

WorldRadio

ONLINE

Year 38, Issue 10

APRIL 2009

Assault on C6 ~ Crooked Island in the Bahamas



On the Cover: Dallas Carter, W3PP,
and Pete Radding, W2GJ, tune the
80/160 meter vertical on their Crooked
Island, Bahamas DXpedition.

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



WorldRadio Online Newsfront

NCVEC QPC Seeks Input on Revised Tech Exam

The Question Pool Committee of the National Conference of Volunteer Examiner Coordinators is now reviewing the Element 2 Technician Class question pool. This, as part of a regular process in which each question pool is reviewed on a four-year rotation.

The next Technician Class pool will become effective on July 1, 2010. In preparation, the Question Pool Committee is seeking input from the amateur community concerning this revision. It is also accepting input in the form of new question topics, new questions and suggestions for changes or deletions.

If you have any comments or suggestions on the current Element 2 question pool, please contact the Question Pool Committee Chairman, Rol Anders, K3RA, via email to qpcinput@ncvec.org; or on line at www.ncvec.org/feedback.php. Guidelines for question formats are provided at that web address. The current Technician Examination Syllabus and Question Pool can be found elsewhere at the www.ncvec.org website. (NCVEC)

Radio Club of America Begins School Outreach Program

The Radio Club of America (RCA) has begun a new multi-faceted outreach program to reach youngsters and late teens to interest them in technology careers and in some cases also in amateur radio. Retired New York City educator Carole Perry, WB2MGP, is in charge of the program and tells us a bit of what's being planned.

Perry: "A dear friend of mine who is a fellow RCA member named Richard Sommers, on the West coast is going to mostly in the inner-city schools of Los Angeles searching for at risk students who have some technical inclination but cannot afford after high school to pursue a trade or a vocation in anything technical as far as schooling goes. We are proposing giving these students —once they are identified— scholarship money which they will receive once they are enrolled or engaged in a technical or vocational trade school."

As to recruiting new hams, that will first be explored in the Northeast. There, WB2MGP will fall back on something she knows quite well. Teaching ham radio and putting ham gear in the classroom:

Perry: "The other move is to encourage amateur radio in as many schools as I can get it into in my immediate area in the New York, New Jersey, Pennsylvania and Connecticut area by going in and actually showing the track record of the successfully run ham radio programs that I already have lined up and in place. Also, by offering them equipment that is going to be donated by fellow RCA members."

Perry says that this equipment will be checked out and put into first rate shape before it's delivered to the schools to create ham

radio stations where now there are none. The program will also train the classroom educators on how to use ham radio as a classroom teaching tool.

You can hear more about this very interesting project being headed up by Carole Perry, WB2MGP, on this week's Rain Report. You can find it on-line at www.therainreport.com or by phone at area code 773-358-7845. (Newsline)

ARRL Approves Limited Use of CW Skimmer

A big change in the world of contesting. Following months of review, the ARRL has decided to allow the use of the controversial CW Skimmer program, but only for multi-ops and single operators using assistance in ARRL contests. The rules change on multi-channel decoders like CW Skimmer was approved by the ARRL Program and Services Committee, which met before the mid-January 2009 meeting of the ARRL Board of Directors. In an interview with Radio-Sport.net, ARRL Contest Advisory Committee Chairman Dick Green, WC1M, said that this emerging technology will be permitted in ARRL contests, but not in the Single Operator category.

This decision mirrors a similar one made last year by the CQ WW DX Contest. The ARRL decision means that all major contests have now dealt with the CW Skimmer issue. (WOWI via VHF Reflector)

ARRL Issues Mobile Amateur Radio Policy Statement:

The idea of banning cell phone use or texting while driving is gaining support from police agencies and insurance companies. The ARRL board adopted a policy encouraging those backing these bans to exclude mobile amateur radio operations. The message is clearly aimed at state legislators and community leaders. The policy statement focuses on the concept that cell phones are full duplex devices - meaning the user is focusing on listening and conversing directly. Amateur radio communications, on the other hand, the policy statement notes, require more listening and less transmitting and each cannot occur simultaneously.

The ARRL is worried that regulating cell phones and text messaging while driving casts such a broad net that amateurs who provide public service could be blocked from lending a hand to their communities in times of need. You can read more at the League's website: www.arrl.org.

The ARRL Policy Statement does recognize the responsibility of the amateur community to conduct its activities in a manner that does not create unsafe operation of their motor vehicles. It says that safety has to be a top concern at all times. (ARRL)

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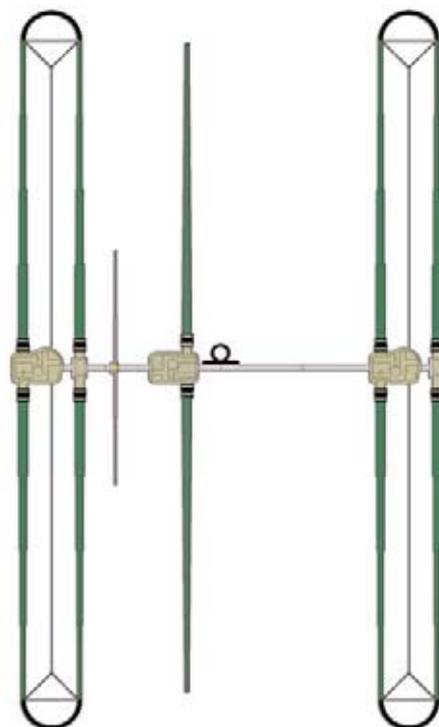
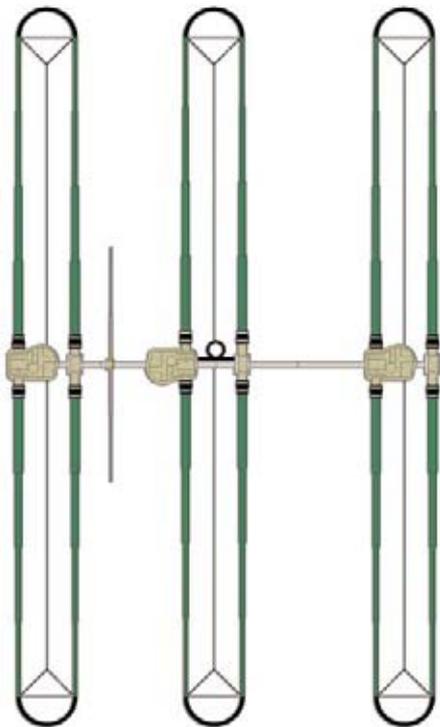
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ON THE COVER

On the Cover: Dallas Carter, W3PP, and Pete Radding, W2GJ, tune the 80/160 meter vertical on their Crooked Island, Bahamas DXpedition.

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April showers bring May flowers and also heralds the tradition of spring cleaning. Being a packrat (I can't throw anything away, I might need it later) my shack has become overflowing with "stuff". There is a path to the computer, and another to the rig. I find it to be cozy and comfortable; it feels like being in a nest or a cave.

I usually listen to 20 meters while I'm answering email or doing computer work. The other day, I heard an old friend and wanted to jump in and say hello. I couldn't scoot my chair across the floor because of some boxes I had "temporarily" placed there last month. The area in front of the rig was so cluttered that by the time I followed the cable from the rig and found the key and cleared a spot for a notepad, my friend had gone.

Looking around at my cozy cave, I saw it as others, especially non-hams, would see it - a room overflowing with boxes, radios, papers, telegraph keys, and assorted ham memorabilia. When I have visitors over, they usually ask to see my shack and I always make some excuse to avoid showing it.

Does this sound familiar to anyone? Would your shack benefit from a spring cleaning? It seems like an insurmountable task, but I'm going to try to make my shack "guest-worthy". I know there are other packrats out there, why don't you join me? Send in your before and after photos, stories of buried treasures you've forgotten about it, storage and organizational tips, and we'll share them in upcoming issues. I'll also keep you posted on my progress.

You can even make some extra cash from selling items that you have packed away for future use, but we both know you will never do anything with them. If it's not worth selling, take a box of "junk" to your local club meeting and let it become someone else's clutter. You don't need it, and can fill the space in the shack with something you can use - or just enjoy the extra room on the floor or table.

The response to our *WorldRadio Online* has been overwhelmingly positive. Of course, people miss not having a paper copy to roll up and put in their back pocket, but seeing the photos in color and being able to read their favorite columns has made our readers happy. We are still working on making the size of the magazine file smaller to facilitate a shorter download time, as well as working on other technical issues to make it easier to navigate and read.

One question that has been asked frequently is whether back issues of *WorldRadio Online* will be available. The answer is yes! There is a "back issues" button on the web page and it will bring up past issues (starting with February 2009), which you can download or read on line. The previous issue is available as a back issue when the new issue is available for download, usually the 20th of each month. And just think of the room you'll save by having an archive of *WorldRadio Online* available at your fingertips on your computer rather than in piles around the shack!

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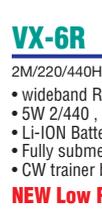
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Assault on C6 ~ Crooked Island in the Bahamas

The runway at Pittstown Point, Bahamas. The resort buildings can be seen to the right of the runway at the water's edge.

By Robert J. Biss W8ZA

I have been around ham radio all of my life and earned my license in July of 1958. My father had been a ham since the early 30's and after WWII (W8LJU, Silent Key). I remember going to the surplus stores in Cleveland and gleaning thru the parts, looking for items he needed to build his BIG rig: a pair of 100-TH's running 800 watts CW/AM. Those were the days, as they say. I have a modest multi-multi station on top of the Blue Ridge Mountains near Harpers Ferry, WV.

