

WorldRadio

ONLINE

Year 39, Issue 10

APRIL 2010



MARS Adopts New Approach in Haiti Relief, pg. 14

**The High Drama of
Tower Safety, pg. 8**

**Are You A Semi-Pro
Radio Ace? pg. 20**

**A 'Good Day' in
the Ionosphere, pg. 36**

NEWS • FCC • DX • QCWA • CONTESTS • HAMFESTS • YL • AMSAT • CW



FCC Team Assesses Haiti Communications, Praises Radio Amateurs

A Federal Communications Commission-led assessment team traveled to Haiti to evaluate the status of the country's communications infrastructure following the earthquake that struck Jan. 12. Deployed in coordination with the United States Agency for International Development, the group came in response to a request from the Director General of Haiti's Conatel, the national telecommunications regulatory agency.

The FCC team was led by International Bureau Chief Mindel De La Torre, who recognized efforts by radio amateurs. Writing on the FCC blog, DeLaTorre said the amateur radio community in Haiti, the Dominican Republic and elsewhere has dedicated equipment and spectrum resources to the relief efforts.

(FCC, Amateur Radio Newsline)

NASA to Launch Three New CubeSats in November

Three small research satellites with amateur radio educational payloads are scheduled for launch in late November. Called CubeSats because of their shape, they come from Montana State University, the University of Colorado and Kentucky Space as part of NASA's Educational Launch of Nanosatellite mission.

Kentucky's KySat-1 is believed to be the first CubeSat to carry a 2 meter-to-70 cm FM transponder – truly a crossband repeater in space and one that should be accessible by most radio amateurs within its flight path, authorities said.

CubeSats are in a class of small research spacecraft called pico-satellites. They have a volume of about one quart and weigh no more than 2.2 pounds. The University of Florida was selected as an alternate in case one of the three primary spacecraft cannot fly.

(ANS, Southgate, others)

Revised Element 2 Technician Question Pool Released by NCVEC

A revision to the new Element 2 Technician class testing question pool has been released after a committee of the National Conference of Volunteer Examiner Coordinators found and corrected more than 50 typographical errors and clarified questions and answers to make them easier to understand.

The changes are now incorporated in a revised Element 2 question pool that contains some 400 questions. Thirty-five are selected to make up any given Element 2 exam. And in a departure from past Element 2 question pools, this one contains graphics and diagrams. The errata list, as well as the revised Technician question pool, is available at: <http://www.ncvec.org>.

This new Element 2 question pool becomes effective for Technician class examinations administered on or after July 1 and will remain valid until June 30, 2014.

(NCVEC)

Top Band Dinner Planned This Month in Visalia

The Top Band Dinner, recognizing operations on the 1.8 MHz 160 meter band, will be Friday, April 16, in con-

junction with the 2010 Visalia DX Convention at the convention hotel - Visalia Holiday Inn in Visalia, CA.

The buffet-style dinner's guest speaker will be Bruce Butler, W6OSP, whose program will be "The Low Bands from K4M, Midway."

For reservations, e-mail: wb6rse1@mac.com

(Amateur Radio Newsline)

UK RadCom Columnist Norman Fitch, G3FPK – S.K.

Radio Communications magazine VHF/UHF columnist Norman Fitch, G3FPK, described as "having been a keen operator on the VHF/UHF and microwave bands and had been writing for over 20 years," has died.

The Southgate news reports that Mr. Fitch was found deceased at his home in Surrey, England on Friday, January 29.

G3FPK took over RadCom VHF/UHF duties from Ken Willis, G8VR, in April 1989 when it was part of the Spectrum Analysis feature of the magazine. The column then became VHF/UHF News and eventually, it became the VHF/UHF column of today.

(GB2RS)

160 Meters OK'd for Spanish Radio Amateur Use in Some Contests

At the request of the Spain's national amateur radio society, the Spanish Director General of Telecommunications has permitted use of 160 meters in certain contests.

Several contest periods through the end of the year will now permit Spanish radio amateurs use of 1.810 to 2.000 MHz. A complete listing is online at the Union Radioaficionados Espanoles Web site: <http://www.ure.es>.

(URE, Amateur Radio Newsline)

CQ Contest Hall of Fame Inductees to Be Announced At Dayton Dinner

The 2010 inductees to the CQ Contest Hall of Fame will be announced at the 18th Annual Dayton Contest Dinner, Saturday, May 15 in the Van Cleve Ballroom of the Crowne Plaza Hotel in downtown Dayton, OH.

CQ Amateur Radio magazine Contest Editor John Dorr, K1AR, will be master of ceremonies. He'll be joined by CQ World-Wide Contest Director Bob Cox, K3EST, who will announce the new inductees. Tickets are available online only: <http://www.contestdinner.com>.

(K3LR)

Quick Hits: News From the DX Scene

Here's some upcoming activity to look out for in the chase for DX:

OH5SB, operating maritime mobile from the Baltic, will be on 2 meter SSB this summer: 144.288 or 144.300 MHz.

7Q7HB is expected to be on this month from Malawi – digital and CW.

EI6DX will be active portable 6W from Senegal in November – lower bands and CW. Updates: <http://www.ei6dx.com>.

(DX news services)

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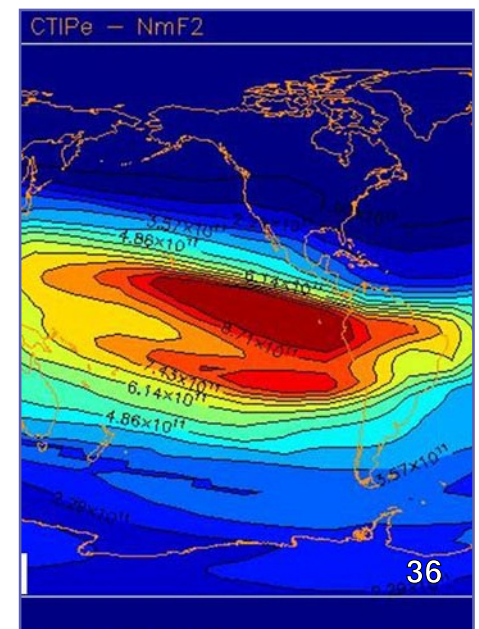
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ON THE COVER: U.S. Marines hand out rations to Haitian earthquake victims near Leogane. Chiefs of the Military Auxiliary Radio System, MARS, have adopted a new plan designed to bring "true unity of effort" to its Haiti relief response. Story, Page 14 (DoD photograph by Cpl. Bobbie A. Curtis, U.S. Marine Corps.)

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At A Crossroad

It hardly seems possible, but it *really* was 17 years ago this month I was introducing myself as the new QRP – low-power – columnist for **WorldRadio** magazine.

A lot of dits and dahs have coursed through the ionosphere since then. And today we find ourselves at another benchmark in the history of this fine magazine.

Nancy Kott, WZ8C, who for the past eight years has so admirably served at the editor's desk, has stepped down. In the story of **WorldRadio**, she will be known as a first rate journalist and as the captain who so masterfully steered us through a transition from print to online.

As her successor, I'm deeply indebted to WZ8C, and to the editors who so ably served before her in **WorldRadio's** 39 years.

Steven Stewart, W4ARZ, from Capon Ridge, WV, writes what surely are the sentiments of lots of **WorldRadio Online** visitors:

"(As) a long time reader, I think the (online) magazine is better than in its paper form," he said. "The color is a welcome change from the old black-and-white pages. The copy and writing styles are right on. Very polished product."

Thank Nancy, a great writing staff and a superb production team at CQ Communications, Inc., for that. Their fingerprints are all over the **WRO** that 'ARZ and so many others have appreciated monthly since February 2009.

Indeed, WZ8C's impact and contributions are indelible. We wish her well.

Now, as we come to this latest **WRO** crossroad, if you'd like a snapshot of the new editor, take a look at a copy of that introductory QRP column from April 1993. You'll find it posted on the new **WorldRadio Online** blog: <http://www.WorldRadioOnline.blogspot.com>.

The KI6SN of 2010 is pretty much the same as 17 years ago – only more curious than ever about the magic of amateur radio and with a deeper appreciation of this magazine and its readership.

By the way, the blog is just one of several new Internet entry points **WRO** readers are invited to use – featuring enhanced, frequently-updated content as a bonus to the monthly magazine. We hope you'll add them to your bookmarks.

NEW: **WRO** Live Chat Every Month

At the **WorldRadio Online** blog, make note of **WRO's** new monthly live Internet chat between the magazine staff and you, the reader.

We're making <http://www.WorldRadioOnline.blogspot.com> its home.

Radio amateurs from across North America and around the world are invited to take part. I'll be moderating and conversing with you during our first session: **Sunday, April 4, at 8 p.m. Eastern time.**

Here's how it will work: When the chat is live, type your question, comment or suggestion in the *Cover It Live* box on the blog and submit it. It will appear in a chat box for everyone to see. I'll respond. It's real-time conversation. You'll be able to see and comment on others' postings, too.

Along with the chat, we'll be conducting live readership polls during our monthly gab session.

This is an opportunity to sound off to the editor, columnists or other **WRO** readers.

I hope to see you there. If you'd like a reminder in advance of the April 4 inaugural session, visit the blog, type your e-mail address into the *Cover It Live* box and you'll automatically get a note prior to the session.

NEW: Follow **WRO** On Twitter

To bring you updates in the ever-changing world of amateur radio, **WRO** is now on Twitter: <http://www.twitter.com/WROmagazine>. We hope you'll follow us and check in several times a day for breaking news of interest to the radio amateur community – as well as links to videos and Web sites.

NEW: **WRO** On Facebook

WRO is now on Facebook: <http://www.facebook.com>. To find us, simply log-in to your Facebook account, type **WorldRadio Online** in the Search box and you'll see our direct link. We hope you'll stop in often and take part in the dialogue.

NEW: **WRO** E-Mail Address

In addition to all of this, we invite you to e-mail us directly at this new address: WorldRadioOnline@gmail.com.

Please keep in touch. We look forward to hearing from and about you.

— **Richard Fisher, KI6SN**

WorldRadio Online

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Tower Safety—It's More Than Just the Harness

By Christine Burke, KØALT

Editor's Note: WRO readers in November 2009 were treated to the cover story "One of Them," a humorous look at having a non-ham spouse, by Christine Burke, KØALT. After submitting the piece and attending a seminar on antenna tower safety, Burke learned the old lineman's belt she wore in the cover picture "did not set a very good safety example." This month Burke revisits her tower and brings a new perspective on safety techniques and climbing gear that can help assure antenna work is no accident.

It started with a bang – or more accurately, a *thunk*.

Mike Higgins, K6AER, stood in front of a room of people interested in learning about antenna tower safety at an amateur radio conference last year with an old leather climbing belt in his hand.

"Do you have one of these in your garage?" he asked. "Throw it away." And into a wastebasket it landed. "If one of these stops your fall, you'll either be dead or paralyzed."

"Yikes!" I thought. It looked just like the one in my basement. I had used it many times.

Mike went on to demonstrate the characteristics of an OSHA-approved fall arrest harness. He showed us fall lanyards and positioning lanyards, emphasizing the importance of staying attached to the tower at all times.

Although I was unhappy about the cost, I knew I should purchase a new harness. We didn't need a top-of-the line model. But we did need a fairly decent one that would allow one of us to be on the tower for two or three hours at a time in reasonable comfort.

I procrastinated until one day my tribander stopped working. It was time to plan a tower project.

After exchanging a few e-mails with K6AER, I went shopping on the Internet.

Christine Burke, KØALT, got her Novice license in 1970, her General in 1971, and her Extra in 2005. Most of her ham radio activity has been since 2004. She enjoys DXing and contesting from her QTH in rural western Colorado. Her other interests include cycling and whitewater canoeing.



This hoisting system uses two double pulleys, also called "blocks." One pulley is fixed, or "standing" and the other moves. If the hauling rope comes from the standing block, the mechanical advantage is 4. With no friction, a 100 pound load could be lifted with 25 pounds of force. If the hauling rope comes from the moving block, the mechanical advantage is 5. Real-world friction reduces the advantage. Note that a temporary steel thimble protects the rope where it is attached to the top pulley.

I sorted through a bewildering array of harnesses and lanyards, looked around for the best price and placed my order for a harness, a positioning lanyard and two fall lanyards.

I got a size medium, which would fit either my husband or me.

With the harness on the way, I began calling friends and discussing the details of the project with my husband, Mike Gross. When it comes to planning the actual maneuvers on the tower, he is the brains of our operation.

I knew we needed to pull the rotator, loosen the U-bolts on the monobander, and lower the heavy mast until the tribander, which was the top antenna, came within reach.

But how were we going to handle all that weight? "Let me think about it," Mike said. He began making sketches for a pulley system.

Ropes and Pulleys

Having proper climbing equipment is only one aspect of safe tower work. Another major consideration is handling heavy loads. To lift or lower them safely and efficiently requires practical skills with ropes and pulleys.

Although it involves some expense, it's essential to have a good quality rope of sufficient length.



Christine Burke, KØALT, practices using her new fall arrest safety climbing harness on the 69-foot tower at her rural western Colorado station.

The main load-hauling rope needs to be twice as long as your highest attachment point (probably a gin pole length above your top section), plus 20 or 30 feet for your ground crew to pull on, plus more for a block and tackle.

Depending on how you position your hoisting gear on the tower, the block and tackle could easily use another 30 to 50 feet of line. Any part of the line that has to pass through a pulley should be continuous and free of knots.

Once I was on a ground crew that had to stop, tie off a heavy load and untie a knot to get the line through the pulley at the bottom of the tower. It didn't feel safe.

Rope that is appropriate for your hauling system is unlikely to be available in the sale bin at the local home improvement store. What you'll find there is mostly in 100-foot lengths, and it might be too stretchy.

We got our hauling rope from a discount camping store that carries mountaineering rope. The low-stretch, tightly braided polyester rope used by climbers and rescue teams is called "static line" or "accessory cord."

It is durable, abrasion-resistant, and will pull your load rather than stretching out when you haul on it. (Climbers also use stretchy "dynamic" ropes for fall protection, so take care to get the right kind.)

For our purposes, the diameter should be at least 3/8 inch, or 8 mm. If you get your rope from a marine supply store, look for low-stretch line that is suitable for halyards.

Besides the main hauling system, we also use a delivery system for sending tools, the rotator, and other small items up and



Mike Gross, KØALT's husband, connects a balun to her lowered tribander antenna during a recent tower climbing excursion.

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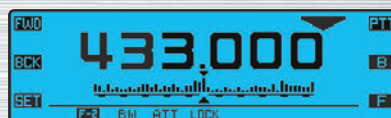
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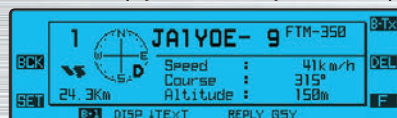
Dual Band (Spectrum Scope function)



Navigation (with GPS antenna unit attached)



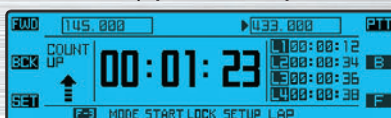
Mono Band (Spectrum Scope function)



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down the tower. You can be less choosy about this rope.

The delivery system only requires a single pulley at the top. The canvas tote bags that are given away at conventions make handy delivery buckets.

When we maneuver an antenna up through the guys, a person on the ground uses a tag line to adjust its angle or position. A 100-foot rope from the hardware store will probably be sufficient for this use. And because no pulleys are involved, you can safely tie two ropes together to get the desired length.

To lower our mast, Mike rigged a pulley system with several components. At one end of the line was a cast iron hook secured in the bottom of the mast. From there, the line went up to the top of the tower, through a pulley, and down the tower. Part way down the tower, on the outside, he inserted a double block and tackle.

At the bottom of the tower was one more pulley to allow for a horizontal pull. A load that would have been dangerously heavy became easily manageable for me with the help of one backup person.

For more information about rigging ropes and pulleys to create a mechanical advantage, there's a great little illustrated book called *Moving Heavy Things*, by Jan Adkins.

A tie-off post about twenty feet from the tower allows the ground crew to rest while work is being performed above. We sank a four-by-four with about three feet in the ground and two feet above ground.

