

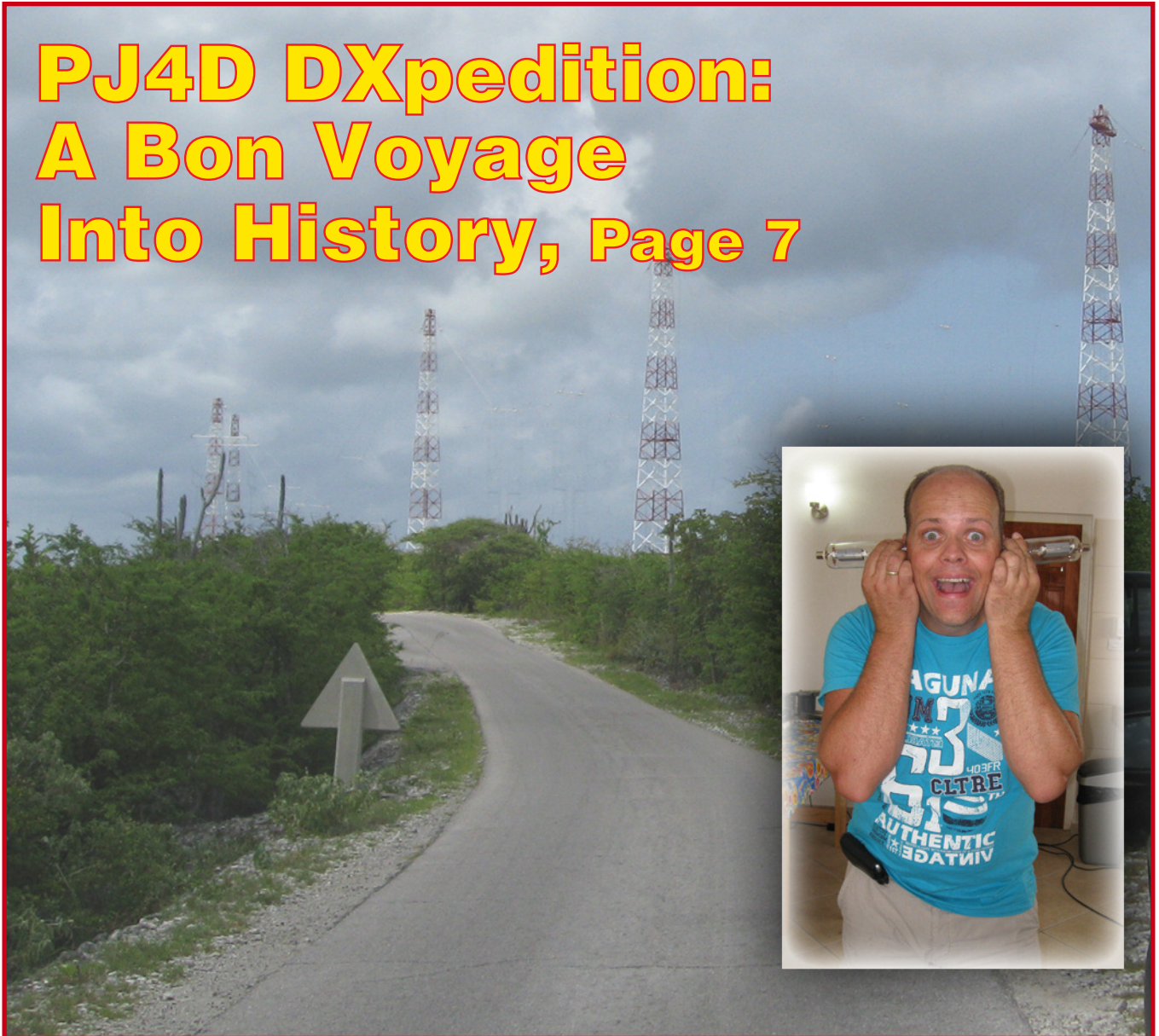
WorldRadio

ONLINE

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NEWS • FCC • DX • SATELLITES • CONTESTS • HAMFESTS • AERIALS • CW



FCC Makes Sweeping Changes to Vanity and Club Call Sign Rules

A *Report and Order* released by the Federal Communications Commission in early November makes “both major and minor changes to the vanity and club call sign programs,” and finalizes “a *Notice of Proposed Rulemaking* (WT Docket 09-209) issued a year ago,” writes Frederick O. Maia, W5YI, in his *Washington Readout* column in January’s *CQ Amateur Radio* magazine.

Areas impacted by the ruling include the license cancellation procedure, availability of a deceased licensee’s call sign, exceptions to the two-year waiting period, ineligible applicants, club station trustees, limits on club station licenses, available call signs, restrictions on call sign availability, renewal fees, and some minor “non-substantive amendments to the amateur service rules,” writes W5YI.

Complete details are carried in this month’s *CQ Amateur Radio*. (CQ)

Glenn Baxter, K1MAN, Cited for Failing to Pay Fine

A complaint filed in the U.S. District Court of Maine alleges Glenn Baxter, K1MAN, had not responded to a Federal Communications Commission order to pay a \$21,000 fine for violations of Part 97 of Commission rules and regulations, according to published reports.

The civil action in late October was brought by two U.S. attorneys in regard to a previous ruling that determined Baxter willfully and repeatedly violated Section 97.101(d) – making transmissions on top of existing communications on 3.890 MHz – and Section 97.113(a)(3) – transmitting communications in which the station licensee or control operator has a pecuniary interest.

Baxter had been cited for willful violation of Section 97.105(a) – exercising control over station – and Section 97.113(b) – broadcasting – and for “failure to file requested information pursuant to an Enforcement Bureau directive,” as well, the reports said.

Baxter in October filed a \$50 million countersuit against the United States and FCC, denying “each and every allegation of wrongdoing and/or FCC rules violation described in the complaint.” (ARRL, other sources)

Radio Amateurs Assist in Thailand Flood Relief

Amateur radio operators in two flood-stricken areas of Thailand helped authorities set up a communications center using the call sign HS3AN, according to Thailand’s amateur radio society RAST.

HS4XU said teams have “pitched in with soldiers, rescue volunteers and workers from various foundations by helping flood-stricken people with food and to ferry expectant mothers to hospitals,” according to Amateur Radio Newsline.

The club station HS3AN has been coordinating relief work with the help of other amateur radio communications centers

based in three other cities as well, according to ARN. “The operators have also been providing information to people traveling to and from flood-stricken area.”

There are more than 100,000 ham radio operators in Thailand. For updates: < <http://bit.ly/8x1G11> >.

Air Force MARS Completes Transition By Naming New Chief

Richard Jensen has been named Chief of the Air Force Military Auxiliary Radio System (MARS), completing the final phase of the organization’s leadership transition, according to David J. Trachtenberg, public information officer.

A program manager at the Air Force Network Integration Center (AFNIC) at Scott AFB, Illinois, he replaces TSgt. Jason E. Sandifer, who has served as interim Chief since May 2010. Scott AFB is home to USAF MARS.

Jensen’s experience includes providing training and communications support to the Air National Guard and setting up phone patch links between ground stations and military aircraft in flight. In early 2010, Jensen played a role in disaster relief efforts in Haiti.

“I am honored to have been selected to lead this organization of dedicated volunteer radio communicators and enthusiastic about my new responsibilities,” Jensen said. “The members of Air Force MARS can be rightly proud of their service to the nation and I am eager to work with all of them as we enhance our ability to serve those who serve us.”

Ugandan Shortwave Intruder Identified on 40 Meters

A station identifying itself as Radio Uganda is refusing to leave the amateur-only portion of 40 meters after notification from the government, according to published reports. The African station is on 7.195 MHz.

Following notification by 5X1JM, the Uganda Communications Commission informed Radio Uganda that the broadcaster is not permitted to use the frequency. The station, however, continued to use the frequency. Uganda radio amateurs have been authorized by Uganda Communications Commission to use 7.1 to 7.2 MHz. (5Z4NU)

G3XBM’s 500 kHz WSPR Signal Heard In Finland

Running well under one watt of power, Roger Laphorn, G3XBM, says he was using the digital mode WSPR on 500 kHz October 21, 2010 when “quite unexpectedly he began receiving a string of reports from Paul Henrik, OH1LSQ, in grid square KP03sd” in Finland, more than 1,076 miles away, according to published reports.

From Cambridge, England, “Laphorn said that to him these were amazing reports pushing his best DX on the band to new levels. This is because he runs only a few milliwatts of effective radiated power on that band. He also notes that his transmit antenna is a very simple vertical loop made with wire only 1 millimeter thick.” (Southgate)

ARRL June VHF Contest

New 6M Records Set in 2010!



Ted Saba, KN5O, with his IC-756PROIII achieved the top Total 6M Score in the Limited Multi-Operator Category in the June 2010 VHF Contest!

Joel Harrison at his 6M station, represents team W5ZN's achievement of the 6M Grid Square Record in the Limited Multi-Operator Category.



"Most HF equipment manufacturers build their radios and add 6 meters simply as a novelty add-on, relying on preamplifiers and filtering designed for HF. Icom chose to take the initiative to engineer and implement components specifically for 50MHz in the IC-7700 making it a clear choice for HF and VHF operators alike."

— Joel Harrison, W5ZN

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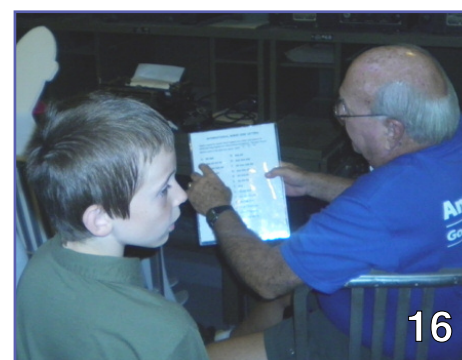
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On the Cover: The antenna farm of Radio Netherlands Worldwide service has a looming presence on Bonaire. It was used by PJ4W during the 2010 DXCC event, with all operators on the island – including the PJ4D team – participating in operations from its location. “It’s amazing what 200 watts into multiple 300’ Sterba curtains can do!” said DX World columnist Kelly Jones, NØVD. Meanwhile, Marco Van Dijk, PE2MC, of the PJ4D team, (inset photo) has a pair of 572B final tubes protruding from his ears during his faux Dr. Frankenstein Experiment.
(Photos courtesy of NØVD)



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12m 3

10m 3

6m 3

Refer to our website for more technical specs and gain figures as they are released. The DB 11 will be available in the Fall of 2010. Get your name on the order list now.

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reef DXpedition.



Resolving to Make 2011 the Start of a Decade of 'Getting It Done'

That bright light you see over there on the horizon is the dawn of 2011 and the *Twenty-Teens*. It's a two-fer that offers the amateur radio community a pause for reflection, projection and lots of action.

On a grand scale there are the ongoing challenges of attracting more, younger people (how fitting for the *Teens*) and families to our hobby. There are important initiatives regarding protection, expansion and efficient utilization of frequency spectrum. New modes. New technologies. New ways to operate. You get the idea. It's an exciting time.

But on a micro level it's a chance to look inward, as well. Ask yourself: *How can I make ham radio more interesting and fun?*

We tossed around the idea with readers on a Sunday evening late last year during one of our **WRO Live Online Chat** sessions.

Modest beginnings in 2011, you know, have the potential to turn into a full decade of opportunity. Here's a sampling of enthusiastic radio amateurs who *reflect, project* and are ready to *act*.

Barb Conciatori, KI4VOV, wrote from Palm Harbor, Florida that her resolution is "to try to get more of our East Lake CERT (Community Emergency Response Team) members to become licensed hams. It's a tough sell."

Angel Santana-Diaz, WP3GW, of Trujillo Alto, Puerto Rico wrote: "Since I have done much, my New Year's resolution is to at least work 100 countries every year, so as to participate on the *CQ DX Marathon*."

Ken Muggli, KØHL, of Glen Ullin, North Dakota, wants to "continue to improve my CW skill." Ditto for **Fred Bruey, KD8IXP**, of Jackson, Michigan.

Ray Lajoie, KB1LRL, of Fitchburg, Massachusetts, wants "to get an RTTY station working and start getting into some contests." He also has a Viking Valiant 2 he "wants to get going."

John Phillips, KA9PGC, of Michigan City, Indiana, has a goal "to work more field operations" from his motorcycle mobile.

From Glassboro, New Jersey, **Cory Sickles, WA3UVV**, said he wants "more 'on air' time from home and to increase my code speed to a consistent 25 wpm and higher."

Jack Ciaccia, WMØG, of Boulder, Colorado aspires to "learn a new mode when I can. I am now trying to become more proficient with D-STAR operating techniques and gear."

Paulo Inojosa, PY7COU, of Jabotao, Brazil is "trying to get practice on landline Morse. At this very beginning, I'm using the MorseKOB program < <http://bit.ly/aOA7un> >." His eight-year-old son Bernard is trying CW, as well.

From **Gene Bartsch, W17N**, of Banks, Oregon: "Resolutions? Yeah, send QSLs to a few more guys I've worked on 160-meters to finish 160-meter DXCC."

"One of my short-term New Year's resolutions . . . I bought an old DX-35," wrote **WRO Propagation columnist Carl Luetzelschwab, K9LA**, of Fort Wayne, Indiana, "and need to get it working."

Ron Erickson, KØIC, of Essex, Iowa, said he has "a Kenwood TS-520 that needs some work for the New Year. I also want to put my Valiant 1 and CE-10B on 160 meters."

From **Nate Bargmann, NØNB**, of Marysville, Kansas: "A new QTH? Oh, wait, that's every year . . . I guess I'll just resolve to continue to have fun with ham radio."

Let's Hear from You

What are your aspirations, goals and projects for 2011 and the *Twenty-Teens*? Diving into a new mode? Is your focus on antennas? DX and contests? Restoring vintage gear? Space operations? Please let us know. Drop an e-mail to: WorldRadioOnline@gmail.com and we'll share your plans with **WRO** readers.

Upcoming Internet Chats

Want to join us on the Web? 2011's **WRO Live Online Chat** schedule is taking shape nicely: **January 9, February 6 and March 6**. If there's enough interest, we'll hold a mid-week session or two, as well.

They all begin at 8 p.m. Eastern time Sunday (0100 UTC Monday) and are casual, friendly affairs. Visit: < <http://www.WorldRadioOnline.blogspot.com> > to sign-up for an e-mail reminder that a chat is imminent. You can also see **REPLAYS** of previous chats on the site.

— **Richard Fisher, KI6SN**

WorldRadio Online

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A publication of



CQ Communications, Inc.
25 Newbridge Road
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WorldRadio Online, Year 40, Issue 6, published monthly by CQ Communications, Inc., 25 Newbridge Rd., Hicksville, NY 11801. Telephone 516-681-2922. FAX 516-681-2926. Web Site: <<http://www.cq-amateur-radio.com>> Entire contents copyrighted © 2010 by CQ Communications, Inc. *WorldRadio Online* & CQ Communications, Inc. assume no responsibility for information, actions or products on/from external links/sites.



The PJ4D 10/10/10 DXpedition, Part I: Getting to Bonaire Was Only Half of the Fun

By Kelly Jones, NØVD

If you have been a reader of this column for any amount of time, you know Bonaire, PJ4, is one of my favorite DXing destinations. I have had the good fortune of operating both casually and competitively from this little island gem.

I have also been fortunate to have fostered many local friendships over the years as a result of my visits. This is how the story of PJ4D began.

In 2006 I was asked to be a team member that was planning to operate in the CQWW SSB contest. Having never been to Bonaire, I thought it would be an interesting place to visit.

During that DXpedition, I had the pleasure of meeting Hans van Hese, PJ4LS, and Peter De Graaf, PA3CNX – now PJ4NX.

At the time Hans was the only active ham on Bonaire. Peter was a regular visitor to the island. In fact, he was in the process of moving from The Netherlands to Bonaire.

PJ4NX and I became good friends over the years. At some point Peter asked if I would be interested in participating in a DXpedition when the Netherlands Antilles disbanded. Of course, this was a *no-brainer* and initial plans were laid to activate a new DXCC when the time came.



