

QRP is!

(Confessions of a QRO op gone QRP) by Ed, W0YK

Wow ... what a blast! Operating QRP from 6Y during the CQWW CW Contest may be the highlight of my 40-year Ham experience so far. Imagine breaking 10 records on a weekend where the A-index was 95 and the K was 7. K2KW, N6BT, N6XG, KE7X and W0YK operated 6 single-op QRP entries (K2KW did two!) to surpass all 6 North American QRP SO single-band records as well as 4 of the 6 world records.

One month ago, I'd never operated QRP and had no desire to torture myself in that manner. Then, a few weeks before CQWW CW I was on the phone with Tom, N6BT, about some Force 12 antennas he was designing for my rather windy ridge top location in the Santa Cruz Mountains. He asked if I would like to join "Team Vertical" for the upcoming CQWW with their QRP caper. The 160 single-op position was open and 80 might open up depending on how Bill's, K6KM, health shapes up in the next few days. Bill had just returned from South America and was fighting something picked up from that trip. I was instantly skeptical about a QRP operation, then quickly became a believer because neither Tom nor team leader K2KW would go to this effort without there being a big opportunity ... or, just a heck of a lot of fun. Either way, I knew I'd enjoy myself. Little did I know how much I'd enjoy myself.

My first (dumb) move was to exhibit a bit too much excitement to my partner Mary ... and, communicate in a typical male fashion, totally ignoring all my "Mars-Venus" training. It went something like this.

(Ed) Team Vertical's invited me to Jamaica for CQWW.

(Mary) Neat. When is it?

(Ed) The weekend following Thanksgiving. It's really cool—we're going to operate QRP with the big Team Vertical antenna farm. We could break some North American and World records.

(Mary) Neat. When do you leave?

(Ed) Huh? Oh, the Monday before Thanksgiving.

(Mary) The Monday BEFORE Thanksgiving?

(Ed) Uh ... yeah, why?

(Mary) Well, I guess you won't be spending Thanksgiving with me and at this late date I'll have little chance to make other plans. How could you do this on Thanksgiving?

(Ed) That's when CQWW CW is ... every year. Thanksgiving is just a time marker pegging the annual occurrence of this important event. When I think of CQWW CW, I locate it in time relative to "Thanksgiving", but I don't actually think of the social aspects of "Thanksgiving" itself ... turkey, family, etc. I really hadn't thought of that angle until you brought it up just now.

(Mary) How could you do this?

(Ed) Do what?

(Mary) How could you leave me on Thanksgiving and not even discuss it.

(Ed) We ARE discussing it. You can go if you want. If you

don't want me to go, then I'll tell Kenny and Tom that I can't make it.

(Mary) Of course you're going to go. I want you to go. It's just that its Thanksgiving and I wasn't included in the decision.

(Ed) Decision? I'm asking you ... we're "discussing" it.

(Mary) Well, it sure doesn't feel like it to me. But, don't misunderstand. I really do want you to go. I'm just hurt that I wasn't more a part of the decision.

(Ed) [Totally confused] Let me get this again. You're hurt that I'm leaving you over Thanksgiving. Yet, you want me to go and are fully supportive?

(Mary) Sure. This isn't about your going or not. It's about how you aren't including me in the decision.

(Ed) I don't get it, but I really do want to go and you do seem to be saying that you want me to go but I have a feeling that you're not happy about something. (Etc., etc. for the next 2 weeks.)

(Later, down in Jamaica, I'm lamenting to Walt, N6XG, about this pre-flight domestic discussion and he tells me it was a snap for him. How so, I ask. Simple, he says, "I told my wife about the trip, but that since it would be over Thanksgiving, of course I wouldn't be going." She immediately says, "Oh no, you must go. It gives me the opportunity to go out to New York and visit our daughter. What a great coincidence." This sounded somewhat like my spousal conversation except his partner seemed happy. Then it hit me. Mars vs. Venus. We're focused on the facts; they're focused on the interaction. And, Walt, the old pro, deftly remembered his Mars-Venus education.)

OK, back to CQWW. I am off to a shaky start, but with only two weeks left, I need to prepare. Plane tickets ... no problem Mon ... 5 minutes on the Internet and I'm all booked. Radio? Ah, I have a TS-50 I took to Damascus for the YK0A operation back in '94 so I proudly announce to Kenny that I'm all set in the rig department. "Nope", he says, "not allowed." "What?" I exclaim. "Unacceptable receiver characteristics ... won't handle the pileups." "OK, what IS acceptable?" I ask. So, he explains the various radios that are fine, such as one of my TS950s, but the rest of the crew is taking Elecraft K2s. Not ever having experience with a K2, he is taking his JRC, also partly because he wants to work 6 meters. Tom is also taking his TS850 ... "just in case the K2s don't work out." So far as we know, no K2s have been tested in big multi-station expedition with potentially huge pileups. But, theoretically, the K2 should perform great.