Not All Knots Are Safe

If you are going to use ropes to do work, you'll need to know a few good knots.

There's a difference between *hitches*, which attach ropes to objects, and *bends*, which tie two ropes together.

I was surprised to learn that the reef or square knot that we learned as children is not an all-purpose knot. When improperly used, it can be downright dangerous.

According to Clifford W. Ashley in *The Ashley Book of Knots*, "There have probably been more lives lost as a result of using a Square Knot as a bend (to tie two ropes together) than from the failure of any other half dozen knots combined."

Useful bends include the sheet bend, the carrick bend, and Ashley's bend.

For attaching a rope to a mast, an antenna, or a piece of coax, use a hitch, such as a rolling hitch. The bowline is excellent when you need a loop that doesn't cinch up.

It's not necessary to invest in the encyclopedic, though fascinating book by Ashley. A smaller book, such as *The Handbook of Knots, A Step-by-Step Guide to Tying and Using More Than 100 Knots*, by Des Pawson, can be a fine resource for learning the basics.

Site Inspection

It's easy to become so goal-driven that you develop tunnel vision. When my tribander stopped working, I spent a lot of time fussing over traps and worrying about the rapid approach of winter.

It didn't even occur to me that the tower guys might have become loose after a couple of years of no adjustments. I'm embarrassed to say that a friend had to point it out to me. We get into more about guys in the sidebar "*Tower Safety: Areas of Special Concern*."

So, before starting a tower project, do a site inspection. Look at the area around your tower base. Cut or remove tall, thick

grass and weeds that can obscure trip hazards such as rocks and holes. Your ground crew needs a clear path for rope-pulling and other tasks.

Also check any areas where you might need to drag a rope. We learned the hard way that if you drag a rope through a patch of prickly pear cactus, you'll get a rope full of spines. Fortunately, the spines came out after we ran the rope through the clothes washer. (Always wash rope inside a mesh bag!) I also dug up the offending plants before the next work session.

Hard Hats Only Work When They're On Your Head

Any good article on tower safety will mention hard hats, especially for the ground crew. The problem is that the hat only works if you wear it.

It's a challenge to get people to use them. Without a chin strap, even a snug-fitting hat can fall off the first time you look up at the top of the tower.

Tower Safety: Areas of Special Concern

- **Don't over-tighten tower bolts.** It can compromise the structural integrity of the tubing, or make it tougher to remove the sections if you need to take it down.
- **Tower legs are particularly vulnerable** to corrosion near the concrete base. The concrete should be crowned so that water drains away and dirt does not collect there. Even galvanized metal can rust. Bill Brown, KØUK, applies a coat of rust-resistant paint on the lowest tower section if it is used as a base.
- **Water collecting in tower legs** can cause serious damage, especially when it freezes. The installation specifications for Rohn towers call for the tower legs to extend into a gravel bed underneath the concrete base for drainage purposes. Even so, water can build up in the legs. Bill drills a tiny weep hole in each leg, near the concrete. Each year Bill applies some rust resistant paint to this hole, making sure it doesn't block the hole.
- **Over-engineer the guy anchor points.** Bill sets a piece of four-inch or six-inch steel I-beam in concrete, with a couple of feet extending above ground. Elevating the attachment point above ground level makes it easier to work on.
- **Maintain the proper guy tension.** Guys will normally loosen a little during hot weather due to thermal expansion, and this is acceptable. If you remove too much of the summer slack, they will be too tight in the winter. This will either cause the guys to stretch, or it will put too much tension on the tower. Some old timers can adjust guys by feel. It's probably better to obtain a tension measuring device. The Rohn manuals provide tension specifications for guys at 60 degrees Fahrenheit.
- **Inspect critical components once a year.** Check guy cables for rust. Examine guy assemblies, turnbuckles, nuts and bolts, and the overall appearance of the tower.
- **Always wear safety glasses** when working with steel cables, as well as a good pair of gloves. Leather is preferred due to toughness, but other materials can also work well.
- **Take care of your ropes.** Keep them clean and store them indoors. Ultra-violet light can weaken ropes. Before each use, inspect them for abrasion and other damage.
- **If you are climbing a tower other than your own,** find out who installed it and what specifications they used. Plus, do a thorough inspection of all critical areas similar to your maintenance routine.

— Christine Burke, KØALT

After that, what are the chances that you will bother to put it back on? Chin straps can be purchased as accessories, or you can fashion your own.

There is apparently a shortage of chin straps on ships and oil rigs operating in the Gulf of Mexico. In recent years, hundreds of hard hats have washed up on the beaches of Texas. Mike and I picked up two nice ones while on vacation last year.

According to Mike Higgins, K6AER, hard hats should meet the OSHA safety rating 1910.135 or ISO International Standard No. 3873-1977.

Listen to the Old Timers

Bill Brown, KØUK, has been a ham since he was 13 and has been climbing towers even longer.

As a young man in Kentucky, he helped his uncle and others with projects on both ham towers and commercial towers. Since he moved to Colorado in 1973, he's been involved in building several of the big contesting stations, as well as commercial tower work, such as taking down the old KSTR tower in Grand Junction.

"The main thing is common sense," Bill says. "It just doesn't make sense to work on the tower when it's too windy, rainy, or snowy, or when there is lightning nearby. And getting too close to power lines with any kind of object – that's just not smart."

"You should never be rushed. Your approach to the work needs to be calm and well-planned. If you start to get tired, come down the tower and take a break.

"If your hands or your feet start to get cramped, you'll start making mistakes. And you have to be strong and fit. If you're not, you shouldn't be up there. It's physically demanding. Know what your body can take.

"Also, I don't climb in the mid-summer when it's too awfully hot. I work on my tower in the mild weather."

Over-Engineer for Safety

Falling people and falling objects are not the only potential risks in tower work. The tower can buckle, or worse, fold or collapse, if it is not properly installed and maintained.

Bill stresses the importance of following the engineering specifications when installing a tower. "If you don't have the engineering manual for your tower, you can probably find it on the Internet," he says.

"Those specifications have a good margin of safety in them. Build to that spec, or even stronger, and don't cut corners. That way, if the wind blows, you know you have the extra 15 to 30 percent of strength."

Respect, Not Fear

Bill Brown was nine years old when he first hopped onto a tower and climbed up 20 feet to retrieve a dipole support rope. That's when his uncle realized it was time to teach the boy about safe climbing techniques.

"I started out with the old-style linesman's belt," he recalls. "I was never really afraid, but I always had respect. Fear doesn't do you any good. Working on a tower is the same at 30 feet as it is at 200 feet – it just doesn't feel that way to a lot of people. But you have to be calm and relaxed.

"Don't try to do something that is out of your league. Leave it alone, or ask someone who has the knowledge and experience to help you."

Teamwork and Planning

Bill Brown's advice for beginners is to "be a grunt on the

ground until you really know what you're doing. As you mature and get stronger, you can climb higher."

I asked him what he looks for in a ground crew. "You've got to have people with experience, and people who listen to them.

"In an inexperienced person, I look for the ability to take directions and not be a know-it-all. I don't want to work around macho behavior – people who are taking chances.

"An older fellow who used to climb a lot – but can't now – is wonderful to have on the ground crew. He is in synch with me. He or she will generally know what I'm doing, and anticipate what I need next.

"We have to be able to think two or three moves ahead. We have to understand the forces that are involved, and not stress the equipment or ourselves."

Working in three dimensions while 70 feet up can get complicated. When a project involves more than just a minor tweak, my husband writes a list of every step in the project.

Often, the act of making the list will raise new issues that we can deal with ahead of time. This reduces the amount of time spent on the tower, and prevents us from forgetting a step.

Forgotten steps can be costly in terms of time and energy. Once, we forgot to drill a hole. Mike had to send the part down, come down the tower, drill the hole, and climb back up. Even if he had trusted me to drill the hole, he would have had to wait on the tower.

I've learned a lot since we installed our tower in 2004. The antenna project in 2009 showed me that I still have plenty to learn.

Fortunately, my mistakes have been small ones, such as getting cactus spines in a rope, or forgetting to drill a hole. In the future, I'll continue to listen to the voices of experience, and remember to keep the big picture in mind.

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MARS Chiefs Draft Unprecedented Plan for Cooperation in Haiti

In a bold break with tradition, leaders of the three branches of the Military Auxiliary Radio System (MARS) have shaken hands on a plan that assigns specific responsibilities for communications support in Haiti following the 7.0 earthquake that devastated the country Jan. 12.

Volunteer MARS radio operators representing all three service MARS programs have been on the ground in Haiti, working with military and medical teams to provide communications support.

"The delegation of responsibilities among the three MARS services not only makes practical sense, but is an excellent example of interoperability in action," said Allen Eiermann, Chief of the Air Force MARS program.

Army MARS has been charged with coordinating "frequency authorizations and use of digital communications for MARS operations on the island, including the transmission of e-mail via radio links. This capability is especially useful in the absence of internet connectivity," according to a news release from David J. Trachtenberg, N4WWL, public information officer for Region III and Northeast Area of U.S. Air Force MARS.

Navy-Marine Corps MARS is responsible for recruiting volunteers for all three MARS services for MARS operation in Haiti.

Air Force MARS has primary responsibility for coordinating and releasing public affairs information on the activities of MARS radio operators assisting in the relief operation.

"This represents true unity of effort," said Jim Griffin, the Army MARS Chief. Bo Lindfors, Chief of the Navy-Marine Corps MARS program, noted that the success of the MARS operation so far "demonstrates the value of this contingency communications capability in a real-world emergency," the release said.

The joint response initiated by the three Chiefs' Feb. 2 decision could be seen as

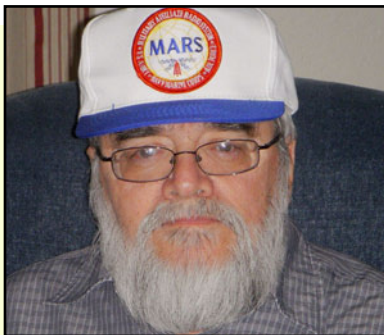


'Bo Lindfors, Chief of the Navy-Marine Corps MARS program, noted that the success of the MARS (Haiti) operation so far "demonstrates the value of this contingency communications capability in a real-world emergency."'

a routine enough operation but in fact represents a significant break with tradition, according to a MARS operator whose experience spans the last four chiefs' tenures.

Like the uniformed services themselves, the three MARS organizations have operated separately since their formation, each with its own command structure, membership qualifications, radio frequencies and net schedules. The result has been that in a disaster situation, it was hard to avoid duplication of activities and overt competition or inability to concentrate scattered assets where most needed.

A first breakthrough came a couple of years ago when a team of volunteer members from the three services compiled a joint Voice SOP (standard operating pro-



"The delegation of responsibilities among the three MARS services not only makes practical sense, but is an excellent example of interoperability in action." — Allen Eiermann, Air Force MARS Chief



"This represents true unity of effort." — Jim Griffin, Army MARS Chief.

cedure) for net operation, following NATO's lead.

Meanwhile two new communication modes produced collaboration at the specialist level. Navy-Marine Corps MARS took over development of the Automatic Link Establishment System (ALE) with members of the other services participating. Army MARS, which had adopted the Winlink e-mail-over-radio protocol provided training and frequency access to the others.

Collaboration at the member level goes back at least to the mid-1990s when Army MARS began reporting "Elements of Essential Information" (EEIs) on major accidents and disasters. It was the great Northridge Earthquake of 1994 in the Los Angeles area that gave EEIs their first application, allowing the Pentagon to calibrate its response.

Air Force and Navy-Marine Corps members were soon contributing EEIs to the Pentagon's Director of Military Support.

In a Jan. 1998 directive on MARS activity, the Defense Department called for the three military department secretaries to "Encourage inter-Service operation of MARS stations on a regular basis." But there was no call for interoperability until much later.

MARS is a Department of Defense sponsored program, established as separately managed and operated programs by the Army, Navy-Marine Corps and Air Force, according to MARS' press release. Members are volunteer licensed civilian amateur radio operators who serve as an

organized military auxiliary and provide contingency radio communications support to the Department of Defense and to civil authorities at all levels.

"MARS operators assist in establishing communications under emergency conditions, or when conventional means of communications are unavailable, or are likely to become unavailable," it said. "They also provide health, morale and welfare radio communications support to members of the Armed Forces, civilian employees and contractors of the Department of Defense, as well as to civil agency employees and contractors, when in remote and isolated areas, in contingencies or whenever appropriate."

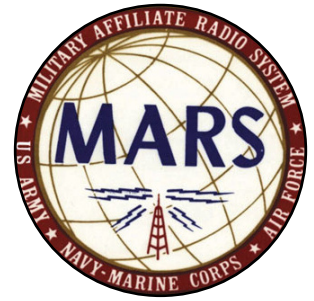
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An Emcomm Benchmark: We Know About Disasters. What About Catastrophes?

Bill Sexton N1IN/AAA9PC

—a momentous tragic event ranging from extreme misfortune to utter overthrow or ruin

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—utter failure

Merriam-Webster

I'm starting to write this column during the early hours of Haiti's suffering. *Warning*: Some of the content may be disturbing to some readers.

While I work at my laptop, a muted TV across the room relays scenes of carnage such as never aired before on the networks. (Look up carnage. The word is used literally here.) And where an unflappable Cronkite or Rather once upon a time would have handled the voice-over, this day's fervid reporting is coming from Twitter and YouTube. A cell phone camera in a tourist's hands informs the world.

Already I'm concluding this is more than just another instance of nature's wrath. Unfolding on America's doorstep, projected

into our homes in tormenting detail, it's no less than a compelling benchmark for measuring our own capacity to cope.

Who could ever forget this tragedy?

Two months must pass before these mid-January musings will be read in the April issue of WorldRadio Online. That's a typical lead-time to produce this sort of magazine.

Haiti's plight won't have been forgotten in that time, but it's a sure bet any lessons learned in Port-au-Prince will be far out of most people's minds come the middle of March. One fresh crisis after another will have captured people's attention in turn.

Let's face it: Serious preparation for disaster is always able to be postponed – especially spending money on it – and it's no fun to think about anyway. We can and do forget.

The consternation of 9/11 isn't exactly forgotten eight years on, but this country has yet to seriously address shoreline and port protection, chemical plant security, power transmission redundancy and preservation of the Internet's integrity.



Staff Sgt. Steven Pearsoll from Combat Logistics Battalion 22, 22nd Marine Expeditionary Unit, hands out rations at a distribution site in Petit Goave, Haiti. (U.S. Marine Corps photo by Cpl. Theodore W. Ritchie)

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And yes, we frequently talk about Hurricane Katrina. Yet the mounting fragility of levees on so many river systems, the folly of undiminished construction in coastal lowlands, the vulnerability of aging highways and bridges and gross inadequacy of the railroad network always remain on next year's agenda, or the next administration's. (Like rebuilding New Orleans.)

If You're Ever in a Quake . . .

On the TV I see a collapsed school ringed by anguished parents, a few people struggling to move heavy chunks of concrete. It brings to mind a true story:

Parishioners at a Tokyo church some years ago met with a seismologist for a discussion on how to react during Japan's frequent earthquakes. At the end of the meeting the expert asked each person in turn to relate what his or her first action would be when a serious temblor happens. Get outside into the open fast, said one. Make sure the gas is turned off, said another. Check on my elderly mother, fill the bathtub with water, get flashlights ready, and so on.

You are all such optimists, the expert told them. Has it never occurred to you (he asked) that you might be gravely injured, that the building may have fallen

on top of you, that your family has perished around you? You seem to assume that only other people will be harmed. Think about it!

A good point to bring up when appropriations are being discussed for the rescue services. Now I'm wondering what possible lessons Americans might learn from Haiti. One surely is that rescue forces have to be capable of arriving much more quickly if appreciable numbers of lives are to be saved. For a major conurbation we're talking hundreds of extraction teams to probe the tumbled wreckage. Massive resources on the same scale could be required in a cataclysmic terrorist attack or flood.

And now that Smart Phones, YouTube, etc., have become the fastest source of situational awareness, FEMA and ARNORTH (the Army command responsible for domestic civil support) had better develop a mechanism to connect the millions of dots from tweeters and YouTube into a coherent picture of ground truth when the next big U.S. emergency comes along.