Operators on Bonaire gather for an *all teams* photograph a few hours before the excitement begins. **Front row** from left: PJ4LS (PJ4LS), K6AM (PJ4D), PE2KY (PJ4D), DL9USA (PJ4I), NØVD (PJ4D). **Back row**: PA3GVI (PJ4B), PJ4NX (PJ4D), WØLSD (PJ4D), PE2MC (PJ4D), PA8F (PJ4B), PA8A (PJ4B), PG4M (PJ4D), PAØGMW. Arriving on the island after the photo was taken were W4PA (PJ4D) and DJ8NK (PJ4N). The banner and t-shirts were provided by the Nippon DX Association, a Bonaire 2010 sponsor. (Courtesy of NØVD)

The Journey to 10/10/10

Determining that *time* was like spinning a roulette wheel. There were several false starts with regard to the DXCC status of the Netherlands Antilles.

In both 2007 and 2008 dates were set for the political changeover. However, as each date approached, something would force a postponement. Nobody should have been too surprised by the fact the target dates could never seem to be achieved, however. This is *the islands*, after all, where things are laid back and time crawls.



PJ4D team members operating at the Radio Netherlands Worldwide location as PJ4W included (foreground) Marco Van Dijk, PE2MC; and (background) Peter De Graaf, PJ4NX; Bert Van Oort, PE2KY; and Michiel Minderhoud, PG4M. (Courtesy of PE2MC)

Finally in early 2010, a potentially achievable date was announced: 10/10/10.

Pushing Ahead

With this new target date, our plans began to progress. We proceeded with caution, just the same. We knew that chances of this being another false start were high, but we were encouraged by things that we saw taking place on the island. As far as the big picture was concerned, the 10/10/10 target appeared to be a date that all parties – Holland, Bonaire and all of the



When shipping by sea container, precautions must be taken to ensure the equipment arrives in good shape. "There is actually a bigger story with this," NØVD said. PE2MC "started running the amp without realizing there was bubble wrap inside. Shortly afterward, the room was filled with the nasty aroma of melted plastic." (Courtesy of PE2MC)



Bonaire serves as a transfer station for various oil companies. Because the edge of the coral drop off is so deep, ships with a deep drag can get close to the shore. (Courtesy of NØVD)

other Netherlands Antilles islands – could agree upon. This gave us a sense that it might actually happen this time.

While there were some bumps along the way with regards to the political structure on Bonaire and in Holland, we kept our fingers crossed and began planning with full vigor.

It was always in the back of our minds that the 10/10/10 date could be missed once again due to some little political hiccup, but we knew that if we didn't take the viewpoint of "it's going to happen this time," then we would be behind the eight ball if and when the time came.

Assembling the Team

A year earlier I had asked Ken Eigsti, WØLSD, if he would be interested in joining a team to PJ4 for the new DXCC. He had indicated going on a rare DXpedition or activating a *new one* had always been a dream of his. In fact, he had purchased a Tennadyne T5 more than 20 years ago in anticipation of doing something like this. With Ken being an RTTY guy, I knew he would be a valuable addition to the team.

I also asked John Barcroft, K6AM, some time ago if he'd be interested in putting Bonaire on the map as a new DXCC. John and I have operated several offshore contests together over the years and I knew he would be an excellent operator for the planned two-week DXpedition.

Of course, John accepted the invitation and our team was beginning to take shape.

Many in the contest world will recognize the name and call of Scott Robbins, W4PA. Remember the 2006 CQWW contest I mentioned earlier? Scott and I met on our way back to the states after that contest. He was coming off the PJ2T effort while I was a member of the PJ4E team.

As it turned out we had many things in common and stayed in touch over the years. In the months leading up to the DXpedition, Scott had mentioned that he would like to come to Bonaire during the event as a part-time participant. Without hesitation, he was added to our team.

One of the goals for the Bonaire 2010 DXpedition, as it had come to be known, was to offer as many possibilities for the DX world to work PJ4. In the final QTH layout we ended up with six locations on the air.

However, unlike a traditional DXpedition, each location was responsible for its own gear, operators, licenses, and so on. This, of course, presented some very interesting challenges.

For instance, some of the operators coming to the island wanted to be more of a cohesive group than others – in other words act as a single DXpedition. While others wanted to be their own mini-DXpedition.

In the end Marco Van Dijk, PE2MC; Bert Van Oort, PE2KY; Michiel Minderhoud, PG4M; and Peter, PJ4NX,

teamed with our group of operators to put PJ4D on the air.

Now, the Heavy Lifting

Equipment presented an interesting challenge. I had hand-carried a fair amount of gear to the island over the years, but not enough to execute a full blown DXpedition – especially a new one.

Our goal was to have two complete stations on the air from two locations. There was enough gear in storage for about one-

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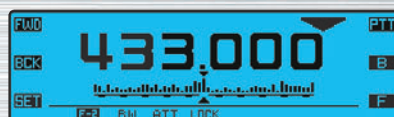
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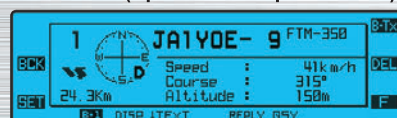
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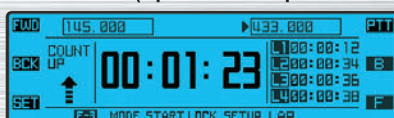
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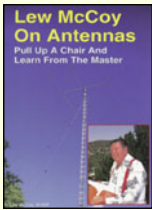
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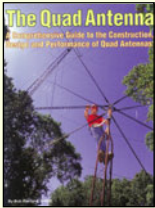


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by Lew McCoy, W1ICP

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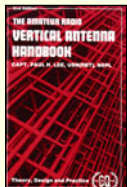


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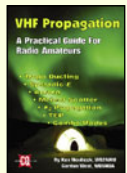


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and-a-half stations, but it was obvious to meet our goal of four stations we would need to transport some equipment to the island.

Our first thought was for each team member to hand carry a couple of pieces with him on the airplane. However, we quickly learned that in recent years the size and weights of allowable luggage had significantly decreased.

In addition, it is now very expensive to check luggage of any consequence. In retrospect, I was glad I had taken what was already on the island. But the question remained, how do we transport the needed gear there?

I am a believer in fate. One of the reasons W4PA and I had kept in touch over the years was that we were attempting to build a DX/contest QTH on Bonaire. During one of the business trips to PJ4, Scott was forced to spend an extra night on the island because his return flight had been cancelled. Because of that delay, he met a local on the island who owned an import business with her husband. We always thought that contact might come in handy, but we never realized how valuable it would become.



Bearing a yellow CARGO INTERNATIONAL sticker, one of the FTDX-5000MPs amplifiers arrives on Bonaire from Yaesu. (Courtesy of NØVD)



Vegetation grows very quickly on Bonaire. In just one week this vine decided PJ4D's dipole guy rope made an excellent trellis. (Courtesy of NØVD)



There are many types of wildlife on Bonaire. These two parrots were often found sitting on the power lines across the street from our QTH. (Courtesy of NØVD)

Their import business works closely with a shipping consolidator based in Miami, Florida. As it turned out, all we had to do was get our gear to Miami and they would take care of the rest. I quickly assembled amplifiers, antennas, coax, band pass filters and other miscellaneous pieces of equipment that I knew were needed and packed them for the voyage.

In Comes a Sponsor

A few weeks earlier we had approached Yaesu about sponsoring high-frequency rigs for the DXpedition. At the 11th hour, I received an email from Dennis Motschenbacher, K7BV, at Yaesu asking if it was too late for sponsorship, apologizing for delay in responding.

We were excited to learn that Yaesu would provide us with whatever rigs we needed. So with just three days of wiggle room to spare, K7BV sent a shipment of rigs to Miami that would arrive just behind the load of equipment I had sent a week earlier.

Shipping the Gear

Now our fingers were crossed and we hoped that there would be no hiccups in the sea voyage. Containers from Miami arrive once a week on Bonaire. If for any reason there was a problem, chances were good we would be operating a much scaled down DXpedition since it would be at least a week before the next container with the majority of our gear would arrive.

This is where having somebody local on the island who is familiar with the ins-

and-outs of importation comes in handy. I can tell you – with absolute certainty – that had we not had those channels in place before shipping the gear, the results would have been very different.

The importers made sure everything was taken care of and when we arrived on the island, all we had to do was visit their office and claim the gear. No red tape, no missing gear, no problems – and it was there with three full days to spare. Talk about cutting things close!

Fingers Crossed: The PJ Callsign

Another 11th hour obstacle that loomed was that of the callsigns. Normally the Bureau of Telecommunications and Post on Curacao (PJ2) issues licenses for Bonaire and all of the Netherlands Antilles islands.

However, because the Antilles was being disbanded, there was no clear authority with regard to licensing. Many thought licenses for Bonaire would be issued by Holland, but on the October 5 it was announced that the Bureau of Telecommunications would continue with licensing authority until at least January 1, 2011.

Now we knew who was responsible for issuing the licenses. The question then became can we get a special callsign for this event in just a few days. If you have ever been to the Caribbean, you know nothing happens very quickly.

And if you try to push things to make them go faster, the usual result is that they end up going slower. The good news was



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“Here’s a look back at ‘The Boulevard’ from the seaside local hot spot Karel’s Bar,” NØVD points out.
(Courtesy of NØVD)

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that we had a couple of contacts in the bureau that knew about ham radio licensing and recognized we needed the special event licenses issued quickly. So late afternoon on Thursday, October 7 we received confirmation that the callsign PJ4D would be issued and valid between October 10 and 22. We were *ecstatic* – another close call, but mission accomplished.

Pieces of the Puzzle in Place

With just a couple of days remaining before the team members were set to depart for Bonaire, things seemed to be falling into place. Our gear was waiting for us on the island, our license had finally been issued and about a week earlier the ARRL had formally announced that the islands of the Netherlands Antilles would indeed become new DXCC entities. We were beginning to feel confident all of our planning and hard work was about to pay off.

Coming Up . . .

In next month’s column I will continue the story of PJ4D and how we tried to minimize the impact on the bands – this was the first time in history that four new DXCC entities came on the air at the same time.

Also trying to deal with the monstrous pile-ups was a formidable challenge and the DXers’ *who’s who* string of callsigns that came during the first few days.

We could hear all of the guys who were knocked off the Honor Roll with the four new DXCC entities. In fact, it almost became a game of Bingo for us as we worked the top echelon of DXers around the world scrambling to regain their positions at the top of the score card. But more on that next month . . .

That’s it for this month’s column. I look forward to hearing your comments, complaints or whatever is on your mind. If you have a story or opinion you would like to share, please send it to me at n0vd@dxcentral.com. I’ll do my best to include it in and upcoming column. Also look for me on Facebook or Twitter and until next time, see you in pileups!

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On Land and 'At Sea,' JOTA Scouts Rally On the Air

By WRO Staff and News Services

Since 1958, the third weekend of October finds thousands of Boy and Girl Scouts and Guides gathering over the amateur radio airwaves for a worldwide wireless campout – Jamboree On The Air.

It's an opportunity for young people annually to see the wonders of ham radio and to make friends with scouts from around the world, in many cases without ever having to leave their hometown.

"Many scouts and leaders hold licenses and have their own stations, but the majority participates in JOTA through stations operated by local radio clubs and individual radio amateurs. Some operators use television or computer-linked communications," according to JOTA information found on the Internet.

JOTA @ Camp McNeill

A 2010 JOTA site at Camp McNeill near White Oak, North Carolina, for example, brought out "an estimated 300 plus Cub Scouts from all over the state," said Glenn Cox, KE4MBY, of

Castle Hayne. "It was sponsored by the Cape Fear Council of Scouting."

About two-dozen JOTA QSOs were logged. "One of the most interesting contacts was in Oklahoma where a Cub Scout Troop was visiting a Buffalo Ranch," KE4MBY said. The North Carolina scouts "did not know we were going to be there, but that didn't stop their curiosity."

Many Cub Scouts made contacts, "and were quite excited," he said. "The parents were somewhat unaware of the role amateur radio plays in emergency communications. While there was a line to make contacts," KE4MBY said, "I was handing out free literature from the National Weather Service Forecast Office and explaining my role as the Assistant Emergency Coordinator for Skywarn®."

JOTA Aboard the North Carolina

Meanwhile, answering a request by the Battleship North Carolina, the Azalea Coast Amateur Radio Club of Wilmington



Cub Scouts at Camp McNeill in North Carolina line up on the third weekend of October 2010 to make JOTA contacts with other scouts across the United States. (Photos courtesy of KE4MBY)



Charlie Vaughn, K4UWH, president of the Azalea Coast Amateur Radio Club, teaches scouts about Morse code about the Battleship North Carolina during Jamboree On The Air, 2010.

North Carolina, “not only (demonstrated) Morse code to the scouts, but did so from the original radio rooms and the original code rooms” aboard the World War II ship on JOTA weekend. KE4MBY said.

“One Scout noticed that the original receivers weighed in at 82 pounds, and I

explained that at that time it was considered state of the art. Now a ham radio transceiver weighs-in at about 7-8 pounds, a difference of about 74 pounds,” he said.

The scouts were “told that the importance of Morse code during World War II was that it was a primary method for



Aboard the ship, a vintage World War II receiver – at 82 lbs. – towers over a contemporary solid state transceiver, which tips the scales at about 8 lbs.

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David McGough, KB4FXC, readies his homemade “potato gun” antenna launching system for the JOTA event at Camp McNeill in North Carolina.



Bill Morine, N2COP; David McGough, KB4FXC; and Allan Pellnat, KX2H, talk about where to place antennas at the JOTA event near White Oak, North Carolina.

receiving messages at sea, but not for transmitting, because at sea it could give away their position to the enemy,” KE4MBY said.

“As for the staff of the Battleship North Carolina, they were nothing short of great in their efforts to assist and support the scouts on this day, as well as any other day.”

Operators who took part in JOTA on the ship included KE4MBY, Charlie

Vaughn, K4UWH, president of the Azalea Coast Amateur Radio Club; Jack Jacobs, WD4OIN; Bill Usher, AG4PA, and Mary Ames, of the Battleship North Carolina museum staff. Jacobs and Usher are volunteers who help maintain the vintage radio equipment.

Coming Up: JOTA 2011

The 2011 Jamboree On The Air will be held October 15-16.



ARRL North Carolina Section Manager Bill Morine, N2COP, makes initial JOTA contacts and then passes the microphone to visiting Cub Scouts.

DX Predictions

JANUARY 2011

Maximum usable frequency from West Coast, Central U.S. and East Coast (courtesy of Engineering Systems Inc., Box 1934, Middleburg, VA 20118). The numbers listed in each section are the average maximum usable frequencies (MUF) in MHz for contacting five major areas of the world centered on Africa-Kenya/Nairobi, Asia-Japan/Tokyo, Oceania-Australia/Melbourne, Europe-Germany/Frankfurt, and South America-Brazil/Rio de Janeiro. Smoothed sunspot number = 19.

Chance of contact as determined by path loss is indicated as bold *MUF for good, plain MUF for fair, and in (parenthesis) for poor. UTC is hours.

WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SA
10	(10)	9	*13	(8)	*12
12	(10)	8	*13	(8)	12
14	(16)	8	*12	(8)	*24
16	20	7	*17	(13)	*28
18	21	(10)	(15)	(10)	*30
20	21	(10)	21	(9)	*31
22	18	*19	25	(8)	*30
24	*16	*18	28	(8)	*25
2	*12	17	25	8	*17
4	11	(10)	17	8	*15
6	(10)	10	15	8	*14
8	(10)	*9	*14	*8	*13

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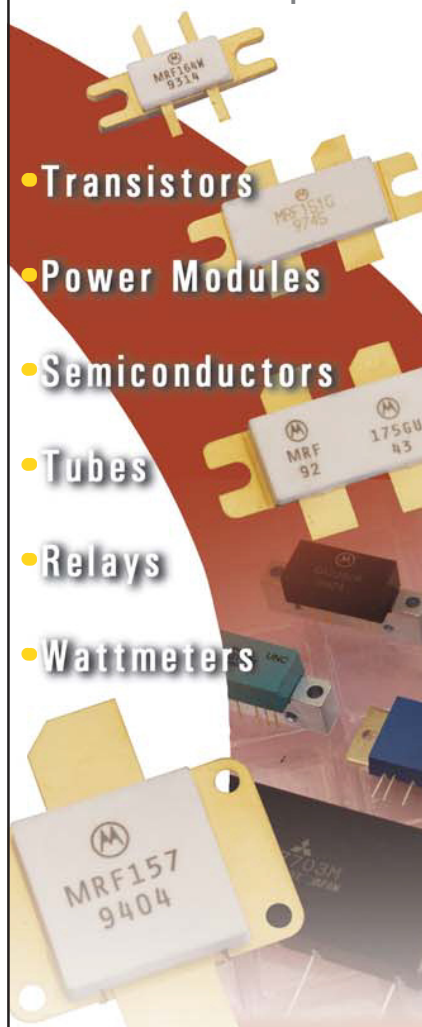
UTC	AFRI	ASIA	OCEA	EURO	SA
8	(10)	8	*13	*8	*13
10	(10)	8	*13	(8)	*12
12	(17)	8	*12	(8)	*18
14	21	8	*18	15	*26
16	22	(8)	17	14	*29
18	*23	(8)	(16)	(11)	*30
20	21	(8)	21	(9)	*31
22	*18	16	25	(9)	*28
24	*12	16	27	8	*21
2	11	(11)	20	8	*17
4	11	(10)	15	8	*15
6	(10)	(9)	14	8	*14

EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SA
7	12	*8	(13)	8	*13
9	12	8	*13	*8	*13
11	22	8	*12	13	*18
13	*27	9	*17	*16	*24
15	*29	(8)	19	16	*28
17	*29	(8)	(15)	14	*30
19	*24	(8)	(19)	(10)	*31
21	*20	(13)	24	9	*29
23	*16	(13)	27	9	*22
1	*14	(10)	(19)	8	*18
3	*13	(9)	15	8	*16
5	*13	(9)	(14)	8	*14

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Where Does Their Inspiration Come From?

By Carole Perry, WB2MGP

With the start of each school year, I like to get in touch with some of my favorite radio/technology teacher friends to ask them where their inspiration comes from. Here are stories of two good friends of mine, who are in totally different positions, yet continue to show the passion for working with youngsters in a radio setting.

Last May at my Dayton Instructors' Forum, I had Jim Mayercak, WX8J, and Jim Hendershot, WA6VQP, speak about recruiting, teaching, and working with young adults.

Reflections: WX8J

Jim Mayercak was positively inspirational in his presentation at the forum, yet it was he who claims to have been inspired by the youngsters he encountered at the Youth Forum, with all their terrific ideas.

Here is a quote from a summary Jim sent me:

"If you ask the average person to name three places that inspire him/her, I doubt that Dayton, Ohio would be one of them. However, for radio amateurs, the Dayton Hamvention® can be the epitome of what we hope to learn, purchase from, or become inspired by. Every year I expect to glean something new from my peers and their years of experience, service, and wisdom. (During May 2010) my inspiration came from much younger peers, and I was most impressed."

Jim is a teacher at Dresden Elementary School in Dresden, Ohio and can be contacted at jmayercak@tvschools.org or on the air at its ham station, KD8NOM. The station's operating schedule is on the webpage: < <http://bit.ly/bCILRj> > .

Jim has a complete HF (high frequency) and VHF station, thanks to donations from local hams. His club operates SSB, ATV, and satellite FM. He was looking for some strategies to take his group to a higher level. "Listening to the young amateur presenters at the Youth Forum was where I got the spark to see what was needed. They had been accomplishing



A film crew from WHIZ-TV interviews Jim Mayercak, WX8J, for a story about the Dresden Elementary Amateur Radio Station. (Photos courtesy of WB2MGP)



Quentin Kanta helped Jim Hendershot, WA6VQP, begin set-up of the amateur radio station in a lockable roll-down desk at Brighton Academy in Oregon.



Austin Gliha and Aaron Ross set up for a pass of AO-51 as they take part in Dresden Elementary Amateur Radio Station activities.



Austin Gliha sits at the high-frequency station at Dresden Elementary School in Ohio.

things that I mistakenly thought could only be done by us *older guys*,” Jim said.

As Jim listened to young adults sharing their experiences with service and adventure with SKYWARN, starting Youth Nets, working digital modes, constructing their own antennas, making ISS contacts and so on, he realized the importance of having *mentors*.

The necessity of young people having a good support system of Elmers and Elmiras is something we always talk about in this column.

Jim also left the forum with a renewed conviction of the importance of *building* projects when working with students. Just as Elmers helped him, years ago, and told him, “If it doesn’t work we’ll tear it apart and figure out why,” he wants his kids not to have a fear of failure. Be sure to contact this group.



Elmers and Elmiras from Dresden Elementary School include, from left, John Lala, KC8MIS; Sonny Alfman, W8FHF; Lyn Alfman N8IMW; Matt Murphy, KC8BEW; and Dwight Bonifield W8TJT.

Reflections: WA6VQP

My good friend Jim Hendershot is a member of my RCA Education Committee. He, too, was very inspired while attending the Instructors’ Forum and Youth Forum at Dayton two years ago. We spoke at length about his approaching a local school in Oregon and getting a ham radio program going. With great persistence on Jim’s part, here is the current situation.

The Brighton Academy has agreed to let Jim and his volunteers start a class and install an antenna. With emphasis on the middle school students initially, high school and precocious elementary school kids will also be allowed on a case-by-case basis. Two instructors from the Radio Design Group (company sponsored) will teach the class: Jim, WA6VQP, and Steve Andrews, K7KO.

It should be noted by my readers that Jim and Steve will be volunteers stepping into a school situation. This is unlike Jim



Jim Mayercak, WX8J, back left, poses with students from the Dresden Elementary Amateur Radio Station.

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Mayercak who was mentioned at the beginning of this article, or myself, who taught this in middle school as teachers, and who don't often get the chance to choose who will be in the program because we're teachers.

My advice is not to discount the "average" or even "at risk" student from being a perfect candidate for your radio class. There are hundreds of stories of many "unlikely" kids who positively "bloomed" when given a chance at the fun of a ham radio class.

The school Jim is at is a building long enough to allow for installation of a full-size trap dipole for 160-10 meters. They have some tower sections, and there is space to put up the tower along with a donated tri-band beam when the time comes.

The station will be housed in a lockable roll-top desk. They currently have an Azden HF rig, a Yaesu 2-meter rig, an MFJ antenna tuner and an Astron power supply.

The rigs were donated by a local ham, and the power supply was donated by the Southern Oregon ARC. Radio Design Group is donating various "glue" items – such as coax, connectors, power strips and the like.

Jim Hendershot is an example of a ham who got "inspired" to get involved with working with, and teaching young people in a school setting – about the fun and opportunity to give service through ham radio. We'll keep you posted when Jim is on the air.

My Conclusion . . .

If ever there were a hobby/service, that has such a myriad of ways to generate a ripple effect of enthusiasm and inspiration, it must surely be amateur radio.

Now is the time to tell talented young hams you may know, who would like to be presenters at next year's Dayton Youth Forum, to contact me ASAP. wb2mgp@ix.netcom.com.

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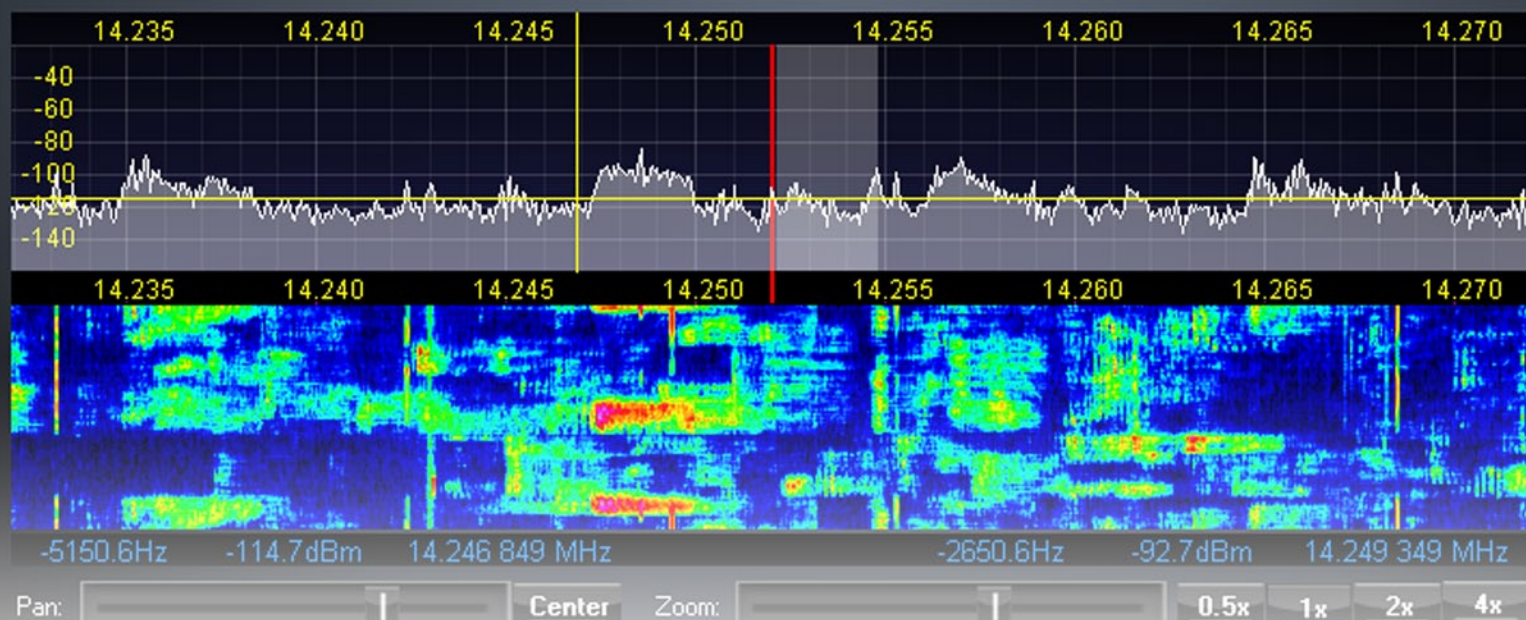
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Daniel Giraud, ZS5DG: He's Listening from Durban, South Africa

(Editor's note – As so many radio amateurs can attest to today, shortwave listening is a great way to be introduced to the wonders of wireless communication.)

*This month's Station Appearance features the shortwave listening and amateur radio post of **Daniel Giraud, ZS5DG**, in South Africa. His activities have been featured on radio outlets in Japan, Canada and others countries.*

Are you as proud of your station's appearance and operation as ZS5DG? Or does your messy shack provide just the comfort you need to most enjoy the hobby?

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If there's a You Tube video to accompany the still pictures, let us know and we'll set up a link.)

“Although I am an amateur radio operator, my first passion is shortwave listening,” writes Daniel Giraud, KS5DG, from Durban, KZ, South Africa. “I listen to all the major broadcast stations as well as air band, ship-to-shore communications and other utilities.”

His combined interests have resulted in a tidy, functional and efficient station layout for both receiving and transmitting.

“I have a Phillips D2935 portable world band receiver which I use with a random length of wire in the garden,” he said. “I was born in Mauritius and am French-speaking.”

“Next to it is my Motorola GM 300 2-meter amateur rig which is connected to a 5/8-wave ground plane antenna for VHF operation,” ZS5DG continued. Other gear includes a Heathkit SWR bridge and a separate receiver.

“I also have a Kenwood TS-515 for high-frequency communications,” he said.

ZS5DG has been “interviewed by Radio Japan, Radio Canada and other stations” for his wireless activities. He is a member of the Durban Amateur Radio Club, South Africa Radio League and HamNet Emergency Communications.



A Heathkit SWR bridge and separate receiving gear are also part of the ZS5DG layout.



With headphones in place and microphone in hand, Daniel Giraud, ZS5DG, puts his shortwave and amateur radio gear through their paces in Durban, South Africa. (Courtesy of ZS5DG)



Next to ZS5DG's Phillips D2935 receiver is a Motorola GM 300 2-meter rig, connected to a 5/8-wave ground plane antenna for VHF operation

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Frequency Coordination: Please Don't Shoot the Messengers

By Bill Pasternak, WA6ITF

I consider hams who volunteer their time to serve on local or regional coordinating bodies as *messengers of peace*, for lack of a better term. Some hams find themselves in harm's way by performing this service, many times receiving only brick-bats and cat-calls in return for their efforts to promote peace and harmony among users of various modes on various bands in a given geographic region.

How It Used to Be – And How It Is

In the late 1960s, the '70s and '80s, a coordinator only had one thing to be concerned with: To shoe-horn in as many repeaters as possible on a given band.

Today it's not quite as easy because there are so many modes vying for the limited spectrum available on most of the popular bands above 28 MHz, with 2 meters and 70 cm attracting the most attention.

When I first came to 2 meters in the '60s, nearly everyone ran low power using full carrier AM modulation. The lone exception was California where experimentation with FM had begun in the late 1940s. By the end of the '50s the California hilltops were alive with the sound of private, remote-base FM, but few outside the region knew it.

In the late '50s, the world's first automatic control repeater, running simultaneous AM and FM was also on the air serving the ham radio community of Los Angeles, thanks to the pio-

neering work of the late Arthur M. Gentry, W6MEP. Its call-sign was K6MYK and its story was told in depth in an article I wrote in the March 2004 issue of *QST* magazine: *Once Upon A California Hilltop*. < <http://bit.ly/cKebZ0> >

Because of these developments, repeater and remote-base operation was growing by leaps and bounds in the southwest U.S. Thankfully, the hams of that era were smart enough to realize that without some form of consistency of band planning there would be havoc, leading to the formation of the California Amateur Relay Council of which every other volunteer spectrum management group is in essence a direct or indirect descendant. It's all documented in the writings of Kendall Webster Sessions, K6MVH (SK).

Answering a Critical Need

Coordination councils and individual coordinators are, for the most part, some of the most competent technologists in today's amateur radio. Most are there to serve the needs of hams such as you and me. And, if you live in a crowded urban area, they are almost indispensable. Think of the chaos that would ensue if there was no coordination body to determine the feasibility of establishing repeaters to serve your community with minimal or no interference to one another.

But it does not end there. FM and digital voice repeaters are not the only users of our various VHF and UHF spectrum.



In the mid to late 1970s, it was not unusual to need an auditorium to accommodate a Southern California Repeater Association meeting. (Photos courtesy of WA6ITF)



Board of Directors and Officers of SCRA conduct a meeting, circa 1977. Pictured from left are an unidentified guest; Bob Thornburg, WB6JPI; Dick McKay, K6VGP; Charles R. “Dick” Flanagan, then W6OLD and now K7VC; Russ Solomon, ex-WA6DUC, and Fred Deeg, K6AEH / N6FD (SK).

DXers hang out at the very bottom of 2 meters mostly running SSB, CW and a plethora of digital modes, including packet and APRS, with the latter gaining a lot of favor world-wide.

Let’s not forget frequencies dedicated to ham radio in space operations here in North America on and around a 145.800 downlink and a 144.490 uplink. There are still a lot of folks running AM on 10, 6 and 2 meters whose rights also need to be respected by a frequency coordinator or spectrum management organization. So it is no longer just fitting in more repeaters but rather respecting and catering to the needs, wants and desires of every user of a given band.

Who’s the Boss?

It is very important to remember that coordination bodies – all of them – serve at the will of the ham radio community. Not the other way around. When a coordinator or spectrum manager stops receiving the community support it requires, its *leadership du jour* can posture all it wants, but it has zero authority and soon disappears.

A classic example is the failure and dissolution of the NorthEast Repeater Association in the early ’70s when it lost its support of those it claimed to represent. Soon it was gone.

The association was replaced by smaller state-regional organizations of which one – TSARC – eventually failed. Through the will of the community it was replaced by the highly successful Metrocor for New York and New Jersey and the Connecticut Spectrum Management Association to the north. All of this came about by the majority will of the respective ham communities of the region.

Over the years there have been a few hams here and there whose service on a coordination body has been self-centered in the hope of gaining exclusive spectral assignments. But in nearly every case these people were found out and forced out. They are the minority and did not represent the true volunteerism of the majority.

