .89 B | 5/24 | Argo 515/HB | Dipole/Vertical |
| W1FD | Frank | 443,232 | 3.0 S | 3/11 | HW-9 | Inv. Vee/Yagi |
| * W1KKF | Bill | 143,510 | 2.4 B | 40M/10 | HB W7EL/mod | G5RV |
| **Florida** | | | | | | |
| K4KJP | Terry | 583,632 | 2.0 S | 4/12 | Argo 509 | Loop/Yagi |
| **Georgia** | | | | | | |
| WD4DSS | Frank | 1,850 | .04 B | 40M/1 | HB Xtal/Omni | Dipole |
| **Hawaii** | | | | | | |
| KH6IJS | Howell | 32,913 | 3.0 B | 3/7 | HW-9 | Vertical |
| **Illinois** | | | | | | |
| * WB9TBU | Paula | 481,620 | 1.0 | 4/10 | Argosy | Loop/Dipole |
| NF9X | Carl | 222,705 | .90 B | 4/18 | HW-8 | Vertical |
| WD9IWP | Tom | 202,335 | .95 B | 3/12 | IC-735 | Inv.-Vee |
| W9PNE | Brice | 167,090 | .90 | 4/8 | Argo 515 | Slopers/Yagi |
| ND9X | Frank | 148,176 | 2.5 B | 4/7 | HW-8 | Vertical/Wire |
| K9PNG | Jim | 42,960 | 2.0 | 4/6 | Argo 515 | Long wire |
| KD9NT | Norman | 20,370 | 5.0 | 5/4 | Argosy-2 | Yagi |
| K5VOL | Red | 6,588 | 1.8 B | 40M/1 | HW-8 | Long wire |
| KA9YMV | Don | 4,680 | 5.0 | 3/8 | FT-767 | Vertical |
| **Indiana** | | | | | | |
| KC9UR | Bob | 51,726 | 2.9 | 4/7 | IC-740 | Vertical |
| WA5IBC | Craig | 32,600 | 1.4 | 2/9 | PM2B/A-2517 | DP/Butterfly |
| **Maine** | | | | | | |
| W1XN | Clinton | 112,050 | 5.0 | 4/22 | Argo 509/R4C | Dipole/Yagi |
| **Massachusetts** | | | | | | |
| * W1HH | Bob | 746,235 | 1.0 B | 5/15 | FT-301 | G5RV/Loop/Yagi |
| KZ1L | Andrew | 563,580 | .98 B | 4/12 | Paragon | G5RV |
| NO1R | Steve | 246,330 | .90 B | 4/15 | HW-9 | Zepp |
| W1XH | Al | 224,160 | 2.0 B | 4/12 | Argonaut | Random wire |
| AD1C | Jim | 215,120 | .90 | 4/10 | HB RX/TX | G5RV/Vertical |
| K1KDG | John | 101,220 | 1.9 B | 4/5 | Argo 509 | Dipole/Vert |
| KO1H | Peter | 98,784 | 4.0 B | 4/9 | HW-9 | G5RV/Dipole |
| KB1MJ | Paul | 24,860 | .80 | 40M/3 | HB RX/TX | Dipole |
| **Maryland** | | | | | | |
| * K3TKS | Danny | 674,520 | 1.0 | 5/22 | Argo 509 | Loop/Dipole |
| K3DML | Richard | 378,400 | 1.0 S | 4/12 | HW-9 | Loop/Dipole |
| WA8MCQ | Michael | 89,100 | .90 | 3/10 | TS-430-S | Dipole/Vert |
| WA3EOP | Page | 58,800 | 2.0 | 4/6 | --- | --- |
| KB3WK | John | 41,184 | 5.0 | 4/21 | Argo 509 | Dipole/long wire |
| WA3GYW | Fran | 17,856 | 2.0 | B | 3/2 | HW-8/Dipole |
| **Michigan** | | | | | | |
| * K8DD | Hank | 277,425 | .90 B | 5/7 | Argo 515/HW-8 | Zepp/Vt/Yagi |
| N8CQA | Buck | 274,170 | .90 | 5/19 | 2-B/20-A | G5RV |
| KE8PC | John | 272,640 | 1.6 | 4/14 | Argo 509 | Zepp |
| NW8G | John | 65,250 | 3.0 B | 3/8 | Argo 515 | Inv.-Vee/G5RV |
| WB8UUJ | Tom | 7,560 | 1.9 B | 2/1 | Argo 509 | Long wire |
| **Minnesota** | | | | | | |
| KF0T | Thomas | 154,860 | .90 B | 20M/18 | Argosy | Vertical |
| WB0L | Jay | 31,920 | 4.0 | 4/10 | IC-735 | Vertical |
| W0NGB | Ronald | 13,832 | 5.0 | 3/8 | Omni-A | Vertical/Yagi |
| KA0OMX | Mary | 11,976 | 2.0 | 2/6 | HB TX/HW-8/Corsair | Yagi |
| **Mississippi** | | | | | | |
| NF5Y | Herb | 487,860 | .50 S | 3/9 | TS-440 | Loop/Yagi |
| **Missouri** | | | | | | |
| * NF0R | David | 170,100 | .90 B | 20M/15 | Argosy-2/Argo 505 | Zepp in attic |
| KC0PP | Keith | 153,300 | .90 B | 3/6 | FT-757GX | Skel Cone/Yagi |
| **Montana** | | | | | | |
| NM7N | Mary Lou | 388,800 | 2.0 B | 2/21 | Argosy-2 | Yagi |
| **New Hampshire** | | | | | | |
| KN1H | John | 551,540 | .90 S | 5/10 | Argosy/mod | G5RV |
| **New Jersey** | | | | | | |
| * AA2U | Randy | 1,919,000 | .90 S | 5/24 | IC-730 | Loop/DP/X-Beam |
| KD2JC | Joe | 312,840 | 2.5 | 5/21 | Cen.-21/Argo 509 | Dipoles/Yagi |
| K2JT | Joe | 189,312 | 2.0 | 5/8 | Argo 515/HW-9 | Dipoles |
| WB2CZB | Mario | 66,464 | 2.0 | 4/4 | HW-9 | Inv. Vee/Yagi |
| W2JEK | Donald | 53,424 | 1.9 B | 4/4 | Argo 509 | Dipole/GndPln |
| K2HPV | Herb | 14,616 | 5.0 | 3/6 | IC-735 | G5RV/Yagi |
| **New Mexico** | | | | | | |
| * W5TTE | Ed | 478,640 | .80 S | 4/16 | HB Tuna-2/HW7/KWM2A | Vertical |
| KB5DQ | Paul | 71,982 | 3.0 B | 2/4 | Argo 509 | Yagi |
| **New York** | | | | | | |
| * WD2H | Brian | 1,040,130 | .90 B | 4/23 | HW-9 | Dipole/Inv. Vee |
| W2QYA | Merl | 325,500 | .90 B | 4/19 | HW-8 | Long wire |
| W2UYQ | Fred | 236,640 | .75 | 4/9 | Argo 515 | Loop |
| K2LGJ | Bob | 234,840 | 2.0 | 4/15 | TS-940S/AT | Vertical |
| WD2ABL | Richard | 119,064 | 2.0 | 3/13 | Argo 509 | Phased Verts |
| W2FB | Howard | 55,266 | 5.0 | 4/11 | Omni | Long wire/Yagi |
| WB2V | Curtis | 21,666 | 3.0 | 3/6 | Paragon | Vertical |
| W2DW | Joseph | 15,392 | 3.2 | 3/3 | Omni | Dipole |
| W2WSS | Pete | 14,160 | 5.0 | 4/5 | Argosy | --- |
| KA2CAQ | Walter | 2,808 | 4.5 S | 20M/9 | Argo 509 | Yagi |
| N2JHS | John | 1,680 | 2.0 | 2/10 | HW-7 | Loop |
| **North Carolina** | | | | | | |
| AA4CO | Joe | 18,144 | 3.0B | 3/3 | Argo 515 | G5RV/Yagi |
| **Ohio** | | | | | | |
| * NN8B | Donald | 884,880 | .98 S | 4/21 | Argosy | G5RV/Yagi |
| N8GJR | Jim | 365,250 | .90 B | 4/16 | IC-730 | Loop/Phase Vt |
| WB8ZWW | Wayne | 212,670 | .90 B | 4/15 | Argosy | Inv. Vee |
| WA8GLF | John | 12,750 | 3.0 | 3/5 | Argosy-2 | Loop/Dipole |
| N8FBG | Jack | 1,040 | 5.0 | 2/7 | TR-7 | Zepp |
| **Oklahoma** | | | | | | |
| * WD5GLO | Lou | 449,280 | 1.0 B | 4/13 | Argo 509/HW-9 | Inv.Vee/Yagi |
| WB5CTS | Steve | 86,850 | .95 B | 2/12 | HW-8 | Dipole |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Pennsylvania** | | | | | | | |
| * | W3TS | Mike | 1,887,420 | .90 S | 6/20 | HB TCVR | Inv.Vee/Zepp |
| * | N3IK | Ike | 635,104 | 1.5 | 4/19 | HW-9 | Hammer/Yagi |
| | K7YHA | Rich | 525,900 | .98 S | 4/13 | Argo 505/m | Windom/G5RV |
| | KA3K | Charles | 333,350 | .90 | 4/16 | HW-9 | Dipole/Quad |
| | WA3SRE | John | 214,816 | 1.8 | 4/24 | Argo 515 | Vertical |
| | WA3SLN | Mike | 61,074 | 3.0 B | 4/6 | HW-8 | Zepp/Quad |
| | WA3PAK | Brad | 32,984 | 3.5 | 4/7 | HW-9 | Inv.Vee/Yagi |
| | NB3V | Luke | 6,720 | 5.0 | 20M/14 | IC-751/m | Dipole |
| | W3GUQ | Walter | 1,080 | 3.0 | 3/4 | Argo 515 | Inv.Vee/Vert |
| **Rhode Island** | | | | | | | |
| | KA9HAO | Randy | 367,920 | .80 S | 4/14 | Argo 515 | Random wire |
| **South Dakota** | | | | | | | |
| | WB0RXF | Max | 58,380 | 3.5 B | 2/20 | Argo 509 | G5RV/Yagi |
| **Tennessee** | | | | | | | |
| | NU4B | Larry | 238,960 | 1.7 | 4/22 | HW-9 | Vertical/Yagi |
| | KV4B | Dick | 190,950 | .90 B | 2/7 | Argosy | Inv.Vee/Yagi |
| | W0SK | Jim | 66,420 | 1.0 | 4/6 | Century-21 | Vertical |
| **Texas** | | | | | | | |
| * | W5LXS | Roger | 957,440 | .50 S | 4/24 | Argo 515 | Sloper/Yagi |
| | WB5FKC | Chris | 327,825 | .90 B | 3/19 | TenTec | Phased Inv. Vee |
| | KC5BG | Mike | 316,480 | 1.8 S | 4/24 | Argo 515 | Loop |
| | K5HDX | Sam | 213,000 | 1.5 B | 3/23 | HW-8 | Dipoles |
| | W5HKA | Luke | 189,504 | 1.8 S | 4/17 | HW-8 | Zepp |
| | W5VGX | Mike | 124,542 | 3.0 | 2/6 | --- | --- |
| | WG5G | Dan | 117,852 | 5.0 | 4/18 | HW-9/mod | Vertical/Yagi |
| | W5TB | Doc | 82,960 | .90 | 4/22 | HW-8 | Random wire |
| | W9NWN | David | 39,672 | 3.5 | 3/5 | HW-9 | Sloper |
| | N5AE | Richard | 32,400 | 3.0 B | 2/4 | Argo 505 | --- |
| | W5QJM | Fred | 24,776 | 5.0 | 3/12 | Argosy-2 | Butterfly Beam |
| | K5SN | John | 5,130 | 2.6 B | 2/1 | HW-8 | Vertical |
| **Utah** | | | | | | | |
| | WJ7H | Wayne | 9,850 | 5.0 | 2/5 | TS-440 | Yagi |
| **Vermont** | | | | | | | |
| | NG1G | Jack | 260,576 | 2.0 | 4/17 | HW-9 | Loop |
| **Virginia** | | | | | | | |
| | K4JM | Tom | 66,480 | 4.5 | 5/6 | Corsair-2 | Dipole/Inv.Vee |
| **Washington** | | | | | | | |
| | NM7M | Bob | 48,776 | 5.0 | 3/8 | Corsair | Dipole/Tagi |
| **Wisconsin** | | | | | | | |
| * | NA9M | Paul | 357,840 | 3.0 | 3/21 | TR-7 | Vertical/Yagi |
| | KA9UAL | Jack | 104,085 | .90 B | 2/10 | HW-8 | Inv. Vee |
| **British Columbia** | | | | | | | |
| | VE7DHM | Paul | 28,290 | 5.0 | 4/13 | IC-735 | Loop |
| **Nova Scotia** | | | | | | | |
| | VE1AGZ | Al | 5,376 | 3.0 | 40M/3 | IC-730 | Inv. Vee |
| **Ontario** | | | | | | | |
| * | VE3KKO | Thomas | 337,734 | 2.5 B | 3/22 | Argosy | Inv. Vee/Yagi |
| | VE3OOL | David | 100,848 | 3.0 | 4/12 | Argo 509 | Dipole/Yagi |
| | VE3EFC | Bill | 1.050 | 3.0 | 40M/7 | HW-8 | Loop |
| **Quebec** | | | | | | | |
| | VE2ABO | Adeoda | 36,984 | 1.5 | 2/11 | HW-8 | Loop/Inv.Vee |
| **Saskatchewan** | | | | | | | |
| | VE5VA | Peter | 196,680 | 1.0 | 3/16 | IC-735 | Vertical/Yagi |
| **England** | | | | | | | |
| | G4EBO | Eric | 5,742 | 3.0 | 15M/2 | Century-22 | ZL special in loft |
| **Mexico** | | | | | | | |
| | XE2IOF | Jake | 159,248 | 2.0 S | 3/8 | Argo 505 | Vertical |
| **Spain** | | | | | | | |
| * | EA3EGV | Miguel | 58,368 | 2.0 | 15M/8 | TS-120-V | Yagi |