Especially if the catastrophe is a terrorist nuclear adventure. Or a massive coordinated attack on the Internet that shuts down the economy as well as homeland security. (Pretty much lost in this day's heavy news: Google and 30-or-so other corporations have had their computer systems penetrated recently by suspected Chinese agents.)

What Haiti Says to Hams

For the amateur community in general – but MARS in particular – it's pretty much the same old lessons. ARES and RACES are terribly diffuse above the state level. Training and effectiveness vary widely. Consolidation of resources is essential if we're to be really useful in catastrophe-level operations.

As for MARS, after all these years there's still no central operational doctrine allowing Army, Air Force and Navy-Marine Corps MARS to respond instantly under joint command, as common sense (and the National Incident Management System) demands.

Despite the Defense Department being urged to provide for unity of command, it's latest renewal of the charter under which the three services operate (DoD Instruction 4650.02, issued December 23, 2009) neatly sidesteps that all-surpassing issue. The buck is passed to three separate assistant secretaries of defense who probably will find no more time for resolving the issue than successive chiefs of MARS

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have. Not exactly a model for unity of command from the Pentagon, by the way.

Nor have we adequately planned for sending pre-organized response teams from safe areas into the obvious targets of man-made or natural calamity. Long overdue, these are, trained, equipped, and ready to move in minutes.

Still, there is good news from MARS. As this is being written, new software for emergency communication is about to graduate from beta testing. It enables MARS members to bridge a break in the Internet using VHF and HF radio for urgent official e-mail, military and civil. The Winlink 2000 protocol is not new, but the WINMOR client software to apply it without expensive auxiliary equipment represents a big breakthrough.

A fresh event on the TV catches my eye. Troops of the 82nd Airborne Division are arriving to clear city streets so that incoming supplies of food and water can reach survivors. I recall the Indian Ocean tsunami on the day after Christmas 2004 in which around 230,000 persons died. The U.S. Navy was fast on the spot there. Memorably so.

For all the differences of scale and causality and geography, disparate events

like the 2004 tsunami and Haiti earthquake – and Katrina and 9/11 and the Mumbai attack two years ago – all have one element in common. Each hits us like a jolt of electricity as if we hadn't been warned over and over again to expect it or something like it – not just *predictable* calamity but also the mind-stretching *unimaginable* kind.

Perils We Forget

Could a Haiti-level calamity, with thousands trapped, streets and freeways useless for rescuers' access, airport runways crumbled, seaport facilities wrecked, water and medicine exhausted, tens of thousands dying for lack of swift aid – could it happen in America?

Please friends, Google "New Madrid Fault" (the seismic zone that tracks the Mississippi River valley from Memphis to Chicago). Read how an upheaval there in 1811-1812 permanently shifted the Mississippi River's course. Church bells as far away as Boston were rung by the distant tremors.

Between Dec. 16, 1811 and March 15, 1812, it has been calculated more than 200 separate tremors occurred in this corridor, 15 of them between 6.7 and 7.7

magnitude (January's in Haiti: magnitude 7). Some damage would have been caused over an area of 230,000 square miles, roughly equivalent to all of Texas. Fortunately the West was barely settled then; no skyscrapers, no oil refineries, dams or bridges yet.

A few days ago local emergency management officials in a populous and very strategically sited metropolitan zone gathered for a "Catastrophic Planning Summit."

The several hundred participants were presented with a truly staggering disaster scenario. They sorted into groups according to their specialties and set about trying to devise a comprehensive rescue blueprint for the nine counties they represented.

According to one who was there, the conference adjourned after a day and a half's work without even a start on a plan. He said the officials, many of whom had plenty of experience with real-life *disasters*, simply couldn't grasp the scale of response a true *catastrophe* would require. It was simply beyond their imagination.

But that was before the wake-up call from Haiti. There's still time.

- Bill Sexton, N1IN / AAA9PC



SEMI-PRO RADIO ACES?

Ray Dio III, ex-K8DAI, Guest Columnist

Q The word “*amateur*” is never associated with anything of great significance. Even capitalizing its first letter “A” does not seem to make it any more respectable. Oftentimes it is used to describe a person who does something poorly, a dabbler or an untrained worker. Another definition says that it is a person inexperienced or unskilled in a particular activity. It’s little wonder, therefore, why so many people do not appreciate what it is that we take so very, very seriously. Please find another term to replace that disparaging moniker!

A. We should obviously consider terms meaning to be an unpaid expert; possibly an adaptation of “*professional*.” That term also means, however, to be compensated – often handsomely – for doing whatever it is that one does; a connotation does not fit in at all with our no-pay grade. We need to inform everyone that we’re highly competent even though we don’t accept compensation for pursuing our favorite hobby. The term “*semi-professional*,” therefore, could replace “*amateur*.”

Q. Excellent! Now, please give us a better term than “*ham*” operator?

A. The term “*ham*” usually means a cut of meat from a hog’s rear quarter or an actor who overplays a part. That does not describe most of us, at least. Let’s replace that disparaging term, therefore, term with “*ace*.”

Q. A *General* is always the top rank in most organizational structures. Something extra, moreover, is just a superfluous piece hanging around. Why, then, is a General Class operator considered a lower operator class than an unnecessary Amateur Extra?

A. It certainly does seem as though the ranks of our operator license classes are not accurately descriptive, chain-of-command-wise. So, here’s the way to rectify this deplorable inconsistency: Make every radio ace a General! Contemplate these titles:

Five-star Ultimate Commander-in-Chief General Class
(formerly Amateur Extra)

Four-star Supreme Commander General Class (Formerly Advanced)

Three-star General Class (No change)

Two-star Lieutenant General Class (Formerly Technician)

One-star Major General Class (Formerly Novice)

Q. Avast! Stand down there, Matey! Your new all-generals license structure discriminates unfairly against us sea-

faring types by not having admirals. Correct that oversight immediately, *MISTER!*

A. Aye, aye Sir! We’ll make it every licensee’s choice whether to be an Admiral Class or a General Class operator.

Q. These HF amateur stations transmitting one-way bulletins sound an awful lot like broadcasting stations to me and should be regulated as such so as not to disrupt our normal two-way intercommunications. What would you recommend?

A. Relinquish one channel per band for regular one-way bulletin hamcasting. Then assign time slots to those station licensees who think that some of us might be interested in hearing whatever it is they want to tie-up our precious frequencies telling us about.

Q. How would the time slots be selected?

A. Adopt the method once used by the FCC: conduct a lottery. Hold the drawing at a large acefest.

Q. How can I become more successful in phone contests? It gets so boring saying the exact same thing over and over.

A. You could use this method with which I once experimented. While shopping in the local mall, I spotted a sign in the pet shop window:

SPECIAL! TALKING BIRD \$49.95.

The idea struck me that such a bird might do most of the repetitive speaking during the upcoming phone contest weekend. Upon inquiring, I was told that the bird could be taught to say almost anything.

I asked, “Could it say, “QSL FIVE NINE OHIO?”

“He could learn that quickly,” answered the sales associate.

I asked, “How about: “CQ CONTEST, CQ CONTEST, CQ CONTEST from KILOWATT EIGHT DELTA ALPHA INDIA?”

“Of course,” he assured me.

I asked, “On command?”

“Absolutely,” was his reply.

So, I purchased the bird, a \$59.95 cage, and took them home. One week later, however, I was back at the store complaining that the bird wouldn’t talk.

“It is most likely that cage. A bird can get lonely living in a cage. He should have a mirror. When he sees his image in a mirror, he will think it is another bird,” said the clerk, “and they’re on sale today for only \$69.95.”

So, I bought a mirror and took it home to the bird. The next week, however, I was back at the store complaining that he still wouldn’t talk.

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"He has to be happy before he will talk," said the associate, "Did he peck on his little silver bell?"

"No." I confessed, "He doesn't have a bell."

"Well, he has to have a bell, or he won't be happy," said the associate, "And they're on sale today for only \$79.95."

So, I bought a bell and took it home to the bird. The next week, however, I was back at the store complaining that he still wouldn't talk.

"Did he peck on his little silver bell?" asked the associate.

"Yes, he did," I replied.

"Did he look into his little mirror?" asked the associate.

"Yes, he did," I said.

"Did he sit on his perch?" asked the associate.

"No, the perch is mounted at the top of his cage and he can't reach it," I explained.

"Well, then he needs a little ladder so he can climb up to his perch. That will make him happy enough to talk," said the associate, "And they're on sale today for only \$89.95."

So, I bought the ladder and took it home. But the next week, I was back at the store complaining again.

"What happened?" asked the associate.

"He pecked on his little bell, looked into his little mirror and started to climb his little ladder up to his perch. About half way up, however, he glared at me and spoke for the very first time. Then he dropped over dead."

"What did he say to you?" asked the associate.

"He said, 'Buy some bird feed, you nitwit!'"

The associate said, "I have good news for you. Our bird caskets are on sale today for only \$99.95."

Q. I plan to petition for a change in the FCC rules. Can you offer any suggestions about how to draft my proposed regulation?

A. Write it in gobbledygook. Learn to write so as to make it only seem that you are saying something of great importance. Do this by writing in overly long sentences that run on and on such that your readers lose interest completely while waiting for your point to be expressed and start thinking of something else which will divert their minds from the new rules that you are proposing. With practice, you, too, can write in gibberish.

Q. Why are you such a perfectionist?

A. It's not easy pinch-hitting here at the R&R nerve center, taking those tough questions about the rules. Years ago, I thought that I had heard all of them. Ah ha! I sure don't think that way anymore.

Besides, everyone is entitled to my own opinion.

For a little more insight, have your club, chapter or acefest engage my 4-hour briefing: MY LIFE SO FAR Part 1.001. If you book me before April 1, I will include - as a bonus - my fabulous 300 color slide presentation of OUR FAMILY REUNION 2007, 2008 and 2009.

Q. How did you get started in ham radio?

A. I started out with but one old radio and a dream.

Q. What was your radio?

A. It was a Hallicrafters Sky Buddy.

Q. And what was your dream?

A. My dream was to go to a major hamfest.

Q. What did you intend to do there?

A. I intended to sell off as brand new that old Sky Buddy.

Q. Realizing that ham radio is not fully appreciated by every non-ham spouse, I asked my XYL if she would marry another ham radio operator were I to pass away. When she surprised me with, "Perhaps," I followed up with, "You mean you would actually allow him to move in here and use my shack?"

Again she answered, "Perhaps."

Then I asked, "Would you really let him come in here and use my radios, my antennas, my microphone and my telegraph keyer?"

I thought I was making progress when she answered, "No, he couldn't use your keyer."

Whereupon I inquired, "Why couldn't he use my keyer?"

"Because he's left handed," was her reply. Your advice, please?

A. Don't eat the home-cooked mushrooms.

Q. I would like to erect an all-band HF wire antenna. What do you recommend?

A. Plant a couple of maple trees about 300 feet apart. When they have grown to about 60 feet high, you'll be all set to string up your wire antennas.

Q. What is the difference between a rule and a regulation?

A. Nothing actually. We are required to use both terms by the Department of Redundancy Department redundancy regulation rule codified in the Section 101.101 section codification. Every idiot knows that. Why, I've known it for years.

Q. What's the difference between a hamfest flea market and a junkyard?

A. The chow is much better at the junkyard.

Q. Which government agency regulates communications in the United States?

A. Err. I forgot.

Q. You mean you forgot which agency regulates communications in the US?

A. No, I forgot your question.

Our regular columnist, right-handed Semi-Pro Radio Service Five-star Ultimate Commander-in-Chief Admiral Class radio ace, W3BE, will return next month, hopefully having acquired my like-new Sky Buddy.

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.

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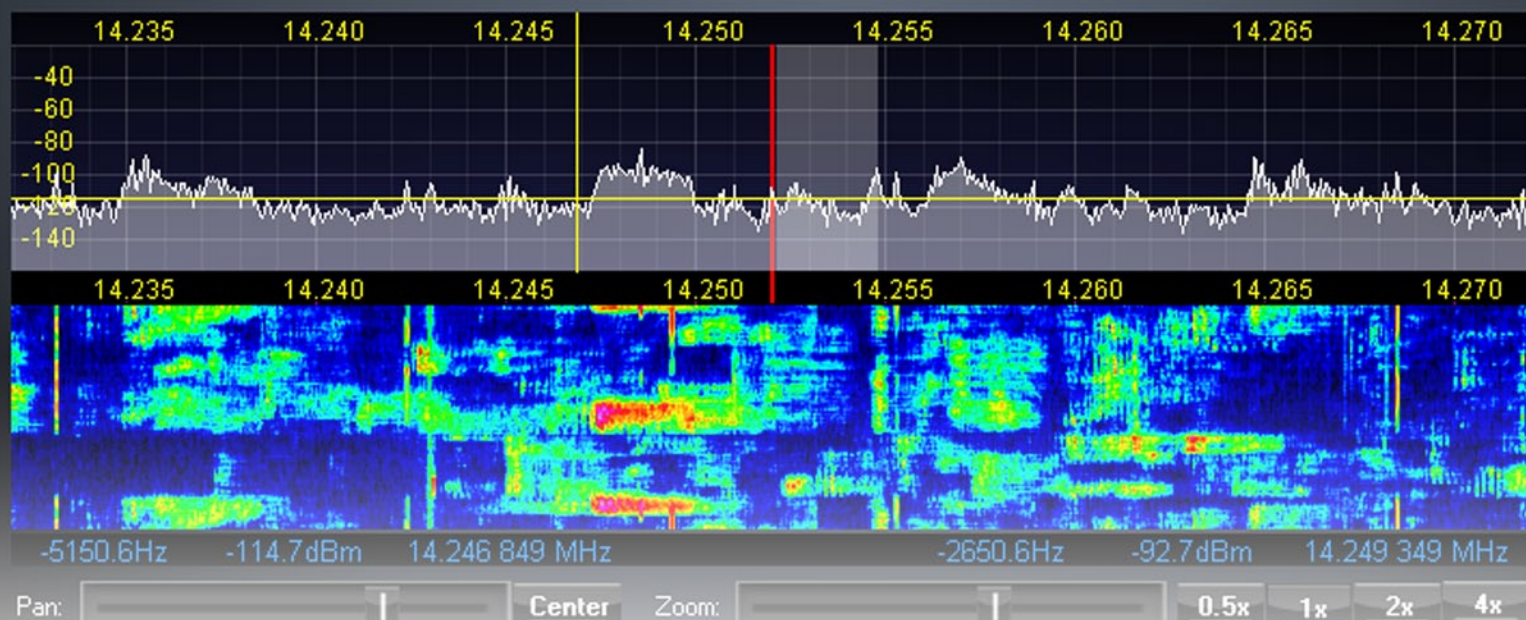
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When Chasing DX is Like Shooting Fish in a Barrel

Kelly Jones, NØVD

As the weather begins to turn from winter into spring, thoughts of warmer days and plans for outside activities begin to take over.

However, there are two very “juicy” weekends left before summer officially arrives that will make chasing DX as easy as shooting fish in a barrel.

If you have been a reader of this column for any length of time, you know that in addition to being a DXer, I often refer to myself as a “sometimes contesteer.”

It’s not uncommon that DXers find themselves playing around in the various contests. After all, with all of the great DXpeditions that are activated during the major contests, it’s quite easy to work DXCC in a single weekend – although a few sunspots would certainly help (more on that later).

Back to those juicy weekends – I’m referring to the CQ WPX contests. Both of these contests are an excellent way for you to pick up a few all-time new ones or perhaps work on some new band countries.

The interesting thing about the WPX contests from a DXer’s perspective is that many teams will travel to exotic places all around the world. That’s the first half of the equation.

The second half is that these rare and semi-rare activations are by contest teams that actually want to work you!

It doesn’t matter that you may not be in the contest full time. It doesn’t matter that you may only have a few minutes to chase the DX. It doesn’t matter that you may not be interested in submitting a log.

What does matter is that the DX stations are looking for you – they want you to call them during the contest. In layman’s terms, it’s a “win-win” situation for both sides. You get an easy shot at working some exotic DX while at the same time helping the DX station in the competition.

If you’re reading this as soon as the April edition is posted in late March, the CQ WPX SSB contest will be just around the corner. It’s scheduled for the weekend of March 27-28.