Order Out of Court

Another thing to consider is that these volunteer coordinators and spectrum managers are constantly in a position of legal liability. Classic examples of this were the highly publicized 1980s

cases in California and Texas where coordinators were sued both as organizations and/or as individuals because some want-to-be repeater operators were either unhappy with their assigned frequencies or the coordinator could not find a suitable frequency pair that would not cause significant interference to others already using a given frequency.

It cost many thousands of dollars to defend these tort actions with some people coming close to losing their life savings and their homes – all because they volunteered to serve their fellow hams. *All of this over a hobby!*

Repeater Channelization

As to the complaints by some newer hams regarding repeater channelization: It exists because repeaters are not frequency agile while users are.

Today’s channelized operation – which for relay and FM simplex operation is an outgrowth of a process that began in the early 1950s in California – was popularized in the late 1960s with the Texas 2-Meter Band Plan originated by the Texas VHF-FM Society.

It ultimately attained ARRL blessing and is what really accounts for 90-percent of the coordination we see today. Over the years it has been modified to suit the needs of given geographic regions, but in reality its publication in the ’60s opened the door to as much national standardizing as has been possible in the past half century.

Lest We Forget Simplex, Other Modes

As to coordinating simplex channels and/or other modes: That’s always been up to the will of the majority in a given area. In some regions – including here in Southern California – it has been a general practice since long before I moved here in 1972. In other regions it is not needed and likely will never occur, at least not anytime soon.

A Side Note

During the peak of the last solar cycle (Cycle 23), when 10 meters was open 24/7 and people were converting inexpensive CB sets to AM and SSB operation on 10 meters, a need arose to *coordinate* these operations. That in turn led to the forma-

tion of an organization known as the Southern California 10 meter QRP Band Planning Council.

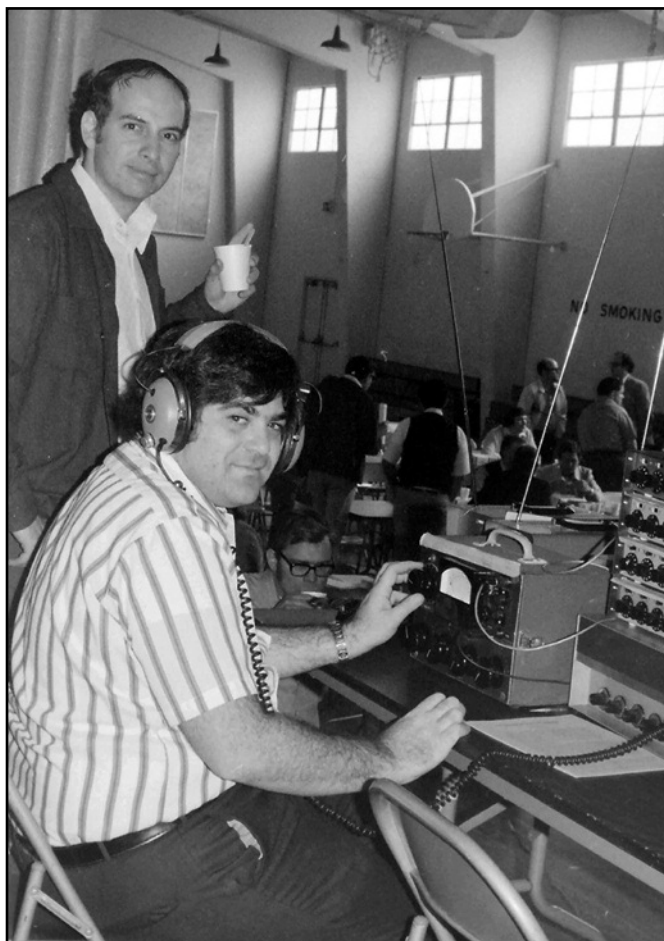
This was a group whose only purpose was the coordination of low power simplex AM and SSB 10 meter operations. And it only succeeded because the hams of the region wanted it that way. When the solar cycle ended, so did the need for this organization and it essentially was disbanded.

There is no law that says a ham – repeater owner or user – must follow a given band-plan. But the FCC's Part 97 rules do state that if you operate an uncoordinated repeater and cause interference to one that is coordinated, that uncoordinated repeater does hold the primary responsibility to mitigate or eliminate that interference. If its license holder fails to do so, then the license holder of the uncoordinated repeater can be cited for intentional interference.

In Closing . . .

It is very easy to sit back and criticize those who in most cases serve their ham communities for the betterment of the majority. If you happen to be one of those whose life is devoted to being a critic of others, then might I suggest before you continue that you volunteer for a few years with your local coordination body – as I did – and learn firsthand the total selflessness of the people who to try to make utilization of our scarce spectrum tolerable and as interference free as possible for the rest of us.

It's easy to sling arrows from the proverbial rocking chair, but unless you have *been there* and *done that*, your criticism has no basis in fact.



Some SCRA meetings were so large, they required an audio engineering team. Pictured here are Broadcast Engineering Consultant Burt Weiner, K6OQK, (standing), then owner of the WA6TDD repeater, and Robert Sudock, WB6FDF, who went on to become the Assistant Chief Engineer at KTTV Channel 11 in Los Angeles.

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Analog vs. Digital Voice (Circa 2011)

I recently took part in a very interesting discussion on the future of conventional analog narrowband FM voice vs. the various emerging digital audio modes – such as D-Star and P25.

It was Jason Dailey, KJ4UPD, who posed a very insightful question on QRZ.com:

With D-Star and other digital modes, and TV gone digital, and soon FM broadcast radio, do you see FM analog voice going away? I have heard some local hams saying FM is dead, and only going downhill. Do you think analog FM voice will be around for a while?

The question really hit home for me because, as I have written here in the past, I maintain that changes in the world of FM and repeaters, and in all of amateur radio tend to be *evolutionary not revolutionary*. So in my view, the answer is *yes* and *no*.

Keeping this discussion 100-percent amateur radio, the *yes* part is that there is an embedded base of hundreds of thousands – if not millions – of FM transceivers and HTs in the hands of hams worldwide.

Additionally, for all the *hoopla* about digital voice, analog FM repeaters worldwide still outnumber digital voice repeaters by a margin of about 250 to 1. Lastly, analog FM transceiver

and HT sales still outnumber digital voice gear by such a wide margin that digital voice is at the moment an *also ran* in the world of ham radio.

So, yes: Analog FM communications as a mainstay form of VHF/UHF "utility communications" in amateur radio will be with us for years to come.

On the *no* side: A day will come when mainstream ham radio will be 100-percent digital on both HF and VHF. Note I say *mainstream* because there will always be people who enjoy the sound of legacy mode communications.

Today, full carrier AM is the primary legacy mode and in a few years Morse may be looked upon in the same way. And once ham radio decides on a single, universally accepted by all CODEC applicable to both HF and VHF/UHF – or one for HF and another for VHF/UHF – the tide toward total digitalization of the hobby will begin. In reality, that is not likely to happen in my lifetime or that of most of you.

For those not versed in digital terminology, a CODEC is an encode and decode scheme wherein analog is converted to a digital bit stream for transmission and later converted back to analog. Each CODEC is different and as such a P25 radio cannot converse with a D-Star radio and vice-versa. So if you have a D-Star radio and your buddy has a P25 transceiver, you can be on the same frequency but you will never know each other are there.

D-Star could be the frontrunner to supersede analog FM. However, you still have to remember that at present, Icom is the only supplier of D-Star-based VHF/UHF equipment.

A look at the ham digital and pseudo-digital marketplace shows Alinco with its own digital audio protocol and Kenwood supporting Echolink, while Yaesu (Vertex-Standard) has its own WIRES II system. Both the latter entail use of analog FM radios tied together over the Internet using an analog-to-digital/digital-to-analog interface.

As to digital voice on the HF bands? Not in the near future. About the only near-successful HF digital voice products to date has been the AOR ARD-9000 series of AD/DA modems. I have one and have used it on and off over the years, but there are not enough stations on the air with it to call it an adopted standard for HF digital audio. Also, lock-up is relatively slow so it would not be a good "competition" or "contest" mode.

Are there any possibilities of radical change occurring? Only one I can think of would be a government mandate for hams to abandon analog and move to all digital by a specific date. While that may work in the commercial and broadcast sectors, with the exception of abandoning the spark transmitter for pure carrier wave, that kind of mandate is not realistic for a hobby service. Possible: yes. Likely: *no*.

So the end answer to Jason's question

is simply that today's VHF/UHF ham radio "utility" voice operations are primarily analog FM and we will all likely wait many years to see digital become the predominant voice mode.

Analog FM will likely be the backbone of VHF/UHF ham radio utility communications for decades to come and SSB will remain the backbone on HF. At least that's the way it looks to this 68-year-old scribe. – *de WA6ITF*

(With as many radio amateurs as there are today using digital photography, Bill Pasternak, WA6ITF, tells how he solved a real-life problem with his Canon A350 and suggests a website that might be of help to anyone who faces camera operation problems. For details, visit: < <http://www.WorldRadioOnline.blogspot.com> > – Ed.)

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Around the World, YLs Are On the Air

By Cheryl Muhr, NØWBV

YLs have been very active this past year and as the New Year starts, there is so much to do.

Winter is one of the best times to get on the air and operate. New things to try each year make great New Year's resolutions.

Resolutions can include everything from getting your first license to an upgrade. Go after that award you've always wanted.

You can even plan a radio-oriented trip and *be* the DX you've only tried to work.

Let me know how your resolutions pan out this year so we have even more news for the YL Column!

Field Day Brings Out YLs to Operate

Participating in ARRL Field Day is a great resolution to add to your list of ham radio items. It provides numerous new things to try or finish depending on how long you have been operating.

Carol Kirk, KA5GIS, sounds as if she had a great time at 2010 Field Day out in Ravenden, AR!

The operation was battery powered QRP (2 watts) and a homebrew three-band dipole.

"Not up as high as I would have liked," she says, "but the best I could manage (and) I had a great time and set a personal best on my fourth solo effort as a battery powered 'peanut whistle'.

"Operation was all CW using a straight key. It rained Saturday but 15 meters was open and got several there. Sunday morning 15 meters wasn't good, but 20 meters was jumping.

Unfortunately the bands weren't so great Sunday afternoon – but had fun anyway.

My totals were 90 contacts in 32 states and 40 sections. I am hoping to get a permanent antenna up so I can operate whenever I want to operate again."

Sounds like a great effort, Carol!

In El Paso, Texas Field Day was hopping, as well.



Carol Kirk, KA5GIS, had a great time at 2010 ARRL Field Day using a battery powered 2-watt rig and a homebrew three-band dipole. "My totals were 90 contacts in 32 states and 40 sections," she said. (Courtesy of KA5GIS)

Mary Emert, KA5EWJ, sent in news about the **W5ES** FD site.

"Our Field Day at W5ES was great with lots and lots of food. Thanks to **Mark Yakubovsky, KE5OHZ**. Mark loves BBQ and never knows when to quit."

There were a lot of visitors at the event including representatives from the El Paso Police Department, the Salvation Army and the University of Texas.

"In fact," she adds, "One of our visitors – Israel Cervantas Jr., age 13 – made a contact with W1AW." What a first contact.

Tom Faulkenberry, KE5OIB, made certificates to present to everyone who helped with Field Day and a special one for Israel. Tom was also the Field Day co-chairman along with Mark.

Mary says that even the clean-up was fun. Now that is how radio amateurs do Field Day!

First YL DXpedition to Greenland

The **OX6YL** trip to Greenland started its planning stages way back in 2000. That's when, during the YL-meeting in New Zealand, **Unni Gran, LA6RHA**; **Ingrid Kleveland, LA8FOA**; **Evelyne Terrail, F5RPB**; **Walli Jaeger-Ketterer, DJ6US**; **Ruth Geering, IT9ESZ**; and **Inger Lundin, OZ7AGR** had a talk about going to Greenland together.

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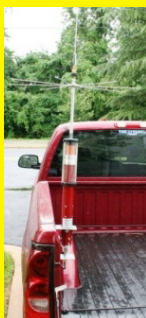
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date and everyone planned to meet at Kangerlussuaq. It is a small town, but it hosts the main airport for the country and you have to catch commuter planes from there to go anywhere else in Greenland.



Olga Borodina, RA3GKB, right, got to spend time in Hawaii with her friend Dean Manley, KH6B, right. (Courtesy of RA3GKB)

Since the ladies had already heard about a ham radio station set up and in use, they thought they would see if they could get a callsign and operate there.

OX6YL became the official DXpedition callsign.

Everyone met at Kangerlussuaq except Unni. Unfortunately she had been sidelined with health problems and missed the trip.

This was especially disappointing, as Unni had organized so much for the trip.



Olga Borodina, RA3GKB, and her OM Oleg Borodin, RV3GM/AH6TF, included a picture diary of their time on the Big Island of Hawaii. (Courtesy of RA3GKB)

The good news is that she was able to keep up with the group on the Internet video-audio communications program SKYPE and felt a part of the group, even from home.

The radio shack was on a mountain five kilometres from the lodge where the group stayed, so renting a car was a must.

Inger, OZ7AGR, reports it was a “shaking” car, but they had fun with it and managed the very steep drive.

At the shack they were met with a beautiful view filled with autumn colors.

Inger describes the shack as “a big old container from the time of World War II, when the Americans took care of the town. The club station is **OX2A** and was filled with radio equipment and a superior antenna farm.”

There was a pile up right from the start and they ended up with 3,000 QSOs on all bands. They were on both SSB and CW.

The main problem seemed to be the OMs letting the YLs talk to other YLs.

“We asked *many times* for YLs,” Inger says. “It was very difficult for the OMs to stop while we spoke to a YL.”

They did enter about 100 YLs in the log, but Inger adds, “We wished to have been in contact with more YLs, but with this short time we were very satisfied with the result.”

Propagation was excellent most of the time and they reached 96 countries confirmed from every corner of the globe including Antarctica.

They were sad when the time came to close down **OX6YL** and everyone would have liked to have been able to spend more time working in the shack.

They are very grateful for the help of **Jesper Dalgaard, OX3KQ**. Jesper is the one who daily takes care of the radio



The OX6YL DXpedition team managed to make 3,000 QSOs on all bands and “there was a pile-up right from the start.” As you can see, though, not all of the “good hunting” was on the ham bands. (Courtesy of OX6YL)

club. “Thanks also to **Bjarne Lunin, OZ2UV**, who was our bodyguard.

“This was the happy ending of the first YL DXpedition in Greenland. The next day we all flew as tourists to Ilussiat for three days, the place called the pearl of Greenland. Outside our hotel windows, big iceberg passed by, a fantastic sight. But this is another story.”

The link to the official **OX6YL** website is < <http://home.online.no/~la6rha/greenland.htm> >.

Hams Love to Travel – Especially With Radio Involved

Olga Borodina, RA3GKB, and her OM **Oleg Borodin, RV3GM/AH6TF**, recently got to spend time in Hawaii with their friend **Dean Manley, KH6B**.

They took pictures of their time on the Big Island of Hawaii – a few of which accompany this column.

Long time YL Ham Is Silent Key

Phyllis Shanks, W2GLB, passed away recently after a brief illness, at home, with her family at her side.

The news spread quickly and many memories were shared. She will especially be missed on the Tangle Net each Thursday.

Her passing was very sudden and unexpected. It seems that Phyllis had undiagnosed pancreatic and liver cancer and was not aware of a problem until she developed severe pain.

Phyllis was past President of the Young Ladies’ Radio League, Inc. (YLRL) and still very active on the nets and in ham radio.

She will be sorely missed.

Whether you have started your New Year’s Resolutions or not, add this one to it: Send news about YLs in Amateur Radio to the WorldRadio Online YL column! I can’t wait to see what the New Year brings. – 33 & 73, Cheryl, NØWBV

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BETHPAGE, NEW YORK – **Ham Radio University 2011**, January 9 at Briarcliffe College, 1055 Stewart Ave., Bethpage, New York. Doors open at 7:30 a.m. First forum is at 9 a.m. Suggested donation: \$3. Sponsored by the Kings County Repeater Association in conjunction with the ARRL New York City/Long Island Section. Complete details and fourm list: < <http://www.HamRadioUniversity.org> >.