Check Logs: W1FMR, WA7F, AE7K

Time of Operation rounded to the nearest hour
* = certificate winner
B = battery power
S = solar/natural power
/m = modified
HB = homebrew

SCORE = POINTS * SPC * POWER MULT * POWER SPLY MULT + BONUS.

ENTRY MAY BE AN ALL-BAND ENTRY, OR A SINGLE BAND ENTRY, COMPETE AGAINST OWN CLASS OF ENTRY. CERTIFICATES TO THE TOP 10 SCORES OVER-ALL FOR THE QSO PARTIES, AND THE TOP 3 SCORES FOR SPRINTS. CERTIFICATES TO THE TOP SCORE IN EACH BAND FOR SINGLE-BAND COMPETITORS. CERTIFICATES WILL BE ISSUED TO THE TOP SCORE IN EACH S-P-C AND CLASS IN WHICH 2 OR MORE ENTRIES ARE RECEIVED, AND THE SCORE IS AT LEAST 40% OF THE AVERAGE OF THE TOP 10. THE 40% RULE APPLIES ONLY TO THE SPRING AND FALL QSO PARTIES. SINGLE BAND ENTRIES APPLY ONLY TO THE HOMEBREW SPRINTS AND THE SPRING AND FALL QSO PARTIES.

ENTRY INCLUDES A COPY OF THE LOGS AND A SEPARATE SUMMARY SHEET. INCLUDE DUPLICATE CHECK SHEETS WITH ENTRIES OF 100 QSO'S OR MORE. INDICATE THE TOTAL TIME-ON-AIR, INCLUDING TIME SPENT LISTENING. ALL ENTRIES MUST INCLUDE A COMPLETE NAME, CALL AND ADDRESS. ALL ENTRIES MUST BE POST-MARKED WITHIN 30 DAYS FOLLOWING THE CONTEST. LATE ENTRIES WILL BE COUNTED AS CHECK LOGS. MEMBERS INDICATE THEIR MEMBERSHIP NUMBER ON ALL LOGS. MEMBERS AND NON-MEMBERS INDICATE THEIR INPUT OR OUTPUT POWER FOR EACH ENTRY. THE HIGHEST OUTPUT POWER LEVEL USED WILL DETERMINE THE POWER MULTIPLIER. OUTPUT POWER IS CONSIDERED AS 1/2 OF THE INPUT POWER. IN THE SPRING AND FALL QSO PARTIES, A MAXIMUM OF 24 HOURS MAY BE OPERATED WITHIN THE 36 HOUR TIME PERIOD.

GENERAL CONTEST RULES - QRP ARCI CONTEST / SPRINTS

DATE/TIME- MM/DD/YY-HHHHZ THROUGH MM/DD/YY-HHHHZ

EXCHANGE - MEMBER - RST, STATE/PROVIDENCE/COUNTRY, ARCI NUMBER
NON-MEMBER - RST, STATE/PROVIDENCE/COUNTRY, POWER OUT

** HOMEBREW SPRINTS, RST SUFFIXED W/ 'HB' OR 'C', INDICATING HOMEBREW OR COMMERCIAL EQUIPMENT. 'HB' SHOULD BE USED ON ALL BANDS IF HOMEBREW GEAR IS USED ON ANY BAND. 'C' IS USED ONLY IF ALL GEAR USED IS COMMERCIAL.

POINTS - MEMBER - 5 POINTS
NON-MEM, DIFFERENT CONTINENT - 4 POINTS
NON-MEM- 2 POINTS
** HOMEBREW SPRINTS, IF STATION WORKED IS USING HOMEBREW, ADD 5 POINTS (IE, NON-MEM USING HB: 2 + 5 = 7 POINTS).

MULT - SPC TOTAL ALL BANDS
THE SAME STATION MAY BE WORKED ON MORE THAN ONE BAND FOR POINTS AND S-P-C CREDIT.

** HOMEBREW SPRINTS, SPRING AND FALL QSO PARTIES
BONUS POINTS (HOMEBREW EQUIPMENT USED EACH BAND WORKED)
+ 2000 FOR EACH BAND HB TX USED
+ 3000 FOR EACH BAND HB RX USED
+ 5000 FOR EACH BAND HB TCVR USED
(MAXIMUM OF 5000 / BAND ON WHICH QSO MADE)

*** NOTE - SPRING AND FALL QSO PARTIES ONLY:
TEAM COMPETITION -
TEAM COMPETITION OF TEAMS CONSISTING OF 2 TO 5 MEMBERS WILL BE A SEPARATE CATEGORY APART FROM INDIVIDUAL ENTRIES. TEAM MEMBERS WILL BE LISTED AS INDIVIDUALS AND THE TEAM SCORE WILL BE THE TOTAL OF THE MEMBER"S SCORES. TEAM ENTRY WILL BE ALL-BAND ONLY. THE TEAM CAPTAIN MUST SEND A LIST OF ITS MEMBERS TO THE CONTEST MANAGER POSTMARKED AT LEAST ONE DAY PRIOR TO THE QSO PARTY. CERTIFICATE AWARDED TO THE HIGHEST SCORING TEAM.

*** NOTE - HOLIDAY SPIRITS HOMEBREW CONTEST ONLY:
TWO CLASSES OF ENTRY FOR A SCORE ARE AVAILABLE.
1. ALL HOMEBREW - ALL GEAR (RECEIVER & TRANSMITTER, OR TRANCEIVER) MUST BE HOMEBREW ON EACH BAND WORKED.
2. MIXED HOMEBREW/COMMERCIAL - A HOMEBREW RECEIVER OR TRANSMITTER MUST BE USED ON EACH BAND WORKED.
THE USE OF ALL COMMERCIAL GEAR WILL CAUSE THE ENTRY TO BE CONSIDERED AS A CHECK LOG. ENTRIES NOT INDICATING HOMEBREW GEAR USED ON EACH BAND WORKED WILL BE CONSIDERED AS CHECK LOGS.

POWER SUPPLY MULTIPLIER (BONUS MULTIPLIER)
X 1.0 - COMMERCIAL POWER
X 1.5 - BATTERY
X 2.0 - SOLAR/NATURAL, OR BATTERY CHARGED ONLY BY SOLAR OR NATURAL POWER.

POWER MULTIPLIER
X 10 - 0-1 WATT OUT CW (0-2 WATTS PEP SSB)
X 7 - 1-5 WATTS OUT CW (2-10 WATTS PEP SSB)
X 0 - OVER 5 WATTS (10 WATTS PEP) IS A CHECK LOG

SUGGESTED FREQUENCIES

| | ------CW-------- | --PHONE-- |
|---|---|---|
| 160M - | 1810 KHZ | |
| 80M - | 3560, 3710 KHZ | 3985 KHZ |
| 40M - | 7040, 7110 KHZ | 7285 KHZ |
| 20M - | 14060 KHZ | 14285 KHZ |
| 15M - | 21060, 21110 KHZ | 21385 KHZ |
| 10M - | 28060, 28110 KHZ | 28385, 28885 KHZ |
| 6M - | 50060 KHZ | 50885 KHZ |

INCLUDE A DESCRIPTION OF HOMEBREW EQUIPMENT, COMMERCIAL EQUIPMENT AND ANTENNAS USED WITH EACH ENTRY. HOMEBREW BONUS POINTS MAY NOT BE CLAIMED IF A DESCRIPTION IS NOT INCLUDED WITH THE ENTRY.

A SUMMARY SHEET AND SAMPLE LOG SHEETS ARE AVAILABLE FROM THE CONTEST MANAGER FOR AN SASE WITH 1 UNIT OF POSTAGE.

INCLUDE AN SASE WITH 1 UNIT OF POSTAGE IN THE ENTRY FOR A COPY OF THE CONTEST RESULTS. RESULTS WILL BE PUBLISHED IN THE NEXT AVAILABLE ISSUE OF THE QRP ARCI QUARTERLY.

SEND ENTRIES TO:

RED REYNOLDS, K5VOL
QRP ARCI CONTEST MANAGER
835 SURRYSE ROAD
LAKE ZURICH, IL. 60047
U. S. A.

# A Rare Moment With Some Rare DX

**by Francis J. Merceret, WB4BBH**
**12801 S.W. 148th St. Rd.**
**Miami, Florida 33186**

I operate QRP because I enjoy it rather than due to some sense of moral obligation. When I'm chasing DX I have no reluctance to use whatever legal power I can command to bag a rare one. Malpelo Island is one of the rarest ones around and in anticipation of the scheduled DXpedition there in the fall of 1983 I had my linear and five-element tribander ready for combat.