A few of the anticipated DX stations that plan to be active include 4L3A from Georgia, CR2X from the Azores and E51COF from South Cook Islands.

During the CW leg, scheduled to take place during the weekend of May 29-30, expect to see YN2GY from Nicaragua and VK9CLH from Lord Howe Island on the air.

Now, back to that “shooting fish in a barrel” comment – during the 2009 running of the WPX SSB contest, there were more than 33,000 participants. In addition to that staggering number, more than 1.8 million QSOs were logged and 209 DXCC entities were represented on the air.

So you see, you can indeed achieve DXCC in a single weekend – even if you worked just half of the DX stations on the air during the event. It’s not only the weather warming up, but expect the bands to heat up as well.



PJ2BVU (left) and KB0B (right) on the “Business End” at PJ2T during the 2009 CQ WPX SSB Contest.

So I hope your thoughts don’t completely turn to the outdoors just yet. Be sure to spin the dial around the bands during the last weekend of March and May. Even though the sunspots have been in the dumpster for the past few years (although things are starting to show some signs of life), you can be sure that when a major DX contest kicks off at 00:00Z, all of the RF seems to have a magical way of creating its own propagation.

3C0 – Annobon Island DXpedition

In another “just about the time you read this” scenario, be looking for a DXpedition to Annobon Island to hit the air. It is anticipated that Elmo Bernabe Coll, EA5BYP and Javier Dominguez Ferrer, EA5KM, will activate the island for 15 days in April as 3C0C – exact dates were not available at the time we went to press.

They plan to work all bands from 10 to 160 meters on SSB, CW and RTTY, with special consideration given to the low bands and CW. In an effort to help reduce noise and interference they plan to place the station on the outskirts of the city.

It’s interesting to note that Elmo has activated Annobon several times over the years. A very successful 3C0R DXpedition took place in 1999 while the 3C0V operation, which took place in late 2003, ended abruptly when the team was told to shut down and leave the island after just a few days of operation.

In a statement at the time, Elmo stated that “We do not feel free to share any additional details about what happened in order to keep open the possibility of future expeditions to Annobon.



Marty (K2PLF) shows off some of the local cuisine while on Curacao for the 2009 CQ WPX Contest.

“We hope you understand the difficult and delicate situation we went through. Nevertheless, we do not abandon hope of reactivating 3C0 when circumstances improve.”

Elmo has been working over the years to re-establish ham radio and DXing in Annobon. In 2006 he did a solo DXpedition as 3COM and now it seems that time and patience has once again opened the doors for a larger Annobon activation. QSL 3C0C to EA7FTR.

W5JQ Follow-Up

A couple of months ago I introduced you to a local DXer, Jay Temple, W5JQ, who had been in “retirement” for several years. Prior to his retirement, he had been a regular both on the air and at our local DX meetings.

As with many of us, other life priorities take over which leads to ham radio and DXing being put on the back burner. However, after a spur of the moment non-ham related trip to Dayton in 2009 – which happened to coincide with Hamvention – the DXing spark was rekindled.

As I was writing this month’s column, I received a phone call from Jay. He wanted to get together for a “guys night out” to discuss (or tell lies) about the new countries he’s worked and bounce around ideas for new antennas.

He has plans for raising his tower, installing new antennas and now he’s looking at acreage for building a larger station.

During our phone conversation I could imagine the rekindled gleam in his eye. He was talking about getting on his tower once the weather warmed up and potentially replacing his tri-bander with mono-banders.

I mentioned that several of the “major” DX contests were coming up and that he could easily pick up a few new ones during these events. That caught his interest and we now have tentative plans to both participate in the CQ WPX CW contest at the end of May.

It’s been a real inspiration to see Jay come out of “retirement” with the passion we all had when we first got on the air. In fact, his excitement has motivated me to get on a few tower projects of my own that I’ve been putting off.

It will certainly be nice to have another tower climber around to help with my new antennas!

A Bit of Humor

Remember the earlier mention of sunspots? It seems like we’ve been talking about them, or lack of, for what seems like forever.

Cycle24 officially began in December 2008. However, it has certainly been slow to ramp up.

A cycle that was once predicted to create HF propagation rivaling that of the late 50s, Cycle24 is now appearing to be quite the dud.

However, while recently wasting time on the Net, I ran across this “headline.” Now we have what appears to be the explanation:

“Goldman Sacks is reported to have heavily sold a new sunspot fund in the Fall of 2009. A spokesperson said ‘Our executives have a direct line to God and convinced Him to reduce the number of sunspots in 2010 in return for a position in our Sunspot Future Fund. We believe having God as an investor gives us the necessary edge for us to anticipate natural events.’”

And there you have it – the reason why Cycle24 has been less than impressive.

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. Until next time, see you in pileups - and now on Twitter as N0VD!

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Revisiting the OM: Three Months *After* the Mast

By Richard Fisher, KI6SN

The OM portable mast featured in the January 2010 Trail-Friendly Radio column – designed with PVC at KI6SN for use with very light-weight field antennas – piqued both interest and hesitation in many readers.

It seems operators either swear by, or swear at the notion of using short sections of plastic irrigation pipe to hold up sky-wires. And we're learning that properly putting together the OM puzzle is no casual matter.

For American author Richard Henry Dana, Jr., it was the classic *Two Years Before the Mast*.

For T-FR readers this April, it's *Three Months After the Mast* – a further look at PVC antenna supports. The good. The bad. And the ugly.

Euler's Law: Is the OM Bending the Rules Too Much?

Peter R. Jensen, VK2AQJ / G4GZT, writes from Sydney, Australia that he read about the KI6SN OM Mast "with considerable interest, but looked at the illustrations with considerable misgivings.

"In my opinion – as an architect – the 'S' shape of the antenna, even when guyed, suggests that it is obeying Euler's Law with complete faithfulness.

"The problem is the stiffness or otherwise of the plastic tubing and this could only be cured with an excessive number of vertical restraints (guys) or perhaps projecting rods (cross trees) as used on yacht masts.

"With the shape shown in the pictures in (January 2010's T-FR), only very slight additional download in the vertical direction is likely to make the whole antenna collapse. As taught to me in elementary engineering, even slight deflection from the vertical in a column under vertical load drastically lowers the load bearing capacity of the column.

"However, there is an elegant and simple solution to the needs of the treeless traveling amateur—something very important in inland Australia. This is what

in the UK is known as a 'roach pole' or in Australia as a 'surf fishing rod.'

"It is a fiberglass telescopic fishing rod that pulls out to 19 feet and closes down to a convenient four foot package with a maximum diameter of about 1.5 inches.

"When fully extended, this antenna is so stiff that no guying is required and attaching a thin plastic covered wire to its peak may induce a bit of bending, but that is all.

"I have used this set up to get onto 40 meters with a wire attached to the top of the pole and sloping back to an end feeding ATU (antenna tuning unit) and run against Earth (ground) with no problems.

"The wire can also be run straight up the side of the pole, too, and operated as a pure vertical. In this configuration, a considerably heavier wire can be used: Euler's Law again.

"Of course there is no interaction with the fiberglass rod and again the ATU can bring the antenna into resonance."

Editor's note: For a look at Euler's Laws, visit: <http://www.bookrags.com/research/eulers-laws-of-motion-wom/>

Only 15 Feet? The OM Mast is a Lightweight Wimp

John Mazzone, N2EIK, took one look at the OM PVC Mast and had to write: "Fifteen feet (in height)? I beg to differ. I have a 35-footer I have had up for almost a year now. It supports my 80-meter inverted L antenna. I can send pix if you like."

We like.

'EIK, of Kingston, NY, says that 35 feet in height "was my limit, but I think – in a non portable situation – if the sections can be fit inside each other with about a foot overlap, 50 feet may be possible. And quite heavy. I was thinking about a 66-footer for a 160 meter antenna."

As for the details on his mast: "What can I say other than every trip that I make to Lowes and the Home Depot is an adventure. It's funny and frustrating



Peter R. Jensen, VK2AQJ / G4GZT, says the fiberglass "roach pole" is a good, lightweight, easy-to-carry antenna support.

City _____ State _____ Zip _____ Phone (_____)- _____ - _____



John Mazzone, N2EIK, has had a “35-footer” PVC mast “up for almost a year now” in Kingston, NY.

when the associates there try to help and ask what I am trying to do.

“I have learned to just tell them ‘I am on a mission. Trust me. If I try to explain it, you will be even more confused.’

“The overall height was 35 feet, but I cut down to 33 for the antenna,” he said. “I decided to make this permanent and glue it.”

Editor’s note: More photographs of N2EIK’s mast and antenna configurations can be seen at the Trail-Friendly Radio Extra Web site: <http://www.TrailFriendlyRadio.blogspot.com>

Variations On a Theme: KCØBMF’s Spin On the PVC Mast

John Fickes, KCØBMF, writes from Truro, IA that the column on the OM Mast inspired him to show **WRO** readers his version.

“A little about it first,” he said. “I used four 10-foot tapered sections of PVC starting with four-inch diameter and working down to 1.5 inch.

“What I used to couple them together was just the PVC reducers – like from 4-inches to 3.5. I then reamed out the little lip that’s in the reducer so that the smaller section of PVC would slide through the reducer so that the two sections would overlap by about 6-inches instead of just the 1-to-2 inches.

“I drilled a hole clear through the reducer and added a bolt to keep the smaller piece from sliding clear through – giving me somewhere between 35 to 40 feet of height.

“I only used three guys, but also drove a steel fence post in the ground at the base and used three large hose clamps to clamp the 4-inch bottom piece to the fence post.

“About the drooping of the mast in winds: I read an article that (suggests) to squirt insulation foam in the top two sections. (It calls for) drilling a hole every foot-or-so and squirting some



This PVC mast configuration was used by John Fickes, KCØBMF, of Truro, IA during ARRL Field Day 2009.

in. The article said that by doing this it would make (the sections) more rigged."

Editor's note: To see more photographs of KCØBMF's PVC antenna mast, visit: <http://sites.google.com/site/kk0gamateurradio/>. Look on the left side, click on Field Day and then look at 2009.

Be Careful: There's Danger Overhead

Of course, design, construction and experimentation with home-made antenna supports – of PVC or any other material – must be done with extreme caution. The combination of materials' height and weight – especially when falling uncontrollably – can be lethal. Be sure you're clear of power lines and other hazards as well.

Bottom line: Be very careful. Use common sense. Use designs and materials that are well within tolerances for load-bearing expectations and capabilities.

Never erect antennas or supports alone or without proper safety equipment. If you don't have much antenna experience, call on others who do to help you.

Editor's note: Your ideas, suggestions and views are certainly welcome: KI6SN@aol.com

No Trees in North Dakota: A Knotty Problem for KØHL – Help!

Ken Muggli, KØHL, writes from Glen Ullin, ND that he likes operating mobile with an ICOM 7000 in his truck. "My antenna is a HI-Q screwdriver." And therein, he says, lies the problem.

"I have a list of six different places I would like to operate a special event station from.

I would like an antenna that is more efficient than my screwdriver.

"I live in North Dakota, the least forested state in the union – forget all antennas that require one end in a tree. We do not have trees. None.

"All operating will be stationary, not driving. Some of the locations have very tiny parking lots. Wire antennas are out of the question.

"Some of the locations have pavement and I will not be allowed to drive stakes into the pavement. That leaves me with one and only one choice: A vertical mounted in the bed of my pickup.

"I am thinking of a heavy duty 30-foot fiberglass mast with a wire through the center for the radiator, fed by an ICOM

AH-4 auto tuner mounted directly below the base of the antenna.

"Given that the mast will not have to support anything but a wire up the center, do you think this will work? Fabrication and welding of mounts is not a problem.

"My other thought: Is there an existing (military surplus) mast with a long whip on the end that I could use? I imagine a stout base spring with a considerable mast with a long flexible whip on top."

Editor's note: OK, T-FR aficionados. What suggestions do you have for KØHL? Please send them to KI6SN@aol.com

aol.com and we'll share them with everybody in an upcoming column.

On the Web: Trail-Friendly Radio Extra

For quick links to Web sites cited in Trail-Friendly Radio and more pictures from this month's contributors, visit Trail-Friendly Radio Extra on the Web: <http://www.TrailFriendlyRadio.blogspot.com>.

You can also view the January T-FR column featuring the KI6SN OM Mast at: http://www.worldradiomagazine.com/wro_issues/2010/WRO_01_2010.pdf.

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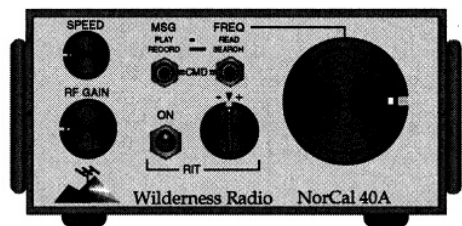
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Chinese HO-68 Brings High 'Hope' to Satellite Scene

By Terry Douds, N8KI

The Chinese launched a new satellite into orbit December 15 carrying an amateur radio payload initially known as XW-1. It began sending telemetry immediately after deployment, and has had good signal readings from around the world.

The XW-1 communications payload includes a beacon and three cross band transponders operating in FM, linear, and digital modes.

Here are the mode and uplink/downlink frequencies:

Mode V/U (J) FM Voice Repeater (30 dBm [1 w]): Uplink: 145.8250 MHz FM, PL 67.0 Hz.; Downlink: 435.6750 MHz FM

Mode V/U (J) Linear Transponder (Inverting) (30 dBm [1 w]): Uplink: 145.9250 - 145.9750 MHz SSB/CW; Downlink: 435.7650 - 435.7150 MHz SSB/CW

Mode V/U (J) PacSat BBS (30 dBm [1 w]): Uplink: 145.8250 MHz AFSK 1200 BPS; Downlink: 435.6750 MHz AFSK 1200 BPS

Mode Beacon (23 dBm [200mw]): Downlink: 435.7900 MHz CW

A great pair of videos produced in English by CCTV 9 in China about the bird is available on You Tube: <http://www.youtube.com/watch?v=n4-0yuC4Sx4&feature=related> and <http://www.youtube.com/watch?v=WwyTzt6JkC4>

<http://www.youtube.com/watch?v=WwyTzt6JkC4>

An XW-1 CW Telemetry Decoder developed by Mike Rupprecht, DK3WN, can be downloaded from his Web site: <http://www.dk3wn.info/software.shtml>

AMSAT-NA OSCAR Number Coordinator Bill Tynan, W3XO, quickly announced that XW-1 is now designated as Hope OSCAR 68, or HO-68. The letters XW in Chinese mean "hope," and it was asked that the word Hope be included in the designator for the satellite.

The latest official information can be found on-line on the AMSAT-China Web page: <http://www.camsat.cn/>

On December 30, during a low elevation pass, DK3WN and Henk Hamoen, PA3GUO, made the first SSTV contact via the HO-68 - linear transponder. A few images were transmitted between the two radio stations in Germany and The Netherlands. Signals were transmitted via HO-68, which was 1200km above Earth and about 8000km distant from both amateur radio stations. See the images here:

Henk has also produced a video showing all the modes available on HO-68. The 2 minute video features the launch of the satellite and shows its various modes of operation - Beacon,

CCTV 9 video, with details about China's Hope OSCAR 68, or HO-68, is among many amateur radio satellite videos accessible on You Tube.

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Show and Tell: Satellites Take Center Stage On YouTube

While I'm thinking about it, when you link to the HO-68 videos, especially on YouTube, take a look at the myriad other satellite-related videos there.

You Tube has truly become a valuable resource for satellite operators who want to see how these satellites work with actual results in audio and video. They can be very helpful to the new or seasoned operator.

Speaking of What's New in Birdland . . .

While we are on the subject of new birds, another one may be up by the time you read this. A new amateur satellite from India, called StudSat (STUDENT SATellite), was slated for a March 2010 launch.

StudSat plans to use a 10mW CW beacon on UHF and also a half duplex 9600 or 4800 bps FSK TC/TLM link with 1 watt output on UHF as well. Further information on StudSat can be found at: <http://www.teamstudsat.com/>.

ISS Space Walk Schedule Changed, Affecting Revised 'SuitSat' Deployment

NASA has informed AMSAT that the schedule of work for space walks at the International Space Station is being revised. The planned deployment of ARISSat-1 from the ISS is now

being scheduled for either Fall 2010 or early 2011 rather than Spring 2010.