STRAIGHT KEY CENTURY CLUB – The **Straight Key Century Club** (SKCC), is celebrating five years of growth, to over 7,200 members on CW. **Special Event** call **K3Y** will be operating in all call areas starting at 00:00 Z on Jan. 1, and ending at 23:59 Z on Jan. 31, 2011. Frequencies are: 1.820, 3.550, 7.055, 10.120, 14.050, 18.080, 21.050, 24.910, 28.050, and 50.090 (+/- 10 kHz). Stations contacted may request a special K3Y QSL. Send name and address to: Dan Rhodes, KA3CTQ, 618 Seminole Dr, Erie, PA 16505. The SKCC URL is: < www.skccgroup.com >. Contact: Roger Kepner, W6SQQ, SKCC PIO w6sqq@sbcglobal.net.

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ALBUQUERQUE, NEW MEXICO – The **2011 146.580 Group Albuquerque Winter Tailgate**, held January 29 from sunrise to 2 p.m.; rear parking lot of the Transcore Amtech Technology Center, 8600 Jefferson St. NE, Albuquerque. The facility is located on the northeast corner of Jefferson St. and Wilshire Ave. – one block south of Alameda and three blocks north of Paseo Del Norte. Enter the parking lot off Wilshire. The tailgate is open to all and it is FREE. This is an outdoor event. For more information, please contact Tom Ellis, K5TEE, at (505) 259-6281 or E-Mail: k5tee@arrl.net.

PALM SPRINGS, CALIFORNIA – **Hamfest-Raffle-Winter Field Day**, 4193 Matthew Dr., Palm Springs, California, January 29, 9:30 a.m. to 4:30 p.m. Sponsored by The Desert Rats – **WD6RAT** – and Palm Springs DX Club. Take I-10 to Palm Drive exit. Turn onto Gene Autry Trail (becomes Matthew Drive as it crosses Highway 111). 4193 Matthew Dr., is on the left. Vendors, exhibits. Complete information: < <http://www.desertrats.am> >. Talk-in: 146.940- / PL 107.2.

FEBRUARY

HATILLO, PUERTORICO – The Caribbean Amateur Radio Club from Hatillo Puerto Rico will be sponsoring **The Great Hamfest of the North** on Sunday, February 6, at the Hatillo Municipal Coliseum, Hatillo, Puerto Rico from 0800 to 1400 Hrs. This event is free and open to the public. There will be FCC walk-in exams by W4VEC, many vendors, door prizes, used equipment sales and conferences. Contact frequencies are 147.21 (-) (Tone 127.3) and 146.52 (simplex). Contact Serafin Martinez, KP4FIE at serafinmrtzn@yahoo.com.

COLCHESTER, VERMONT – **HAM-CON: Vermont's Amateur Radio Convention**, sponsored by The Radio Amateurs of Northern Vermont, February 26, from 8 a.m. to 2 p.m. at the Hampton Inn Convention Center, I-89 at Exit 16, Colchester. Features include flea market, dealers, forums, demonstrations and VE Exams. General admission is \$8. If purchased on-line, \$6. Tables are free, while they last. Check Web Site for advanced ticket sales, forum schedule and vendor setup information. Talk-in on 145.15 repeat, bulletins on 146.67. Contact W1SJ at 802-879-6589. E-mail: w1sj@arrl.net. Web: < <http://www.ranv.org> >.

SAN ANTONIO, TEXAS – **Siege Days at the Alamo Historic Commemoration**, San Antonio, TX. **WA5DTK**. February 23-March 6. Frequencies: 7.040/7.240 MHz; 14.050/14.250. For special QSL, write Barry Brewer, 601 Wagon Wheel Trail, Pflugerville, TX 78660.

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Thoughts On the QCWA, HF and Condo Living

By Dave Hayes VE3JX

Many of our older members have made the choice to downsize their living accommodations. Having a large lot and home is no longer practical for them.

The decision is not taken lightly, since it is well known that condominium or townhouse living may bring with it various covenants, conditions and restrictions that limit or prohibit the use of outside antennas. (Many newer full-size home subdivisions also have CC&Rs.) Such CC&Rs could effectively curtail an active amateur's on-air operations.

CC&Rs and HR-2160

It is fair to assume that all QCWA members, especially those living in dwellings that have CC&Rs attached, are at least interested in the outcome of the current bills before Congress, HR-2160 and S-1755, regardless of their personal assessment of their future success.

The American Radio Relay League has been lobbying for Congressional support for the sponsorship and passage of these bills, and they have been quite successful in encouraging co-sponsorship of HR-2160.

S-1755 has already passed the Senate and has been sent to the House of Representatives for its consideration. It sits in committee.

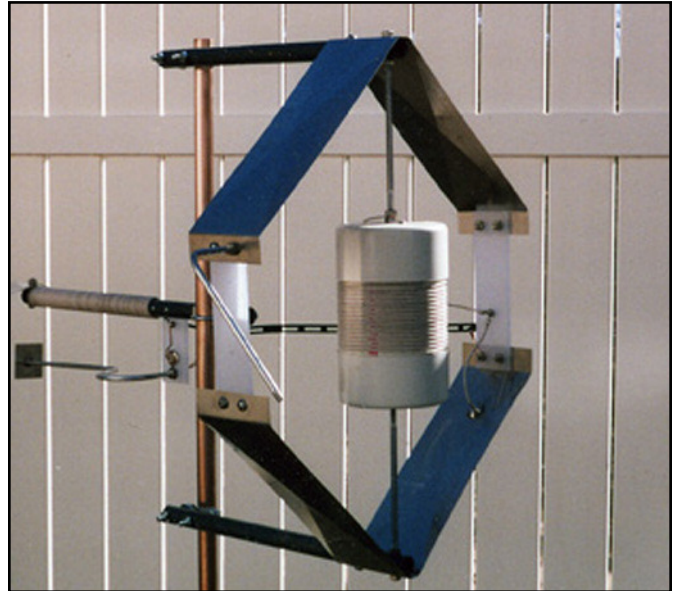
HR-2160 calls for the Department of Homeland Security to undertake "a study of the uses of amateur radio for emergency and disaster relief communications, by identifying unnecessary or unreasonable impediments to the deployment of amateur radio emergency and disaster relief communications, and by making recommendations for relief of such unreasonable restrictions so as to expand the uses of amateur radio communications in Homeland Security planning and response." (S-1755 is the Senate's companion Bill and is almost identical in nature.)

It is no wonder that these bills are popular with U.S. radio amateurs. Non-U.S. amateurs are also following their discussion and progress with much interest. However, not everyone is so enthusiastic about them. *Why?*

A leading reason would be that they are "study" bills which are designed to authorize the DHS to *study* the problem(s) and report its findings. There is nothing that dictates, or allows for, any actions in accordance with the results of the study.

The proposed law just requires that the results be reported back to Congress. So, some have called them "do nothing" bills. The negative aspect of "study" bills is that they can consume a significant amount of revenue – money the U.S. Government can't necessarily afford to spend at present. Regardless of the outcome of these bills, whether they live or die, relief from CC&Rs will be a long-time coming, as there are many legal hurdles yet to jump.

One thing we should never expect is that new rules will be enacted that allow us to put up a 65' tower and 11-element HF



The Isotron 40/20 antenna is an example of a limited-space antenna that might be perfect in a CC&R mandated area. It looks somewhat like a bird feeder.

(Photos courtesy of VE3JX)

beam beside our townhouse unit, with permission to use our legal-limit amplifier as well. This will never happen.

However, what is to be hoped for is some sort of compromise where HF radio operation is allowed, with permitted antennas to be as inconspicuous as possible. It is this type of balancing of everyone's desires that will ultimately fly, if any change does occur. We also have to be prepared to see no change to the status quo.

What to do now?

What do our members do in the meantime as this whole thing shakes out?

There have been several articles and a couple of books authored on the subject of hidden, or *stealth*, antennas and operations in condensed-living accommodations.

In them, instructions on how to build and install virtually-invisible or well-concealed antennas have been successfully followed by many enterprising hams, overcoming the adverse conditions with which they live. Also, there are several commercial antenna products on the market, designed for limited-space use. (One book that I enjoyed on the topic is called: *Low Profile Amateur Radio – Operating a Ham Station from Almost Anywhere*, by Al Brogdon W1AB.)

Operating practices have also been implemented by some members that allow for satisfying operations while not disturb-

ing others' right to enjoy their property. Avoiding RFI problems is a bona fide need in condo living, with the plethora of electronic gadgetry and controls susceptible to any extraneous RF energy.

While the sale of such things should not be allowed, it is a matter of fact that RFI protection in many appliances is almost non-existent. Thus, it would appear to be in our own interests to do what we can to avoid unnecessary problems associated with RFI/TVI by using lower power levels than we otherwise might do if we were back in our large-lot home.

When we move into our condo unit, it may be a good time to dispose of our legal-limit amplifier. Others have gone a step further to eliminate any possibility of "neighborhood" wrath, especially when CC&Rs force them to operate "underground" with stealth antennas. They have chosen QRP.

QRP?...

Now, we are not suggesting that everyone operating from condos have to use 5 watts or less; this is just an observation of how some have continued to enjoy HF operations while under such CC&R limitations.

It is an option to consider before giving up your beloved HF bands. Most QRP work, though not all, is done with CW. Of course, CW, whether QRP or not, has been the mode of choice for many QCWA members over the years. QRP is a good safety choice particularly when using an indoor antenna, such as in the attic.

I have a younger – a *relative term* – friend whose view is: "Life's too short for QRP." Conversely, I have friends who do not want to operate any other way. The saying that might better apply in this situation is: "Life's too short to give up on HF." If QRP is an answer, then so be it.

Helpful is the fact that many modern transceivers do allow for varying the power output down to QRP levels. That being the case, one can experiment with various power levels to see at what maximum power one can enjoy interference-free operations. Time of day can also be taken into consideration – that is, identifying when operations would be *least likely* to cause problems.

Need Help?

Are you a member who is having difficulty with setting up for HF operation in a CC&R environment? There are, no

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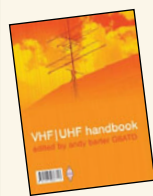
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A computer screen shot of the CQ-100 Internet transceiver shows how the format looks for the program's Internet communications protocol.

doubt, several fellow members willing to help you. Check with your local chapter for such assistance.

I know of one Canadian "snowbird" who found himself in such a situation with his new dwelling. In his previous Florida abode, he was able to operate by attaching coax from the home to his car-mounted HF antenna. This was impossible at the new dwelling due to a requirement for all cars to be parked in the garage, with the garage door closed.

Flagpoles are banned as well. A fellow Canadian QCWA member helped him install a stealth Windom antenna in the adjacent pines.

No HF?

Some situations do not allow for on-air operations at all. Such places as long-term care facilities and nursing or retirement homes may fall into this category. RF energy in some of these places may interfere with medical equipment in use.

Are there any possibilities for those who are living there?

If there is high-speed computer network access available, a member may be able to use modes that make use of the Internet, such as Echolink. There is also QsoNet; an HF simulator on the Internet.

QsoNet/CQ-100

QsoNet involves the use of a software transceiver named CQ-100. It covers 5 simulated bands: 80, 40, 20, 15 and 10 meters. The system is capable of voice and CW operation. CW is sent via one's computer keyboard. There is also a band scope built-in the CQ-100 transceiver,

with user-settable sweep ranges. It appears to be the next best thing to actually being on HF.

QCWA QSO Party

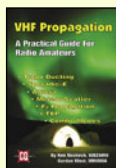
The Quarter Century Wireless Association holds the semi-annual operating event: the QCWA QSO Party. Scoring is done according to mode(s) used. On-air frequencies include: 160, 80, 40, 20, 15, 10, 6, 2, 1 1/4 meters, plus UHF and up. There are categories for CW/Digital, Phone, and Mixed.

A new mode was added to the contest in mid-2009: QsoNet (CQ-100). This, of course, is in response to the needs of many of our members who find themselves without HF access, but who do have a high-speed Internet connection. Scoring categories for CQ-100 are the same as for HF, though separate. It is to be expected that this mode will grow in popularity as all QCWA members become aware of its existence.

It is the expressed wish of QCWA that all its members enjoy themselves during the QCWA QSO Party, as well as with the hobby in general – whether they have real or simulated access to HF. Last year, the "Party" was held in April and September. Check the March 2011 QCWA column for the dates of the next QCWA QSO Party.

While non-members are welcome to participate, why not consider joining us and operating as a member? If you are currently licensed, and you were first licensed 25 or more years ago, we welcome you to become one of us, the Quarter Century Wireless Association.

CQ Books & DVDs



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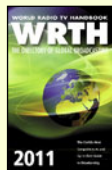
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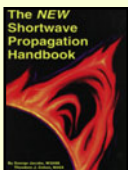


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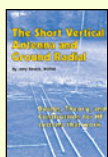


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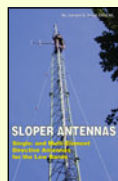
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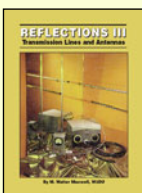
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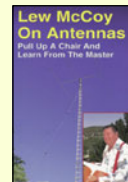
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Our Signal's Scenic Route: Dissecting a Skewed Path

By Carl Luetzelschwab, K9LA

Our propagation prediction programs do fairly well under quiet geomagnetic field conditions, assuming you use them as they were intended to be used – as statistical results over a month's time frame.

One inherent assumption in our prediction programs is they make predictions for great circle paths – either short- or long-path. But we routinely observe paths that don't follow the true short path or true long path. We typically call these skewed paths.

So what has to happen to have a skewed path? I believe there are three fundamental requisites for a skewed path:

First, the true great circle path (short path, long path, or both) is likely to be unavailable.

Second, assuming skewed paths are two great circle paths joined by a skew (refraction) point, there must be some mechanism to divert the electromagnetic wave off one true great circle path and onto another great circle path.

Third, the skewed path must allow propagation.

Let's dissect a skewed path QSO to try to understand these three fundamental requisites. The QSO we'll use is one made by Dez Watson, G3WW, of Bedfordshire, England. Last August he e-mailed me reporting that he worked Wisnu Widjaja, YB0AZ, in Indonesia on 40-meter CW at 0153 UTC on November 27, 2008.

Dez works at an ITU (International Telecommunications Union) monitoring station where they have an HF direction finding array. He observed on the direction finding array that the YB0AZ signal was coming from 192 degrees (this array allows determination of the arrival angle with one or two degrees of uncertainty). Figure 1 (from the mapping feature in W6ELProp with additional annotations by me) shows the particulars of this QSO.

The true great circle short path coming into G3WW (the red line) is a bit north of east. The true great circle long path coming into G3WW (the black line) is a bit south of west. From G3WW's direction finding array, the actual path (the green arrowed line) was coming in from over the northwest portion of Africa.

Also included on Figure 1 in the lower left corner is tabular data from VOACAP (Voice of America Coverage Analysis Program) of the prediction parameters for both the short path and long path using dipoles and 500 watts. The monthly median MUFs (maximum useable frequencies) for both short path and long path are sufficiently high to support 7 MHz on almost all of the days of the one-month period centered on November 27.

The monthly median signal strength of -217 dBm on the long path is some 80 dB below the sensitivity of our receivers. The monthly median signal strength of -120 dBm on the short path is just below the noise level for a quiet rural location (from Figure 1 in the August 2005 column, and translated to a 500 Hz bandwidth).