I also had a serious timing problem. The expedition was set for the second week of October. On Tuesday evening of that week I would leave Miami for a three day seminar in Orlando. On Saturday, my XYL would meet me in Orlando to begin heading north for our vacation in the Carolinas. Malpelo had better be activated on Monday or I'd miss it!

As Monday evening waned and Malpelo remained silent, I did not. As I bemoaned my misfortune on the local DX repeater, K4CEF came on with a suggestion: "Hey Frank, don't you have a mobile rig?" I did. It was my little Yaesu FT-7, a QRP jewel capable of about 10 watts PEP out if you're transmitting downwind. Unfortunately, I told Bart, I didn't have any mobile antennas. "No problem," he said, "I have a set in my trunk. You can borrow them during your trip." QRP from the mobile wasn't quite half a kilowatt into five elements, but it would be worth a try. I met him the next day at a turnpike exchange on the way north and picked up a set of Hustlers. They fit the CB antenna mount on my Sentra just fine. Still nothing heard from HK0.

The seminar began on Wednesday, and so did the DXpedition. I ate dinner immediately after the afternoon session and headed for the car. One of Orlando's abundant lakes provided a ground plane to the south as I selected a clear site, parked, and fired up on 20 meters. The first few minutes was spent setting up and tuning the antennas for the frequencies targeted by the expedition. The rest of the evening was spent vainly searching for the pile-ups. Conditions must not have been good, or maybe I just had the wrong band. The beginning was not encouraging.

Thursday's operation was another matter. Quick QSOs with EA3BVS, TU2NW, J88AG, CE3CEF and several Canadians gave hope that maybe, just maybe, it could be done! Finding the pile-up was easy, but finding HK0TU was not. The expedition was working split frequency. Would they be within reach of the RIT on the FT-7? The Orlando DX repeater provided the frequency. Unfortunately, they couldn't provide me with a second VFO. The RIT wasn't even in the ballpark, and the little hope I had dimmed. Several hours later, the band closed with no on-frequency operation.

Friday afternoon operation on 10 and 15 meters captured stations in Canada and the Caribbean, but the principal quarry remained split and the pile-ups a hundred deep. I played with running the VFO back and forth between his transmit frequency and receive range, but even if he heard me, could I return to the same frequency closely enough for him to copy my report? Probably not. Time was running out. The expedition was leaving the island on Sunday. Saturday and Sunday were travel days and that could not be altered. Operation while in motion was impossible for several reasons. That left Saturday night and Sunday morning. I wasn't sure it was worth the effort. The odds seemed so small.

Saturday evening brought only J37AH and an earful of the continuing melee around HK0TU. I couldn't blame him for not working his own frequency. The cacophony was painful. Penetration was impossible.

Sunday morning dawned clear and crisp--a pleasant day for driving. The sand in the glass was almost gone. While the family caught breakfast next door to the motel, I made one last try to catch HK0TU. There they were on 20, split as usual. The FT-7 VFO spun back and forth to no avail. Then it happened: "North America stand-by. I will now take South and Central Americans on my own frequency. No North Americans please."

What to do? I always obey DX station's instructions, because to do otherwise leads to chaos. But this was a unique situation. In a flash I had made the decision and pressed the PTT. One word radiated out into the ionosphere: "QRP!"

"The QRP station please go ahead." My heart was in my throat as I keyed up again. "This is WB4BBH QRP mobile. Please forgive me, I am in North America and will stand-by until you're done with South and Central America, but I cannot work split and am QRP mobile. I couldn't work you any other way." Would he acknowledge me after I violated his instructions? Was it even me he was calling?

"WB4BBH QRP mobile this is HK0TU. No problem. You are 57 on Malpelo Island. How much power are you running?" My whole body tingled with excitement as I gave him his 59 report and a quick run-down on the equipment. I did it! No linear. No beam. Not even a second VFO. I did it!

I didn't work another station that entire trip/ Somehow it seemed inappropriate. As we approached Miami on the return leg, K4CEF came on the repeater and asked if I got him. My answer as a nonchalant "of course". The club's response was to give me their "South Florida DX Association DX Hog of the Year" award at the annual banquet the following February. The real prize, though, is the HK0TU card on the wall and the memory of the most thrilling experience I've ever had as an amateur radio operator.

HOMEBREW BONUS POINTS - HOMEBREW DEFINITION.

IN THE HOMEBREW SPRINTS AND THE SPRING AND FALL QSO PARTIES, BONUS POINTS ARE ALLOWED FOR HOMEBREW EQUIPMENT. HOMEBREW FOR BONUS POINTS INCLUDES TRANSMITTERS, RECEIVERS AND TRANCEIVERS ONLY.

FOR THE PURPOSES OF QUALIFING FOR BONUS POINT STATUS, THE EQUIPMENT MUST MEET ONE OF THE FOLLOWING CRITERIA TO BE CONSIDERED 'HOMEBREW'.

1. COMPLETELY HOME CONSTRUCTED GEAR, ORIGINAL DESIGN OR A COPY OF ANOTHERS DESIGN AND NOT A KIT.

2. 'KITS' WHICH DO NOT INCLUDE, OR HAVE AVAILABLE, A STEP-BY-STEP CONSTRUCTION MANUAL (IE. NOT A HEATHKIT).

3. KITS (SUCH AS HEATHKIT) OR COMMERCIAL GEAR THAT CONTAINS A MAJOR MODIFICATION TO IMPROVE OR ALTER SIGNIFICANTLY ITS PERFORMANCE. EXAMPLES INCLUDE REDESIGNED FRONT-ENDS, ALTERATION OF ONE BAND FOR ANOTHER BAND, OR COMPLETE REPACKAGING AND MODIFICATION INVOLVING A CHANGE IN USE SUCH AS HOME-BASED TO PORTABILITY. COMPLETELY HOME-BUILT TRANSVERTERS USED WITH COMMERCIAL GEAR ALSO QUALIFIES AS HOMEBREW.

   COSMETIC CHANGES SUCH AS ADDING DIAL LIGHTS, COMMERCIAL FILTERS AND LARGER CONTROL KNOBS DO NOT QUALIFY. A PURE VANILLA VERSION OF A HEATHKIT-TYPE KIT DOES NOT QUALIFY.

THE FINAL DECISION AS TO HOMEBREW QUALIFICATION RESTS WITH THE CONTEST MANAGER.

# My Three Year DXpedition To Okinawa

**by Lt. Col. Paul Schaffenberger, KB8N/7J6CAM**
**PSC #1 Box 20272**
**APO San Francisco, California 96230**

My Air Force career has taken me all over the United States and has provided me many enjoyable operating experiences. Unfortunately, I've spent the majority of my career in the north-central states and the midwest. Somehow, this didn't satisfy my desire to "see the world". After 16 years in the service, I finally got an assignment to a distant and exotic part of the world--the island of Okinawa.

Okinawa lies in the Ryuku chain, almost 500 miles south of the Japanese mainland. The island has cool, damp winters and hot humid summers. Population density is even greater on the island than on the mainland, yet there seems to be plenty of wide open space, particularly on the northern half of the island.

Most available housing on the island is small by American standards and generally quite expensive. Construction is steel reinforced concrete due to the summer typhoon threat to the island. Unfortunately, this severely limits the use of indoor antennas, since most of the walls tend to act like "RF screens".

We were fortunate to find a three-bedroom two-story apartment shortly after arriving on the island. While my primary concern was obtaining quality housing for my family, the location for antennas was almost too good to be true. Our apartment is and end unit, with an open field between us and the next apartment, a distance of about 120 feet. The thought of a long-wire strung between the two apartments really intrigued me. What's more, the location was ideal--just a stone's throw away from the East China Sea, with no major obstructions in any direction.

When it comes to putting up antennas, I've always followed retired Navy Admiral Grace Hopper's advice that "...it's easier to ask forgiveness than to obtain permission." Wherever I've lived, I've always put the antenna up first and stood ready to apologize if it offended anybody. Usually, the antenna was never even noticed! After befriending my neighbor in the adjacent apartment, my 120 foot longwire was quickly (and quietly) installed. In addition, I found a way to get up on my apartment roof and soon had a 40 meter folded dipole up.

My antennas were ready when my Omni A arrived in the mail from the states. Although I was excited to have the rig hooked up, I was also a little surprised to find very little activity on the upper portion of the CW bands. I soon realized that almost all CW activity takes place in the bottom 25 kHz of the band. I was soon SWLing juicy DX from all over the Far East.

Licensing in Japan is somewhat different that in the states. Servicemen here have the option of obtaining a military MARS license, which gives them a basic American ham license and a KA6 callsign and American ham privileges; or they can pay for a Japanese license, receive a 7J6 callsign and be governed by Japanese rules. Since I wanted to enjoy the status of being rare DX, I opted for the latter.

I paid approximately $90 for a one-year portable license (50 watts maximum output). The JARL acts as a broker with the government and helped me obtain my license in about 60 days. I'd be glad to get the info on licensing procedures to anyone who might be interested in obtaining a Japanese license.

My first few days after receiving my license were rather frustrating! My memory keyer had developed bugs. I swapped out several IC's and ran numerous tests, but no luck. I finally wired a push-to-talk switch to use as a hand key, but it was very difficult to use. I finally located a cold solder joint in the circuit board and, once repaired, I was in business.

My first day on the air was a real thrill. Other than the difficulty of getting used to the rather awkward callsign, I was soon making plenty of contacts. I can't begin to describe what it's like to DX from an island in the middle of the ocean. Signals just seem to pop in on all bands. My longwire loaded very well on 80, 40 and 20 meters. I've had no difficulty contacting the states and Europe on all three bands. It's a real treat to have a VU2, a YB0, or a UL7 calling YOU!

It is always my intent to operate QRP whenever possible, and I have been quite successful in that regard. In a recent JA contest, I worked several stateside stations while running just 5 watts output. To really compete with the mainland Japanese stations however, I often need to run the full 50 watts. I've noted that many of the stateside and European stations I've worked are using monster antenna systems on 40 and 80 meters. I've also found that there are very narrow time windows for working the states and Europe on the lower bands. For there to be a night path to the states, for example, I have to be on the air at dusk or shortly after (that's before dawn stateside). Working Europe is best just before dawn.

I wish that everyone could have an experience like mine. The courtesy of the Japanese operators is truly exemplary, and has contributed to the great experience of operating from here. They will often wait patiently as I finish with a pileup of Europeans before calling. I have been checking the QRP frequencies and hope that I can give out some QRP contacts from this terrific location between now and when I leave here in 1989.

# What's A Watt?

**by C.F. "Rock" Rockey. W9SCH**
**Box 171**
**Albany, Wisconsin 53502**

What's a watt to you? Sure, you've memorized some definitions: one volt times one ampere or one ampere squared times one ohm. Or how about 44.3 foot-pounds per minute or 0.00134 horsepower? All these definitions depend on other definitions that are really pretty abstract, even far out.

How about getting a gut feel for what a watt is? Go to the fridge and take out a 12 ounce can of your favorite brew or soft drink. Lift the full can straight up one foot from the counter. If you take one second to do the lifting, you have involved yourself directly in close to one watt of output. Now, as you sip your brew, I think you'll be getting a real gut feel for what one watt is.