Back in 2007, one of the occasional operators of my station, Ed Steeble, K3IXD, asked if I would consider going on a DXpedition. I said sure, if it would be low key, since that is mainly the way I operate here. My contest philosophy is to have fun and make a decent showing in the standings.

Well, in August he called and asked if I would be interested in going to the Bahamas with two other hams, flying in a small plane and operating the 2008 CQWW SSB contest as one of the C6APR team. We talked about a few particulars - how long we would be gone, expenses, etc. My home station was down for some repairs and basement remodeling and my wife encouraged me to go. I agreed.

An interview was arranged to see if I would fit in with the others. That's not an unreasonable request since we were going to be traveling in a Piper Aztec, a light

twin-engine six-place airplane. In addition, we would be living and working together for a week, 24/7. Ed and I made arrangements to meet at the Leesburg, VA airport with Pete Radding, W2GJ/C6APR, who is the team captain and the airplane owner/pilot. All went well. We shared our interests in ham radio, contesting, and it didn't hurt that I was once an instrument-rated private pilot.

Over the next month, many e-mails were exchanged, plans and information

were shared. Dallas Carter, W3PP, who had gone to C6 with Ed and Pete in July for the IOTA contest, asked if there would be room for a fourth operator. That kept Pete constantly calculating the available weight for equipment and placement of the load between the nose, the middle and rear of the plane. This required computation is known as weight and balance. The total weight of the people, equipment and fuel could not exceed 1995 pounds. The target weight limit for the rigs, amps,



The crew getting ready to leave for C6. Ed, K3IXD/C6IXD; Dallas, W3PP; Pete, W2GJ/C6APR; and Bob, W8ZA. (Photos courtesy of the author)



Bob, W8ZA; Dallas, W3PP, look over the shoulder of Pete, W2GJ/C6APR, while calculating the weight and balance for the trip.

coax, antennas, power supplies, filters, antenna switches, tuners and laptops was 500 pounds. The result was we could only take 10 pounds, maximum, of personal stuff - toothbrushes included.

Everything was falling into place. On Tuesday, October 21, bright and early, we took off for the 2½ hour flight to Summerville, SC, where Pete's plane resides. Pete lives nearby in North Charleston, SC. That afternoon, we loaded the equipment in the plane, refueled, and the team went out for a fine dinner. Another member of the team, Randy Hargenrader, K4QO/C6AQO joined us; he was unavailable for this year's CQWW SSB contest but had put in a major effort in designing and testing the antennas. I learned that the team had been improving the antennas on each trip to Crooked Island. They also were constantly trying out different rigs. This was their sixth trip.

Early on the morning of the 22nd, off we went. First stop after a 2½ hour flight to Fort Pierce, Florida, was to refuel and pick up the required "life raft" when flying over water. Those 29 pounds had to be figured in with the equipment weight. Our next destination was to be about a 2½ hour flight to Exuma, Bahamas. However, en-route the weather became a little dicey; we opted to go into Nassau and wait out the weather front that was ahead of us. Our stay in Nassau wasn't too bad... a couple hours later, the front was past our destination. While in Nassau we cleared Customs and

Immigration, had our passports stamped, and were wished a pleasant journey and stay in the Bahamas.

Finally, mid afternoon we arrived at the Pittstown Point Lodge. After a fly-by to check the condition of the runway and a

quick circle around the Bird Rock Lighthouse (ARLHS BAH-005) we touched down on the private 1800-foot runway. Immediately, a van pulled up and David Cunningham, the manager of the lodge greeted us. He left the van at our disposal for carrying the equipment to our set of rooms in one of the buildings.

It had been a long day, but we had many antennas to put up. Ed and I tackled the two HF2V verticals that were to be phased and switched for either endfire to Europe or broadside to North America on 40 meters. Dallas started construction of the first of two pairs of R5 verticals that were to be phased. This set was broadside to North America and Japan; the other set was broadside to Europe. Both sets were optimized for 20 meters, but exhibited by design some gain on 15 and 10 meters. Pete started assembling the second set of R5s.

The HF2Vs each had sixteen 18-foot radials around them. The sun was starting to set and we were tired so we headed indoors to set up the two K3 rigs with the automated antenna switching/band-pass filter selection arrangement that Dallas had designed. The system was designed to prevent two radios from being on the same antenna at the same time, but we could operate on any two different



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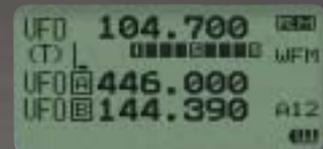
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bands simultaneously. Ed fired up on 17M RTTY and Pete, Dallas and I took turns running on SSB until it was time to have dinner. On SSB, we put some two hundred contacts in the log in about 1½ hours.

Did I mention that the restaurant served three exceptional meals a day? We had several choices for breakfast and lunch, but dinner was whatever the cooks came up with and it always rivaled the best restaurants in which anyone has eaten. There is nothing like freshly caught fish or lobster. Each dinner was complete with wine, fine china, and dinnerware. We never left the table hungry. The bar was well stocked for being in such a remote location. I truly was amazed. By the way, the Bo Jangles chain currently owns the resort. The runway is in the process of being lengthened to 3600 feet. In addition, a marina is in the plans.

Thursday morning, Dallas worked on the second pair of R5s. Ed started assembling the receiving loops that Randy made and Pete and I started assembling the 80/160 mast. Soon, all four of us raised the 80/160 antenna in place, set the guys and then laid out the thirty-two 40-foot radials. Dallas took the tuners out to the antenna and matched one to the vertical on 160 and the other was matched on 80. The tuners were band switched from the shack, thanks to a Dallas and Randy innovation. A double bagging of large garbage bags sealed by a liberal use of duct tape provided the weather protection. The 80/160 antenna was a 55 foot heavy walled aluminum mast comprised of 5-foot sections, so it would fit in the baggage compartment of the Aztec.

As we finished the 80/160 antenna installation we were visited by a local, affectionately known as 'Uncle Bob'. Bob is W8RZZ and has been spending winters on Crooked Island for over 20 years.

Dallas had done some extensive modeling of our antennas with the short radials based on the work done by N6LF <<http://www.antennasbyn6lf.com/2008>> and settled on the configurations that we used.

At the start of the CQWW, Dallas started on 40 meters and stayed there for nine hours with over 900 contacts. The 40 meter verticals were working. Ed opened on 15 meters then quickly moved to 20 meters and finally moved to 80 meters. After two hours, I relieved Ed. Later, Pete operated. We didn't have a set schedule; you operated until you wanted relief. During the contest, two of us ate together-



Dallas, W3PP tunes the 80/160M vertical under the watchful eye of Pete, W2GJ/C6APR.

er, and then the other two ate together. The lodge was very accommodating. They served an early dinner for us on Friday night and held Sunday dinner until after the contest ended.

This whole operation was done Field Day style. Everything was to be erected one afternoon and dismantled and packed one day after the contest. All antennas were verticals and this made installation quite easy. No trees to climb or slingshots to get lines up or over. The hardest antenna to erect was the 80/160M vertical. After all the sections were put together, the four of us had it up and ready for tuning in about 20 minutes, including laying out the thirty-two 40-foot radials.

Due to bad weather being forecast for the Tuesday after the contest, we stayed an extra day and were treated to a guided tour of Crooked Island, from one end to the other. There are many interesting things to see on the island. For history buffs, there is an entrance pillar to a prop-

erty with the date 1795 on it. At the Lodge there is a plaque honoring Columbus' Fourth Landfall in 1492, presented by the Royal Bank of Canada.

Before and after the contest C6APR and C6AXD handed out contacts on 160, 80, 40, 20, 17, 15, and 10 meters. We didn't do each mode on each band but we did operate CW, SSB, and RTTY. Overall, we made a total of 5249 contacts while on Crooked Island. We concentrated on working SSB since this was the CQWW SSB weekend and the antennas were tuned for the phone bands.

I titled this article 'An Assault on C6' because in previous efforts there were only two or three hams on the trip; this time there were four of us. Operating multi-two and using the call C6APR, we amassed a total of 3824 contacts with a claimed score over 4.15 million points. I hope that after the UBN checking, C6APR will have set a new multi-two record for C6 in CQWW SSB.

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Avoiding the Scourge of DX

Since the HF bands will soon be coming back to life and stations from all over the world will start popping into your receiver, even when you're just trying to talk with Ed across town, it's time to get prepared and learn how to deal with the inevitable...

By Ron Wren,* W6DFT

It's a subject that hams have feared to address, but it's time to face the issue: DX causes pile-ups. Pile-ups cause QRM. And QRM interferes with communication! No one wants QRM, so eliminating or minimizing DX contacts is the most sensible pathway to the full enjoyment of ham radio.

Avoiding DX is not as easy as it seems, but the problem can be broken down into two basic concepts: (1) receiving DX and (2) transmitting to DX.

As one who has not worked DX in years, I consider myself somewhat of an expert on the subject, and it is with the best of intentions that I am willing to pass on my DX avoidance techniques. Note: In all instances, I recommend that readers adhere to gentlemanly (or womanly) ham decorum, masking any overtly negative act that would bring shame on our hobby.