ARISSat-1 is the revised version of "SuitSat," which was the parts of a satellite deployed inside a surplus space suit, and which is launched by hand from the ISS. This new version has been rebuilt into an actual satellite frame and should have a much longer use than did the SuitSat.

This schedule adjustment also impacts when ARISSat-1 will be flown to the Space Station, with upload likely to take place sometime in Summer 2010.

These revisions were made in response to new higher priority work that must be done during the timeframe of the space walk when ARISSat-1 was originally scheduled to have been deployed in April 2010.

Overall, this revision helps ARISSat-1 because it provides additional time for testing of the spacecraft. Furthermore, it also ensures that the NASA Safety Review process for ARISSat-1 can be concluded prior to shipment of the spacecraft to Russia.

The major items to complete for ARISSat-1 are the IHU software, PSU software, PSU testing and system testing. The structure is coming together well and the team looks forward to providing an innovative and reliable satellite this coming spring.

SO-67 (SumbandilaSat) Suspension Puts Amateurs On Hold

News has come from South Africa that amateur radio via SO-67 (SumbandilaSat) had to be suspended temporarily due to system commissioning requirements of the main payload.

After handover of operations of the commissioned payloads, the Satellite Applications Center planned to return SO-67 to scheduled amateur radio operation in the mid-March/early-April 2010 timeframe.

Phase-3E Project is Focus of AMSAT-DL Program

Peter Guelzow, DB2OS, of AMSAT-DL in Germany, gave a talk in mid-October concerning the upcoming Phase-3E project.

This bird will hopefully become the

new DX satellite to continue the work that was planned for AO-40, our last Molniya orbit satellite. It is being constructed in conjunction with the AMSAT-DL P5A plan for an amateur satellite orbiting Mars. The mechanics of the satellite are ready, but many of the modules are still being completed.

A satellite launch aboard the Ariane (via the European Space Agency) will cost about 3 million Euros. An alternative to Ariane and Soyuz could be the new agency SpaceX, an independent commercial space agency based in the U.S.

There were discussions concerning the possibilities for an inexpensive launch for P3E on one of their Falcon 9 rockets. At present, the prices for a regular Falcon-9 launch are outside the financial resources of AMSAT-DL. However, there are some possibilities that may arise on how to reduce costs. AMSAT-DL will continue to remain in contact with SpaceX.

The financing of launch costs would be done by the Mars P5A mission. A study is being undertaken to determine ways to raise these monies, which include nearly 10 million Euros to launch the P5A. The planned realization of the P5A Mission to Mars is to occur between 2016 and 2018.

The P5 satellite design is based on the P3D structure of AO-40. Further details will follow after completion of the feasibility studies later this spring.

Happily, Students Amp-Up ARISS Numbers

ARISS activity has been very high over the past months, with school contacts being made with Russia, Taiwan, Japan (2 schools), Italy (2 schools) and Utah. Packet and SSTV activity has been popular as well. This is always a big event in international education, not to mention international relations everywhere. Students learn a great deal from these contacts.

Sat-Chat On An Echolink Node Near You

For those who are interested in finding out more about amateur satellites and want to talk with other interested hams, don't forget that you can listen and participate in numerous nets either over the air (if you're local to the net) or via Echolink.

Stu Ballinger, WA2BSS, invites all amateur radio operators to join the next Hudson Valley SatCom net on alternate Thursdays at 8PM EST (or 0100 UTC 12/24). The on-air portion of the net meets on the 146.97 Mt. Beacon Repeater in Poughkeepsie, NY. Hams worldwide can "tune in" via EchoLink node N2EYH-L. More information can be found at <http://www.wr2abb.org>. The net meets every other Thursday, so tune in.

That's a Wrap

That's it for this month, because I'm out of room. Take care and I hope to hear you all soon on the birds.

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HAMFESTS & SPECIAL EVENTS

APRIL

CALIFORNIA - 15th Annual Islands On The Air (IOTA) Dinner - Friday, April 16, Plaza Room of the Holiday Inn, 9000 W. Airport Dr., Visalia, CA 93277. (559) 651-5000. In conjunction with the 61th annual Visalia International DX Convention. See DX Convention Web site for details: <http://www.dxconvention.org/>. IOTA dinner open to all who are interested or active in the IOTA program. If you do not desire dinner, you may attend the IOTA program following the dinner. Doors open 1730. Information: Ray Benny, N6VR, (928) 848-2158; Will Costello, WC6DX, (831) 375-8133, wc6dx@sbcglobal.net.

61st Annual International DX Convention - April 16, 17 & 18, sponsored by the Southern California DX Club, at The Holiday Inn Hotel & Conference Center Visalia. Top DXers from every continent, contest forum, antenna forum, DX forum seminars for everyone from the beginning DXer to seasoned pro. Details: <http://www.dxconvention.org/>.

COLORADO - Longmont Amateur Radio Club Annual Swapfest, Saturday, April 3 at the Boulder County Fairgrounds. Vendors, VE testing, talk-in on 147.270.

FLORIDA - Venice Sharks Tooth Festival, April 9-11, 1300-2400Z or until the bands close; Tamiami ARC, K4S, Venice, FL. 21.313, 18.153, 14.236 MHz. For photo QSL send QSL with SASE to Jack Sproat, W4JS, 1419 E. Manasota Beach Rd., Englewood, FL 34223-6341. Information: <http://tamiamiarc.org>.

NEW YORK - Orange County Amateur Radio Club Hamfest, Saturday, April 10, 8 AM to 2PM at the Town of Wallkill Community Center, 2 Wes Warren Drive, Middletown. Premier mid-Hudson Valley Hamfest. Talk-in at 146.76PL. Information: Don, AA2DS, 845-342-2056 (after 6 PM), add2ds@hvc.rr.com.

NORTH CAROLINA - Raleigh ARS 38th Hamfest, NCS ARRL Convention, Sunday April 3, 8 AM to 3:30 PM in the Expo Center Bldg., NCS Fairgrounds, Raleigh. Huge electronic fleamarket. **Special Event Station N4C**, from this Hamfest on approximately 7.235 or 14.235. QSL info for special event station and/or general hamfest info: www.rars.org/hamfest, Steve, KJ4BX 919-247-8690, steve.kj4bx@gmail.com.

TEXAS - HamEXPO, April 17, 7 AM to 2 PM, at the Bell County Expo Center, 301 West Loop 121, Belton. Sponsored by the Temple Amateur Radio Club. Information: www.beltonhamexpo.org, Mike, WA5EQQ at 254-773-3590 or wa5eqq@arrl.net.

WASHINGTON - The 12th Annual Communications Academy - April 10 and 11 at South Seattle Community College. Pacific Northwest's premier event for amateur radio operators, first responders, and others who want to expand and sharpen their emergency-communications skills. 30 workshops and seminars including basics of setting up a station, exercise planning, managing an emergency team. Emcomm organizations from around the Northwest and British Columbia will be there to demonstrate communications vans. Vendor displays, door prizes, and a radio kit-building contest. See <http://www.commacademy.org> for details and registration. Contact: Kirk Bellar N7UK, kbellar@comcast.net (206) 465-2873; Marina Zuetell, N7LSL, zuetell@comcast.net, (206) 954-4099.

Click here to have your hamfest or special event listed!

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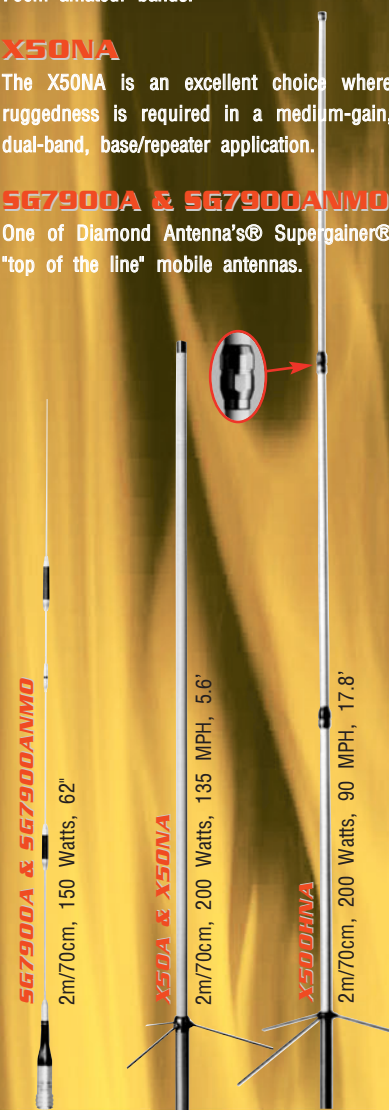
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IN PROFILE: A 'labor of love' for Jack Moore, K5CC, #50708

By Gerald F. Gross, WA6POZ

This month we profile Jack Moore, K5CC, a 10-10 International director living in Bulverde, TX. In his own words, here's his story.

My interest in amateur radio started from listening to stories from my great uncle, Virt Elmore.

He built a spark gap station in 1915 and received his license in 1916 as 9BA. The Government took his transmitter at the start of World War I. It was a long time before he got back on the air.

After I got my license I helped him get his in 1952 as W9BB. We worked each other on CW until his death. He never got on phone. I have his old radio papers.

I received my license in 1950 as W9LZT in Illinois. I built a power supply for an ARC-5 aircraft transmitter on 40 meters. I used this for six years.

Television interference was a big problem, as I would wipe out TV for several blocks around.

In 1956, my wife Barbara and I went to Germany for a tour that lasted five years. I obtained the German call DL4CP.

I built Heathkit DX-35 and Apache transmitters.

The late 1950s were the best sunspot cycle on record. It was common to have 10 meters open 24 hours a day. In terms of getting on the air and making contacts it was the most productive time of my amateur career.

In 1961 we moved to Seattle where I became K7QPT. I traveled a lot so amateur radio was second fiddle to travel and family matters. I made a lot of Japanese contacts and got to visit several amateurs on my trips to Alaska.

In 1964 we moved to northern Virginia where we spent an enjoyable 14 years. I had three calls during this period - WA4VXE, K4ASJ and K4NF.

I obtained my Extra class license in 1968 by going to the FCC Headquarters in Washington DC and taking the written test and 20 wpm CW exam. It was an intimidating experience.



Jack Moore, K5CC, has been a member of the 10-10 International board of directors since 2004. He will close out his service at the end of this year.

I worked Barry Goldwater several times on 2 meters in the Washington area. For most of the time I used a Swan 350 transceiver.

Barbara and I earned our pilot's licenses and bought a Cessna four-place airplane. I mounted 2 and 10 meter antennas on the plane and had a great deal of fun. While Barbara was doing the flying, I could play amateur radio.

The 10 meter antenna wasn't all that efficient, but I made a number of contacts. Two meters was fun but I had to stay off repeaters since I brought up stations up and down the northeast.

We moved to San Antonio in 1978 looking to retire in the area. I retired in 1978 and we moved to a house we built in the hill country on 22 acres. For the first time, I could put up decent antennas.

I first became interested in 10-10 after checking into the South Texas Lighthouse Brigade chapter net. After checking into local nets for a year, I decided to ask members to come to a picnic at my place. This started a run that lasted 20 years.

Over the years, members showed up from all over the country, Canada and England. I think everyone had a good time and only age caused Barbara and me to call it quits.

In 2001 I was asked to become trustee of W6OI, the 10-10 International club station. This has been an enjoyable experience.

In 2004 I became a member of the 10-10 Board of Directors and will complete my service on the Board at the end of 2010.

For the first four years I had responsibility for the 10-10 Internet activities and

now have responsibility for the QSO Party program.

I will complete 59 years in amateur radio later this year. I have enjoyed every year.

This will be my sixth sunspot cycle and I look forward to working as many members as I can. Ten-Ten has been my main interest in amateur radio the past 20 years. It has been a labor of love.

10-10 at Dayton and HamCom

10-10 will be at the Dayton Hamvention and HamCom again this year. Come say hello, sign the log, and see what's happening with 10-10.

At Dayton we will be in Booth 486, north of the ARRL area. At HamCom we'll be situated with other amateur radio organizations.

Upcoming 10-10 events

This year the spring CW / digital QSO parties are being held on their own weekends.

The 10-10 Spring CW Party will be held from 0001Z on April 24 through 2359Z on April 25.

As is the case with all 10-10 QSO parties, it is open to everyone. However, logs can only be submitted by paid 10-10 members as of the date of the party. All other logs received will be handled as check logs.

10-10 members should exchange their call sign, 10-10 number, name and QTH (state, province or country).

Stations without a 10-10 number should use 00000. For non-10-10 members this is a good time to make those initial 10 contacts – to qualify for membership – while using 00000 as your 10-10 number.

QSO Party logs must be returned to the QSO Party Manager within 14 days of the end of the party.

Meantime, the Open Season Contest will be held starting at 0000Z on June 5 through 2359Z on June 6. This contest is to stimulate PSK activity on 10 meters and is hosted jointly by 10-10 International, the Penn-Ohio DX Society 070 Club and European PSK Club digital groups.

It is not necessary to be a member of any group to participate. For more information on the other two groups please visit their web sites. The PODXS070 club site is <http://www.podxs070.com/>. The EPC site is <http://www.eu.srars.org>.

Open Season logs must be returned to the QSO Party Manager and be postmarked not later than June 26.

For complete dates, rules and where to send logs for all 10-10 events, visit the 10-10 web site www.ten-ten.org.

Want Information About 10-10?

The easiest way to obtain information about 10-10 is to visit the organization's Web site: www.ten-ten.org.

If you have been issued a 10-10 number and have forgotten it, send me an e-mail and I send it to you. A 10-10 number is issued for life, regardless of the call(s) you may hold.

I would also appreciate any comments or suggestions. Please send them to: Gerry Gross, WA6POZ, #21274, 10-10 President, 16046 Orchard Cir, Omaha NE 68135-1068 or e-mail: wa6poz@ten-ten.org.

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Having a ‘Good Day?’ – Emerging Models of the Ionosphere

By Carl Luetzelschwab, K9LA

If someone mentions the phrase “model of the ionosphere,” most amateur radio operators will immediately think of the model of the ionosphere in our propagation prediction programs (such as VOACAP, W6ELProp, and others). This model was derived from years of ionosonde measurements of the E and F regions, and rocket and scatter radar measurements of the D region.

After a study of this data and solar data, scientists determined that the only acceptable correlation for a model of the ionosphere to be used in our propagation prediction programs was between a smoothed solar index (a 12-month running average of monthly mean sunspot numbers or monthly mean 10.7 cm solar flux values) and monthly median ionospheric parameters (such as the E region critical frequency foE, the F₂ region critical frequency foF₂, the height of the F₂ region peak electron density HmF₂, and others).

The term “monthly median” implies a 50 percent probability, and thus the model of the ionosphere in our propagation prediction models is statistical over a month’s time frame. It follows that our propagation predictions are also statistical over this same time frame. And that means we can only predict that a given band to a given target area at a given time will be open on a certain percentage of the days in the month. The problem with a statistical model is we can’t tell which specific days will be the “good” ones.

We ended up with a statistical model because the ionosphere varies significantly on a day-to-day basis, and scientists at the time didn’t have enough understanding of the variables causing this variation. But the development of this statistical model was done decades ago. Nowadays, with satellites and other advanced methods of data collecting, we are gaining significant knowledge about the processes that form the ionosphere.

The result of this understanding is that we are starting to see new models of the

parameter	source
10.7 cm solar flux	Penticton observatory
solar wind speed	Advanced Composition Explorer (ACE) satellite
IMF Bz	Advanced Composition Explorer (ACE) satellite
auroral activity level	Polar-orbiting Operational Environmental Satellite (POES)
auroral input power	Polar-orbiting Operational Environmental Satellite (POES)

Table 1 – CTIpe inputs

ionosphere emerging – and they are physical models. In other words, the processes that result in ionization are modeled using known variables. One such model is the Coupled Thermosphere Ionosphere Plasmasphere Electrodynamics model, abbreviated CTIpe.