Sometimes we want to explain our QRP exploits to non-amateur friends. How can we give them a realistic idea of how little power output we use to make those fantastic contacts? Perhaps these comparisons will be enlightening:

1. One tiny Japanese bulb decorating today's Christmas tree consumes about 100 milliwatts.
2. A one-cell "pencil" flashlight consumes about one watt.
3. A common two-cell flashlight consumes about 2.5 watts.
4. A six-volt spot-light lantern consumes about 5 watts; so does one of the old style Christmas tree bulbs.
5. An automobile tail light consumes about 6 watts.

When we realize that broadcast radio stations supply 5 to 50,000 watts to their antennas to cover 50 to 200 miles reliably, our 1,000 miles per watt achievements take on proper perspective.

# Awards

Fred Turpin, K6MDJ
Box 9145
Cedarpines Park, California .92322

| Call | Date | Basic | Endors., M/W, notes etc. | Power | Mode | Band |
|---|---|---|---|---|---|---|
| **KM/W** | | | | | | |
| WONGB | 1-9-88 | 1018 | To NF3K, 1202 M/W | .500 | CW | 14MHz |
| WB4LTS | 1-9-88 | 1019 | To W6SJC, 2070 M/W | 1.0 | SSB | 28MHz |
| NW2I | 1-17-88 | 1020 | To 7X2FK, 4196 M/W | 2.0 | CW | 14MHz |
| JP1NDO | 1-17-88 | 1021 | To KG6DX, 6444 M/W | .25 | SSB | 50MHz |
| VE3NVP | 1-29-88 | 1022 | To 4Z4DX, 1830 M/W | 3.0 | CW | 7MHz |
| VE3NVP | 1-29-88 | 1023 | To ZB2X, 1147 M/W | 3.0 | SSB | 21MHz |
| VE3NVP | 1-29-88 | 1024 | To TR1G, 1992 M/W | 3.0 | SSB | 14MHz |
| OK2BPG | 1-30-88 | 1025 | To UL7PAC, 1247 M/W | 2.0 | CW | 3.5MHz |
| KF5OW | 1-30-88 | 1026 | To T32BM, 1135 M/W | 3.5 | CW | 3.5MHz |
| KA0USE | 3-5-88 | 1027 | To YV6BXN, 1086 M/W | 3.0 | SSB | 28MHz |
| AA2U | 3-12-88 | 1028 | To KJ0H, 20 Mega M/W | .000043 | CW | 28MHz |
| KA4TMJ | 3-14-88 | 1030 | To VK4KRP, 1861 M/W | 5.0 | SSB | 28MHz |
| KA1MJR | 3-19-88 | 1031 | To N6PKT, 10,760 M/W | .250 | CW | 21MHz |
| WB2CZB | 3-19-88 | 1033 | To JA30AW, 2298 M/W | 3.0 | CW | 14MHz |
| KF5OW/M | 3-19-88 | 1034 | To YU3AI, 2862 M/W | 5.0 | SSB | 21MHz |
| JA1MAZ | 3-27-88 | 1035 | To CX7BY, 38,517 M/W | .3 | SSB | 21MHz |
| **DXCC** | | | | | | |
| W2JEK | 3-26-88 | 83c | 2.0 W/O or less | 2.0 | CW | Mix |
| **WAC** | | | | | | |
| HI3JEI | 1-17-88 | 462c | 5.0 W/O or less | 5.0 | CW | Mix |
| 5N9GOM | 1-23-88 | 463c | 5.0 W/O or less | 5.0 | CW | 14MHz |
| VE3NVP | 1-29-88 | 464c | 5.0 W/O or less | 5.0 | Mix | Mix |
| KF5OW | 1-30-88 | 465c | 10.0 pep W/O or less | 10.0 pep | SSB | Mix |
| **WAS** | | | | | | |
| WONGB | 1-9-88 | 259c | WAS 50, 1 to 3 W/O or less | 3.0 | CW | Mix |
| KB5CJB | 1-17-88 | 260c | WAS 10,20,30,40 | 5.0 | CW | Mix |
| WB0RXF | 1-22-88 | 261c | WAS 10,20,30,40,50 | 5.0 | Mix | Mix |
| N8HOB | 1-23-88 | 262c | WAS 10,20,30 | 2.0 | CW | Mix |
| VE3NVP | 1-29-88 | 263c | WAS 10,20,30,40,50 | 3.0 | Mix | Mix |
| KA4QZJ | 3-5-88 | 264c | WAS 10,20 **2XQRP** | 5.0 | CW | Mix |
| KA4TMJ | 3-14-88 | 265c | WAS 10,20 **Novice** | 5.0 | SSB | Mix |
| N5DUQ | 3-19-88 | 266c | WAS 10,20,30,40,50 | 3.0 | SSB | 3.9MHz |
| N5DUQ | 4-10-88 | 267c | WAS 10,20,30,40,50 | 3.0 | SSB | 7MHz |
| **QRP-25** | | | | | | |
| WONGB | 1-9-88 | 991 | QRP-25 | | CW | |
| WB0RXF | 1-22-88 | 992 | QRP-25, QRP-50 | | | |
| W6IUA | 1-23-88 | 993 | QRP-25 | | | |
| WOUY | 3-27-88 | 994 | QRP-25 | | | |
| KD8FR | 3-26-88 | 316 | QRP-100 | | | |

QNI-25 and QNI-100 certificates will be issued in the 2nd quarter.

# To Russia With Love

**Bob Brown, NM7M**
**504 Channel View Dr.,**
**Anacortes, WA 98221**

Like a diamond, there are many facets to ham radio and QRPing. An important one is the friendships that are formed, whether across the street or across oceans. We see this all the time but now, in the days of Super Power Politics, we are seeing new opportunities on the horizon, ways of lessening the tensions in the world. And this is true on the DX scene, involving the two main players, the US and the USSR. For example, here in the Northwest, the Western Washington DX Club (WWDXC) tried to foster a joint US/USSR operation on the Diomede Islands. Maybe you don't recall them, Big Diomede (USSR) and Little Diomede (US) straddling the International Date Line just west of Cape Wales, Alaska. Anyway, that effort was launched a couple of years ago but finally came to naught. However, faithful to their design, the WWDXC members got on the air and contacted as many UA stations as possible at the time planned for the operation.

It's not exactly clear where the Diomede Project went aground in the USSR. I gather it got past the Central Radio Club at Box 88, Moscow but things seem to be murky after that point. But discussions continue, now between WWDXC members and Russian hams like Gene, UA4RZ, in Kazan, and Victor, UB5WE in Lvov. This talk, while still in the formative stages, now speaks of a joint US/USSR DXpedition. The area is not settled on yet but discussions center around Armenia (UG), mainly as it is difficult for US DXers to make contact with the few UG's that are on the air. That would be the preference on the US side; the USSR, I am told by Jack Bock, K7ZR (a QRPer), would like to see a joint operation in Montana or Wyoming, again for similar reasons.

Hey, let's pause and think about that one! The distance from a site in the MT-WY area to Armenia (UG) is about 6000 miles or, if it is translated into QRP terms, about 1200 miles/watt for someone running a full gallon of QRP (5 watts). In these days of Cycle 22, when the solar flux is up to 145 and has sunspot numbers to match, I bet you or I could have a blast going into the field, turning a tri-bander to 35 degrees east of north and calling "CQ UA", then signing "/MT" or "/WY". Maybe our rf wouldn't raise any of those rare UG's, being devoured elsewhere between Leningrad and Rostov by the effective apertures of the "Monster Quads" the UA's are famous for. But working into the USSR from there wouldn't be all that hard and we'd sure have a good time fighting off the pile-ups and helping international relations by QSL'ing.

So think about it; you, too, can be a DX-object, right here in the USA. The only words of caution that I'd offer on this one are to avoid August, when Europeans traditionally take their vacations, and June, when mosquitos seem to hatch. Otherwise, have fun and when the bands close down, you can always make the US County Hunters happy with whatever county you happen to be in; look for them just above the QRP frequency on 14 MHz.

After that "Walter Mitty" diversion, let's return to something closer to reality, another effort to improve world tensions. This time I am referring to the USSR/CANADA Transpolar Skitrek. That effort started around March 1 and involved a skiing expedition from Severnaya Zemlya in the USSR to Cape Columbia, Canada via the North Pole - a distance of 1730 km. For that trip, communications were handled entirely by amateur radio. Back in late March, when the solar flux was up around 125, I managed to bust through the pile-up and work CI8C, the base camp at Resolute Bay, Cornwallis Island, NWT. SKITREK even has an award, the 1988 Polar Bridge Diploma, offered by the CRRL. By QRP standards, the requirements are a bit demanding - 3 different VE8's for NWT, 3 different UA9's or UA0's from the Asiatic RSFSR, then 1 base camp, 1 UA from around the Moscow area and 1 VE3 from around Ottawa. I suppose QRP'ers could do that one, depending where they're located. For me, the UA9's are the hardest, then Moscow and a base camp; on the East Coast, the UA0's might replace my UA9's. Anyway, write me if you get the award; I'll see to it that you get some public attention in the Quarterly.

Now let me turn to yet another DXpedition in the USSR where US hams might participate. This one was written up in "QRZ DX", a weekly DX news bulletin, back in early May. This DXpedition is being organized by Valery, UA0KK, and will be in the Soviet Arctic, on Ayon Island (69.83 N, 168.66 E) in February 1989 and has wide interest in ham radio circles. For example, it appeals to those DX'ers who count up the Russian oblasts they've worked. This QTH is in oblast 139, way over in western Siberia and not exactly a populated area. Another interest in the Ayon Island DXpedition would be for those who chase after islands, trying for IOTA (Islands on the Air) Awards. If you want a real QRP challenge, look into the IOTA game; it's rough.

**...you, too, can be a DX-object, right here in the USA.**

As for QRP interest in that DXpedition, I would think that Bill, KZ3I/KL7, would be a good one to be involved, if not on the trip then as one who could contact them easily. Bill is the nearest QRPer, on Kodiak Island and only 2261 km, or a single 1400-mile F-layer hop, from Ayon Island. By February '89, the sunspot number should be up to around 120, at least by the latest forecasts, and Bill should be able to work them around the clock: 06-16 UTC on 3.5 MHz, 03-19 UTC on 7 MHz, 21-05 UTC on 14 MHz and 21-04 UTC on 21 MHz.

The one person I know who is QRV for a DXpedition to the USSR is our Editor, Paula, WB9TBU. I'm not recommending this trip to her in spite of the fact that she has "winter training", year in and year out, in the environs of Chicago. I say that as Chicago might just look like the French Riviera, at least from the perspective on one on Ayon Island in February.

At that time of year, Paula's QRP could make it OK to Ayon Island but it would be a bigger struggle than Bill's as it's a 6200 km, 3900-mile 2F-hop, path off at 20 degrees west of north. She'd only be able to make it on three bands: 03-13 UTC on 7 MHz, 22-02 UTC on 14 MHz and 21-24 UTC on 21 MHz; further, band by band, her signals would be down by about 22 dB, or 4 S-Units, from Bill's. Maybe a better idea would be to have her as a relay station if KZ3I/KL7 gets involved.