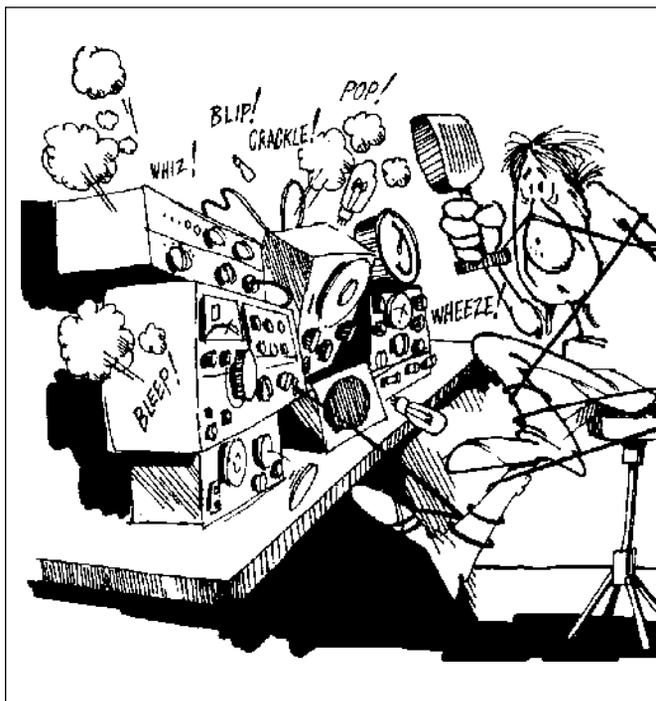
First, the issue of receiving DX. If a DX station insists on calling you, remember the cardinal rule: Never answer a DX station's call. Other hams on or near the frequency will thank you. Also the DX station, used to being sought after by several thousand DX-chasing hams, will be properly chagrined.

Let's say a YK station, for example, calls you, and you take pity on his efforts to make a contact. Answer in high school Spanish. The YK will immediately sign and check the orientation of his beam.

If making a DX contact is unavoidable, never give a 5 by 9. That only encourages the other fellow. The fact is, most DX stations are 3 by 3, so be honest. Give them the report they don't want to hear. That should end the QSO quickly.

Implied criticism has worked well to end domestic contacts, and the same technique can work just as effectively with DX. Subtly find fault with the other chap's transmission ("There's some kind of crackling sound in the background. Could your radio be on fire?"); suggest that he has a hearing problem by overly enunciating your call using pedantic phonetics (even after he has it down perfectly); confuse his call with another. For example, reply to a VE1 by calling him XE1 ... and commend him on his excellent English. Unwanted QSOs, domestic and DX, will be cut short, allowing plenty of time to pursue other interests.

Transmitting techniques to avoid DX are an enviable skill to hone. Here's a technique that always works: Adjust your radio for cross-band operation. Receive a DX station on 20 meters, for instance, but transmit on 10. (Ed. note: This technique may not necessarily fail when sunspots are active.)



Cut your power to 5 watts and load a grounded dipole (see my earlier article, "The Magic of Mismatching"). Should you, in spite of this, succeed in making an unwanted DX contact, you'll be written up in all the publications and receive a handsome award (suitable for framing).

Make good use of your DX-100. Should an unfortunate DX station break in on an otherwise excellent local contact, sprinkle your conversation with references to "crystals," "6L6s," and the advantages of rectifier tubes. Any self-respecting DX station will dump you in a minute.

Non-responsiveness is an excellent way to end a DX—or for that matter any—QSO. Talk only about yourself, your rig, your life, your achievements. Never ask a question of the other operator. If your goal is to discourage a contact and do your part in clearing up the airwaves, this approach will end any QSO fast.

Finally, the sure-fire secret to avoiding DX. It's the one approach that assures that a DX station will not call you, that you'll have done your part to unclog the ether and the scourge of DX: Call ... "CQ DX."

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The Rules Say...

John B. Johnston, W3BE

HAMCASTING?

Q I would like to air on our net about 10 minutes worth of a ham-pilot communications recording of an air mobile QSO that I had on 20 meters. But the FCC regulations are just a bit too vague for comfort. Sections 97.111 (c) and (f) seem to say it is okay; other paragraphs in that same section limit a broadcast to specific types. Guidance, please?

A. You are looking at obsolete rules. Access the current rules at www.gpoaccess.gov/ecfr/. Click on [Title 47], then on [Part 97]. Therein you will find Section 97.111(b)(6) which authorizes amateur stations to make certain one-way transmissions, including those "necessary to disseminate information bulletins." Section 97.3(a)(26) defines such as a message directed only to amateur operators consisting solely of subject matter of direct interest to the amateur service. That sounds like it is what you are contemplating.

W3BE-O-GRAM: Steer clear of all use of the term "broadcast." Section 97.3(a)(10) defines "broadcasting" to mean "transmissions intended for reception by the general public, either direct or relayed." Section 97.113(b) says that an amateur station shall not engage in any form of broadcasting. How about adopting the hamslanguage "hamcasting" to describe those one-way transmissions necessary to disseminate information bulletins to amateur operators?

Q. Our local radio club assists at public-service events by running a net to pass informal traffic between several operators located around the site. The club member organizing things said that all stations will be operating under the club call sign and that individual operators are only to identify themselves using their tactical call signs. Individual operators would not identify with either their own call signs or with the club call sign. Only net control would identify with an FCC-assigned call sign, the club call sign. He said that would satisfy the legal identification requirements for all operators at the event. I asked how this would be legal. He simply said that it's legal. I don't understand how. What am I missing?

A. Apparently, all of the licensees of stations participating in that network have, in effect, arranged to relinquish physical control of their station apparatus to that one net controller who, under the provisions of Section 97.5(a), becomes the only station licensee of record. Under this arrangement, he takes on responsibility, under Section 97.103(a), for the proper operation of all of the stations in the network. He then designates the control operator for each station, as required by Section 97.103(b). This switcheroo makes it possible for each station in the network to perform its station identification announcement with the same call sign.

It is probably under such an arrangement that your network's controller is basing his directions to disregard the requirements of Section 97.119(a), which says that each amateur station, except a space station or telecommand station, must transmit its assigned call sign on its transmitting channel at the end of each commu-

nication, and at least every 10 minutes during a communication, for the purpose of clearly making the source of the transmissions from the station known to those receiving the transmissions.

Tactical call signs, however, can never substitute for the FCC-assigned call signs. No station may transmit unidentified communications or signals, or transmit as the station call sign, any call sign not authorized to the station. See BE Informed No. 14 ABOUT THAT STATION IDENTIFICATION.

W3BE-O-GRAM: It is only for the purpose of over-the-air station identification that the FCC assigns call signs – in accord with international arrangements – and maintains the ULS data base from which our Official Observers and other listeners can ascertain the identity of the station licensee and verify the class of operator license.

Transmitting a proper station identification announcement is especially critical to our uniquely unstructured radio service when it comes to creating and maintaining a culture of observing the FCC rules and using good amateur practices. Having that capability is our major deterrent to would-be rule violators. It facilitates self-policing and discourages interference-causing transmissions and annoying mischief-making because it exposes personal identities. It should never be compromised. It is basic to our maintaining a high level of rule compliance and promoting proper and efficient use of our allocated spectrum.

Q. Could the station identifications be legal in this situation if the operator at each different position periodically identifies his or her transmissions by including the club station call sign along with his or her tactical call?

A. Yes, provided those station identification announcements otherwise fully satisfied the requirements of Section 97.119(a). Such would comply with the letter, if not the spirit, of the rule. See BE Informed No. 4 WHICH CALL SIGN? It explains your options and accountability when someone wants to use your station apparatus or vice-versa.

Q. Our Net Control announced that we will be using the tactical call of our position and stated that it was not necessary to ID using our FCC call sign. He cited an FCC exception made during the New York Marathon and stated that the exception applies to the event that we were participating in. Is there any such exception?

A. The only exception codified in Section 97.119(a) is for a space station or telecommand station, neither of which is relevant here. Your station identification announcement must always be as stated in the United States Code of Federal Regulations Title 47 Part 97 Section 97.119. Your FCC-assigned station call sign must always be transmitted by your station as required; even whenever some sort of self-created tactical designation system is also employed for whatever reason.

W3BE-O-GRAM: Section 97.119 means what it says. Be ever skeptical about anything purporting to overrule or supersede the United State Code of Federal Regulations.

Q. Could all transmissions at the public-service event be considered to be originated by the club station, hence requiring use of only the club's FCC-assigned call sign?

A. That is the prerogative of the club station license trustee. Each participating station, however, would still have to comply with Section 97.119(a).

Q. Your column stated that if I hold an Amateur Extra Class license and someone comes to visit my station, they cannot operate in the Amateur Extra Class portion of the bands. While Section 97.105 would appear to cover that, you omitted that anyone can operate as a third-party (as long as they do not fall into the excluded class as defined by Section 97.115(b)). The net effect is that I could let my dog operate anywhere within my license grant. This means that when a friend of mine comes over, he can operate in the Extra Class portion of the band as long as I am at the control point to monitor the communications. I can even let him push the buttons (or the key) as long as I am at the CP to be able to control the communications if necessary.

A. The basis for your contention seems to be that third parties have operating rights and privileges. Such, however, is not the case. Section 97.115 simply authorizes an amateur station to transmit messages for a third party to any station within the jurisdiction of the United States and, in certain instances to any station within the jurisdiction of any foreign government. Its control operator may even allow the third party to participate in stating the message where the control operator is present at the control point and is continuously monitoring and supervising such participation. See BE Informed No. 33 OUR NEW TPMS (Third Party Message Stating Participant) "CLASS."