The CTIpe model consists of four distinct components that run concurrently and are fully coupled. The components are a thermospheric model, a high-latitude ionospheric model, a low- and mid-latitude ionosphere/plasmasphere model, and an electrodynamic calculation of the

global dynamo electric field. You can read more about these components, including references, at <http://helios.swpc.noaa.gov/ctipe/CTIP.html>. The CTIpe model is a research tool used at the Space Weather Prediction Center (SWPC) in Boulder (<http://www.swpc.noaa.gov>) to study thermosphere-ionosphere phenomena in order to develop now-casting and forecasting algorithms for space weather.

Real-Time CTIpe runs, developed by Fuller-Rowell, Codrescu, Fedrizzi, Matsuo, Millward, and Maruyama, are

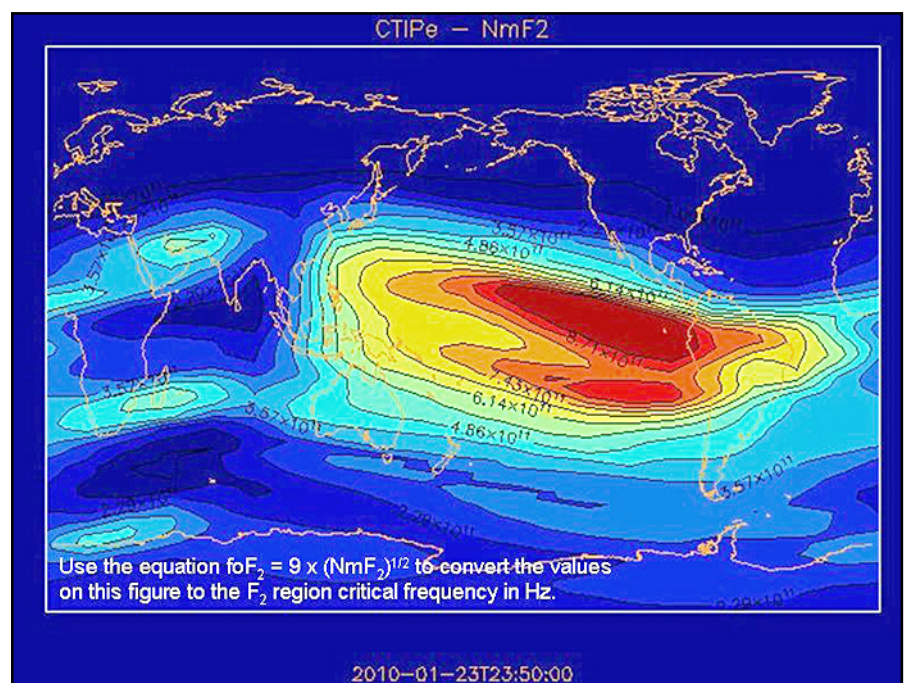


Figure 1 – CTIpe run for January 23, 2010 at 2350 UTC

available at <http://helios.swpc.noaa.gov/ctipe>. The inputs to the model (and their sources) are listed in Table 1.

The model calculates the global 3D structure of electron density, plasma drifts, neutral temperature, neutral winds, and neutral composition. The plots on the Web are sample outputs, and a brief description of each follows.

The Electron Density plot gives the electron density, in electrons per cubic meter, at the 12th pressure level. The model divides the atmosphere into 15 levels in terms of the logarithm of pressure, and the 12th pressure level is in the F₂ region.

The Neutral Temperature plot gives the temperature of the neutral atmospheric constituents at the 12th pressure level in degrees Kelvin.

The O/N₂ Ratio plot gives the height integrated ratio of atomic oxygen to molecular nitrogen. From the October and November 2005 columns, atomic oxygen is important for electron production and molecular nitrogen is important for electron loss. A higher O/N₂ ratio indicates more electrons.

The NmF₂ plot is the maximum electron density (again in electrons per cubic meter). Figure 1 is a representative NmF₂ plot at 2350 UTC on January 23, 2010.

What's the difference between the Electron Density plot and the NmF₂ plot? As noted, the Electron Density plot is at a constant pressure level, which is not necessarily the maximum density. Thus the NmF₂ plot, which is the maximum electron density regardless of altitude, is likely to be the most useful one for us to use. Since this is the maximum electron density in the F₂ region, you can convert the values to foF₂ through the equation foF₂ (in Hz) equals 9 times the square root of the electron density. For example, the contour line labeled 8.71×10^{11} would result in an foF₂ of 8.4 MHz. (That's 8.71×10^{11} , or 871,000,000,000. The square root of 871,000,000,000 is 933,273.8. Multiply that square root by 9 and you get 8,399,464.3. Divide that number by 1,000,000 to get the frequency in MHz, which is 8.3994643 – or 8.4 MHz.)

The MUF (maximum usable frequency) for a normal 3,000 km path with this foF₂ value at the mid point would be around 3 times foF₂.

Figure 1 shows the two crests of the equatorial ionosphere on either side of the geomagnetic equator. They are west of South America at 2350 UTC in January. These crests are responsible for trans-

equatorial propagation (TEP), and are the tell-tale ionospheric signature for TEP.

The HmF₂ plot gives the altitude (in km) of the peak electron density.

The TEC plot gives the total number of electrons in a column of ionization from the bottom of the ionosphere to the top of the ionosphere (well above 500 km). The values on the plot are in TEC units, with 1 TEC unit equal to 1×10^{16} electrons per square meter. Note that TEC doesn't delineate the various regions – it only tells you the total number of electrons per square meter in the column.

The Input plot shows the values (see Table 1) used to run the Real-Time CTIpe model.

OK, now for a good question: How accurate is CTIpe? Mihail Codrescu (as noted previously, he is one of the SWPC developers of the Real-Time CTIpe run) reports that they have performed a comparison over a month of global ionosonde data for June 2009. The uncertainties on the data are so large that they have not put the results on the Web. I should also men-

tion that part of this uncertainty is a problem with auto-scaling of ionosonde data, which is the data considered to be "the truth".

The CTIpe developers also have a year comparison with incoherent scatter radar data (NmF₂ and HmF₂) that is being prepared for publication as part of the IPY (International Polar Year).

So be advised of this issue if you try to use a CTIpe run to predict a path. At the moment they should be used for determining general trends, not absolute values. When you think about it, these are early results from a relatively new model that's trying to represent the worldwide ionosphere on a daily basis. As we gain experience with this model and more understanding of the important processes, we may some day have a true daily model of the ionosphere that will tell us "this is a good day."

Finally, thanks to Mihail Codrescu at the SWPC for reviewing this month's column and offering suggestions to improve it.

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Advice Averted: Sometimes, They Just Don't Listen

By Jerry Wellman, W7SAR

If you didn't want my opinion, why did you ask and why are you arguing with me? This is my hobby.

This is an area I have some expertise with and, no, this is not my profession – although it could be.

(I always say: "If this were my job, I'd be less passionate and less interested.")

I like to experiment and like to test and have many years of hands-on experience – from the warmth of a dispatch office to the cold field station.

Last summer, leaders from two different youth groups approached me to ask about communications for back-country events involving several hundred kids aged 14 through 17.

Their activities would take place in some very rural and mountainous terrain. They would be miles and hours from medical response. They wanted to be sure their activity would be covered by "emergency" communications.

The groups' activities (several weeks apart) would take them to an area I was pretty familiar with. I'd hiked and traveled the region and had set up communications for other groups participating in similar activities.

When I met with last year's groups' leaders I had topographic maps, diagrams, equipment lists and even a cache of radios (on a commercial frequency licensed for such use) to loan the groups.

Over several hours I answered questions and shared ideas as to how they might have good "umbrella coverage" where emergency communications was concerned.

At one point, one of the leaders picked up one of my UHF portables. It's heavy, but no heavier than current technology and radios carried by police officers, for example.

The fellow turned to me and said they wouldn't do: "We're not going to carry these."

I pointed out that not everyone carried a radio, and that there should be one radio for each group of 10 people. He argued, pulling out a small cell phone, saying: "if it weighs more than this, we're not going to take it."

The discussion went downhill from there.

They didn't want to have to charge radios during the week-long event or buy alkaline batteries.

They didn't want to set up a base station with a directional antenna.

In short, setting up such a system would be too much bother. They declined.

At that point I was even wondering why they'd called to ask my opinion. I had been willing to loan them all they needed and even spend several weekends showing them how to set up stations.

In the end, they were the "experts" and had no need for the input they'd sought from me.

They chose to go with their own ideas and a very simple plan: Use cell phones and just call each other. If they had a medical emergency, they'd dial 911.

A few days after the meeting, an amateur radio operator (who had attended with his two kids) called and asked what ham repeaters covered the area they'd be in.

"None," I answered. How close was the nearest medical help? "About two hours by helicopter in good weather," I answered.

He and I talked about response time and that the sooner you called, the sooner help would begin responding. Delay the call, I cautioned, and you delay the arrival time.

A few months later I heard from one of the groups. (The other group I've not talked with and presume their experience may be similar.) The leader reported they'd had no life-threatening emergency but they did need to call about a possible allergic reaction.

First of all, they discovered their cell phones did not work all the time. For many calls they had to hike to high ground, and even then the coverage was intermittent.

They could not call each other from where they were hiking and could not call to their base camp to report progress. The base camp was in a valley and had no coverage. It was good, he reported, that they did not need to call 911.

Their cell phones drained many of the batteries in the first days.

Then there were the usage charges. Because all of their phones were from different providers, there were different costs. For some there were roaming and long-distance costs. The final tally was rather steep – costing much more than buying alkaline batteries for radios.

For me it was frustrating when one leader called to say, "We should have used your equipment and listened to your advice." While it was nice to receive his call, I took no satisfaction in being proved right. After all, I really had no dog in the fight – it was not an event I was participating in and I wasn't funding the cell phone costs.

I was happy they had no medical emergencies.

In 20 years of writing this column, my experience with the youth group leaders is similar to those you have shared as well.

One reader said he was accused of crying "wolf" and being overly dramatic in responding to a request to help an agency plan for emergencies.

Some readers have reported great success and, to be honest, I've had a number of youth groups use my equipment on back-country activities and report it worked very well.

It's not that the advice you and I give is wrong. Often we propose a system that covers emergency needs. It's simply "insurance" for when things go wrong.

If nothing went wrong, did it mean the advice was flawed? No. It means you were prepared and prudent in your planning.

I've already fielded a couple of calls concerning the upcoming summer months of youth activities. I don't advertise and the

calls have come from groups who have talked to other groups, who over the years, I've advised.

I'll again spend a few hours showing photos, discussing the need and even pull out the maps and radios to demonstrate. My hope is they will not seek my advice and take my time and then tell me I'm silly because my "system" doesn't depend on cell phones.

It's the Message, Not the Medium

A local ham was feeling frustrated because he attended a meeting and everyone was showing off new equipment. His "old" radio didn't have a lot of features and he was feeling inadequate.

I asked him what the problem was – couldn't he talk on the VHF repeaters? Didn't he have a spare battery pack? Didn't he have a good portable antenna?

He smiled as he said "yes" to every question. He got it: It's not the medium, it's the message.

The need to be able to communicate effectively and use the gear you have far outweighs the need to buy the latest stuff.

Often the cost of accessories is also pretty steep if, for example, you have already purchased an alkaline pack, desk charger, headset, mobile antenna adapter and the like.

I've yet to buy a new radio and discover the accessories from my old rig worked on the new rig. In today's world, charger plugs won't fit (and voltages are different), antenna adapters don't adapt and I'm left spending another \$100 or so to get accessories I would need for crisis events.

I love new stuff. Nothing I've purchased has ever increased my ability to copy a message accurately or send a message and know the phonetics needed to "spell" a person's name or city.

I've even been able to pick up someone else's radio and send a message. Remember, it's still practicing the basics that makes you a good operator.

Having toys does not make you any more efficient or capable.

For Initial Reports From Haiti, Radio Amateurs Come Through

A few moments after CNN began reporting a major earthquake in Haiti, my phone rang. Several local media folk, who are also friends, called to ask if I'd heard anything on my radio.

I'd been tuning around 20 meters and did hear a maritime net relaying a tsunami warning, but nothing from Haiti.

I'm not into DX and my station antenna at work – where I was at the time – consists of a dipole atop a 10-story building. It's not the best, but allows me to hear nets from around the region to get my daily "radio fix."

The lesson here isn't that my radio system is inadequate and that I should be convincing my boss to let me put up a better antenna system. There were other operators with DX stations around the valley I referred the media to in their quest for information.

The lesson is that even in these times of Internet and cell phones, when a crisis hits, many will turn to amateur radio for initial reports.

As I surfed the Associated Press reports, there were many dispatches with reference to amateur radio, which remains a viable resource and method for emergency contact.

I sincerely doubt that will change in the near future—so the lesson is to be prepared and know that in the initial stages of an emergency, the expectation is that amateur radio is there.

Until next month, best wishes from Salt Lake City!

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April With Her Sweet Showers Cometh...

By Randall Noon, KCØCCR

As Chaucer said in the opening lines of “The Canterbury Tales,” *WHAN that Aprille with his shoures soote, The droghte of Marche hath perced to the roote.*

Soote, of course, rhymes with roote. What Chaucer was trying to say, as I translate it, is that now it is April, get ready because there is a whole bunch of enjoyable CW stuff to do for almost everyone.

This includes brass pounders with cabin fever who can't wait to get out and enjoy the weather; operators who want to travel, shop and schmooze a little; and hams who just want to sit in the shack, relax with a sandwich, and work the traffic while listening to the ball game.

First, for those who want to travel, shop, and schmooze some radio shop talk – all at the same time – Dayton is just around the corner! And, there is still time enough to plan a trip to Radioland, which, indeed, is the happiest kingdom of them all.

Dayton is May 14-16 this year at the usual place, Hara Arena in Dayton, OH. Do I need to remind you that there are keys and keyers, flea markets, vendors, kits, rigs, boat anchors, antennas, seminars, strange chocolate covered cheese cake things on a stick, VE testing, door prizes, and, of course, the requisite pilgrimage to the FISTS booth?

There is also the fun of working 6, 2, 1.25 and 0.70 meter repeaters on the drive to and from Dayton, and perhaps racking up hundreds of APRS contacts along the way. This beats Wallyworld hands down because none of the rides at Dayton will make you throw up.

For a reminder of how much fun it is at Dayton, go to the Dayton web site, <http://www.hamvention.org/>. By the way, if you enjoy camping – either RV or tent – I have never had any problem finding a campsite at Hueston Woods State Park, which is a first rate park. Even when I waited until almost the last minute to go. Check out its Web site: <http://www.dnr.state.oh.us/tabid/745/Default.aspx>

It's not down the street from Hara, but it really doesn't take long to drive from the park to Hara, and you pass some nice places for breakfast along the way. Or, you can have breakfast right at Hueston Woods Lodge.

For those who want to stay at home and watch robins build a nest outside your window as you mind the traffic, there are several excellent “don't move out of your chair” events coming up.

First is the FISTS Spring Sprint on May 8, from 1700 UTC to 2100 UTC (OK, noon to 4 p.m. Central Daylight Time). For those who would like to be in a contest, but don't want to work too hard at it, this is perfect for you. You don't even have to be a FISTS member to participate.

The contest is only four hours long, and there is no requirement to work the bands the whole time. It's in the middle of

the day on a Saturday, when you would otherwise have to be doing some honeydew chores.

You already likely have an HF rig that can work at least one, if not all of the bands used for the Sprint: 80, 40, 20, 15 and 10 meters, the classic HF ham radio bands.

Let me remind all the Technician Class operators that except for 20 meters, they have CW privileges on all these bands. There is no reason why a Tech can't win this contest. There are entry categories that will fit your radio, from 5 watts and less, to a top end of 100 watts. Anything over 100 watts is not allowed in the Sprint, so you don't have to compete with stations operating at “death ray” level power outputs.

The rest of rules are just as easy. If you go to the Web site that has the rest of the rules, it will even provide you with a log sheet you can download, print out, fill out, and mail in: <http://www.fists.org/sprints.html>.

I can tell you from a review of the score sheets from previous contests, you don't have to be an experienced contest pro to win, place, or just be shown a good time in this contest.

A second activity for the staycation-in-the-shack bunch is the brand new FISTS Military Appreciation Award. The idea is to work CW QSOs with 100 FISTS members who are also U.S. military veterans, or who are currently serving. When you make a contact, get the person's call, name, date, band, his or her FISTS number, and the branch of service in which she or he served. This is actually no different from a normal exchange and log entry, except for the military service branch.