With those two US/USSR ventures in the offing, it will be most interesting to see if they really come to pass. There are a lot of things stirring in the USSR these days, their hams now able to give their addresses on the air and QSL direct, instead of via Box 88. That will be a blessing as the last batch of UA QSL's I got had one in the pipeline for almost TWO YEARS! Can you believe that? Yes, you can, it's happened to you too, I'm sure. But I should quit this sniping and close on an up-beat note; so let's hope we can contribute to the new efforts to relax tensions. The easiest thing you can do is head off to MT or WY on your next summer vacation and be a DX object for the USSR. Think about it and explain to your "better half" just how important it would be, QRP DX'ing and also being part of a bigger venture. Who could object to that?

# Operating The IC-735 As A QRP Rig

by Brian Kassel, W5VBO/7
9200 W. Hollywood Ave.
Peoria, Arizona 85345-5529

Presented here is the method that I use to allow the IC-735 to run at low power levels. All of the adjustments described are accessed by removing the bottom cover of the radio. (See figure 1)

1. With the radio turned upside down, find the slide switch at the rear left of center. This is the switch that selects either 50 or 100 watts as the maximum output available from the transmitter. Push the switch to the rear of the radio. This is the 50 watt position.

2. At the rear right of the radio, find the pot labeled R-267. Turn the pot to full clockwise position. This is the minimum output setting. You should now have about 4 watts output with the front panel control set at minimum, and about 50 watts out at maximum. R-268 located just to the right of R-267 sets the maximum power output, when the front panel control is advanced to the maximum position.

3. At the front left of the radio, find the pot labeled R-361. If a lower power output is desired than already obtained, adjust this pot for the lower power setting desired. This adjustment is quite touchy at settings below 2 watts out, but if one is careful, outputs down to approximately one watt can be obtained and maintained in a stable fashion through a reasonable amount of vibration, as while operating portable or mobile.

Of course, step 3 will probably change the power output obtainable when the front panel control is advanced to the maximum position. With R-361 adjusted to 1.9 watts output, for example, the maximum obtainable with the front panel control at maximum is 30 watts.

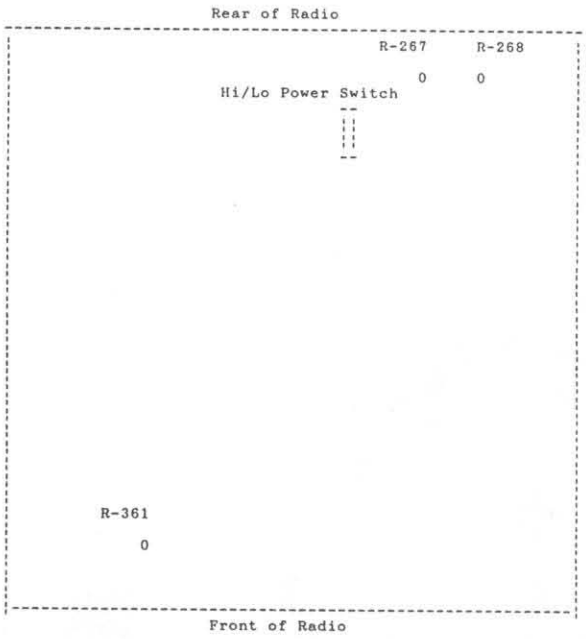
Utilizing these procedures, or a portion thereof, one should be able to obtain just about any power output that the unit can produce below the rate output of 100 watts.

To allow the IC-735 to transmit on any frequency in the range of 100 kHz to 29.999 MHz, follow this procedure:

1. Remove the radio top cover.

2. Remove the final amplifier heatsink assembly which will expose the PL board.

Figure 1




3. Find diodes D-33 and D-34. They are located in the left center of the board and are clearly marked with silk screening. They are mounted vertically with small insulation present on the exposed portion of the leads. Very few diodes on this board are mounted vertically, so the desired units are not as difficult to find as might first be believed.

4. Clip out these diodes. This is best accomplished by cutting the long, insulated lead only, which will allow soldering the unit back is the need or desire arises to restore the unit back to its original configuration.

# Power Reference Chart

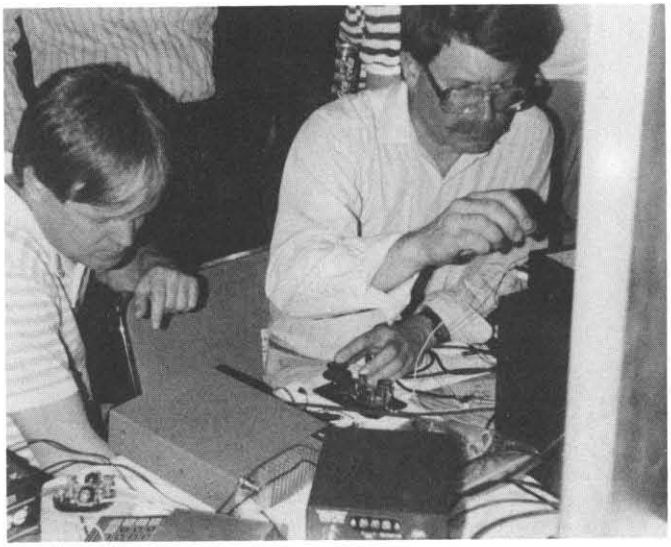
by Brian Kassel, W5VBO/7
9200 W. Hollywood Ave.
Peoria, Arizona 85345-5529

For those fortunate few who may have access to a power meter that reads in DBM, below is a chart for easy reference which will allow one to directly read watts from the measured DBM value, assuming that 33 dB of attenuation is used between the radio and the sampling lead. I personally use a Booton model 42-B, with fixed attenuators that were obtained through surplus outlets and flea markets over the years.

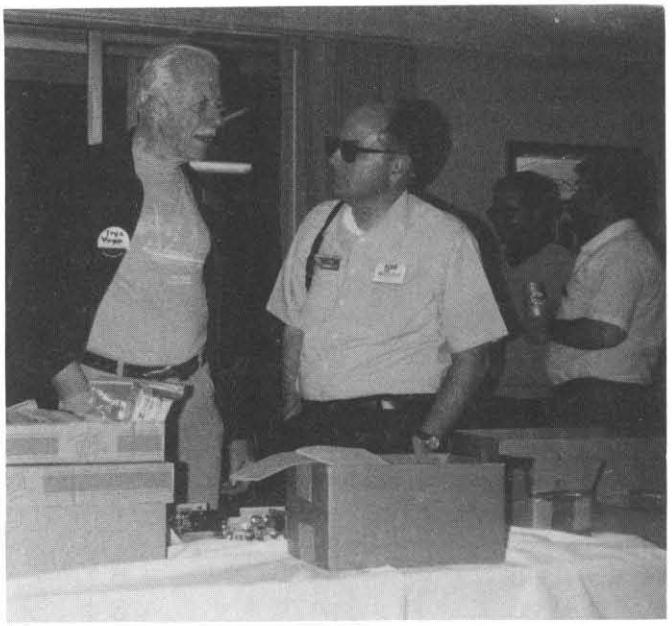
| Transmitter Power Output (watts) | Power Meter Reading (DBM) | Transmitter Power Output (watts) | Power Meter Reading (DBM) |
|---|---|---|---|
| 1.00 | - 3.0 | 7.00 | + 5.4 |
| 1.25 | - 2.1 | 8.00 | + 6.0 |
| 1.50 | -1.2 | 9.00 | + 6.5 |
| 1.75 | - 0.6 | 10.0 | + 7.0 |
| 2.00 | 0.0 | 11.0 | + 7.4 |
| 2.50 | + 1.0 | 12.0 | + 7.8 |
| 3.00 | + 1.8 | 13.0 | + 8.1 |
| 4.00 | + 3.0 | 14.0 | + 8.4 |
| 5.00 | + 3.9 | 15.0 | + 8.7 |
| 6.00 | + 4.8 | 16.0 | + 9.0 |

# DAYTON 1988 QRP FAMILY REUNION

Danny Gingell, K3TKS was not able to get his Net News column in before deadline. However, he did send his Dayton photos.



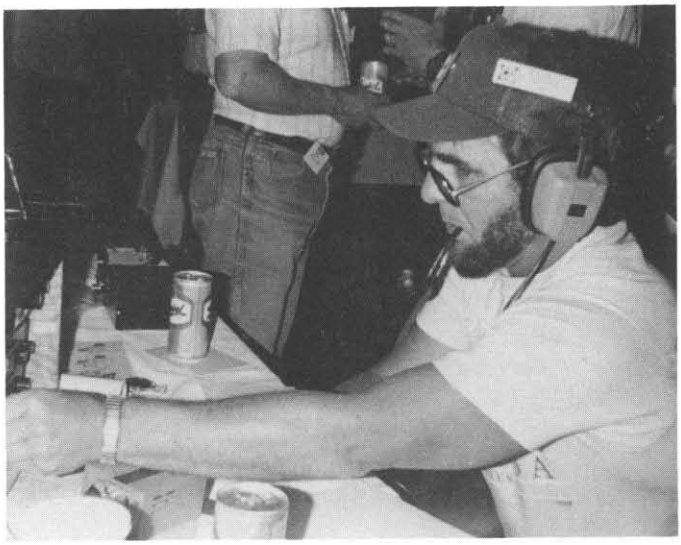
**Rich Littlefield, K1BQT (right) field tests his latest creation as Jack Frake, NG1G lends a hand.**



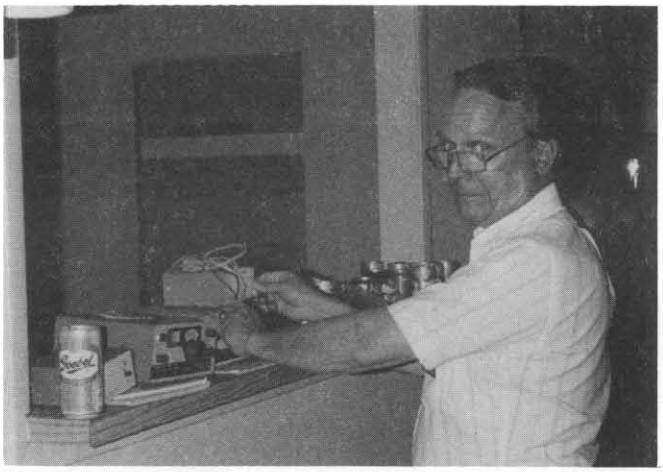
**Barney Scarlett, VE3NOA (left) and Tom Root, WB8UUJ, editor of the Michigan QRP Club's The Five Watter find a few things in common to discuss.**

Did we all have a good time? I think the photos tell the story.

**Doug DeMaw, W1FB was on hand and available for much interesting conversation. His donation of copies of his books for the Saturday night raffle was also very much appreciated.**



**Ade Weiss, W0RSP was at home at the key while in contact with Fred Turpin, K6MDJ who couldn't make it to Dayton in person this year, but he did in spirit.**



**Michigan QRP Club Contest Chairman Buck Switzer, N8CQA checks out the hospitality suite flea market offerings.**

**As QRP ARCI president Jim Fitton, W1FMR (front) tries to begin a meeting of the general membership, The Quarterly editor Paula Franke, WB9TBU in the back just can't help but be exuberant! (Photo by W0RSP)**

**Homebrew gear was spread all over the place in the hospitality suite. This was just one table. (Photo by WB9TBU)**

**What do QRPers do in the wee hours of the morning when sensible folk are sleeping? Well, (l. to r.) Bob Wallace, W1HH, Red Reynolds, K5VOL, Jack Frake, NG1G, and Ade Weiss, W0RSP find that poking through a flea market bag of miscellaneous components to be a just the thing to do. (Photo by WB9TBU)**

# DXpeditions

## PJ0M-Saba Island

An expedition to Saba Island, manned by 6M DX Society members Mario Karcich, WB2CZB, Jim Holt, N3AHI, and John Laing, W1EXC has been finalized for July 7-14. The special callsign PJ0M will be used. Operation will be all bands, 80-6, SSB and CW. Equipment includes an FT-757, two TS680s and amps, with wire antennas on HF and three and five element beams on 6M.