From these prediction parameters, it's obvious the true long path wasn't available due to ionospheric absorption on the

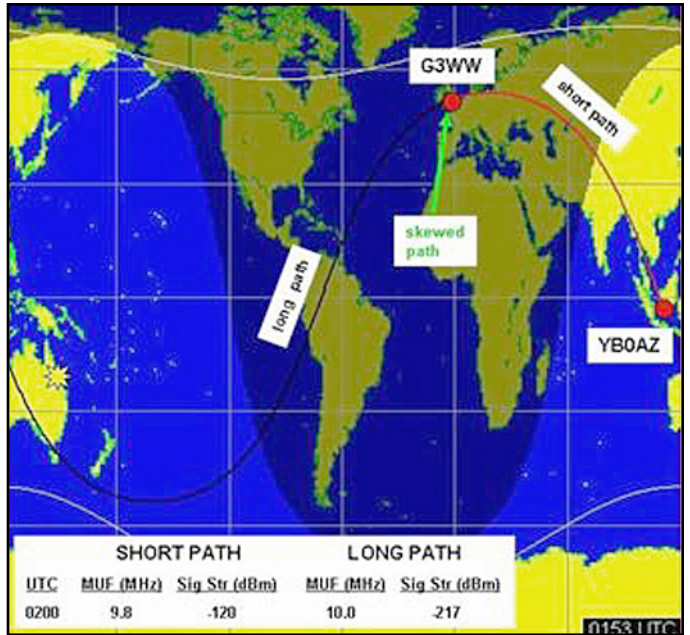


Figure 1 – G3WW to YB0AZ on November 27, 2008

daylight portion of this path. The overhead Sun (the yellow star over Australia) is close to the long path, and that's not good for 40 meters.

Similarly, it's likely that the short path wasn't available due to absorption – it's not as bad as long path, but it's still enough to put the signal near the noise.

We have now addressed the first requisite – the true great circle paths are likely to be unavailable. Let's now look at the second requisite.

To determine where the possible refraction point was to bring the signal into England from 192 degrees, we can use a PacketCluster spot from W2IRT for YB0AZ at the same time G3WW made his observation. W2IRT reported hearing YB0AZ best from 125 degrees (his antenna is a Force 12 shorty-40, which would give more uncertainty in the bearing due to a wider azimuth pattern).

Now let's superimpose great circle paths coming into G3WW onto great circle paths coming into W2IRT. Figure 2 presents this data, with 192 degrees and 125 degrees highlighted in red.

Where 192 degrees into G3WW intersects 125 degrees into W2IRT suggests where the electromagnetic wave on the skewed path came from – approximately 20 degrees South latitude and 20 degrees West longitude. This is likely to be the skew point.

So is there anything going on in this area of the ionosphere that could refract a signal off one great circle path and onto another? Yes, there is – it's the southern crest of the equatorial ionosphere,

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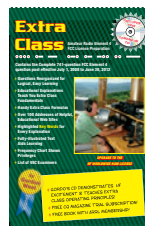
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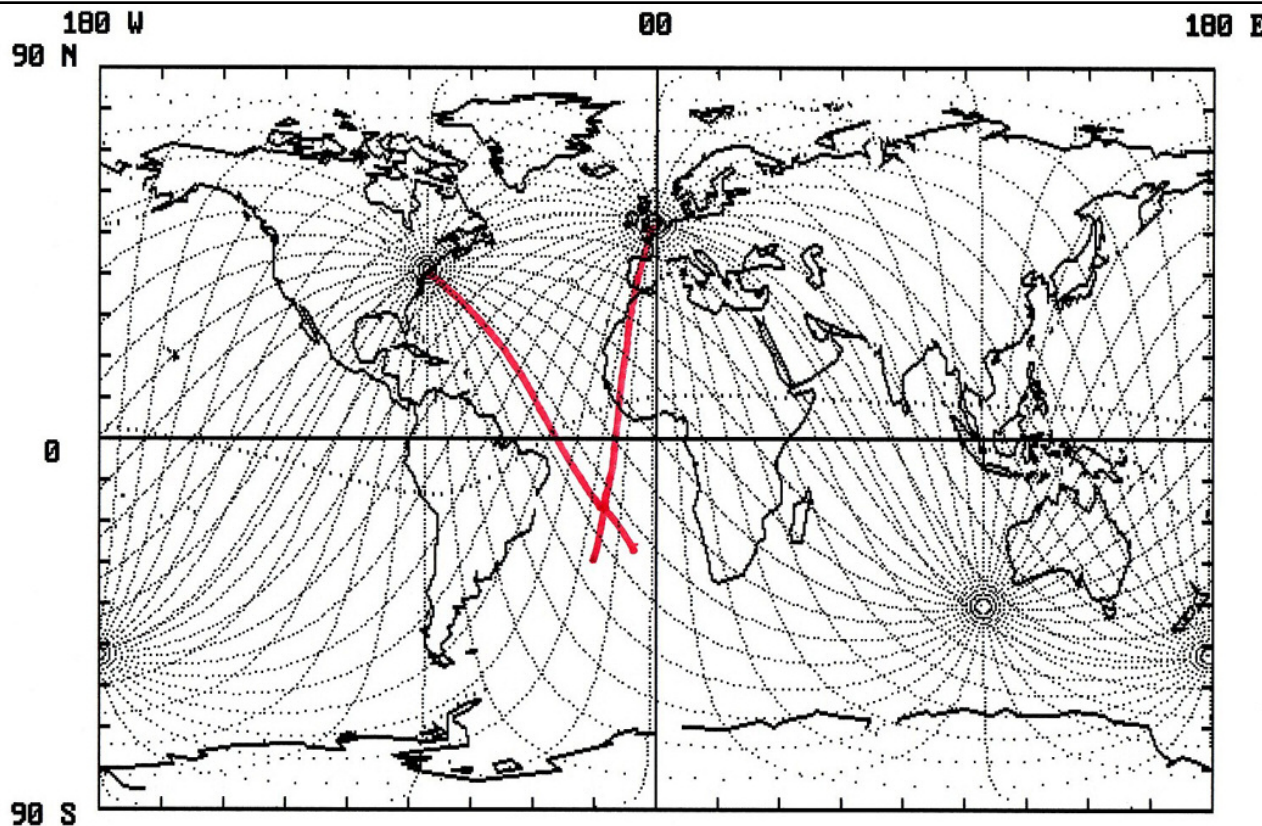


Figure 2 – Great Circle Paths Into G3WW and W2IRT

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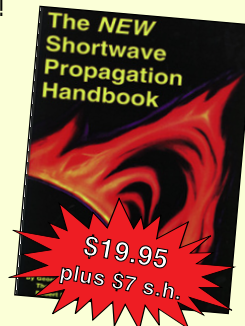
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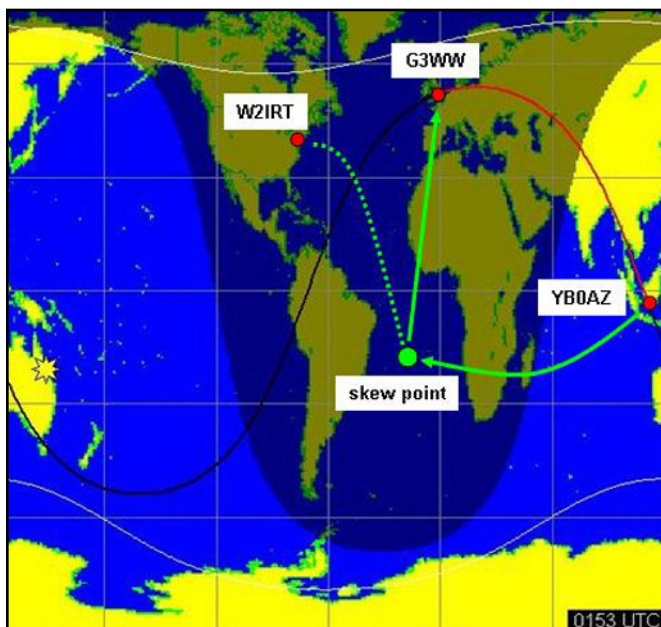


Figure 3 – The YB0AZ-to-G3WW Skewed path

where there is a significant increase in electron density (which gives a nice gradient for refraction to occur). We have now addressed the second requisite – there must be some mechanism to divert the electromagnetic wave off one true great circle path and onto another great circle path.

This refraction point at 20-degrees S / 20-degrees W also allows us to determine the path out of YB0AZ. All we have

to do is find out which great circle path out of YB0AZ goes to the assumed skew point. That great circle path is 240 degrees out of YB0AZ (from a great circle path map centered on YB0AZ). Putting this all together gives us Figure 3.

For G3WW to hear YB0AZ from 192 degrees azimuth, the electromagnetic wave coming out of YB0AZ on a heading of 240 degrees (the green arrowed line) encountered an electron density gradient around 20-degrees S / 20-degrees W. At that skew point, it refracted onto the path that brought it into G3WW from 192 degrees (and into W2IRT from 125 degrees – the dotted green line).

Note that the 240-degree path out of YB0AZ gets to the dark ionosphere quickly. That helps reduce ionospheric absorption.

Some work with Figure 7.5 and Figure 7.6 from Ionospheric Radio Propagation (Davies, 1965) indicates the ionospheric absorption from YB0AZ to the skew point (the worst portion, with half of it in daylight) is around 37 dB. The absorption on the portion of the path from the skew point going into G3WW (and into W2IRT) is minimal because it's in the dark ionosphere. This amount of absorption results in a decent signal strength.

And checking the MUF on both segments of the path (and on the segment to W2IRT) indicates a high enough MUF to support 40-meters. We have now addressed the third requisite – the skewed path must allow propagation.

This example worked out nicely due to having two observations from two widely separate locations on the arriving angle of YB0AZ's signal. Usually we don't have this luxury, so we have to make some educated guesses on where the skew point may be. The bottom line is that if we can reasonably address all three requisites, we'll have a pretty good understanding of the skewed path.



The Rules Say...

John B. Johnston, W3BE

Is My HF Remote Base OK?

Q Is it OK to have a remote base with its output on HF (high frequency)?

A. Possibly so. Part 97 doesn't even mention the term *remote base*. The answer to your question, therefore, depends upon just what you mean by that expression. BE Informed No. 31 Hamslanguage describes a *remote base* as a remotely controlled amateur station having a radio or wireline control link between the station and its distant control point.

If, therefore, should you have in mind an HF station located at a distance from its control point such that it cannot function properly under local control, note that Section 97.109 says that any station may be remotely controlled. The accommodations for such telecommand of an amateur station are in Section 97.213.

Otherwise, if you mean by the term *remote base* some arrangement whereby your station simultaneously retransmits the transmissions of another amateur station on a different channel or channels, you have yourself a *repeater*. Read that definition in Section 97.3(a)(39).

The special accommodations for repeaters are in Section 97.205. Note that paragraph (b) authorizes a repeater to receive and retransmit HF only in the 10 meter band, except for 28.0-29.5 MHz.

W3BE-O-GRAM: As Bill Cross has observed, "If it looks like a duck and quacks like a duck, it probably is a duck."

Q. What is telecommand?

A. Section 97.3(a)(43) defines *telecommand* as a one-way transmission to initiate, modify, or terminate functions of a device at a distance.

Section 97.213 authorizes an amateur station on or within 50 km of the Earth's surface to be under telecommand where:

- There is a radio or wireline control link between the control point and the station sufficient for the control operator to perform his/her duties. If radio, the control link must use an auxiliary station. A control link using a fiber optic cable or another telecommunication service is considered wireline.
- Provisions are incorporated to limit transmission by the station to a period of no more than 3 minutes in the event of malfunction in the control link.
- The station is protected against making, willfully or negligently, unauthorized transmissions.
- A photocopy of the station license and a label with the name, address, and telephone number of the station licensee and at least one designated control operator is posted in a conspicuous place at the station location.

Q. What is a control link?

A. Hamslanguage describes a *control link* as a radio or wireline connection between the control point and a remotely controlled station for the purpose of enabling the control operator to perform his/her duties.

Section 97.3(a)(38) employs that term in the definition of remote control as the use of a control operator who indirectly manipulates the operating adjustments in the station through a *control link* to achieve compliance with the FCC Rules.

Section 97.213(a) says that if by radio, the control link must use an auxiliary station. Section 97.3(a)(7) says an auxiliary station is an amateur station, other than in a message forwarding system, that is transmitting communications point-to-point within a system of cooperating amateur stations.

Q. What frequencies can be used for my radio control link?

A. Section 97.213(b) authorizes an auxiliary station to transmit on at least one segment of all VHF and shorter wavelength bands except 6 meters.

W3BE-O-GRAM: To minimize potential interference, seek from your local frequency coordinator a recommendation for a channel and associated operating and technical parameters.

Q. Can my repeater be a remote base?

A. Yes, in that a repeater – as well as any other FCC-licensed amateur station – is authorized to be remotely controlled. Read Section 97.109.

W3BE-O-GRAM: Past rulemaking proceedings would indicate that our amateur service community does not favor HF repeaters other than at the highest end of the 10-meter band. It does, however, support authorizing amateur stations to be under telecommand, although it is apparently unconvinced that auxiliary stations should be allowed to transmit on channels in bands below 2 meters.

Q. Could another ham use my remotely controlled 40 meter base station via the VHF uplink and UHF downlink with his auxiliary station?

A. He could, provided that you – the 40-meter station licensee – designated him as the control operator of your remotely controlled station. Heed Section 97.103(b).

You also have the option of transferring physical control of your station apparatus to him. Heed Section 97.5(a). In which case the call sign transmitted in the station identification announcement would be that assigned to his station. Read BE Informed No. 4 Which Call Sign?

He would have to hold the class of operator required to be the control operator of an amateur station transmitting on the segment of the 40-meter band on which your station transmits. Read Section 97.301.

Q. Would the repeater rules apply to my 40 meter remote base?

A. No. Your 40-meter station is not eligible for the special operation accommodations for a repeater station, as codified in

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Section 97.205, because it transmits and receives outside of the bands authorized for such. Paragraph (b) says that a repeater may receive and retransmit only on the 10 m and shorter wavelength frequency bands except the 28.0-29.5 MHz, 50.0-51.0 MHz, 144.0-144.5 MHz, 145.5-146.0 MHz, 222.00-222.15 MHz, 431.0-433.0 MHz, and 435.0-438.0 MHz segments.

The special accommodations for auxiliary stations in Section 97.201, however, are available for your VHF uplink and downlink stations. Paragraph (b) says that an auxiliary station may transmit only on the 2 m and shorter wavelength bands, except the 144.0-144.5 MHz, 145.8-146.0 MHz, 219-220 MHz, 222.00-222.15 MHz, 431-433 MHz, and 435-438 MHz segments.

Q. Would the repeater rules apply for a 2-meter remote base with UHF an uplink and a downlink?

A. Not unless your 2-meter station simultaneously retransmits the transmissions of another amateur station on a different channel or channels (other than a system point-to-point downlink.) Read Section 97.3(a)(39). Then it would be required to comply with the repeater rules in Section 97.205.

Q. But it would be simultaneously retransmitting the transmissions of another amateur station on the UHF downlink.

A. Assuming your downlink consists of an auxiliary station transmitting point-to-point communications received at your remotely control station - including possibly telemetry - back to its control point, it could not also be a repeater that qualifies for the special accommodations in Section 97.205.

Q. Can the downlink auxiliary station be under automatic control?

A. Yes, provided it does the job properly. Section 97.201(d) specifically authorizes an auxiliary station to be automatically controlled. It is one of four such authorizations. The others are: certain beacons, Section 97.203(d); repeaters, Section 97.205(d); and certain digital stations, with restrictions, Section 97.221(c).

Q. We are going to offer an activity award for working those who have served, or are currently serving in the military. Someone said that you petitioned the FCC to allow military veterans to use a special suffix - did this go through?

A. No, it was dismissed. It asked for exclusive use of specific identifiers by current and former military personnel. The FCC said that all hams can use them, regardless of whether they served our country militarily. Read BE Informed No. 11 Veterans' ID Petition for the pleading and the FCC dismissal.

Also read Including A Self-Assigned Indicator With Your Station Call Sign for recommendations on appending self-assigned indicators consistent with Section 97.119(d).

W3BE-O-GRAM: View a faded 1945 photograph of one 17-year-old Navyman who went on to become a ham operator: < <http://www.w3BEInformed.org> >

Q. Is it permissible for our RACES group to use only tactical call signs; never ID'ing with their assigned FCC call signs?

A. Not and be compliant with Section 97.119(a): Each amateur station, except a space station or telecommand station,

must transmit its FCC-assigned call sign on its transmitting channel at the end of each communication, and at least every 10 minutes during a communication, for the purpose of clearly making the source of the transmissions from the station known to those receiving the transmissions.

No station may transmit unidentified communications or signals, or transmit as the station call sign, any call sign not authorized to the station.