Q. At a recent exercise at our county Emergency Operation Center, we discovered that the RF noise level is too high to allow us to communicate effectively on the HF bands. We are considering some sort of HF remote receiving capability at a quieter location. What are our implementation options?

A. Use a wireline, including the internet, or a radio point-to-point link to relay the signals received at the quieter remote site back to the EOC. If by radio, you will need an auxiliary station at the remote site. See Section 97.3(a)(7).

An auxiliary station is one of the special operations for which accommodations to the normal station operation standards are provided. See Section 97.201. Note that an auxiliary station may transmit only on the 2 m and shorter wavelength bands, except the 144.0-144.5 MHz, 145.8-146.0 MHz, 219-220 MHz, 222.00-222.15 MHz, 431-433 MHz, and 435-438 MHz segments.

Your auxiliary station may transmit one-way communications (Section 97.201(e)) and it may be automatically controlled (Section 97.201(d)).

W3BE-O-GRAM: It should be coordinated. See Section 97.201(c).

Read the rules—Heed the rules at: www.gpoaccess.gov/ecfr/ and click on [Title 47], then on [Part 97]. Also visit <http://wireless.fcc.gov/> and click on [amateur]"

Enforcement reports are at: <http://www.fcc.gov/eb/AmateurActions/Welcome.html>.

Report violations to: fccham@fcc.gov.

BE Informed! Have a question about the amateur service rules? Visit <http://w3be.home.att.net/>; and e-mail john@johnston.net.



Our R&R Superham-of-the-Month is Ken Oelke, VE6AFO, Vice-President of the Quarter Century Wireless Association. Thanks, Ken, to you and the Wild Rose Chapter No. 151 for hosting our 2006 QCWA Convention in Calgary, Alberta.

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Low Band DXing from Modest Stations

Kelly Jones, N0VD

As winter begins drawing to a close and warmer weather starts to make its appearance, the low band DXing season also begins to wind down. With the lack of sunspots and high band doldrums, many of us have taken to the lower bands in search of that elusive DX. However, one of the major challenges of being a low band DXer is being able to get an effective antenna on these bands. Moreover, unfortunately, the challenge is inversely proportional to the frequency.

A couple of years ago I made a concerted effort to get something on the air for 160 meters. In 20+ years of being licensed, 160 was the only HF band that I had not operated. For years, I

used a 26' tall vertical that covered 40 and 80 meters with some degree of success. While this little vertical played well on 40, it was pretty much an air-cooled dummy load on 80. However, I will admit that even though it wasn't the most effective player on 80, I did manage to work DXCC with it. Shortly after that accomplishment, plans were made to figure out how to get on 160 meters.

After speaking with some of the local DXers who were active on 160, it was decided that due to my somewhat limited space, the best option for me would be to shunt feed my tower. Given that the tower was only 40' tall, we knew it



The 160m tower at SP5EWY, in the suburbs of Warsaw. Rys shunt-feeds the tower.



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**AT-1000Pro Review
in Nov. '08 CQ**



NEW! IT-100

Always looking to make our products better and more useful, LDG's popular AT-7000 tuner has been upgraded to the IT-100. Still matched in size to the IC-7000 and IC-706, the IT-100 now sports a front panel push-button for either manual or automatic tunes, and status LEDs so you'll know what's going on inside. You can control the IT-100 and its 2000 memories from either its own button or the Tune button on your IC-7000 or other Icom rigs. It's the perfect complement to your Icom radio that is AH3 or AH-4 compatible. **Suggested Price \$179.99**



AT-1000Pro

Building on the success of the AT-1000, LDG Electronics has refined and expanded its 1KW tuner. The AT-1000Pro has an Automode that automatically starts a tuning cycle when the SWR exceeds a limit you set. Operates at any power level between 5 and 1,000 watts peak. RF Relay protection software prevents tuning at greater than 125 watts. Tunes from 1.8 to 54.0 MHz (inc. 6 meters), with tuning time usually under 4 seconds, transmitting near a frequency with stored tuning parameters, under 0.2 seconds. 2000 memories. 2 Antenna connections. All cables included. **Suggested Price \$599**



Z-11Pro

The original portable Z-11 was one of LDG's most popular tuners, accompanying adventurous hams to their backyards, or to the ends of the earth. Now meet the Z-11Pro, everything you always wanted in a small, portable tuner. Designed from the ground up for battery operation. Only 5" x 7.7" x 1.5", and weighing only 1.5 pounds, it handles 0.1 to 125 watts, making it ideal for both QRP and standard 100 watt transceivers from 160 - 6 meters. With an optional LDG balun, it will also match longwires or antennas fed with ladder-line. All cables included. **Suggested Price \$179**



NEW! KT-100

LDG's first dedicated autotuner for Kenwood Amateur transceivers. Easy to use - just right for an AT-300 compatible Kenwood transceiver. The KT-100 actually allows you to use the Tune button on the radio. The LEDs on the front panel indicate tuning status, and will show a match in seconds, or even less of you've tuned on or near that frequency before. Has 2,000 memories for instant recall of the tuning parameters for your favorite bands and frequencies. If you have an AT-300 compatible Kenwood radio, you can simply plug the KT-100 into your transceiver with the provided cable; the interface powers the tuner, and the Tune button on the radio begins a tuning cycle. The supplied interface cable makes the KT-100 a dedicated tuner for most modern Kenwood transceivers. **Suggested Price \$199.99**



NEW! Z-817

The ultimate autotuner for QRP radios including the Yaesu FT-817(D). Tuning is simple; one button push on the tuner is all that is needed - the Z-817 takes care of the rest. It will switch to PKT mode, transmit a carrier, tune the tuner, then restore the radio to the previous mode! 2000 memories cover 160 through 6 meters. The Z-817 will also function as a general purpose antenna tuner with other QRP radios. Just transmit a carrier and press the tune button on the tuner. Powered by four AA internal Alkaline batteries (not included), so there are no additional cables required. A coax jumper cable is also included for fast hook up. **Suggested Price \$129.99.**



NEW! Z-100Plus

LDG's popular Z-100 economy tuner is now the Z-100Plus. Still small and simple to use, the Z-100Plus sports 2000 memories that store both frequency and tuning parameters. It will run on any voltage source from 7 to 18 volts; six AA batteries will run it for a year of normal use. Current draw while tuning is less than 100ma. The Z-100Plus now includes an internal frequency counter so the operating frequency is stored with tuning parameters to make memory tunes a blazingly fast 0.1 seconds; full tunes take an average of only 6 seconds. **Suggested Price \$159.99**



AT-100Pro

This desktop tuner covers all frequencies from 1.8 - 54 MHz (including 6 meters), and will automatically match your antenna in no time. It features a two-position antenna switch, allowing you to switch instantly between two antennas. The AT-100Pro requires just 1 watt for operation, but will handle up to 125 watts. All cables included. **Suggested Price \$219**



AT-200Pro

The AT-200 features LDG's new "3-D memory system" allowing up to eight antenna settings to be stored for each frequency. Handles up to 250 watts SSB or CW on 1.8 - 30 MHz, and 100 watts on 54 MHz (including 6 meters). Rugged and easy-to-read LED bar graphs show power and SWR, and a function key on the front panel allows you to access data such as mode and status. All cables included. **Suggested Price \$249**

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would be a “compromise” antenna. Nonetheless, it would at least be something that would get me on the band – something was better than nothing.

That was in the fall of 2006. During the first “season” (roughly October – April), 71 DXCC entities were put in the log on 160 meters, all from the “black hole” of Colorado. To date, I’ve managed 94 entities and have a goal to finish out DXCC by the time this year’s season is over.

By almost any definition, my low band antenna arrangement is modest for operating on 160 meters. If I can get DXCC from my “RF challenged” location, I wondered how many others were using similar stations. Remember the adage about the inverse relationship of antennas to frequency - were other DXers on the low bands using modest antennas as well?

Rys Tymkiewicz, SP5EWY, commented about how he has managed on the low bands over the years. As any city dweller can relate, he points out the abundance of noise pollution.

I’ve been on Topband [editor – 160 meters] for many years starting in 1987 in Warsaw where I used to live a 10 story building (of course I had flat on the 10th floor!). I was using 2 x 40 meter slopers from the top of the building to the street lamp. The power was about 500W input. I lived there for two years. During that time, I worked about 150 DXCC entities on 160 meters. However, because of a high level of noise in the city, I decided to move out of Warsaw.

In 1990 I built a house 25 km from the center of Warsaw. The property is rather small - only 30m x 30m. Because of that, I have only a few long radials; most of them are only 10-15m long. In total, there are about 45 radials. The tower is also not too high – about 18 meters plus a 4 meter steel tube with an X7 (added 2 elements on 30 meters) and a seven element 6 meter yagi on the top. The tower is shunt fed on 160 meters. This is the kind of antenna I’ve been using on 160 for the past four years. Previously I was using a half-sloper, which worked quite well, but the shunt fed tower seems to work a little better with at least one s-unit (or even more) at the other end. I have now worked/confirmed 292 DXCC countries and all 40 zones on 160 meters.

Of course the main problem on 160 meters is receiving, especially with such a small lot. For many years, I’ve been using K9AY loops, which are still my main receiving antennas. However, during the winter months I’m able to use two short Beverages - about 250m long. But because they are on a public land, quite often I find them broken or damaged.