Well, this was music to my ears. I love building stuff and it had been over 30 years since I built my last Heathkit or anything homebrew of any significance. So, this offered a great excuse to build a K2 which I had been coveting ever since Eric, WA6HHQ, of Elecraft had given a presentation at an NCCC meeting last year. At the time, my only concern was ... "What in the world would I DO with a QRP rig once I enjoyed the construction phase?" Elecraft is located just down the hill from me in Aptos, so I arranged to pick up my kit, along with all the various accessory kits, the next day.

With everything else going on in my life, including SS participation for the club, I didn't get started on the K2 until a week before departure ... not a lot of margin for issues. Well, other than an un-programmed IOC chip (which controls all the relays and other internal K2 devices), the kit went together flawlessly. The basic kit took me 36 hours and I got the audio filter and computer interface modules completed as well. That was all I really needed. Just as I had ordered the K2, we had learned that K6KM wouldn't be able to make the trip, so I was moved into the 80-meter position. Thus, I didn't need the 160-meter module and since we weren't operating SSB, I didn't need that one either. However, I just barely finished the rig before leaving and had no opportunity to operate it ... not a way to "prepare" for the trip.

I met up with the other 4 guys at LAX where our non-stop Air Jamaica flight originated. While I knew most of the guys, this was the first time I had met Fred, KE7X. Fred is a really cool EE professor at Bozeman University in Montana, and has been going on expeditions with Kenny for 10 years. Our flight was a red-eye arriving at 6:30am Tuesday morning before the contest. Two drivers filled their cars with our gear and antennas (with barely enough room for ourselves) and we headed for the villa, 35 miles away on the North coast of Jamaica, just West of Discovery Bay. The groundskeeper and 3 household staff greeted us



with a pristine tropical abode. Within minutes of arriving, we pushed the furniture out of the way, set up two large operating tables and soon

the living room was a nerd's paradise. Power cables were run from the breaker box and duct-taped to the floor.



Kenny, K2KW, by the 2-element Sigma-6 array. Behind him are the 4 element 10M European array, 4 element 15M European array, 2 element 80M array, and 160M inverted L.

Kenny unpacked his JRC and Acom 1000 Amplifier on 6 meters in 5 minutes! The 2-element Sigma-6 vertical array was erected on the coral with waves lapping at their bases and then the 150' of LMR-400 I brought down was connected. Kenny had 6 meters on the air roughly 30 minutes after arrival and worked the US and European openings as they appeared the rest of the day, interspersed with serious antenna construction.



Fred KE7X, Tom N6BT and Walt N6XG building vertical elements on the lawn

Ultimately, we built 23 vertical elements, configured into 4 basic antenna types:

1. SVDA (Switchable Vertical Dipole Array)--full-size center-fed vertical dipoles in a 2-element set of driver and parasitic reflector. The reflector is switchable to a director, but we didn't use that feature. All directivity was northward to our main running directions: Northwest (US) to Northeast (Europe). On 10m & 15m, 2 of these pairs were phased to create a 4-element array on Europe.
2. Sigma Vertical--shortened center-fed vertical dipoles with "T-bar" capacity end-loading. Also, configured in 2element parasitic driver/reflector pairs for 6 and 40.
3. 1/4 wave vertical--bottom loaded with a coil, two elevated tuned radials.
4. Inverted-L--compliments of a local 50' tree, two elevated tuned radials.

Here's the band by band antenna complement:

6m: 2-element Sigma manually "rotated" by moving the reflector to favor US or Europe depending on openings.

10m: 2-element SVDA on US/JA, 4-element on Europe.

15m: same as 10.

20m: 2-element SVDA pointed at 20 degrees.

40m: 2-element Sigma on US and a second array on Europe.

80m: 2-element base-loaded 35' tall vertical array pointed at 20 degrees.

160m: 50' tall wire inverted-L

By Tuesday evening all elements were constructed and 10/15/20 were operational. Wednesday, the 40's and 80's were erected and tuned.



Never operating from the Caribbean before, I wanted to get as much airtime as possible on the band before the contest, so I operated 80 through the night Wednesday, from about 5pm until 7am the next morning. For the first half of Wednesday night, the band sounded like 20 meters – no noise, and lots of loud Europeans. Then, the band noise rose up and stayed that way for the rest of our stay. Kenny and Tom say it's unusual to have such band noise at this location based on previous experience – usu-

ally the low bands are as quiet as a mouse. Thursday we constructed the 160-meter inverted-L and it played wonderfully Thursday night. The plan was for me to do both 80 and 160 as single-band efforts ... that is, until Tom came down with a severe case of the flu. On Friday, he began to get better close to contest time, but was worried that he wouldn't have the stamina to battle his 40-meter assignment all night. So, we decided that I would do 40, Tom would do 80 as best he could, and Kenny would put in a few hours on 160 after 10 died.