Q. The tail numbers on airplanes are just like our ham call signs. Pilots use them as their call signs. Aren't station call signs supposed to be unique, across all radio services?

A. Yes. Aircraft registration numbers, however, are sometimes similar to amateur station call signs.

Section 87.107(a) authorizes an aircraft station to radio identify by one of several possible ways. When communication is initiated by a ground station, an aircraft station may use the type of aircraft followed by the last three characters of the registration marking.

While piloting our flying club's N4850A, I used "Tripacer five-zero-alpha" during tower and other aircraft intercommunications.

SUPERHAM



R&R Superham Denny Avers
W3DRY. Congratulations, Denny!

Read the rules - Heed the rules

Visit <http://www.w3BEInformed.org> for links to rules and information sites. E-mail your questions about the amateur service rules to john@johnston.net.



In Reprise: ‘That Little 2-Meter 300-Ohm Twinlead J-Pole’

By Richard Fisher, KI6SN

At least every couple of months an e-mail arrives asking for details about “that little 2-meter 300-ohm twinlead J-pole” featured in *WorldRadio* “some time back.” This has been going on for *more than eight years*.

The writers are referring to a **WR QRP** column that appeared in the magazine’s print version in September 2002. Under the headline *Keeping the ‘Simple’ in Simplex On QRP 2-Meter FM*, the piece focused on the Loose-Wire Double Radiator J-Pole – L-WDR-J, for short – described by the late antenna guru L.B. Cebik, W4RNL. Why the KI6SN version continues to capture the interest of readers is a mystery. But that’s the case.

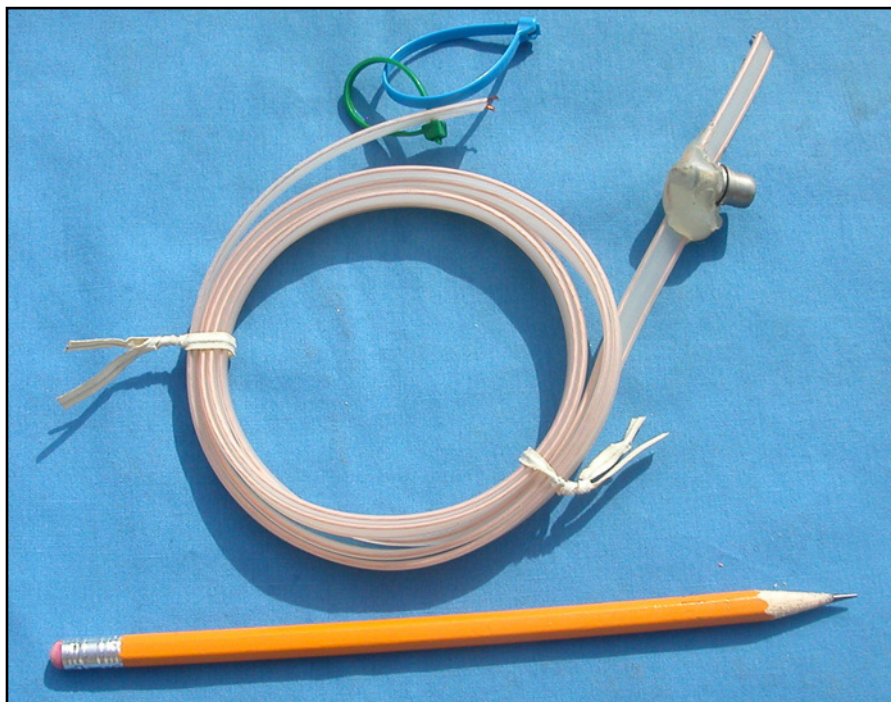
With the American Radio Relay League-sponsored January VHF Sweepstakes right around the corner (January 22-24) and the CQ Worldwide VHF Contest this summer (July 16-17) – we thought it might be a good time to reprise details of this nice little antenna in *WorldRadio Online*.

Using the L-WDR-J, even newcomers to VHF contesting can be on 2-meter FM simplex from a local mountain, park, lake or beach – fully in the competition.

What should be particularly attractive to trail-friendly radio operators is the L-WDR-J’s simplicity of design, ease of construction, inexpensive parts, small size, light weight, portability and ruggedness. In short, it’s perfect for using in the field.

The L-WDR-J used at KI6SN has been rolled and unrolled hundreds of times. It has been up and down poles and trees. It has been hung on bushes and curtain rods and dangled from rocks and window sills. Despite this licking, it keeps on ticking – even after all these years.

As detailed in the 2002 column, the L-WDR-J features “a 34-inch radiator, a 22.5-inch *parallel* matching section and a feedpoint 2-inches above the base of the antenna. The half of the twinlead separated above the 22.5-inch matching section is the *loose wire*.



The W4RNL-inspired L-WDR-J 2-meter twinlead antenna can easily be rolled for compact storage when heading into the field. (Photos courtesy of KI6SN)

“As W4RNL explains, this design ‘emerges from the desire to use the twinlead intact for added strength. Therefore, instead of removing the wire that is parallel to the normal radiator (above the matching section), we leave it in place, cutting out only a small portion to allow one side of the matching section to be open.’” For more details, visit: < <http://scr.bi/ba8nym> >

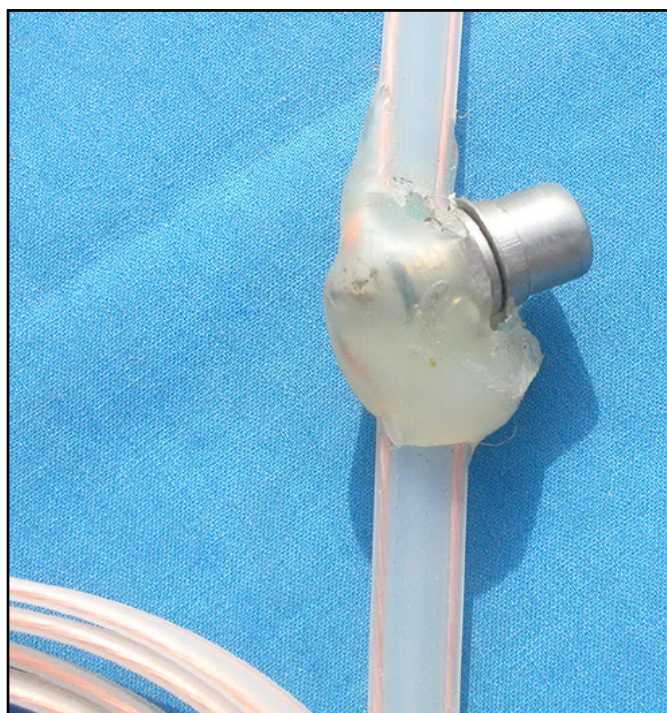
This antenna can easily be constructed in an hour or so, but great care must be taken in dressing the 300-ohm twinlead – especially at the antenna’s feedpoint.

As detailed in 2002, for the KI6SN version of the L-WDR-J, we chose to cut away a 3/4-inch long section of insulation that created a “window” – much like those seen in standard 450-ohm ladder line – in which a standard RCA phono plug was soldered to accept the coaxial feedline.

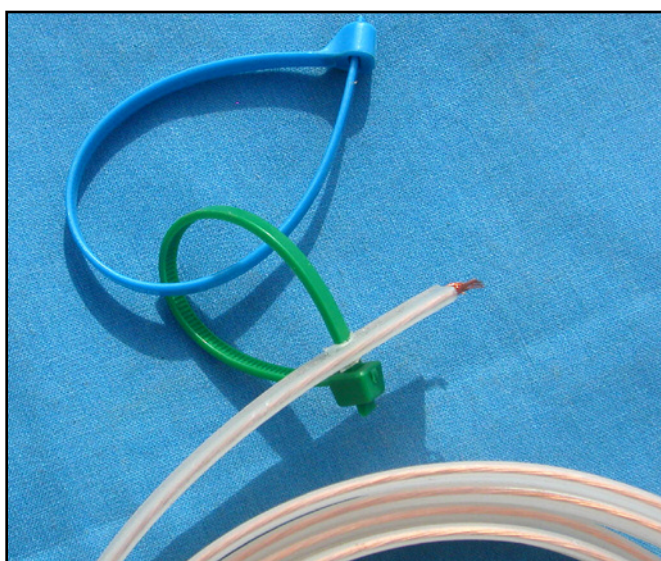
In this process, an X-acto knife was used to cut away the insulation between the parallel stranded wire feedline. Then a soldering iron was used to melt the insulation remaining directly on the wires. Melting the insulation reduces the chance of nicking the fine wires in 300-ohm twinlead. Of course, be sure to give your iron a good cleaning after doing this.

After carefully trimming any excess bits of insulation, the builder will have a 3/4-inch length of insulation-free parallel stranded wires. The rest of the insulated 300-ohm twinlead extends above and below this 3/4-inch stretch of parallel wires.

One of the bare antenna wires is then soldered to the center post of the RCA phono jack midway in the “window.” Next, solder the opposite stranded parallel wire to the ground post of RCA phono jack. *There’s your feedpoint.*



Hot glue covering the RCA plug and bared twinlead wires makes the feedpoint both rugged and weatherproof.



Small plastic wire ties are “chained” to provide support at the top of the L-WDR-J for hanging from a tree limb, curtain rod or other support when erecting the antenna for 2-meter FM operation.

The accompanying diagram shows pictorially how the jack is connected.

Next, from those solder points measure and mark the 300-ohm twinlead 2-inches below the RCA phono jack. Cut the twinlead there and trim about 1/2 inch of insulation from the parallel stranded wires. Ultimately they’ll be twisted together and soldered. But let’s not get ahead of ourselves.

From that 2-inch cut, measure up the twinlead, crossing over the phono jack feedpoint, a total of 56.5 inches. Mark it there and, again, cut the twinlead.

Now, identify the side of the twinlead that is connected to the ground lug of the RCA phono jack. This is the matching section side of the antenna. Measure 22.5 inches from the bottom of the antenna and mark it. Then measure 22.75 inches from the bottom of the antenna and mark it. This is the point where you’ll remove a 1/4-inch section of one of the twinlead wires. This simultaneously creates the matching section and the “loose wire.”

OK, now we’ve got an RCA phono plug dangling from a 3/4-inch section of insulation-free twinlead. That doesn’t sound very sturdy, does it? A hot glue gun can provide a solid solution. Filling the void with glue not only secures the wires and makes the RCA phono jack a solid foundation for the feedpoint, it also provides weatherproofing.

The last step is to twist and solder the twinlead wires at the base of the 2-inch stub. Before doing that, though, it’s a good idea to check for shorts. Set your digital multi-meter or VOM to “resistance” or “continuity.” Touch the meter’s probes to each side of the antenna at its base. If you see a short, you’ve got trouble. If not, you’re in good shape and can now twist and solder the twinlead wires at the base of the antenna.

A caution: It’s extremely important to measure each element of the L-WDR-J antenna precisely. And remember that the electrical length of the antenna begins at the tip of the twisted, soldered wires at the

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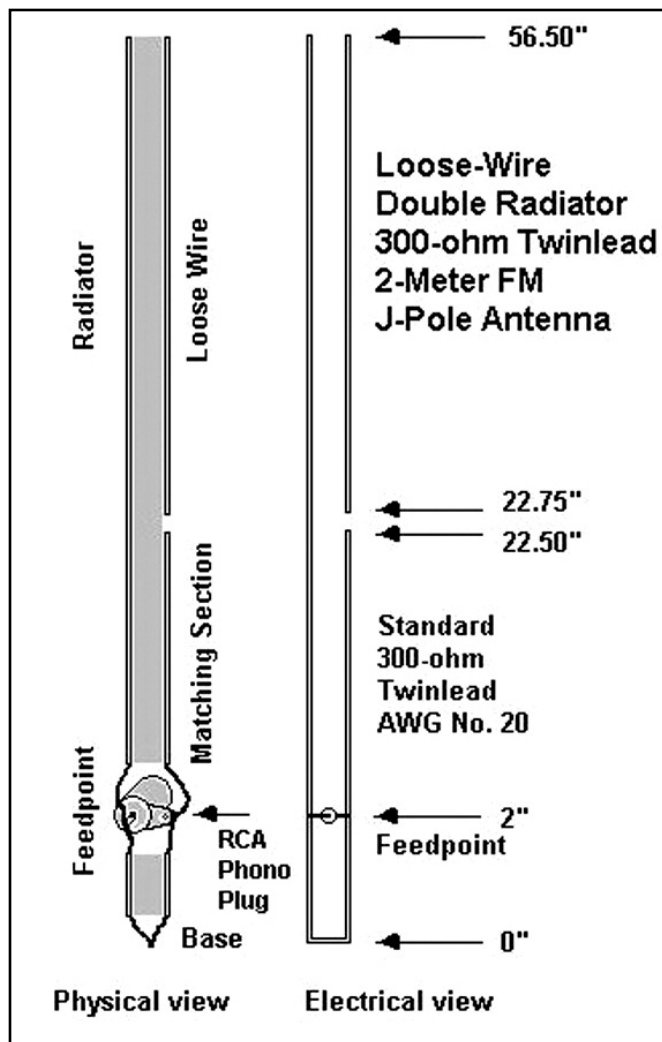


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base of the antenna and extends 56.5 inches up the twinlead from that point.

I've made lots of 2-meter FM simplex contacts on 146.52 MHz using the L-WDR-J antenna suspended in a tree about 20-feet above ground at KI6SN. Signal reports from more than 65 miles away have been excellent while running five watts output.

Since my feedline has a run of about 35-feet to the Kenwood TM-261A, a coaxial balun was wound using the feedline coax to prevent coupling between the J-pole and feedline. It is a simple matter of curling five turns of the feedline into a 4-inch diameter coil and securing it with electrical tape.

The L-WDR-J proved so popular at the time, the November 2002 QRP column carried a series of operating experiences, testimonials and questions about it from readers who had constructed the antenna. It was clear that builders and users had had positive results – having simplex contacts and hitting distant repeaters they could not reach previously.

Other contests to consider for 2-meter FM simplex action this year include the ARRL June VHF QSO Party, June 11-13; ARRL Field Day, June 25-26; and the ARRL September VHF QSO Party, September 10-12.

Why not try your hand at building the L-WDR-J, heading into the field and give 2-meter FM simplex a go? If your experience turns out to be as positive as many of those who have used this antenna since 2002, we suspect you'll be pleasantly surprised.

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Here's a peek at CQ's January issue:

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CONTEST CORNER

CONTEST: Straight Key Night

DATE & TIME: 0000-2359Z 1 Jan

BANDS/MODE: 80/40/20 CW

POINTS: None

MULTIPLIERS: None

EXCHANGE: Conversation! Include "SKN" so others know you are participating.

ENTRY CATEGORIES: Single op

ENTRIES: A list of stations worked to: ARRL Straight Key Night 225 Main Street Newington, CT 06111 or by E-mail to: StraightKey@arrl.org.
Note: Be sure to vote for best fist heard!

CONTEST: SARTG New Year's RTTY

DATE & TIME: 0800-1100Z 1 Jan

BANDS/MODE: 80/40M RTTY

POINTS: 1 Pt. per QSO

MULTIPLIERS: DXCC Countries except JW, JX, LA, OH, OH0, OJ0, OX, OY, OZ, SM, TF

EXCHANGE: RST + Serial # + "Happy New Year" in your native language

ENTRY CATEGORIES: Single op - All band; Multi op - All band

ENTRIES: 31 Jan SARTG Contest Manager Ewe Hakansson, SM7BHM Pilspevagen 4 SE-291 66 Kristianstad, Sweden
E-mail: contest@sartg.com

Rules at: <http://www.sartg.com/contest/nyrules.htm>

CONTEST: Original QRP

DATE & TIME: 1500Z 1 Jan - 1500Z 2 Jan

BANDS/MODE: 80/40/20M CW

POINTS: 1 Pt per QSO

MULTIPLIERS: DXCC X 2; + IT9

EXCHANGE: RS(T) + Serial # + Entry category

ENTRY CATEGORIES: Single op only! VLP = <1W out; QRP = <5W;

MP = <20W

ENTRIES: 31 Jan Cabrillo (preferred) to: oqrpc@qrpcc.de Lutz Gutheil, DL1RNN, Bergstrasse 17, D-38446 Wolfsburg, Germany

Rules at: www.qrpcc.de/contestrules/qqrpr.html

CONTEST: Kid's Day

DATE & TIME: 1800-2359Z 2 Jan

BANDS/MODE: All bands 80-10M SSB (Not on 30M band) + 2M repeaters

POINTS: None

MULTIPLIERS: None

EXCHANGE: Name + Age + QTH + favorite color

ENTRY CATEGORIES: Single ops encouraged to bring in a group of kids and have fun!