Particular attention will be paid to exploring 6M multi-hop paths to the U.K. and the rest of Europe, as well as to the Americas. In addition, QRP ARCI member WB2CZB will actively solicit QRP contacts. QSLing is via Mario K2MUB.

## /KP2-St. John, Virgin Islands

Also during the time period July 7-14, QRPers will be camping on the north beach of St. John at Maho Bay. Using solar power and homebrew rigs, as well as commercial rigs, the group will be concentrating on 2-way QRP contacts, particularly during the Homebrew Sprint on July 10. The group will also be running the IARU HF Championship.

Contacts will be mostly CW, since that's what we like best. Look for Paula Franke, WB9TBU/KP2, Larry Maso, NU4B/KP2, Fred Turpin, K6MDJ/KP2, and Jim Fitton, W1FMR/KP2, plus anyone else we pick up along the way.

QSL via NU4B.

# Idea Exchange

by Mike Michael, W3TS
P.O. Box 593 Church Lane
Halifax, Pennsylvania 17032-0593

**QRP Constructors Net**

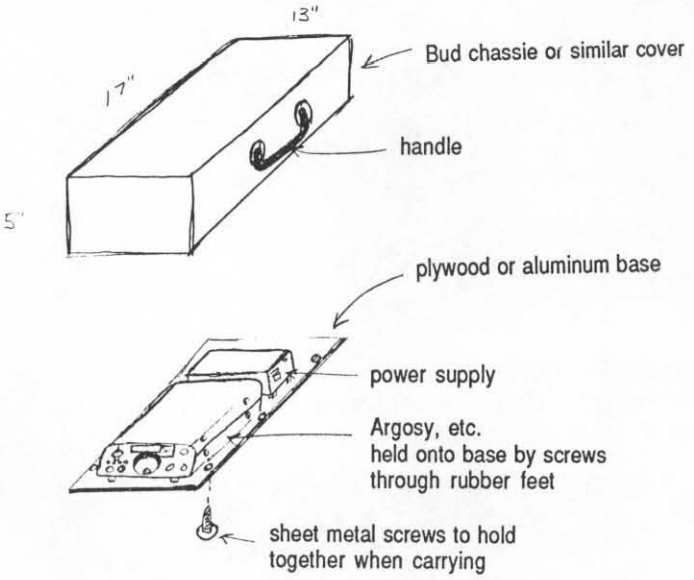
Any QRPers that would like to talk homebrewing can join in with KN1H, K2JT and myself on Monday nights at 9:30 local Eastern time. We try to meet around 3.760 MHz on 75 meter SSB. This is not really a net, but just a regular get together of a few homebrewers. Anyone with similar interests is welcome to join us.

**One Stop QRP Parts Supplier**

The Small Parts Center, 6818 Meese Drive, Lansing, Michigan 48911 is as close as I have found to a one stop supplier of QRP parts. Chris Hethorn, KM8X, the owner, is trying to have the most popular parts that QRPers would require. Listed are SBL-1s and ferrite and powdered iron toroids as well as most other hard to find items. To get your catalog, send first class postage to the Small Parts Center.

**Low Cost Equipment Cabinets**

Using sheets of P.C.B. or thin aluminum (from cheap cookie sheets) and blocks of wood or plywood (from orange crates or lumber supply or hobby shop) and a few #4 wood or sheet metal screws, you can make custom low cost QRP gear enclosures. They can be useful for small rigs. You also could build the equipment on the inside surface using the ugly construction technique.

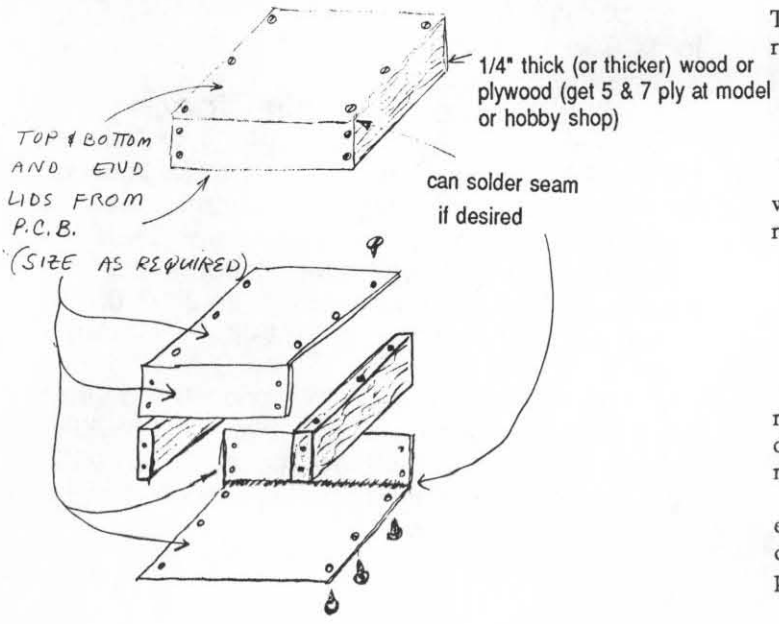



**Suggestions for Portable Equipment Cases**

Taking my QRP rig along on vacations is one of the things I enjoy doing, but getting my gear all beat up was not something I wanted. So I was trying to come up with some good, low cost "suitcases" but "zero" aluminum cases cost way too much for a QRP budget. After thinking about it for a few weeks, I came up with a few ideas:

1. Make my own.
2. Use a camera case or gadget bag.
3. Use an old case from a portable tube checker, etc.
4. Use a case from a "kiddie" phonograph.

I carry my HW-9 and power supply and accessories in an old aluminum tube checker case. The lid is removable. Along the side it has a small storage compartment with a lid where I put my key, antenna wire, earphones, etc. Using some foam padding, it works out nicely.




Another case is in the works for my Argosy and some smaller homebrew transceivers. I used a large bud chassie (5"x13"x17") for the cover and 1/4" plywood (or aluminum) for the equipment platform. You have to put on your own handle and feet, etc. To keep it together, I used a few sheet metal screws.

You can use a coin or your swiss army knife screwdriver to "open" the case when you are ready to set-up. A small plastic freezer box could also be bolted onto the base and used to hold accessories inside and wrap antenna wire around the outside.

**Simple Mods Improve QRP Operating Convenience**

Luke Dodds, W5HKA wrote to tell of a simple change made to his Century 21:

"The Century 21 is a viable QRP rig. Flea market prices are at $125-150. Using this unit at QRP power levels is difficult. The panel radial marks are 0-10 with 30 degree spacing. My rig settings were:

| Watts out | Control Knob Points |
|---|---|
| 1 | 1.5 |
| 5 | 1.7 (estimate) |
| 10 | 1.8 (estimate) |

The control pot is 10 K ohms linear taper. When replaced with a Radio Shack 10K audio taper pot (#271-1721) the readings changed to:

| Watts Out | Control Knob Points |
|---|---|
| 1 | 4.6 |
| 2 | 5.0 |
| 5 | 6.0 |
| 10 | 7.0 |

"This makes low power settings easier. Results from rig to rig will vary. One can tighten the knob set screw to place the desired repeatable setting at an even dial number for convenience.

"The Radio Shack pot is not a mechanic duplicate. I tightened the hex nut against the inner panel with the spacer loose on the pot shaft. Lacking a hex nut on the front panel isn't a problem. Just put the knob on the shaft."

# Wire Length For Toroids

**by Mike Czuhajewski, WA8MCQ/3**
**2934B Olive Court**
**Ft. Meade, Maryland 20755**

I don't like to waste wire when I wind toroids, or come up short in the end, so I need to know about how much to cut off the spool before I start. I didn't like the suggestion about winding the core first with a piece of thread, then removing and measuring it, since I don't enjoy winding toroids and don't relish the thought of doing it twice. The best solution was to take the published dimensions for the various cores, compute the length of one turn and place the information in a chart. Whenever I need to wind a toroid all I have to do is look up the core type and multiply by the number of turns, and add a couple extra inches for the leads.

The length of one turn is found by subtracting the inner diameter from the outer diameter and adding twice the height. In actual practice, this isn't quite the length of one turn of wire, but simply the sum of the published dimensions. Wire has finite thickness, plus the shape of the turn tends to be elliptical rather than rectangular, so the length of the wire will be somewhat longer than addition of core dimensions would suggest.

As a result of some winding tests I did, I added an additional 15% fudge factor to my original computed values before printing up the final chart. Hopefully, this will prove adequate in most cases. (Core dimensions were obtained from the March 1988 version of the Amidon flyer.)

I wound a few test cores with wire to see how actual lengths compared with the original calculated values. I put 25 turns of #24 wire on T68 and T50 cores and 25 turns of #30 on an FT37. The actual lengths came out 9%, 11%, and 13% longer than computed. Next, I put 25 turns of #24 on an FT82. Loosely wound, it was 9.3% longer, and with a tighter wind it was only 7.5% longer, so winding technique is a factor.

One final test to demonstrate effect of wire size was putting 20 turns each of #22, #30 and #36 on the FT82. The lengths were 17.32", 16.25" and 15.82". Since the published dimensions add up to .805" per turn, or 16.1" for 20 turns, and the #36 wire took less than that, you can see manufacturing tolerances come into play as well. The "fudged" length from the table for 20 turns on an FT82 comes out to 18.6 inches, which was more than enough for the different wire sizes tried here. Since the worst overrun I saw was 13%, I settled on 15% to give a bit of safety. Remember, though, that the extra 15% built into the table does not provide for lead length to connect the coil into your circuit. After you figure how much wire is needed for your coil, add a couple of extra inches for the leads.

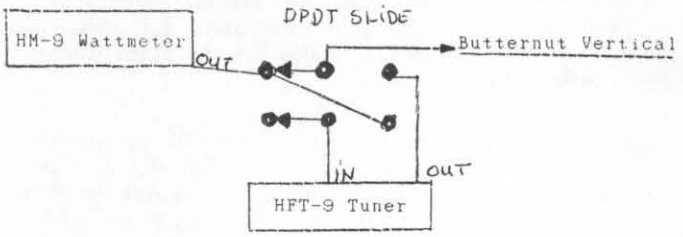
Before, I would just make a wild guess at how much wire I'd need, and occasionally find out it was six inches too short after painstakingly winding 35 turns of hair-thin wire on a microscopic core. Having this information has been a timesaver for me, and kept the language in the shack a bit nicer!

**HFT-9 and HW-9 Mods**

Dick McIntyre, K4BNI wrote to tell of some simple mods to his HFT-9 and HW-9:

"My HW-9 output is routed through a HM-9 wattmeter to a Butternut vertical set for the lower ends of the CW bands. This works well except on 80 meters where the range is limited and the HFT-9A tuner is needed for extended coverage.

"To simplify tuner insertion, a DPDT slide switch was wired as shown below. To avoid drilling new holes in the tuner cabinet, the unused open wire terminal was removed and the slide switch, mounted on a PCB, was installed. The removed terminal was taped inside the cabinet for possible future use."