Like the FISTS Spring Sprint, you don't even have to be a FISTS member to earn the award. If you aren't a FISTS member, however, a small charge for return postage is required.

For contacts to count toward this award, they have to have been made after Jan. 15, 2010. CW contacts on any band will do, including 6 meters, 2 meters, and 0.70 cm.

Heck, if you can manage it, a CW EME QSO will also work, and will be very impressive on the log sheet. For the rest of the information about this new award, please check out: <http://www.fists.org/military.html>.

Despite the Jan. 15, 2010 start date for valid contacts, I'll bet there are operators who will have this award on their walls in a nice frame before Cubs fans start checking their calendars.

For that matter, check out the other awards listed on <http://www.FISTs.org>.

If you have been operating CW for a while and have kept a good log, you may already be eligible for some of them. That happened to me. I didn't know I was already eligible for any of the awards until I read the FISTS Awards web site pages. I then discovered that I likely had all the contacts necessary for a FISTS CW Worked All States certificate.

I downloaded the log sheet provided on the Web site, and went through my trusty paper log book, contact by contact. Even using this Luddite method of recording contacts, within an hour or so I was cruising through the paperwork and had filled out all the state entries – except (gasp) one! Rhode Island.

Holy smokes, after all this time on the air I didn't have a single contact with a FISTS member in Rhode Island. I had a number of Rhode Island CW contacts logged, but not one was a FISTS member. And, I couldn't just leave this one line on the form unfilled until, by chance, I worked some FISTS member from Rhode Island. Apparently, Rhode Island FISTS member contacts are a rare item, like Ming Dynasty vases or 1913 V-nickels. This was time for action.

I opened up the search engine on my computer and, honest to goodness, put into the search blank the following entry, "FISTS Rhode Island WAS contacts." I was immediately rewarded with a cryptic entry, two or three down from the top, that listed the 2008, Issue #3 of *The Keynote*, the flagship publication of FISTS. Trusting, but not understanding, the tip provided by the search engine, I opened the 2008 # Issue of *The Keynote* and looked inside. There, on page 12, I found the following small item at the top right hand side of the page, in the letters column.

Need Rhode Island? Bob, W1YRC, #7604, writes: Lately I've been more active working members who need Rhode Island for FISTS Worked All States. I've also been promoting FISTS more.

Is that cool or what? Bob, W1YRC, had clairvoyantly anticipated two years ahead of time that I would need a Rhode Island entry to finish my WAS application. I think I had an out-of-key experience.

With a little more looking, I was able to find Bob's email address. After a quick exchange of emails, Bob very graciously set up a schedule on 40 meters to complete my WAS application the very next night.

Apparently, there is a well beaten path to Bob's door for Rhode Island FISTS entries for WAS. So from me, and all the other FISTS members who have been ending up on Bob's radio doorstep, this is a public *thank you very much* to Bob.

Last, for those brass pounders with cabin fever who want to get out and enjoy the weather, like me, April is just the ticket.

Like bears that have been in hibernation, it is time to come out. I have kept the batteries in my FT-817 and FT-897D charged all winter. I have seven kinds of portable antennas at the ready, and I have all the necessary gear for a successful portable operating day loaded in my car: a full ice chest, barbeque stuff, walking shoes, and a handheld GPS device to help me find the local geocaches in the park.

I like to think these forays to local, state, and national parks to operate portable are like mini-DX-peditions. Perhaps there should be an award for operating portable in all the National Parks, or in all of your own state parks.

I will have to check into the FISTS Mobile Awards I recall seeing. But then again, just doing it is reward enough. See you all on the air, on the left side of the bands.

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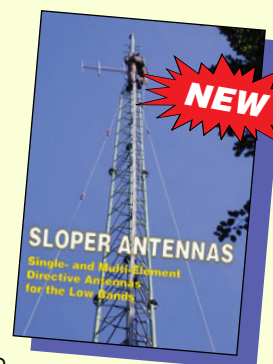
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Creative Approaches to Introducing Students to Ham Radio

By Devere "Dee" Logan, W1HEO

Helping today's youth become the radio amateurs of tomorrow is easier said than done. Within the educational establishment, one of the barriers to including ham radio is that teachers are hard pressed to cover the core academics.

Student test scores are often the primary method of measuring teacher performance, so radio may be considered extraneous.

To some teachers, however, integrating radio basics into science or physics lessons and laboratories is perfectly logical. In fact, ham radio can enhance the learning process.

We've recently become acquainted with several instructors who have proven this. Their creative approaches that draw upon their ham radio knowledge have even motivated some students to become licensed operators.

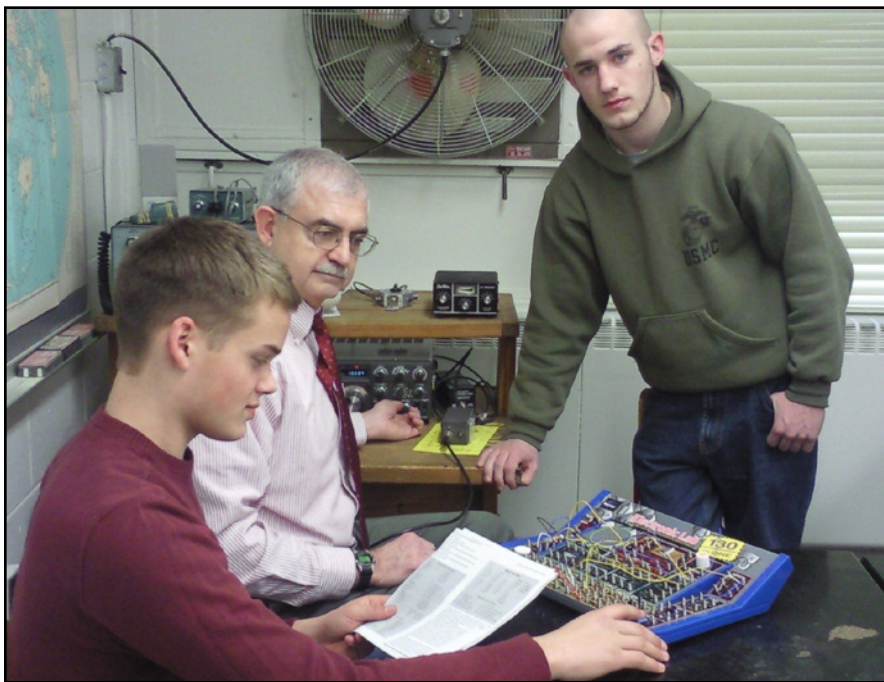
Shining Examples

Richard Castanet, WD4DMZ, teaches physics at Tucker High School in suburban Richmond, VA. A professional engineer, he uses ham radio to add interest for his 140 physics students.

He reports that amateur radio was a mystery to them when first introduced to it, but that they were intrigued. "They have grown up in a world of cell phones, text messaging and Facebook etc., and it never occurred to them that there were methods of long-range communication before these things were invented."

Castanet introduces his classes to electrical components, circuits and radio physics to get them excited about the second semester course content.

"Having them build a breadboard QRP (low power) transmitter, and trying their hand at sending code and hearing it come



Tucker High School instructor Richard Castanet, WD4DMZ, center, watches as student Daniel Farley, left, sends Morse code and Corey Austin looks on in suburban Richmond, VA.

out of a transceiver really excites them," he reports. "I've introduced Morse code to 140 students this year. Every student lab group has assembled a code practice oscillator and every student has tapped out their name, legibly, to me in Morse."

One challenge is finding the funds to buy kits and radio components used in his classes. School budgets are tight these days, so Castanet has gone outside to find financial support. The local power company's charitable foundation, for example, provided a grant that paid for kits and a solar power system.

"My hope is that most of the students will head into technical fields after graduation and perhaps a few will be bitten by the ham radio bug," he said.

The Career Link

Many ham educators feel that today we

should "sell" ham radio as a means to an end. Careers in electronics are a prime example.

Whether mainstreamed into classes or through after-school clubs, the career path can be a powerful incentive to both school administrators and parents.

"We have to sell ham radio to the school administrators, the principals, teachers and then school boards, the PTA, and finally the population that fund the school," emphasizes Ken Muggli, KØHL.

As an enthusiastic advocate of involving ham radio in the schools, he developed a detailed Power Point presentation, "Career Paths for Our Children," that explains amateur radio and its strong relationship to career development. (Contact Ken at dakclock@beu.midco.net.) He's currently discussing this with the president of his local school board.

D.E. "Dee" Logan, W1HEO, is an accredited member of the Public Relations Society of America and a member of its College of Fellows. He has been an active ham for 45 years.

"If the school administrators see its value, then and only then will the program have even a remote chance of being successful," he emphasizes. "Selling directly to the children is a waste of time."

A Family Affair

A somewhat different view is held by the Lake Washington Ham Club of Kirkland, WA. Their radio classes have produced a thousand new hams, focusing on ages 9-12.

The secret? Both the student and one of his or her parents must attend the classes. The goal is to license both the student and the parent.

"The parent team member is needed to support the child in the purchase of a radio, to provide transportation, and to join in the activities," explains teacher Dave Condon, KI7YP.

Classes are short 40-minute lessons with built-in recess times between each lesson. The class is limited to three lessons per week. Doughnuts, juice and coffee are provided.

"In three sessions of three hours each, children can earn radio licenses, with the final session being the exam," he says. "Once the children and the parents have earned their Technician license and purchased handheld radios, the real learning about amateur radio begins."

The Power of Demonstration

One of the major opportunities to showcase ham radio to youth and parents is, of course, ARRL Field Day. Clubs that include public demonstrations receive extra bonus points in their score. The result of this motivator is a coast-to-coast flurry of activity starring amateur radio in action.

Another popular event is the School Roundup in which educators and students participate. The Gilmour Academy of Gates Mills, OH, was among the participants in last year's roundup, according to instructor Brother Ken Kane, KG8DN.

"Our decision to set up the 20-meter sideband station in the student center during the week resulted in greater student interest, especially during lunch and on Friday afternoon," he said. "We ended the week having secured 116 voice contacts with 10 clubs and stations in 22 states and 20 countries."

Some radio clubs have sponsored ham radio demonstrations at public libraries and malls. For example, the Norwalk (CT) Amateur Radio Club showcased shortwave radio in cooperation with the Norwalk Public Library. The club

installed a 40-meter inverted V antenna on the library roof and connected it to a shortwave receiver on the main level.

They billed it as "an opportunity to experience the thrill and adventure of amateur radio."

Hands-on involvement and personal demonstrations have long been among the most effective ways of getting persons interested in our hobby.

Whether it's a personal demonstration with a family friend in a radio shack, in a school, or a major showcase of ham radio in a public venue, seeing and hearing what today's ham radio is all about is a powerful promotional tool.

What has your club done? Tell us about it. Your photos are welcome, too. In the meantime, check out the Ham Radio Promotion Project at www.neoham.org.



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CONTEST CORNER

CONTEST: Missouri QSO Party
DATE & TIME: 1800Z 3 Apr - 2400Z 4 Apr
BANDS/MODE: 160-10M CW & SSB
POINTS: 1 Pt. SSB QSO, 2 Pts. CW QSO (one time only bonus of 100 Pts. for QSO with W0MA)
MULTIPLIERS: MO sta's - States/Provinces/Countries; All others - MO Counties
EXCHANGE: MO sta's give RST + serial # + County/ All others give RST + Serial # + State/Province/Country
ENTRY CATEGORIES: Not given
ENTRIES: At time of this column, rules were being updated.
 For latest information on rules and submission of logs, see www.w0ma.org.

CONTEST: SP DX
DATE & TIME: 1500Z 3 Apr - 1500Z 4 Apr
BANDS/MODE: 160-10M CW & SSB
POINTS: 3 Pts each QSO with Polish sta
MULTIPLIERS: Each Polish province (voivodeships) once per band
EXCHANGE: Polish sta's give RST + letter of voivodeship (B-Z), all others give RS(T) + Serial #
ENTRY CATEGORIES: Single Op - Single Band, CW; Single Op - Single Band, SSB; Single Op - All Band, SSB; Single Op - All Band, CW; Single Op - Single Band, mixed modes; Single Op - All Band, mixed modes; All single op categories further divided by power level, High, Low & QRP
ENTRIES: SP DX Contest Committee P.O. Box 320 00-950 Warszawa, Poland Cabrillo to: spdx-logs@pzk.org.pl
 Rules at: www.spdxcontest.info/reg/reg_g.html

CONTEST: QCWA QSO Party
DATE & TIME: 1800Z 10 Apr - 1759 11 Apr
BANDS/MODE: All (except WARC) Bands 160M - 440 MHz CW & SSB
POINTS: 1 Pt. Phone 2 Pts CW/Digi
MULTIPLIERS: X 1 each QCWA Chapter QSO X1 State/Province/DXCC X3 for QSO with W2MM
EXCHANGE: Call + Year first licensed + Chapter (if member) + State/Province/Country
ENTRY CATEGORIES: Single Op, SSB, CW/Digital or Mixed (all modes)
ENTRIES: 30 Days Robert Buus, W2OD, 8 Donner St. Holmdel, NJ 07733-2004. E-mail submissions to: w2od@aol.com.
 Rules and forms at: www.qcwa.org/qso-party.htm

CONTEST: EA RTTY *
DATE & TIME: 1600Z 5 Apr - 1600Z 7 Apr
BANDS/MODE: 80-10M RTTY
POINTS: 1 Pt 10/15/20M own continent; 2 Pts. 10/15/20M other continents; 3 Pts. 40/80M same continent; 6 Pts. 40/80M other continents
MULTIPLIERS: DXCC, Spanish Provinces, W/VE/JA/VK call areas
EXCHANGE: RS(T) + serial #
ENTRY CATEGORIES: Single Op - Single Band; Single Op - All Band; Multi Op (all band only!); SWL
ENTRIES: 10 May Antonio Alcolado, EA1MV P.O. Box 240 E-09400 Aranda De Duero, (Burgos) Spain
 E-mail: alcolado.a@gmail.com Web page: www.ure.es

CONTEST: Georgia QSO Party
DATE & TIME: 1800Z 10 Apr - 2359Z 11 Apr
BANDS/MODE: 160-6M CW, SSB, Digital (counts as CW for scoring)
POINTS: 1 Pt. SSB, 2 Pts. CW (once per band)
MULTIPLIERS: GA sta's - States (including GA)/CA Provinces (DX is not a multiplier!), All others - GA Counties (159) pwr mode (318 possible)
EXCHANGE: GA sta's give RST + County, All others give RST + State/Province
ENTRY CATEGORIES: Single Op; Multi Op; Multi-Multi;
 (Note - all categories subdivided by power output - QRP <5W; Low <150W, High >150W); GA will have Rovers
ENTRIES: 15 May John Laney, K4BAI P.O. Box 421, Columbus, GA 31902-0421 All formats accepted by e-mail: gqp@iham.us
 Rules at: <http://gqp.contesting.com/Rules.htm>
 Web page: <http://gqp.contesting.com/>

CONTEST: Japan International DX
DATE & TIME: 0700Z 10 Apr - 1300Z 11 Apr
BANDS/MODE: 80-10M CW
POINTS: 1 Pt 40/20/15M; 2 Pts 80 or 10M
MULTIPLIERS: JA Prefectures + JD1 (Maximum of 50), per band
EXCHANGE: JA's give RST + Prefecture; all others give RST + CQ Zone
ENTRY CATEGORIES: Single Op - Single Band high or low; Single Op - Multi-Band high or low; Multi Op
ENTRIES: JIDX CW Contest C/O Five-Nine Magazine P.O. Box 59, Kamata Tokyo 144-8691 Japan
 Cabrillo to: cw@jidx.org
 Rules at: <http://jidx.org/jidxrule-e.html>