ENTRIES: Certificates are available for 9 X 12 SASE to: Kids Day ARRL 225 Main St., Newington, CT 06111 ATTN: Sean Kutzko, KX9X Survey and Certificates also available as a download at:

www.arrl.org/kids-day-survey-certificate

Information at: <http://lists.contesting.com/mailman/listinfo/kids>

Rules at: www.arrl.org/kids-day

Submit your story and photos to: www.arrl.org/soapbox

CONTEST: ARRL RTTY Roundup

DATE & TIME: 1800Z 8 Jan - 2359Z 9 Jan

BANDS/MODE: 80-10M RTTY, ASCII, AMTOR, PSK31, Attended Packet

POINTS: 1 Pt. per QSO

MULTIPLIERS: States/Provinces/DXCC (Hawaii and Alaska count as DX) once per band

EXCHANGE: RST + State/Province; DX gives RST + Serial #

ENTRY CATEGORIES: Single op - Low; Single op - High;

Multi op - Low; Multi op - High

ENTRIES: 8 Feb 2010 RTTY Roundup 225 Main St., Newington, CT 06111

Cabrillo format (preferred) to: rttyru@arrl.org

Rules at: <http://www.arrl.org/files/file/Contest%20Rules%20PDFs/2011/2011%20RTTY%20Rules.pdf>

CONTEST: North American QSO Party

DATE & TIME: 1800Z 8 Jan - 0600Z 9 Jan

BANDS/MODE: 160-10M CW

POINTS: 1 Pt. per QSO

MULTIPLIERS: State/Provinces/Territories/NA Countries

EXCHANGE: Name + State/Province/Territory/NA Country; non-NA sta's give name only

ENTRY CATEGORIES: Single op; Multi op, 2 XMTRS

ENTRIES: 14 Days Bruce Horn, WA7BNM 4225 Farndale Ave., Studio City, CA 91604

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Online Cabrillo form at: www.ncjweb.com/naqlogssubmit.php

E-mail: cwnaqp@ncjweb.com

Rules at: www.ncjweb.com/naqprules.pdf

CONTEST: SKCC Weekend Sprintathon

DATE & TIME: 0000-2359Z 9 Jan

BANDS/MODE: 160-6M CW

POINTS: 1 Pt per QSO per band

MULTIPLIERS: States/Provinces/DXCC countries

EXCHANGE: RST + QTH + Name + SKCC # if a member (Non-members give "NR None")

ENTRY CATEGORIES: Not given

ENTRIES: 5 Days - Online submission via score sheet at:

www.skccgroup.com/sprint/wes/wes-submit.html

Rules at: www.skccgroup.com/sprint/wes/#RULES

CONTEST: Hunting Lions In The Air

DATE & TIME: 0000Z 9 Jan - 2359Z 10 Jan

BANDS/MODE: 160-10M All modes

POINTS: 1 Pt. QSO with Lions Club member (Class 1); 5 Pts. other countries; 25 Pts. QSO with VU2LCI;

MULTIPLIERS: Lions Clubs worked

EXCHANGE: RS(T) + Serial # (If operation on behalf of a Lions,

Leo or Lioness Club give Club Name, Number and District Number)

ENTRY CATEGORIES: Single Op, Multi-Op (single XMTR only);

Class 1 = Lions Club members; Class 2 = Operation on behalf of a Lions, Lioness or Leo Club;

ENTRIES: 28 Feb HLITA Contest Committee, Lions Club of Bangalore

North, c/o Lion Ajoy, VU2JHM, 9/1 Kshitija, Opp Big Bazaar, 5-Cross,

Malleswaram, Bangalore-560003, India.

E-mail submissions to: lions@vsnl.net

Rules at: <http://lionshuntingintheair.lionwap.org/>

CONTEST: LZ Open Contest

DATE & TIME: 0200-0600Z 15 Jan

BANDS/MODE: 80 & 40M CW

POINTS: 1 Pt per QSO

MULTIPLIERS: None

EXCHANGE: Serial # + Serial Nr of the last correspondent's QSO

ENTRY CATEGORIES: Single Op, Multi-Op, QRP

ENTRIES: 10 Days

Online submission only, Cabrillo (preferred): lz1gl@yahoo.com

Rules at: <http://www.lzopen.com/>

CONTEST: North American QSO Party

DATE & TIME: 1800Z 15 Jan - 0600Z 16 Jan

BANDS/MODE: 160-10M SSB

POINTS: 1 Pt. per QSO

MULTIPLIERS: State/Provinces/Territories/NA Countries

EXCHANGE: Name + State/Province/Territory/NA Country;

non-NA sta's give name only

ENTRY CATEGORIES: Single op; Multi op, 2 XMTRS

ENTRIES: 14 Days Bruce Horn, WA7BNM 4225 Farndale Ave., Studio City, CA 91604

E-mail Cabrillo (preferred): ssbnaqp@ncjweb.com

Online Cabrillo form at: www.ncjweb.com/naqlogssubmit.php

E-mail: ssbnaqp@ncjweb.com

Rules at: www.ncjweb.com/naqprules.pdf

CONTEST: Run for the Bacon

DATE & TIME: 0100-0300Z 16 Jan

BANDS/MODE: 80-10M CW

POINTS: 1 Pt. non-member QSO; 3 Pts. FP member; 5 Pts. FP member different continent

MULTIPLIERS: States/Provinces/Countries

EXCHANGE: RST + State/Province/Country + FP #; (non-members give power)

ENTRY CATEGORIES: Single band; All band

ENTRIES: Online only! Form at: www.fpqrp.com/autolog.php

Rules at: www.fpqrp.com

CONTEST: ARRL January VHF Sweepstakes
DATE & TIME: 1900Z 22 Jan – 0359Z 24 Jan
BANDS/MODE: 6M and up
POINTS: 1 Pt. 50 or 144 MHz; 2 Pts. 222 or 432 MHz; 4 Pts. 902 or 1296 MHz; 8 Pts. 2.34 GHz or higher
MULTIPLIERS: Grid squares per band
EXCHANGE: Grid squares
ENTRY CATEGORIES: Single op – Low or High; Single op – Portable; Single op – Rover; Single op – Limited Rover; Multi op; Multi op – Limited
ENTRIES: 23 Feb Cabrillo files to: januaryvhf@arrl.org;
 January VHF, ARRL 225 Main St., Newington, CT 06111
 Rules at: www.arrl.org/january-vhf-sweepstakes

Contest: SKCC Straight Key Sprint
Date & Time: 0000-0200Z 26 Jan
Bands/Mode: 160-6M CW
Points: 1 Pt per QSO, per band
Multippliers: States/Provinces/DXCC
Exchange: RST + QTH + Name + SKCC # (if a member of SKCC)
Entry Categories: Not given
Entries: 3 Days - Online submission via score sheet at:
www.skccgroup.com/sprint/sks/sks-submit.html
 Rules at: <http://www.skccgroup.com/sprint/sks/>

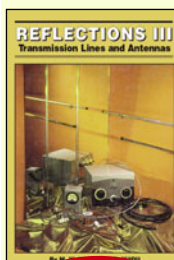
CONTEST: CQ 160M
DATE & TIME: 0000Z 28 Jan - 2359Z 30 Jan
BANDS/MODE: 160M CW
POINTS: 2 Pts. own country; 5 Pts. different country, same continent; 10 Pts. other continents; 5 Pts. Maritime Mobile QSO's
MULTIPLIERS: 48 States + DC/CA Provinces/KH6/KL7/DXCC
EXCHANGE: RST + State/Province; DX gives RST + CQ Zone
ENTRY CATEGORIES: Single op - High (>150W); Low (<150W); Single op – QRP; Single op – Assisted; Multi op
ENTRIES: 28 Feb CQ 160M Contest 25 Newbridge Rd., Hicksville, NY 11801
 E-mail: (Cabrillo) 160cw@kkn.net

Click here for information on listing your contest in the next issue of WRO!

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by Walter Maxwell, W2DU

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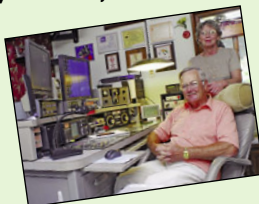
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VE EXAMS

As a service to our readers, WorldRadio Online presents a feature listing of those VE exams, times and locations which are sent to us. Please remember that our deadline for publication is two months in advance. For example, if your group is scheduling an exam for December, please have the information to us by October 1st. *World Radio Online*, VE Exams, 25 Newbridge Road, Hicksville, NY 11801. List the location (city and state), any information examinees should have (advance registration, etc.) and the name of the person to contact for further information. Examinees should bring their original license (along with a photo copy), two forms of identification (at least one should be a photo), and required fee.

p/r pref. = pre-register preferred but w/i OK

w/i = walk-in only

p/r = pre-registration only-no w/i

w/i pref. = w/i preferred to p/r

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Phoenix	4th Sat	Gary Hamman, 602-996-8148, K7GH@arrl.net		NEW JERSEY			
ARKANSAS				Roselle	4th Sat	Gerry, AA2ZJ, 732-283-2795, aa2zj@arrl.net	
Vilonia	3rd Sat	James, KE5OVE, 501-796-3910, ke5ove@arrl.net	p/r pref.	Winslow	4th Tues	Mark, K2AX, 609-820-1523, JTRA@comcast.net	
Harrison	2nd Sat	Bob, AJ5C, 870-365-3871, aj5c@cox.net		NEW YORK			
CALIFORNIA				Bethpage	2nd Tues	Bob, 631-499-2214, w2ilp@optonline.net	p/r
Highland	1/15	Ed, WU6I, 909-864-0155, wu6i@arrl.net	p/r pref.	Canandaigua	1st Wed	Squaw Island ARC, David A. Foster, 585-398-0216, D1161F@aol.com	w/i
LaVerne	Last Sat	Frank, K6FW, 909-628-8661, k6fw@arrl.net	p/r	Canandaigua	1st Wed	David Foster, 585-398-0216, www.siarc.us	w/i
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Manteca/Tracy	4th Sat	David, N5FDL, 209-835-6893, n5dfl@arrl.net	p/r	Yonkers	Call	Paul, AC2T, 914-237-5589, w2yrc@hotmail.com, www.yarc.org	w/i ok
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Sebastopol	Hotline!	Recording 707-579-9608		Sandusky	Call	Luther, N8HC, 419-684-7864, n8hc@arrl.net	p/r
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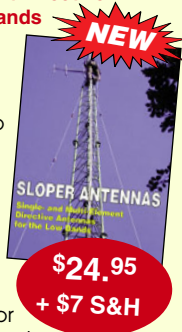
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By Juergen A. Weigl, OE5CWL

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Impedance, Baluns, Toroids and That End-Fed Dipole

By Kurt N. Sterba

As pointed out in recent columns, Krusty Olde Kurt's end fed dipole uses the coax shield as part of the antenna. At the antenna end of the cable, a quarter-wave long piece of wire is connected to the cable's center conductor. This is one half of the dipole.

The other half is part of the coax shield. A quarter-wave back toward the transmitter there is a high impedance inductor that stops any RF from going further along the cable. So, as far as the RF is concerned, this part of the coax shield is just a quarter-wave long.

So now we have a half-wave dipole fed in the center but with the coax coming out the end of the antenna instead of dropping down from the center.

The inductor is formed by winding the cable through F240-61 ferrite cores. In a more compact version for backpacking **WRO** Trail-Friendly Radio columnist Richard Fisher, KI6SN, used much smaller F114A-61 toroids.

Several readers have asked if, instead of winding the cable through toroids, they could use W2DU type baluns. These are just beads placed over the cable. Since there is no winding, it would be easy to move the beads along the cable to make the antenna portion shorter or longer thus facilitating band changes.

Kurt says no. The reason is due to the difference between the impedance at the center of a dipole, where W2DU baluns are designed to work, and the far higher impedance at the ends of the dipole. At the center the impedance is around 50 to 75 ohms depending on antenna height above ground.

Most manufacturers do not reveal their balun's impedance, but Palomar Engineers does on its website.

On 40 meters the Palomar balun kit has 500 ohms impedance. This is high enough in comparison with the antenna impedance to keep current from flowing down the outside of the shield.

At the end of the antenna the impedance is 1,000 ohms or more. We need an impedance higher than that to block the current – an absolute minimum of 2,500 ohms. You can get that with a lot more beads. Instead of 5.6-inches worth in the Palomar balun kit you'd need 28-inches of beads. That's a lot of beads to move around.

In KI6SN's trail-friendly end-fed dipole, the beads are only 2-inches long but he gets 2,500 ohms impedance. This is accomplished by winding 10 turns through the beads. The impedance goes up as the square of the number of turns. That is the problem with the W2DU balun: There is just one turn through the beads.

There is another important factor: The ferrite material of the beads. For the W2DU balun, where the power to the antenna is low, baluns use type 73 or 77 ferrite. For high power 43 is much better.

But at the end of the antenna there is high voltage across the beads (high RF voltage at the antenna end and, on the other side of beads, zero voltage on the grounded shield) and either of these will get hot and absorb some of your transmitter power.

Better to use 61 ferrite, as KI6SN does, because it is much less prone to heat up and reduce your transmitted power.

In QRP you like to have all your power radiated. You probably can't feel the beads getting hot at QRP power levels, but the loss is there. The permeability of 61 is a lot less than the other ferrites so

you get less impedance. But by winding the beads with multiple turns you still get enough impedance to do the job.

Antenna Tuning: 101

Kurt received this letter from an annoyed reader:

Kurt Sterba needs to try one more time regarding what antenna tuners do. His statement that the tuner tunes the antenna is false.

The tuner tunes the transmission line and antenna to resonance. It is not ideal to have the coax be part of the resonant circuit because it is a poor radiator.

Kurt confuses many people when he says that the SWR on the cable remains unchanged after tuning which means to most that the antenna performance is below what it would be at resonance.

It would be better to say that the tuner tunes each end of the transmission line as Kurt will explain. This is how it tunes the antenna. However, the coax itself does not radiate. Only the antenna radiates. The coax can't radiate because the RF is confined to the inside. The outer shield prevents any RF from escaping. It is all radiated by the antenna. It does not matter what the SWR is. The coax does not radiate.

Also Kurt wants everyone to understand that a non-resonant antenna radiates just as well as a resonant one. There is no practical difference in the radiation resistance and loss resistance between the two. The reason we tune the antenna to resonance is that it's a lot easier to get power into it. At resonance it is purely resistive. Off-resonance it also has a lot of reactance. Our transmitters don't like that.

Here's how your tuner tunes the antenna: If you look into one end of a length of coax you will see 50 ohms only if there is a 50 ohm resistor at the other end. If there is some other value of resistance, say 500 ohms, then you will see something different. If the cable is a half-wave or a multiple of a half-wave long you will see 500 ohms. But if the cable is some other length you will see a different resistance and also some reactance. What you see depends on the length of the cable.

So, if your antenna is non-resonant it will present the cable with resistance and reactance. At the transmitter end your tuner will see some resistance and reactance depending on the length of the cable. If the tuner is adjusted to present the same resistance and the same, but opposite polarity, then the two reactances cancel and just resistance is left. This end of the cable is tuned.

At the antenna end the cable looks to have the same resistance as the antenna but, since we set the tuner to have opposite polarity, the antenna sees opposite reactance. The two reactances cancel and the antenna is tuned to resonance.

But why does the SWR on the cable not change to 1:1? That's because the cable is still looking at the *off-resonant* antenna. It is providing the extra reactance that resonates the antenna but it is not looking at that reactance because that reactance is part of itself. This is a bit difficult to understand but if you think about it awhile you'll see.

Kurt welcomes questions of general interest from readers and will answer them in his Kolumn. Write to him at: WorldRadioOnline@gmail.com.