Dick continues:

"The HW-9 audio thump suppressor mod in the April 1988 issue of QST does a fine job in my rig. Rather than use the "flying mod" to Q303's collector, I removed Q303 and mounted it and the balance of the Q3 circuit on a small PCB. After wiring and testing, I mounted the mod PCB to the TR board ground foil area (near removed Q303) with a small screw and metal standoff.

"If you use this method, do not forget to run a test lead from R371 (22K ohms) to the base of Q303. Because it was on hand, I used an MPF102 instead of the specified 2N5486. My version did not require an additional resistor at R2. I have not installed the other two mods described in the article."

| Toroid Size | Inches Per Turn | | |
|---|---|---|---|
| FT23 | .26 | | |
| FT37 | .5 | T37 | .49 |
| FT50 | .68 | T44 | .61 |
| FT50A | .79 | T50 | .67 |
| FT50B | 1.37 | T68 | .8 |
| | | T80 | .92 |
| FT82 | .93 | | |
| FT87A | 1.53 | T94 | 1.16 |
| FT114 | 1.13 | T106 | 1.57 |
| FT114 | 1.7 | T130 | 1.6 |
| FT140 | 1.73 | T157 | 2.02 |
| | | T184 | 2.66 |
| FT150 | 1.44 | | |
| F150A | 2.01 | T200 | 2.13 |
| FT193 | 2.22 | T200A | 3.16 |
| F193A | 2.51 | T225 | 2.24 |
| FT240 | 2.3 | T225A | 3.28 |
| | | T300 | 2.39 |
| T12 | .19 | | |
| T16 | .23 | T300A | 3.54 |
| T20 | .29 | T400 | 3.51 |
| T25 | .37 | T400A | 4.31 |
| T30 | .47 | T500 | 4.28 |

Length Per turn, in inches, of wire required to wind toroid coils. Add a few inches to wire length to provide leads for mounting.

# Member's News

By Fred Bonavita, W5QJM
PO Box 12072, Cap. Stn.
Austin, Texas 78711

There's a healthy assortment of members' comments from around the world this issue, so let's get with it:

**Fokke Gerrits, N7GQC/PA,** had to fall back on an "emergency" inverted vee antenna in his attic after taking down his Butternut Butterfly beam in preparation for a move to a new home in Hillegom, the Netherlands, but it apparently did not hamper his operating.

Among the stations worked with his HW-8 at two watts out and the indoor skywire was RA6ATZ. Fokke says his new home is in an area where outdoor antennas are not allowed, but he advises: "I'll find a way -- don't worry -- the fox always does!"

**Ed deBuvitz, W5TTE,** from Albuquerque, N.Mex., is prowling the 30- and 12-meter bands QRP with the help of a recently acquired Collins KWM-2 and a new Butternut vertical. His 5-watt signal landed F3NB, T22VU and some JAs on 10.1 MHz.

Ed says he finds 30 meters "the best for ragchews, DX, etc, but, I still need Delaware and Arkansas for two-way QRP WAS." Any help out there in radioland?

Speaking of Butternut verticals, board member **Chris Page, G4BUE,** reports from England he is running a pair of them in phase and pointed toward the Colonies. Chris says he's lopped milliwatt signals on 40 meters into the U.S. with good results.

And still on the subject of antennas, consider the plight of **R.S. "Whit" Whittle, VE7DCI,** who is operating his Kenwood TS-440 at 5 watts' output from his third-floor condominium in Vancouver, B.C., and is having a ball.

"No outside antennas are permitted," laments the longtime club member, "so my dipoles are on our balcony. I have a dipole up for each of the bands I operate." Your editor landed Whit on 10 meters during a brief opening in late March, and his signals were loud and strong.

Another veteran QRPer, **T.E. "Doc" Drake, W5TB,** is recently back on the air and running 1 watt from an HW-8 in his home in Arlington, Texas. Arlington is the site, by the way, of the 1989 ARRL 75th anniversary convention, at which there will be a QRP forum, awards banquet and other events. The dates are June 2, 3 and 4, so mark your calendar.

From Down Under comes word of a new kit sponsored by the CW Operators' QRP Club. **Len O'Donnell, VK5ZF,** has details of the 4-watt QSK transmitter for 80 meters and available as a complete unit or with any combination of its four modules.

Drop Len a line at 33 Lucas Street, Richmond, S.A. 5033, Australia, for more details. Send along a couple of IRCs, please. Better yet, $14 Australian (or $10 U.S. currency) will get you a one-year membership in that active club, including an air-mail subscription to Lo-Key, the group's quarterly newsletter, which makes interesting reading.

The VK gang can be found at 1815, 3530, 7030, 10,106, 14,060, 21,060, and 28,060 kHz.

From elsewhere in the Pacific, **Paul Schaffenberger, 7J6CAM/KB8M,** writes from Okinawa he can be found QRP on the low end of 80 or 40 meters around 1200 to 1300 UTC Sundays.

Paul, a lieutenant colonel in the Air Force, has been DXing from that tropic island for almost two years and says he enjoys it.

On the opposite side of the weather picture was **Peter Purdy, VE3NVP,** who was writing from the "great white North" at his snow-bound shack in Cornwall, Ont., where he'd just worked DF2DN/EA8 with 3 watts' output from his 515 Argonaut.

Peter barged into a pile-up on the bottom end of 40 meters, signing /QRP and hearing a reply of "QRP only." "I went back again and received a 599 report," he recalls. It was a good feeling but not a new country, he says.

His station includes two 515s; a Ten-Tec Argosy, to which he is in the process of adding a digital display; a Kenwood TS-130V; and a Yaesu FT-290R, an all-mode transceiver with 2 to 2-1/2 watts' output. Antennas are a triband beam at 40 feet, an inverted vee at 35 feet, and homebrew quarter-wave verticals for 40 and 80 meters, with more than a thousand feet of radials under them.

Finding out a nearby ham friend was building a Heathkit HW-9 transceiver, club member **Art Hember, KB6FJI,** of Glendora, Calif., thoughtfully sent him a unique gift: A membership in QRP ARCI plus a copy of the January issue of The Quarterly, which included several modifications to that popular CW transceiver. "I know he would appreciate the good information in that issue," Art said.

He might not have intended it as such, but member **Nobuyuki Yoshimoto, JR3ELR,** won the pun sweepstakes for this quarter.

He writes a column entitled "QRP a la carte" for the JARL QRP Club. It deals with "mobile hams." Ouch!

And the "Going Cold Turkey Award" this time goes to **Burl Keeton, N5DUQ,** of Oklahoma City. A newcomer to QRP, Burl says he's been "having a ball" on 15, 10 and 20 meters ("in that order") with a newly acquired Ten-Tec Argonaut 509.

"My Henry 2KD-5 amplifier is up for sale," Burl adds. We ran into him on the QRP Gulf States Net one recent Wednesday evening and had a nice chat.

QM/QRP: Keep an ear tuned for some QRP signals from W6RO aboard the Queen Mary in mid-September. **Lou Berry, KF5OW,** of Albuquerque, will be aboard the ship, which is moored at San Diego, Calif., on Sept. 12 and 13 beginning around 2100 UTC for 24 hours. Unfortunately, it's all ssb.

Lou will be on the following frequencies: 3903.5 kHz and 7233.5 kHz; 14.285-14.290 MHz; 21,380-21.385 MHz; or 28.385-28.490 MHz, as conditions dictate. Look for him Sept. 14 operating from the San Diego Zoo only on 3903 or 7233 kHz from around 1800 Pacific Daylight Time.

Lou, who will be operating a Yaesu FT-7 from his camper, will be listening for QRPers on the trip to San Diego and back. On the return leg, he's planned a stop at Old Tucson, Ariz., where he will be on the air from around 1700 local time on the same 80- and 40-meter frequencies. QSLs via his 1987 or 1988 Callbook address; include an s.a.s.e.

**Dan Holloway, 9V1VB/K6KMD**, reports from Singapore he is hoping to take advantage of a lull in things to build a beam "and start joining in on the action on 10, 15 and 20 meters."

"Presently I am using a Cushcraft R3 (vertical) with surprisingly good results, but there is no substitute for a beam," Dan writes. "I'm going to try one of the K4JZB `V beams' that were published in CQ in 1983 and 1984."

♦♦♦

From the Pacific Northwest, our illustrious club secretary-treasurer **Bob Brown, NM7M,** informs us **Jack Bock, K7ZR,** of Clinton, Wash., has re-joined QRP ARCI and is "burning up the DX bands with his mighty 500 milliwatts."

Jack is the famous "Nightmare Alex" correspondent for the West Washington DX Club's "Totem Tabloid," Bob says, and "he is now telling the QRO gang what you can do with a bit of skill and patience."

In a recent issue of the Totem Tabloid, Jack recounted landing a ZL after reluctantly cranking up the output from 100 to 200 and finally 500 milliwatts before snaring him. "The report wasn't earth-shattering, a mere 539, but (we) chatted for 10 minutes or so," he writes.

That QSO was good for 14,500 miles per watt -- a figure Jack later bettered with a 70,000-miles-per-watt QSO on 10 meters. "The dedicated band of QRP DXers proves over and over again that it can put a readable signal any where on this planet with single digit and fractional wattages," Jack writes. "It just takes a little longer."

♦♦♦

More 30-meter activity: After several years as an inactive ham, **Daniel N. Eggert, AC9E,** of Appleton, Wis., got going again by designing and building "a simple, portable rig to set up on our weekend camping trips."

What emerged was a 10.1 MHz transceiver which drew lots of on-the-air praise from others and inspired Dan to "put some polish" on the design. Watch for an article on it later in The Quarterly, and listen for him on 30 meters. On a recent Sunday evening on 30, Dan snagged F9EP near Paris.

♦♦♦

Informal QRP groups have cropped up in two Texas cities and welcome visitors.

**Ray Colbert, W5XE**, says the El Paso gang meets intermittently and when the spirit moves them.

Up in the Dallas-Fort Worth area, **Mike Kilgore, KG5F**, of Carrollton, counts about "15 hard-core QRPers," who gather after the monthly Dallas fleamarket known locally as the sidewalk sale.

"There are no rules, bylaws, dues, officers, etc.," Mike writes. "Just a nice, low-key bunch of people getting together every other month after sidewalk sale to have lunch and shoot the bull."

♦♦♦

While he was at it, **Ray, W5XE,** passed along an impressive list of DX worked recently, including **Ben, XE1C,** who was QRP from Cedros Island in Mexico's Baja Peninsula. Also landed was **Jacky, 3B8CF**, in Mauritius, on 80, 40 and 30 meters. "He must be a super op, has outstanding equipment or both," Ray says of Jacky.

Others worked include CI8CW, VP9NLR, UA6HSD/UA0Q, HI3JH/QRP, HK0BKX, UZ0LWC and W1BIH/PJ2. Ray also confirms how active his friend, Ed, W5TTE, has been lately from Albuquerque (see earlier item): "He beat me out on several calls. He is really putting that new vertical through its paces on 80 and 40 with the DX."

♦♦♦

There is no telling where he was for Field Day 1988, but **Rick Van Krugel, VE7FOU,** turned some heads for the 1987 outing. He operated an HW-8 from a public park in the heart of Victoria, B.C., using a wire up a kite string and a random-wire tuner.

In a classic understatement, Rick confesses: "The little station got some really funny looks from some folks passing by."