CONTEST: Michigan QSO Party
DATE & TIME: 1600Z 17 Apr - 0400Z 18 Apr
BANDS/MODE: 80-10M CW & SSB
POINTS: 1 Pt. SSB; 2 Pts. CW
MULTIPLIERS: MI sta's count other States/CA Provinces (No DX multiplier); All others count MI counties (83 possible)
EXCHANGE: MI sta's give serial # + county; All others give serial # + State/Province; DX gives serial # + "DX"
ENTRY CATEGORIES: Single Op; Multi Op, single XMTR; Multi Op, Multi XMTR's; Mobile Op, Solo or Multi; EOC
ENTRIES: 30 days Mad River Radio Club c/o Dave Pruett 2727 Harris Road, Ypsilanti, MI 48198
 Most logging formats accepted, submit entries by e-mail: logs@miqp.org. Entry forms and rules at: www.miqp.org

CONTEST: Holyland DX
DATE & TIME: 2100Z 16 Apr - 2100Z 17 Apr
BANDS/MODE: 160-10M SSB/CW/Digi
POINTS: 1 Pt. 20/15/10M; 2 Pts 160/80/40M
MULTIPLIERS: Israeli "Areas" (Note - strongly suggest you see web site for map of "Areas")
EXCHANGE: RS(T) + Serial #
ENTRY CATEGORIES: Single Op - SSB only; Single Op - CW only; Single Op - Mixed mode; Single Op, QRP (<10W); Multi Op - (single XMTR only!)
ENTRIES: 31 May Contest Manager 4Z4kx Israel ARC Box 17600 Tel Aviv, 61176 Israel Cabrillo logs to: 4z4kx@iarc.org Web page: www.iarc.org. Rules available: IARC Contest Manager, P.O.Box 17600, Tel Aviv 61176, Israel. (SASE required)

CONTEST: TARA Skirmish Digital Prefix
DATE & TIME: 0000-2359Z 17 Apr
BANDS/MODE: 160-6M (No WARC!) PSK31, PSK63, MFSK, Hell, Throb, Packet, ASCII, SSTV, MT63
POINTS: 1 Pt per QSO
MULTIPLIERS: > 100W X .5; 100-20W X 1; 19-5W X 2; <5W X 3
EXCHANGE: Name + Prefix
ENTRY CATEGORIES: RST + State/Province/Country + FP #; (non-members give power)
ENTRIES: 15 May Use online form at: http://n2ty.org/seasons/tara_dpx_score.html
 Web page: www.n2ty.org/seasons/tara_dpx_rules.html
 E-mail: skirmish-manager@n2ty.org

CONTEST: SP RTTY DX
DATE & TIME: 1200Z 24 Apr - 1200Z 25 Apr
BANDS/MODE: 80-10M RTTY
POINTS: 2 Pts own Country; 5 Pts. same continent; 10 Pts. other continents
MULTIPLIERS: SP Provinces (16), once per band; DXCC + Continents (6)
EXCHANGE: RS(T) + Serial # (SP will give RST + Province)
ENTRY CATEGORIES: Single Op - all band; Multi Op - all band; SP single Op
ENTRIES: 25 May Cabrillo to: sprtty@pzk.org.pl
 (Note: No address given for paper log submission).
 Rules at: www.pkrvg.org/zbiior.html
 Web page: www.pkrvg.org

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

CONTEST: Run for the Bacon
 DATE & TIME: 0100-0300Z 19 Apr
 BANDS/MODE: 80-10M CW
 POINTS: 1 Pt. non-member QSO; 3 Pts. FP member; 5 Pts. FP DX member
 MULTIPLIERS: States/Provinces/Countries (X 2 if more than 50 members worked)
 EXCHANGE: RST + State/Province/Country + FP #; (non-members give power)
 ENTRY CATEGORIES: Single Band; All Band
 ENTRIES: Logs submitted by online only: www.fqrp.com/autolog.php
 See web page: www.fqrp.com/fqrpun.php

CONTEST: Florida QSO Party
 DATE & TIME: 1600Z 24 Apr - 0159Z 25 Apr & 1200-2159Z 25 Apr
 BANDS/MODE: 40-10M CW & SSB
 POINTS: 1 Pt. SSB, 2 Pts. CW
 MULTIPLIERS: FL sta's count States (including FL/Provinces/Countries/Maritime Mobile Regions (once per mode); All others count FL counties (67 possible)
 EXCHANGE: FL sta's give RS(T) + County; W/VE sta's five RS(T) + State/Province; DX gives RS(T) + DXCC prefix
 ENTRY CATEGORIES: Single Op; Multi Op, Single; Multi-Multi; Mobile; Club; School; (Note: All categories sub-divided by power output - QRP <5W; Low <150W; High >150W)
 ENTRIES: 26 May Florida QSO Party c/o Ron Wetjen, WD4AHZ, 5362 Castleman Dr., Sarasota, FL 34232. Cabrillo to: logs@floridaqso.org. Rules at: www.floridaqso.org/rules.html
 Web page: www.floridaqso.org/

CONTEST: Nebraska QSO Party
 DATE & TIME: 1700Z 24 Apr - 1700Z 25 Apr
 BANDS/MODE: 160-2M CW/SSB/Digital
 POINTS: 1 Pt. SSB; 2 Pts. CW or Digital
 MULTIPLIERS: NE sta's count States/Provinces/DXCC Countries; All others count NE counties (93 possible) (Note: If all QSO's QRP (<5W) X 3; All QSO's <150W, X 2;)
 EXCHANGE: NE sta's give RST + county; All others give RST + State/Province/Country
 ENTRY CATEGORIES: Single Op; Multi Op, single XMTR; Mobile; Club
 ENTRIES: 31 May HDXA NQP, P.O. Box 375, Elkhorn NE 68022-0375. ADCII or Cabrillo to: nqp@hdx.net. Rules at: www.hdx.net/neqso/neqso.htm

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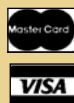
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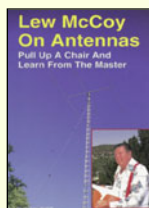
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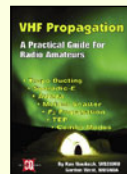


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DX Predictions

APRIL 2010

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/Toyko, Oceania-Australia/Melbourne, Europe-Germany/Frankfurt, and South America-Brazil/Rio de Janerio. Smoothed sunspot number = 7.

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	(11)	11	*18	(9)	*15
12	(17)	10	*16	(14)	(13)
14	21	*12	*13	17	20
16	23	12	(13)	18	*24
18	*24	15	(12)	17	*27
20	23	*20	22	15	*29
22	19	*20	28	(12)	*29
24	16	*20	*30	(9)	*27
2	*14	*19	*29	*12	*22
4	*15	*17	*28	*13	*18
6	14	*15	*26	(11)	*16
8	(12)	*13	*21	(10)	*14

CENTRAL U.S.A.

UTC	AFRI	ASIA	OCEA	EURO	SA
8	(12)	(10)	*20	(9)	*14
10	(15)	*9	*17	14	*13
12	20	*13	*15	*17	*20
14	23	(11)	*14	*19	*24
16	24	(10)	(13)	*19	*27
18	*24	(9)	(12)	*18	*29
20	*22	15	23	16	*29
22	19	18	28	13	*29
24	*16	19	*30	10	*27
2	*14	17	29	9	*22
4	*15	14	*29	*12	*19
6	13	(12)	*24	*10	*16

EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SA
7	15	(10)	*18	9	*14
9	17	*9	*16	14	*13
11	*23	*14	*14	*17	*19
13	*27	(12)	(15)	*19	*23
15	*28	(10)	(13)	*19	*26
17	*28	(9)	(12)	*19	*28
19	*25	(14)	(18)	*17	*29
21	*20	17	26	15	*29
23	*17	18	29	*11	*27
1	*15	16	28	*10	*22
3	*13	13	*26	9	*19
5	*17	(11)	21	*10	*16

Visit Your Local RADIO CLUB

CALIFORNIA

Fresno Amateur Radio Club - Meets 2nd Friday/monthly, 7 PM at Cedar Lanes bowling alley, Cedar and Shields in Fresno. Net Sunday at 7 PM on W6TO/R, 146.94 (-) PL 141.3hz. Tech net Wed 7 PM on W6TO/R www.W6TO.com; W6TO@ARRL.net. Contact Ken, WA6OIB @559-323-6753 12/10

El Dorado County Amateur Radio Club, Meets 4th Thursday/monthly, 7:15 p.m., Federated Church, Thompson Way, Placerville, CA. Net 8p.m. Tuesday 147.825-PL82.5Hz, POB 451, Placerville, CA 95667, www.edcarc.net. 3/10

COLORADO

Denver Radio Club (DRC) meets 3rd Wed, 7:30 p.m., St. Joseph Episcopal Church, 11202 West Jewell, Lakewood, CO. Learning/Tech sessions 6:30 p.m. Oldest club in Colorado (1917). Net Sun 8:30 p.m. 145.490 rptr.; w0tx@arrl.net; www.w0tx.org 4/10

HAWAII

Honolulu ARC meeting 0900 for breakfast in Jan, Mar, May, Jul, Sep and Nov at the Sizzler Restaurant at Pearl Ridge. Contact John, K1ER, 808/484-9748. 4/10

ILLINOIS

North Shore RC, www.ns9rc.org, is one of Chicago's largest and most active radio clubs. Monthly meetings feature a wide variety of topics relating to amateur radio and are normally held on the second Tuesday of each month at 7:30 PM, the Heller Nature Center, 2821 Ridge Rd., Highland Park, IL. Regular weekly net is held on Thursday night at 8:00 PM on the 147.345+ (107.2) and 442.725+ (114.8) repeaters. Club's other repeaters include: 224.32- (110.9), D-Star 442.09375+ and 1292.20- voice and 1242.20 data. Club also provides licensing classes, exams and help to new hams. 11/10

VIRGINIA

Williamsburg Area Amateur Radio Club (WAARC) meets on 2nd Tuesday of each month at 7PM at James City County Library, 7700 Croaker Rd., Williamsburg, VA. Talk-in on 146.76 (-). Contact Ken, NU4I at 757-564-7731 or nu4i@arrl.net. Website www.k4rc.net 03/11

Click here to have your club listed!



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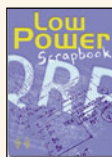
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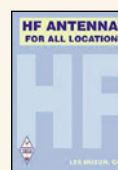
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As a service to our readers, WorldRadio Online presents a feature listing of those VE exams, times and locations which are sent to us. Please remember that our deadline for publication is two months in advance. For example, if your group is scheduling 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.

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Dissecting the Cobra Antenna

Kurt N. Sterba

John Portune, W6NBC, asks: “Have you commented on – or what do you think about – the open-wire-fed + tuner dipole that uses three wires on each side instead of just one, hooked alternately together at the ends to form an S-curve?”

“Obviously it would resonate and radiate much the same as its normal one-wire cousin, but would possibly show one or two additional resonances at lower frequencies due to distributed capacity.

I think the one currently on the Internet is called a Cobra. Skin effect wire resistance at the sub-frequencies might be a problem, though, but not a lot, I suspect.”

Kurt looked up this antenna on the Internet and found www.k1jek.com has a Cobra Ultralite version of the Cobra for sale and a good description of its operation under FAQ. An edited reprint of the original 73 Magazine article by W4JOH can be seen at <http://www.hamuniverse.com/cobraantenna.html> as well.

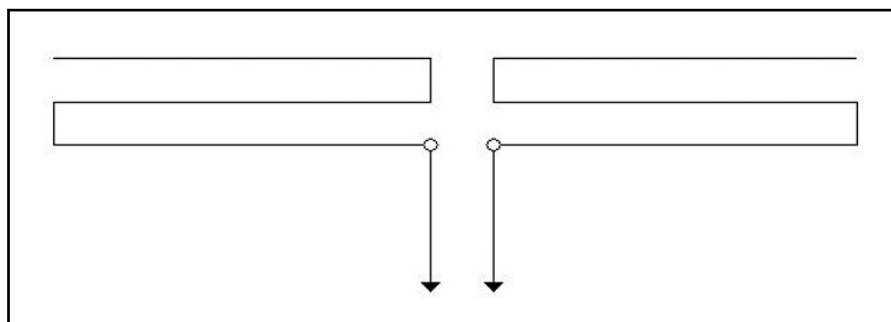
The Cobra has three horizontal wires on each side of the feed point as shown in the drawing. They are connected in an “S” shape. The whole assembly is 140 feet long. The antenna is fed by 81-feet of 450 ohm ribbon cable and covers 160 through 10 meters. It requires a tuner.

The advantage over a simple dipole is that it works on 160 meters even though it is only 140 feet long instead of the 246 feet needed for a 160-meter dipole.

How does it work? One way of looking at it is this: The total wire length in the Cobra is 420-feet. If this were stretched out to make a dipole it would resonate at 1.2-MHz. Its second harmonic resonance would be at 2.4-MHz and its third harmonic would be 3.6-MHz in the 80 meter band.

A dipole on its third harmonic has an impedance of about 75-ohms, the same as on its fundamental. This is also true of the fifth harmonic, seventh harmonic, and other odd harmonics.

There does not appear to be a resonance on 160 meters but the 81-foot ladder line will transfer the impedance down to about 200 ohms, an impedance easily handled



The configuration of the Cobra antenna.

by a tuner. The other harmonics are not exactly in the amateur bands but this does not really matter because the ladder line will change the impedance to some other value anyway.

Remember, at the end of a 450 ohm line you do not see 450-ohms and you do not see the antenna impedance unless the line is a half-wave or some multiple of a half-wave long. The impedance you see at the transmitter end changes with the length of the line.

Is it a good antenna? Well, it gives you 160 meters in a relatively short antenna. It will have better bandwidth than an 80 meter dipole operated on 160. Otherwise it should work about like an 80-meter dipole and with the same efficiency. If you want the better efficiency on 160, it may be worthwhile for you.

Balun Or Isolator

Donald Wilson, N9ZGE, has a Mosley tri-bander with a balun on the feedline at the antenna. “I found that all three bands were resonant just outside of the ham bands,” he says. “So I called Mosley.

The first question I was asked was ‘Is there a balun installed on the beam?’ I answered ‘Yes.’ Then I was told to remove the balun and to call them back. I told them that removing the balun should have no effect on resonance points of the beam. Basically then I was told they would not help me until I removed the balun. So I removed the balun, and guess what? The resonant points were the same.

“Now my question: Instead of taking the beam down to re-install the balun at

the feedpoint, is it OK to install a line insulator like the Radio Works T-4 at the base of the tower? This might be a good article for you to enlighten the ham community on the proper location of baluns and isolators. In other words, at the beam or at the transceiver?”

Kurt can tell you that a balun and an isolator are the same things as far as their function. They both prevent RF current from flowing down the outside of the cable. Some baluns are built as transformers that connect between the coax and the antenna. They feed both sides of the antenna and isolate the antenna from the coax shield.

If you connected the coax directly to the antenna, the coax shield would be directly connected to one side of the antenna. The RF current could be split – with some going to the antenna and some going down the shield. The balun prevents this.

There is another type of balun using ferrite beads. The beads are placed over the coax and their impedance blocks the current from going down the shield.

Some commercial isolators are made of a short length of coax with the beads on it. This isolator is put in-line with the main coax. They operate just the same as the beads-on-the-coax balun. So there is no difference between the bead balun and the isolator. You can use either one as a balun at the antenna or as an isolator anywhere along the line.

Where should you put them? You should always put one right at any balanced antenna. Without a balun, RF cur-

rent likely will flow down the outside of the coax shield. This is a loss of power to the antenna.

Also, any noise pickup from the coax shield will feed down to your receiver. The coax is normally vertical. And vertical antennas tend to pick up more noise than horizontal antennas. This is because most man-made noise is vertically polarized.

If the antenna is a beam, it can skew the pattern and will reduce the front-to-back ratio. So always use a balun on any balanced antenna.

Krusty Olde Kurt doesn't understand where Mosley is coming from, but they are absolutely wrong when they tell you to use the beam without a balun. Any antenna engineer could tell them that.

Down at the transmitter it may be desirable to use an isolator or bead balun. If the cable shield picks up noise from being close to household noise sources the isolator will keep it from getting into your receiver.

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

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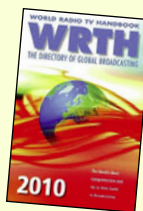
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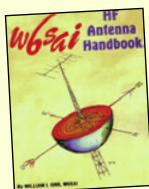
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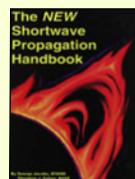
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