I’m sure many will relate to Rys’ comments about receiving. When you start chasing DX on the lower bands, finding some type of receive antenna that can help reduce noise, both atmospheric and manmade, adds to the challenge. It seems that every electronic gadget these days (from lamps to televisions to cell phone chargers) emits some sort of RF hash. However, experimenting with different types of “small lot” receive antennas can pay huge dividends in the end. As Rys mentioned, the various incarnations of the K9AY loop seem to be very popular and can be installed in tight quarters.

Steve Litwins, K8WK, mentioned he has done very well DXing on the low bands with a very modest station, although with a piece of real estate many of can only dream about.

“I have 150 confirmed on 160, 240 confirmed on 80 and about 300 confirmed on 40 meters. On 160/80 I use a Gladiator Phoenix special with full size above ground radials on five acres. It works pretty well but is noisy on receive. On 40, I use an extended double-zepp aligned NNW to SSE. As for power, I use about 800 watts on all bands when in the piles.”

Wire antennas such as dipoles, inverted Vs and double-zepps

are very common when it comes to lowband DXing. If you don’t have room for a shunt fed tower, can’t put one up due to space limitations or struggle with that “4 letter word” - CC&Rs, stringing wires around trees makes a very good option for getting on the bands. For years I used a 1/4-wave dipole for 80 meters which worked very well – and the apex was only at 37’. It was not something that broke the pileups on the first call, but with some persistence, it did make the QSO.

Dave White, G0OIL, is a perfect example of how to use wires. He has managed to make DXCC on 160 meters using stealth antennas.

I’m certainly not a Big Gun on 160 meters – I don’t have the real estate that some have, nor the antennas that others have. I have just under 1/3 of an acre, two 60 ft towers and a large ash tree in the garden [editor – yards are often called “gardens” in



Your author (N0VD) making some adjustments to the 160m shunt feed shorting strap.

many parts of the world]. I use a stealth vertical wire inside the ash tree. It's about 45 feet high and has a base loading made of 1 square mm insulated wire wrapped around a 1.25 inch diameter PVC pipe. The small coil is switched in for 80 meters and the large coil for 160 meters, both by relays switched from the shack. There are a dozen or so random radials. Although I can't hear the weak DX that others near here can hear, and can't bust the pileups that they can, I'm currently up to about 180 countries on 80 meters and 105 on 160 meters.

I've been at this QTH for 14 years and been on 80 meters occasionally for about half of that time. I only really started 160 seriously two winters ago, but I spend most of my time working away from home and have to be up at 5.30 a.m. for work if we are at home - hence radio time is curtailed.

I used to have a delta loop for 80 meters. This was vertically polarized, hung from a 75 ft aluminum pole in the centre of the tree poking out at the top and fed a quarter wave down from the top on one of the sides of the triangle. This worked magnificently, but as you may be aware, the UK has draconian planning laws that mean you can't put anything up, even in your own garden, without a remote bureaucrat's permission. The bureaucrats made me take the delta loop and aluminum pole down after an evil, interfering, busybody, old witch of a neighbor complained, so unless I try to shunt feed one of my towers I have to be a bit sneaky and hide low profile wire antennas.

Now that I've got to 100 [DXCC entities] on 160 meters with my small wire, I may try to rig up an inverted L to the top of the tower that sits about 15 feet behind the house, over the roof and down into the front garden. I have tried centre and top loaded (capacitive) antennas as described in ON4UN's book, *Low Band DXing*, but can never seem to get them to resonate.

I have experimented with shielded receiving loops, magnetic loops, DSP units, and noise-canceling phasing gadgets, yet none of them help the power line QRM which is transmitted along miles of cable from NE thru SSE directions from our QTH. It is certainly frustrating not to be able quite hear the weak ones on 160 meters when everyone else is, but when I finally work them, like the recent AL7R, 5X1GS, ZD8UW and XU7ACY, on 160 it feels like a big achievement against the odds.

Kudos to Dave for figuring out a way to do some low band DXing despite the "evil, interfering, busybody, old witch of a neighbor!" Being creative is cer-

tainly one of the qualities that we, as DXers, put forward when it comes to DXing on the low bands.

As we head into warmer weather, I hope that you might start thinking about how you could get on the low bands or how to improve your signal. There are many creative ways for getting on these bands, as we have seen this month. Whether it is a wire out to the light pole or up the middle of the tree in the backyard, a shunt fed tower or a dipole strung around your lot, working DX on the low bands can be addictive and will certainly

invoke a sense of pride and accomplishment. With that, I hope to see you "down there" next season!

That's it for this month's column. I look forward to hearing your comments, complaints or whatever is on your mind. A special thanks to SP5EWY, K8KW and GOOIL for sharing their low band DXing experiences. 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 my next column. Until next time, see you in pileups!

- N0VD

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An Inauguration at MARS

Bill Sexton N1IN/AAA9PC

Like other federal emergency responders on Jan 20, MARS communicators were very ready should their service be needed during the inaugural ceremonies. It wasn't. And like most everybody in the capital, MARS members around the country were wondering if big change was headed their way, too. It is.

Just before Inauguration day you could pick up hints of transformation in the formal "Alert Notification" that Army Military Affiliate Radio System commands received in the five states surrounding the District of Columbia.

This communications support plan assigned Jim Sears (WA3MEJ/AAA3MD), the Maryland state director, to the position of Incident Commander.

Incident Commander? That's not Army language. That's FEMA talk!

Then Tim Zutaut (KC8PMI/AAA3RD), the Region 3 director, activated what he termed a "Transcon style" HF net on Inauguration Day.

Transcon? That's not Army either. It's the label Air Force MARS uses for its unique cross-country HF net, a model that would be particularly handy in any emergency situation spanning long distances.

Please pardon the play on words, but it's change you can believe in when Army MARS leadership starts using FEMA and Air Force MARS language in organizing for a National Security Special Event, as Homeland Security had proclaimed Jan.20.

The explanation lies in a separate occasion unfolding at the very same time. On the day before Zutaut broadcast his Alert Notification, a task force of senior Army MARS members completed drafting a new long-range plan for the whole organization and forwarded it to Chief Army MARS Stu Carter for consideration.

Although the document hadn't been published as this was being written, it reveals no secrets to say that the plan defines partnership with other entities—FEMA and Air Force MARS among the many—as the key to the Army MARS future. It most emphatically mandates retraining for the entire membership as the next step in that direction.

As this is being read, the 2,700 members should be just beginning that intensive instruction.

Such an unconventional approach to doctrine for the future departs from the military's top-down custom in a couple of ways. Chief Carter assigned the first draft to leaders in the field rather than headquarters. And he stipulated that they avoid the typical blueprint loaded with fragile fine-print specifics.

Rather, he wanted a "road map" focused on direction and priority instead of detail—that is, a navigation chart that would stand up regardless of the endless ebb and flow of revisions and updates that have prevailed in the emcomm community ever since Hurricane Katrina. That's what the team gave him.

As if to confirm the wisdom of his approach, in December the Department of Homeland Security (DHS) issued a new edition of the National Incident Management System (NIMS).



Pudge Forrester (W4LTX/AAA9GL) takes a turn at the Maryland Emergency Management Agency MARS station during the Inauguration emergency net activation. A staffer at the U.S. House of Representatives, he is government liaison coordinator for Army MARS. (Photo credit: James Sears)

This is the master document that guides all federal emergency response. If state and local agencies want federal funding they, too, must conform. The new NIMS supercedes the version published the year before Katrina.

A very cursory analysis suggests that the Army MARS drafting team, while not aware of the imminent FEMA rewrite (fair disclosure: I was one of the seven participants), was operating on the same frequency as Washington.

The new NIMS "reorders the key components to emphasize the role of Preparedness," the DHS announcement said. The former No.1 priority, Command and Management, drops to fourth place. Communications and Information Management, previously No. 4, jumps up to No. 2.

Translation: Being ready and in touch is better than being in charge but disconnected. Significance: MARS capabilities become all the more important, not least our Incident Notification ("EEI") task.

Thus is the embarrassing Katrina experience clearly reflected in the agency's altered emphasis—as it is in the Army MARS draft plan, too.

Our guiding doctrine bears the title "Army MARS: The Road Ahead" and of course it is all about communications. It shares with NIMS a strong focus on training (which is one of the key Preparedness subtopics in the NIMS document) as well as interoperability (which is central to NIMS Communications and Information Management).

I don't especially take to the word "interoperability." The Army has begun using "jointness" as in "joint operations."

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Overview of the MD EMA operations center during the Inauguration. Note the presidential motorcade on the monitor. (Photo credit: James Sears)

Jointness is certainly easier to say and spell. Whatever you call it, NIMS has the perfect definition:

“First and foremost, interoperability is the ability of emergency management/response personnel to interact and work well together.”

Only after that injunction does NIMS get into the technicalities of communication, declaring that emcomm systems should:

–Be the same or linked to the same system that the jurisdiction uses for non-emergency procedures. [MARS: we conform.]

–Effectively interface with national standards, as they are developed. [MARS: so far so good.]

–Allow the sharing of data throughout the incident management process and among all key players. [MARS: been there, done that, with Winlink.]

Inauguration Day provided an ample test of how far jointness has come in MARS, but also how far it has to go.

On the basis of a few early After-Action Reports, the eastern coastal commands (Regions 1 through 4, Maine to Florida), were ready for emergency traffic throughout the day-long activation.