Rick also can lay claim to being the only "QRP-oriented ham operator in greater Bull Harbour (population 15)." He is a nigh-shift operator at the Coast Guard radio station in Bull Harbour and says that presents ample opportunity to contemplate things QRP between "official duties and the occasional surprise (you don't want to know about the surprises)."

♦♦♦

**Bob Wymer, KA6HGT,** is asking for some suggestions so he can get the output of his ICOM 720A below the 9-watt level. He's reachable at 1734 Walgrove Avenue, Los Angeles, California 90066.

"If I could get it down to 5 watts or less, I would have a great station here," he writes. "I can hear things on the 720A that are not readable on the 509 Ten-Tec Argonaut."

Bob's recently re-activated station also includes an HW-8, a full-size 40-meter vertical with three radials, a four-element Yagi on 15 meters and a Ringo AR-010 for 10 meters. "I look forward to meeting members on 21.060 and 7.040 MHz," Bob says.

♦♦♦

From San Antonio, Texas, **Dan Walker, WG5G**, reports his DXCC total is up to 163 countries worked and 151 confirmed. Among his recent contacts was 9M2AX long path with a 329 report.

♦♦♦

Instead of attending Dayton this year, **Bob Spidell, W6SKQ** opted for a business trip to Honolulu/Waikiki where he found time to share chopsticks with Oahu's QRPers **Ray KH6JOI, Alan AH6EK,** and **Doug KH6U.**

Bob reports that KH6JOI has been enjoying 10 meter activity with a "DX Handy" and recently made a QSO with a ZS6 with a simple dipole 1/2 wave above ground. Ray has an addition to his shack: a new HW-9 transceiver. Antenna experimentation on a 10 meter vertical whip with eight radials has been keeping Ray busy.

AH6EK is looking for a new QTH. His old QTH is plagued with CATV interference and power line noise. Alan did have a sloping 1/4 wave 40 meter wire from his shack to the top of a 40 foot palm tree with five radials. Fishing line and a weight tied to the tree kept it taut. The 1/4 wave sloper pointed east and Alan worked 10-40 meters. He says it works better than a standard vertical.

KH6U lives in Kailua overlooking the vast Pacific and is QRV with an HW-9 and TH3 beam on 20, 15 and 10. For 40 meters, Doug uses an indoor dipole in his attic. Doug wants to know where are all the QRPers on 10 meter CW and SSB.

♦♦♦

That's it for this quarter, gang. I have some material left over for next time, but please keep those cards and letters coming. It's always great to hear from you, and the members enjoy reading about what others are doing. Don't forget we can use an occasional picture -- but it's got to be a glossy, black-and-white print, please. The more off beat the photo the better the chance for it to run.

If you had an odd-ball Field Day operating location and/or experience, drop us a line about it. Your experience could qualify for some sort of award, provided we can twist the arm of our awards chairperson, **Fred Turpin, K6MJD,** to produce something non-libelous. Black-and-white photos will be accepted as evidence, as will the testimony of accomplices and/or a photocopy of the arresting officer's report on the incident.

# ✉✉✉ Letters To The Editor ✉✉✉

## It's My ARCI number, Not a Signal Report!

*Well, the April QSO Party is over and* I could make my usual tongue in cheeck complaint about some operators. But I won't. I used to be bothered by some comments, but now I just kind of chuckle. What's so funny? *It is just that people think an old style callsign* means an old timer, while a low QRP number means I don't know what I'm sending. Nothing could be further from the truth.

First of all, about my "old" call. W1X calls were issued in the late 1920's to experimental stations. W1XG was issued to General Radio Company and W1XM was issued to M.I.T. (which recently reclaimed the XM). As far as I can tell, W1XH was never issued to an experimental station and was issued to me in 1977. As to me being an old-timer, while I've been licensed 27 years, that hardly qualifies me. Concerning comments about my age, I was licensed very young and am barely over 30. OK, maybe I'm really 15 years over 30, but that's hardly old. (Excuse me, my nurse just brought in my Geritol.)

*Now as to my membership number.* Just to confirm what people hear, it does only have two digits. I got it as a novice in 1961. Back then the QRP power level was 50 watts INPUT, which was ideal for novices because *we could only run 75 watts back then. Anyway, that is* why, when asked for my number, I send "NR XY NR XY NR XY". If I sent "NR XY XY," people who expect four digits would hear "XYXY". I could slow things down by sending "00XY", but I don't want to.

Perhaps you can tell that I don't really mind people calling me OT or expressing surprise at my two digit number. I'd just like to let people know that they aren't hearing things. As the DXers say, you gotta believe what you hear.

Al Bates, W1XH
Chelmsford, Massachusetts

*With the newest numbers being assigned near 6500, it's nice to know that some of the old numbers are still around and active, and more and more of them coming back all the time.*

Editor's Note:

*Last issue Peter Purdy, VE3NVP wrote asking for a QSL route for HL7T. After it was published, I got a phone call from Norm Wald, KD9NT and a postcard from J.P. Frossard, KB4GID saying the DX station in question was actually 5L7T, Liberia. The QSL route is via YU1RL.*

## Calling All FT-7 Users

I'm currently working on an article detailing mods and other information not printed in the manual for Yaesu FT-7's. Could you give me any leads on other FT-7 users that may want to contribute ideas or information?

Steve Hutcherson, WB5CTS
P.O. Box 20829
Oklahoma City, Oklahoma 73156
(405)755-8699

*Consider the word spread, Steve. You may be interested in one of the articles included in this issue: A Rare Moment With Some Rare DX, which details DX adventures with an FT-7.*

## Wire Antennas

I was interested in the letter about using "wire" *antennas/QRP by Rock, W9SCH.* I became interested in QRP 5 months ago and also do not have a "gain" antenna, such as a Yagi or a quad. (Although, of course, long wires over a half wavelength exhibit gain over a *dipole in some directions, but also negative gain in* others.)

I have used short verticals on 40 an 80 meters (12 and 19 ft. high) over 48 radials, and an 80 meter half-wave dipole fed with 2" open wire line and transmatch on other bands. In a short time it has proven possible to WAC-QRP (in fact, in 3-1/4 hours in the recent DX contest--amazing to me!) and 95 countries toward DXCC-QRP.

Furthermore, today I was pleased to QSO North Dakota to round out my 5 watt WAS. I am now aiming for WAS-1 watt, for which I already have 48 states.

I am often asked by DX stations what kind of antenna I am using. The great majority have been on 14 and 21 MHz with the 80 meter dipole (25-30 ft. high). It seems that operating skills count for many dB in DX contacts, QRP or QRO. I am sure others have found this to be true also.

The point of all this is that high gain antennas are certainly not necessary for quite enjoyable DX contacts. *In fact, I have worked a number of rare DX stations with* QRP and wire antennas. Perhaps we can encourage others to try this by instituting contests and awards for simple antennas. This might be called "wire" or perhaps better "single element antennas." *This would not allow* fixed wire quads or Yagis, but would allow dipoles, long wires, loops (fixed), or single element verticals. (I do not count the radial system under verticals, since they provide a ground plane which produces an electrical image of the vertical element, and thus an effective dipole antenna.) The definition would rule out the use of switchable vertical or wire beams. The idea is to promote simple antennas that are available at low cost to every amateur.

John Stanford, NN0F
Professor of Physics
Iowa State University

# The QRP Candy Store

Operated for QRP ARCI by Bob Spidell, W6SKQ 45020 N. Camolin Ave., Lancaster, CA. 93534

The QRP Candy Store is a clearing house for all member or ARCI sponsored, QRP related products. Promote QRP in your area; send your ideas, suggestions and a sase to Bob Spidell, W6SKQ for store flyer.
LOGO: T-Shirts, Ball Caps, Hat Pins, Stickers, Stationary & more.

## Exclusive!

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Please make check payable to Bob Spidell.

## SUPPORT QRP ARCI & SPREAD THE WORD
## SIGN UP A NEW MEMBER TODAY!

---

**New Member/ Renewl Data Sheet**

Call_____ Age_____
Recommended by:_____
License Class_____
Other Calls Held_____
Bands Most Used_____
Please circle your interests and elaborate if desired on a separate sheet. Thanks!
Ragchewing, DXing, Contests, Traffic, Awards, Homebrew, Experimenting, CW, SSB, RTTY, ATV, Packet, VHF/UHF, Satellite, Other

Do you plan to participate in club activities? Y/N
Would you like to be a club officer/director? Y/N
Do you have access to duplicating equipment? Y/N
Are you interested in our awards program? Y/N
Have you applied for any of the club awards? Y/N
Are you in favor of QRP calling frequencies? Y/N
Are you in favor of member QSO parties? Y/N
Would you help write for the Quarterly? Y/N
What subjects?
What QRP awards/achievements have you won?
Why do you run low power?

[ ] Renewal (U.S. $10, DX $12) [ ] New Address
[ ] New Member (U.S. $12, DX $14) [ ]New Call

Name_____Address_____

City_____State/Country_____Postal Code_____

Amount Enclosed_____QRP ARCI #_____Callsign_____
Please make your check or money order payable to:
QRP Amateur Radio Club, International
***Please Do Not Send Cash***

Mail to: Bill Harding, K4AHK
10923 Carters Oak Way
Burke, Virginia 22015 USA

List File_____ MCert_____ Rep Cpy_____
QRP #_____ Inc Rec_____ Apl Rec_____

## First Sunday QSO Party
**(every first Sunday)**

| UTC | CW | SSB | Novice |
|---|---|---|---|
| 1400-1600 | 14.060 | 14.285 | |
| 1600-1700 | 21.060 | 21.385 | 21.110 |
| 1700-1800 | 28.060 | 28.885 | 28.110 |
| 1800-1900 | 7.040 | 7.285 | 7.110 |
| 1900-2000 | 14.060 | 14.285 | |
| 2000-2100 | 21.060 | 21.385 | 21.110 |
| 2100-2200 | 28.060 | 28.885 | 28.110 |
| 2200-2300 | 7.040 | 7.285 | 7.110 |
| 2300-0000 | 14.060 | 14.285 | |
| 0000-0100 | 7.040 | 7.285 | 7.110 |
| 0100-0300 | 3.560 | 3.985 | 3.710 |

## Spring/Summer Net Schedule
**(changes with Daylight Savings Time)**

| | | | | |
|---|---|---|---|---|
| TCN* | 14060 | W5LXS | Sunday | 2300 Z |
| SEN** | 7030 | K3TKS | #Wednesday | 0001 Z |
| GSN | 3560 | W5LXS | #Thursday | 0100 Z |
| GLN | 3560 | K2JT | #Thursday | 0100 Z |
| WSN-80 | 3558 | NM7M | #Saturday | 0300 Z |
| NEN | 7040 | WA1JXR | Saturday | 1200 Z |
| WSN-40 | 7040 | NM7M | Saturday | 1600 Z |

* On weekends of major contests, TCN will meet one hour later.
** If conditions on 7030kHz are poor, QSY to 3535 at 0130 Z (0030 Z Spring/Summer).
# Evening of the day before for W/VE

### Upcoming Contests

| | |
|---|---|
| Summer Homebrew Sprint (CW) | 2000-2400Z July 10 |
| Summer Daze Sprint (SSB) | 2000-2400Z August 14 |
| Fall QSO Party (CW) | 1200Z October 8 to 2400Z October 9. |

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