I had to quickly adjust my mind from 80 meters to 40 meters as we reconfigured stations just a few hours before the contest by moving coax lines, coax switches, and building new CT Bin files. On 40 prior to the contest, I could clearly and loudly hear all over Europe, but no one would come back to my calls. I was enlightened that in 6Y, you can hear Europe on 40 and 80 a couple hours before being able to work anything there, even with a kilowatt. Eventually, my QRP signal was heard and I began running stations. I couldn't believe how well 5 watts was playing. My excitement and anticipation for the contest was quickly squelched when the contest bell went off. I couldn't find a running spot anywhere in the lower 80KHz of 40 meters! In the first 8 minutes, while everyone else was wildly running, I managed only one W8 in the log. Experimentally, I discovered two things. First, I had to add "CQ" to my CQ message ... the 6Y4A call (sans kilowatt) wasn't enough in the initial bedlam. Second, I had to "Search and CQ" because holding a frequency longer than a few minutes proved futile and pouncing just as much so. While trying to run, I squeezed



Team Vertical: (L to R) Fred KE7X (6Y9A), Walt N6XG (6Y2A), Kenny K2KW (6Y1A & 6Y0A), Tom N6BT (6Y8A), Ed W0YK (6Y4A).

between two loud stations and was constantly moving my TX VFO 50-100Hz back and forth to optimize my running frequency. Eventually, the band settled down and I settled into my techniques that began the run. Then, I had the opposite problem ... the pileups are HUGE. Kenny & Tom warned me about them, but you have to hear them to believe it. Fortunately, the K2 RX handled them quite well. For those of you who heard Eric's RX presentation at the November meeting, everything he said proved out. The RX really handled the signal overload. My problem then became my own personal ability to pull out the calls from the bedlam. The next 14 hours were incredible. What a high to be running Europe, USA, JA and the Pacific around 10z. This was what all the preparation was for and I thoroughly enjoyed it.

However, my excitement kept me from sleeping enough during the day, and Saturday night was a bit more difficult. It was also a series of ups and downs. A JA called in at 0700Z, uncharacteristically early and actually prior to his sunset, so I thought I was in for a very hot band that night. Then, quickly, the band died, even the US stations were hard to hear and got watery and fluttery like a polar path during a disturbance. Somewhat later the band peaked again and I started running JA's (along with the US and some Western Europeans). But, suddenly, "poof", no pileup again.

The net result was that my QSO total dropped way below my anticipated rate and overall goal. It was a constant battle to hold a CQ frequency. Right in the middle of my CQ some European and an occasional W would just start CQing on my frequency. I had previously determined that fighting it out was futile, but by now I was feeling more confident, so I pushed back and guess what? I was able to chase stations off my run frequency. Not all the time but more than I would have thought possible. Then, VQ9X starts CQing beneath my CQ's. He obviously couldn't

hear me, and I missed a new zone and country. A 4X called me but didn't confirm my report, so I had to scratch him from the log. There were many mults like this that slipped through my fingertips. I feel that my mults (22 zones and 72 countries) were lower than they could have been. Looking at other 40 meter results today, convinced me of this. I also felt I could have gotten more out of the pileups, so more practice in that department is planned this coming year. However, 23 hours into the contest (with solar indexes of A=95, and a K=7), I surpassed the 40-meter QRP world record!

All and all, I was learning a whole new kind of operation ... QRP with atypically high antenna gain and a great location for running the USA, EU, and JA. As Kenny explained at the meeting last month, 5 watts is "only" 4 S units down from full legal power. And if your antennas/location are optimized, as ours were, for a S9++ signal advantage over the typical expedition Yagi, then ta daa ... it is very much possible to "rock 'n roll" with QRP. This tiny 3lb K2, that is mostly air inside anyway, was commanding the world. What a thrill indeed.

The net result is that I have a completely new perspective on "QRP". Transmitter power is just one element of the total system, and not nearly as important as other elements, like location and antennas that are matched for that location. This is not about verticals being better than Yagis. It's about verticals exploiting a saltwater location in a way no Yagis could ever do. Even the 23 vertical elements on our oceanfront didn't look that impressive compared to how they performed. Moreover, the analysis supports the operating experience.

Yes, indeed, "QRP is!"

Thanks again to Force 12 for the loan of the antennas, and to Elecraft for technical support.

Final Results by Band:

Band	Call Used	Op	QSOs (duped)	Z	C	Claimed Score	NA Record	World ¹ Record	# Of CQs ²
10	6Y1A	K2KW	2,578	31	99	843,700	242,686	431,060	5,523
15	6Y9A	KE7X	2,166	28	93	637,670	186,102	364,344	4,819
20	6Y2A	N6XG	1,209	23	64	238,728	208,392	230,528	3,706
40	6Y4A	W0YK	1,337	22	72	298,168	90,240	117,262	5,632
80	6Y8A	N6BT	588	14	55	86,763	6,389	105,595	937
160	6Y0A	K2KW	162	6	17	7,567	2,232	28,670	198

¹Note that none of the previous World Records came from NA, so if our claimed scores hold (and are not surpassed), we will have brought 4 World Records to the region.

²Does not include multiple CQ's from the CT "Repeat" function, only the initial CQ button push! Looks like W0YK holds the CQ record!