Among lessons learned, though, was the need to become more familiar with, and respectful of, the special instructions applying to the nets and needs of the other MARS branches when sharing each others’ facilities.

Reporting for Region 3, which includes the District of Columbia and neighboring states on four sides, Maryland state



During the Inauguration Day operation, the Army MARS Region 2 hub at Ft Monmouth (NJ) provided a link with Air Force MARS stations working on their own emergency networks. Bob Forshee (KC2QMZ/AAR2BA) mans the console while Jules Depuma (KA2FUY/AAR2PQ) eyes incoming digital traffic. (MARS photo)

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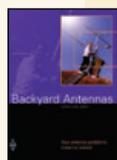
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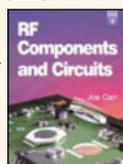


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director Sears commented, "NCS performance was outstanding." (It's no secret that the Net Control Station is key to this kind of high-pressure operation.)

"Further," Sears said, "stations from all [three] MARS services observed the minimize order— (a ban on non-urgent messages) placed on certain of Maryland assets so that these would be free in the event of emergency traffic. . . . There were several Navy-Marine Corps and Air Force stations that checked into the emergency nets."

In all, Sears reported 67 stations logged into the Region 3 e-net, including AAN3PNT at the Pentagon, AAN3DCE at Homeland Security HQ and AANIARL at the American Radio Relay League.

An early AAR on Air Force MARS listed 165 check-ins spread among three simultaneous net operations: the North-east emcomm net, Transcon, manned digital net and the airborne phone patch net, (which handled 7 in-flight calls).

Interoperability, by the way, isn't just about sharing nets and traffic. The concept embodied in the AFMARS Transcon nets (voice and digital) deserves to find its way into others' toolboxes. Good ideas need sharing, too.

Basically the "Transcon style" is a net into which stations sign on for one-hour

stints during which they silently monitor for emergency traffic to be listed. Call it a "standby net." It's a way of keeping a wide-area channel open with many stations ready for instant action but without anybody cluttering the air with non-essential messages, radio checks or other chatter. Each hour a fresh net control comes aboard and calls the roll of stations aboard at that time.

Region 3's Tim Zutaut credits his emergency operations officer, Larry Walker, (K4LLQ/AAM3RE), with proposing the "Transcon style" on Inauguration Day.

It happens that the Army MARS team of Walker, state director Sears and national government liaison Pudge Forrester (W4LTX/AAA9GL) was joined at the state EOC by Navy-Marine Corps MARS member Frank T. Barranco, Sr, (NNN0SIM/N3FBQ).

Navy-Marine Corps MARS, Army MARS, Emergency Management Agency. Now that's jointness. And jointness is the future.

Bill Sexton NIIN/AAA9PC can be reached by snail mail at P.O.B. 428, Richmond MA 01254, or by e-mail to NIIN@arrl.net.

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A New Mission for NTS?

By Jim Wades, WB8SIW

Few would argue that the National Traffic System has fallen on hard times. Interest has been slowly waning for years as evidenced by the increasing age of many traffic handlers and the declining quality of traffic. In some areas, section nets have even failed. The ARRL has long since abandoned any serious commitment to promoting NTS. Modern advances in personal communications technology have led many to perceive the process of manually transmitting radiograms as irrelevant, regardless of the mode utilized.

While serving in a variety of leadership capacities in the ARRL Field Organization, I have undertaken many efforts to promote and modernize NTS. The goal was always to promote the program as a training and preparedness tool while insuring some level of relevancy. In particular, attempts to attract new traffic handlers by deploying newer digital technologies largely failed, as have attempts to define new and unique public service missions for nets. The reasons for these failures have likely been many, ranging from petty politics to overly optimistic expectations, which ran counter to modern operating trends. One thing seems certain. New digital technologies will likely offer little promise for renewing NTS.

After considerable thought, it seems there is only one option for restoring NTS to true viability. This option has little to do with new digital technologies. Rather, it defines a new mission for NTS: **Advertising**.

In this modern day and age, advertisers invest large sums of money in direct advertising. Even non-profits find they must invest significant sums in advertising to ensure their "brand" will stand out above the modern media noise floor in order to attract investment and support. Ultimately, the goal of an effective advertising campaign is to reach the most likely consumers of a product or service, at the least cost. Attaining a reasonable cost-benefit ratio is done by targeting specific demographics with relevant and attractive information.

Traditional advertising methods are not an option for amateur radio. We cannot hope to develop the revenue necessary to match an advertising campaign of the type often developed for a major relief organization or well known non-profit. However, amateur radio has a variety of tools available, which are ideal for a direct marketing campaign even Madison Avenue could appreciate. These tools include NTS and tens of thousands of volunteers!

Every time a traffic handler delivers a radiogram to a third party, he or she is engaged in marketing. Unlike spam or unwanted bulk mail, the message content and originator provide a valuable direct connection to the targeted party (addressee). This is a direct connection, which opens a door to the addressee, which few advertisers can ever hope to enter!

Unfortunately, there are a few flies in the ointment when it comes to the traditional radiogram delivery process. First, many individuals are naturally uncomfortable with telephone calls from strangers. This natural barrier is reinforced by decades of abuses by telemarketers, collection agency bullies, and automated political promotions. Just as many dislike calls from strangers, many radio amateurs are also uncomfortable with the

process of telephoning a stranger to deliver a message. Traditional alternatives such as delivery by postal service result in a significant delay and expense.

Fortunately, the answer is right before us in the form of e-mail!

Today, e-mail is the preferred method of communications for a large number of Americans. Most individuals are quite happy to accept a wide range of information, ranging from humorous messages to serious communications from friends, family, and business associates. By utilizing e-mail for radiogram delivery, one solves many problems. First, there is no need for an uncomfortable direct contact via telephone. Second, there is no expense associated with the process. Third, the use of e-mail opens a valuable door to marketing opportunities.

Imagine an HTML form, identical to the traditional yellow and green paper radiogram form, which could be populated with all the same information. When opened, the addressee would see a traditional radiogram style message. However, included with the message would be a variety of additional features. For example:

- An e-mail link could be provided allowing the addressee to submit a reply through the delivering station.
- A link could be provided to a national web page, which promotes amateur radio, such as the ARRL www.hello-radio.org web page.
- An additional link could be customized to take the addressee to a local radio club web page or similar resource with information on how to get involved in amateur radio.
- A variety of information on the role of amateur radio in emergency communications could be provided directly beneath the radiogram form.
- Some history of the Amateur Radio Service and its contributions to the development of radio communications could also be included.

Essentially, every radiogram delivered would serve as a targeted, direct contact advertisement. Unlike spam, which is relatively ineffective because it replaces the benefits of targeted, specific demographics with simple quantity, each radiogram delivered would take advantage of a direct personal connection to the addressee, greatly increasing acceptance and effectiveness.

All that would be necessary to make such a system work would be for an organization to develop a simple web tool, which would allow an operator to transmit such a form within the framework of an e-mail.

Of course, some will suggest that it is silly to send a message via NTS simply to have it delivered via e-mail. This is, of course, a fallacy of logic. The same could be said of the public switched telephone network today, or the Western Union of yesterday. The training value of NTS would remain, and the network would remain intact and available for emergency communications functions in the event of a widespread emergency. Telephone delivery would remain an option for welfare, priority, and other time-sensitive messages.

Simple standard operating procedures could be implemented to define the stage at which the message should be delivered in order to maintain the integrity of the infrastructure and to keep the e-mail process from undermining the NTS network. For example:

- A routine message could not be delivered via e-mail until it reaches at least the Section Level.
- The message should be delivered by a local radio amateur whenever possible. However, routine messages over 48-hours old could be delivered at any stage to ensure they remain time-relevant.
- Operators would be at liberty to deliver welfare, priority, or emergency messages by conventional means at any point during the transmission/relay process to ensure timely delivery.

Ultimately, it would not matter how the message moves across the country. Many operators, including me, would likely prefer to use a highly interactive mode like voice or CW to originate and receive traffic. E-mail would only be used to provide a professional quality message delivery along with the value added marketing information.

By converting routine radiogram delivery into an on-line marketing tool, amateur radio operators may once again make a commitment to utilize the system. The effectiveness of special event stations, public demonstrations of amateur radio, and similar activities would be multiplied many times in that each public contact would result in a commensurate marketing contact elsewhere in the country during the delivery process. When individual radio amateurs originate casual radiogram messages into the system, there would be a significantly higher probability of delivery, thereby restoring confidence in the system.

Ultimately, it would not matter how the message is conveyed. Whether sent by CW, voice, or data, the routine radiogram's purpose would become one of marketing ham radio. In the process, NTS could perhaps once again play a significant role in training radio amateurs to handle "real" third party traffic.

73!
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Information and Integrity

By Jerry Wellman, W7SAR

Information is powerful. Wars are fought over information access. Fortunes are made with information. People are jailed for improperly revealing information. You and I exist to relay information; it's our bread and butter.

Information is critical in saving lives – if the information is timely and correct. The message may say there is an accident victim at the corner of State and Main. But the information may not save a life when it is realized by a responding medic that State and Main do not intersect.

Last week I was listening to a net via EchoLink. Discussion on the net concerned the upcoming inauguration of then President-elect Barack Obama. A number of agencies were using the historic event to test communications channels and wanted to be ready in case there were any problems. I received several notices via e-mail that invited me to participate in various nets and to test connectivity. None of the notices said anything about an “emergency” or “terrorist threat” or even “let’s be prepared for a disaster.” Yet here I was, listening to this net about the upcoming inauguration and one station said (and I quote), “President Bush has declared a federal emergency for the inauguration.” The station sharing this info nugget said it with just enough emotion and voice inflection to introduce some element of urgency. And, the net members responded. “An emergency? We must hold a net and be ready for emergency traffic! We will need stations to monitor all day and be ready to respond.” In short order, a frenzy had been established.

I, too, was caught up in the emotion. I’d heard nothing in the media reports of an elevated threat level or impending doom. Did this operator have inside information? Was he privy to a threat not known by the rest of us? So, I did an Internet search. There it was, a New York Times report confirming that President George Bush had declared an emergency for the inauguration. But... the declaration was to enable the local Washington D.C. leaders the ability to have additional funding to help deal with expected large numbers of people. It was a move to assist with paying the cost of having a larger-than-normal crowd on hand for an historic event.

I was mad. I expected an EMERGENCY! I wanted to take the day off and be ready to respond (from Utah no less) to an emergency!

Why did this individual feel the need to share partial information and in such a manner that his voice tone and inflection inferred something ominous was in the offing? Did he feel the need for attention? Was he trying to drum up support for an “emergency net?” I don’t know. What I do know is that he damaged his reputation.

If you want to establish amateur radio as a viable and credible resource in the emergency community, let’s simply provide what we promise: reliable communications in a timely manner. When we leave out bits and pieces or add voice inflections that serve to alter the information at hand, we only discredit ourselves. Let’s not “create” emergencies where none exist. Isn’t there a story about that? Crying wolf?

Before you press the microphone button for that “emcomm net moment” check your sources, give the complete message, and perhaps evaluate your own motivation for thinking you have something of value to contribute.

Confidences

I was told of an event recently where an amateur operator of complete integrity worked for years to be invited to an inner cir-

cle of his area’s law enforcement. He had established himself as a person of trust and as someone dependable and as someone representing a group (i.e. amateur radio) of value to the agency.

After years of gaining trust, the group was privy to information that was perhaps not top secret but considered sensitive to the local agency. Can you imagine what happened when that information found its way (via one of the radio group’s members) to a public discussion forum on the Internet? No need to speculate. The group was uninvited by the local agency. Net result of several years’ hard work to gain trust? A step back many years.

A Matter Of Trust

In the emcomm world, trust is a heady thing. When you’ve been granted access to the EOC or the inner planning circle, you’ve hit the big time. I was seen leaving a rather high-level meeting one afternoon and a co-worker asked me why I had been there. I was invited, I said. He then asked what happened at the meeting. I said I could not tell him, and that was why I’d been invited.

Some years ago I was a desk editor for a Salt Lake City newspaper. I was able to assign reporters and photographers and make decisions about how we played news stories. I was also active as a parent with some mental health initiatives for children. One afternoon I was asked to serve on an agency board. I would have access to all kinds of sensitive information. Some of this information had been on the newspaper’s radar screens for years.

I cleared the request to serve with my boss, the publisher, and went to an interview with the agency chief. She asked me if I could keep confidences. She asked me if I could safeguard information I might have access to. I assured her I could. She then warned me that she knew I was a newspaper editor and that if I “leaked” information to anyone, I’d not be given a second chance, I’d be dismissed from the board.

I served for a two-year term and it was a fun time. Several years later I bumped into the agency chief. She came and thanked me. I was trying to remember what I’d done that was noteworthy. She explained that during my tenure, I’d held true to my word and had not disclosed information. She explained that she’d gone to bat (and had been subjected to a fair amount of criticism) for me serving on the board and because I’d been trustworthy, she’d been “vindicated” in her decision. Then she added that my boss (the publisher) lived next door to her, which I had not known. She said she asked him on several occasions if I’d mentioned details of board meetings. He assured her that I’d been true to my word as well.

Here’s the “rest of the story.” Because I didn’t reveal information that the newspaper had sought for years, my boss realized I could be trusted and it helped my career at the paper. I could have had some instant (and short-term) fame and attention at the paper by sharing confidences. In the long run, it was a wise career choice.

Moral of the story? The price of short-term fame is often a trade off for long-term benefits. Again, consider your motivation before you share confidential information. In the emergency communications world, you need long-term trust. Don’t jeopardize it one day and complain the next when you’re not invited to play. Agency officials tend to have long memories.

Emergency Nets

My primary peeve with emergency nets is the lack of brevity. What’s brevity? KISS: Keep It Short (and) Simple. Listening to

another ARES net via EchoLink, a fellow asked if anyone had a certain piece of equipment. The item wanted was somewhat esoteric, so his chances were not very good of finding what he wanted. But, instead of a short statement of need, the fellow felt we all had to be privy to a rather long and rambling transmission of why he wanted it, what he was going to do with it and a dozen other details that ate up a lot of net time.

Operators take notice: When you key the microphone, consider the listener. You may be the expert and have a great story to tell. Does this captive net audience need to listen? Is it a waste of time for the listener? How might he have improved his inquiry? Simply, "I need one of [these] for a project. If anyone knows of one or wants to know about my project, please contact me after the net." If anyone wanted to stick around for a long (and possibly interesting) exchange, they could do it on their own time once the formal net was closed.

Having consideration for others' time is the mark of a good communicator. Just because we all checked in doesn't indicate we all came to listen to you elaborate. Keep it short. Keep it simple. Stick around after the net for those who need more information.

Emergency Traffic

Why do we start nets with a call for emergency traffic? You've heard the phrase: "Before I begin roll call, are there any stations with emergency traffic, if so, come now."

Huh? Let's see. I've been at the scene of a traffic accident for fifteen minutes and I have emergency traffic. I just wanted to wait until the net started so I could pass my emergency traffic? I don't think so. If it's emergency traffic, why did you wait for the net? If it's an emergency, handle the traffic as quickly as you can and don't wait for a net to start!

Might I suggest that we modify our nets and just say: "If anyone needs to break into the net with high priority traffic, please do so at any time by giving your call sign." I've listened (and conducted) a lot of nets in my 30-plus years as an amateur operator. I've yet to have anyone give me emergency traffic at the beginning of a net.

(What's wrong with people? Don't they know there's a net at 9 p.m.? Couldn't they plan their emergencies to happen at that time? Gee, it would make handling emergencies so much more convenient - having them scheduled when we're all here.)

Checklists

Way back when I knew a lot more than I know now, I thought it would be a neat pro-

ject to create checklists for every possible contingency an emergency communicator might face. I started with a couple of scenarios and quickly branched out into all kinds of events, places and possibilities. After a hundred or so checklists, I was pretty proud of my work. I decided to offer the collection to others. My work was given much criticism. People told me I'd forgotten to include this or that or they'd offer me a few dozen other scenarios that I'd not considered.

On an old disk drive I found that collection of checklists. Years later I had a good laugh at my own efforts to create checklists that were all-inclusive. Looking at them now, 20 years after I wrote them, I was reminded about things I still might want to remember. Checklists are not bad things. We often do better if we have a checklist than if we rely on memory. In the heat of the moment, we do forget critical items or tasks.

A checklist isn't, however, the complete list of items or tasks. Every event is unique and every event brings a combination of conditions that require you to adapt. Experience and common sense must play a large part of how we react, how we make equipment decisions and how we respond.

Having said all that, I love checklists. I like to read through them and glean ideas for things I might make use of or actions I might take next time I get to respond. Might I suggest a book to you called: *River Otter-Handbook for Trip Planning*, by Maria Eschen. It's published by Anotter Press, LLC. and it deals with planning river running trips. She's an experienced river trip leader and her wisdom and common sense are reflected in the book's pages.

Why, you ask, would I suggest a book on river outings? It has no mention of how to set up a field communications station, so where's the value? I've never had to plan to feed a dozen people for a week. I've never had to equip an outing that requires several trailers of support materials and organize a camp. Maria has. There are nuggets of wisdom on camp planning, camp setup, and camp management that you know are the result of trial and error. I can set up a station, but I might overlook the little things like healthy meals, insects, bad weather, basic outdoor safety, and a hundred other things.

It's a good read. You may not need to plan a river outing but most of what is written applies to any event in the field where a dozen or so people need to operate as a team. Find a used copy on the Internet and add it to your library. It's worth it.

Until next month, best wishes from Salt Lake City!

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NEW PRODUCTS

By Anthony A. Luscre, K8ZT



Alpha Radio Products new AP8410 HF amplifier.

Alpha Power AP8410 Amplifier

Alpha Radio Products LLC recently announced its new AP8410 HF amplifier. The AP8410 is the latest in the line of legal-limit (1.5-kilowatt output) tetrode amplifiers from Alpha Power.

Alpha included several features to enhance operating performance, including improved screen-grid regulation, simplified AC line-voltage tap selection, and provision of a USB interface for remote monitoring and limited control. "The new amplifier retains all of the rugged dependability and functionality of the familiar two-tube tetrode design that was first introduced as the Alpha 91B."

The amplifier uses the Alpha Power brand VTX-X118 tubes—ceramic, external-anode, indirectly-heated tetrodes that are qualified to handle the grid current that might be experienced in the AP8410. Alpha Senior Engineering Manager Brad Focken, who oversaw the new amplifier's 18-month development, is very pleased with the result: "This has been a great opportunity to engineer the product to use modern components and assembly techniques. We considerably simplified the wiring harness and used surface-mount parts wherever possible. We expect to be able to produce this amplifier for many years to come."

The AP8410 joins the AP9500 1.5-kW auto-tune amplifier and the AP2100 legal-limit dry dummy load, along with other high-power RF products in production at Alpha. Price is \$5,395.00 plus shipping and handling. For more information, contact Molly Hardman, telephone 303-473-9232, or visit <www.alpharadioproducts.com>.

LP-PAN Panadapter

Tele-Post and Larry, N8LP, have recently introduced the LP-PAN Panadapter. The LP-PAN is designed to work with Elecraft's K3, but models are also available to work with other radios. LP-PAN is a software-defined IQ direct-conversion receiver with integrated

SDR (software-defined-radio) application to provide a high-quality panadapter for rigs with IF output jacks. The unit uses a combination of SMT and through-hole technology, a custom aluminum case with powder-coated finish, and silk-screening. Pricing for an assembled and tested unit is \$225.00 plus shipping. A kit is available for \$175.00 with SMT parts pre-installed. Larry says the kit takes an average builder about 2 hours to complete, plus another few minutes to adjust the front-end filter. The standard 8.215-MHz IF model is designed for the Elecraft K3. With optional IF frequencies, LP-PAN can also be used with many earlier Kenwoods (8.83 MHz) with IF output jacks as well as the Ten-Tec Orion (9.00 MHz) or the Elecraft K2 (4.915 MHz) when modified to bring out the IF signal.

Current features include: crystal-controlled local oscillator for low phase noise and a switching quadrature detector for high dynamic range, strong buffer amp with very high LO isolation to protect the K3, and ground isolated inputs/outputs with mil spec audio output transformers.

The LP-PAN can display a band segment up to 192 kHz wide on your PC (sound-card dependent). Point-and-click frequency control is available by using a variety of free/Open Source software programs including PowerSDR/IF Stage (<http://code.google.com/p/powersdr-if-stage>), LP-Bridge (www.telepostinc.com/LPB.html) or Ham Radio Deluxe (www.ham-radio-deluxe.com). In addition, LP-Bridge allows sharing of K3/LP-PAN with almost any logger, PSK program, CW-Skimmer, etc. The free LP-Bridge software can also be used without the LP-PAN to provide sharing of the one serial com port between multiple software programs.

Some of the performance specifications are sound-card dependent. In addition to a suitable sound card and computer, the unit also requires 11–16 VDC @ 55 ma. For more information or to order, visit <www.telepostinc.com/LP-PAN.html>.



Rear and top view of the LP-PAN panadapter.



HAMFESTS & SPECIAL EVENTS

APRIL

CALIFORNIA

The Valley of the Moon Amateur Radio Club, W6AJF Annual ARRL Hamfest, The Valley of the Moon Amateur Radio Club, W6AJF, is holding its annual ARRL Hamfest Saturday, April 25, from 8 AM. to noon. The hamfest will be held at the Sonoma Valley Veterans Memorial Building, 126 First Street West, Sonoma. Admission is free and hams are encouraged to bring the entire family. Walk-in VE session. Sellers can start setting up at 7 a.m. with spaces renting for \$10. No charge for amateur radio organizations or other public service agencies.

The club will serve a full breakfast from 8 to 10 a.m. for \$6. There will be QRP, emergency communication demos, PSK-31, APRS and other digital mode demonstrations ongoing during the hamfest.

For a map and printed directions to the hamfest, send a business size SASE to VOMARC, 358 Patten St., Sonoma, CA 95476, or visit the club website at www.vomarc.org and click on the Hamfest link. Talk-in will be on 145.35, -600, with a PL of 88.5. For info call Darrel, WD6BOR at 707-996-4494/ email wd6bor@vom.com.

FLORIDA

Sharks Tooth Festival. The Tamiami Amateur Radio Club will operate Special Event Station K4S from the Annual Venice Sharks Tooth Festival April 17-19, 1300-2400Z, or until the bands close. Suggested frequencies are 21.313, 18.153 and 14.236 MHz. For photo QSL describing the Festival, send QSL and SASE to Jack Sproat-W4JS, 1419 E. Manasota Beach Rd., Englewood, FL 34223-6341; additional info via <http://tamiamiarc.org>

NORTH CAROLINA

The 19th Annual Down East Hamfest will be held April 5, at Lenoir Community College located on US 70 East at NC 58 South, Kinston. Hours 8 AM - 3PM. Pre-registration Tickets \$4 each or 3 for \$10. Door price \$5 each or 3 for \$12. Vendor contact: Jean Dupree KB4OHX (252) 523-2703 or jeanhd@embarqmail.com Tables \$10 Electrical \$5 Pre-registration or Table order by March 30. FCC Exams at 11AM; Walk-in only. Economical meals available on-site. Talk-in 146.085/146.685 88.5 Tone.

Catawba Valley Hamfest, 145 Bost Rd., Morganton, NC. The gates will open at 8:00 AM. on Saturday April 18th. There will be Amateur Radio testing on site. Tickets are \$4.00 pre-registration or \$5.00 at the gate. Parking is free. Free flea market and set-up with purchase of admittance ticket. Food available early. Talk-in, 147.150. For more info contact Tom Land (828) 292-6699 or hamfest website, www.cvhamfest.org.

MAY

MICHIGAN

47th Annual Cadillac Swap Saturday sponsored by the Wexaukee Amateur Radio Club, Saturday, May 2nd at Cadillac Junior High School, 500 Chestnut Street, Cadillac. Admission \$5, tables \$10. Talk-in 146.98 (no PL) Commercial Vendors and VE session info contact Alton McConnell 231-867-3774, nu81@81yahoo.com.

Click here for information on having your hamfest or special event listed in this column!

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Numbers, Numbers, Numbers

This 10-10 column is being written by Keith Schlottman, KT7RK, 10-10 63324, 10-10 Treasurer.

Unless you have been ignoring current world events, you are probably growing weary of hearing the daily barrage of huge numbers that come across the news screens. After a while, the billions and even trillions become meaningless. So I thought I'd take a few minutes to discuss some numbers that might be a bit easier to digest.

One of the distinctive aspects of 10-10 is that members are each given a unique membership number. To date we have issued over 75,000 numbers, making our organization one of the largest ham radio groups in existence. It's the people behind the numbers who make 10-10 special, but part of the fun comes from collecting those numbers to earn awards. Did you know that one member, WA5JDU, has made contacts with over 24,600 of our members? We have had 1,558 members earn an award for making contact with over 1,000 unique members.

We all know that Cycle 24 has been slow in coming, but hopefully that does not mean you have given up on the bands. Last year, I was able to make several hundred QSOs with 10-10 members. Many members are using PSK31 to make QSOs under weak-signal conditions. Working 10-10 QSO parties is an excellent way to build your numbers.

Speaking of building numbers, last year 10-10 added approximately 500 new members to our ranks. 10-10 is one of the best ham radio values around, with annual dues of just \$15.00 (\$18 DX). We have multi-year renewal discounts and life memberships that can reduce the dues even further. Careful planning and budgeting by the 11-member volunteer Board of Directors has allowed 10-10 to maintain reasonable dues rates. You won't find any big-bonus 10-10 officials seeking a bailout! How do we spend that dues money? First and foremost has always been to produce a quality 32-page newsletter, published 4 times per year. We also use dues to support our website and to set up booths at various ham radio

“Speaking of building numbers, last year 10-10 added approximately 500 new members to our ranks. 10-10 is one of the best ham radio values around, with annual dues of just \$15.00 (\$18 DX).”

conventions. 10-10 dues also support numerous award programs and there are 15 different volunteer award managers. Here is a number that everyone will like - zero! All of our awards are free for 10-10 members.

Because 10-10 is a non-profit organization, we do not pay income taxes. Our assets consist entirely of dues collected - volunteers use their own computers and supplies when working on 10-10 business. Since we have many members who pay in advance (including life memberships), we are careful to reserve funds to ensure that 10-10 can meet its commitment to provide benefits to those members. We hold those funds in certificates of deposit with laddered maturities over 5 years, so we have not experienced any losses because of recent market declines.

10-10 also sponsors a separate charitable 501(c)(3) organization, the 10-10 International Net Scholarship Foundation. Members of 10-10 recognize the importance of a good education, and each year we fund 4 scholarships of \$1,500 each to deserving students. Contributions to the foundation are tax deductible, so by making a donation you can help a student, share ham radio goodwill, and perhaps get a benefit for yourself.

A couple of numbers that every 10-10 member should be familiar with are 28.380 and 28.800 MHz. These are the frequencies of the official 10-10 nets, which have been held six days per week at 1800 UTC for over 40 years. Another important number is #109 - that's the 10-10 number for the official 10-10 club station, W6OI. You will find #109 showing up at various special events throughout the year, including the annual W6OI spe-

cial event when it is activated from all 10 U.S. call areas.

10-10 currently recognizes 80 different chapters. These local groups of 10-10 supporters are found all over the world, and most have nets. A list of chapters and net times can be found on the 10-10 website. Our website was recently updated and according to the webmaster we had over 25,000 hits in the first couple of months after the update.

The final numbers I'll mention are 7, 23, 24, 25, 26, and 2009. What are they? These numbers refer to the dates for the upcoming 2009 Ten-Ten Convention, which will be held in Orlando, Florida on 23 through 26 July 2009. There will be a large number of 10-10 members there, and I hope you join in on the fun!

Miscellaneous

10-10 will be at the Dayton Hamvention[®] and HamCom[®] this year. Come say hi, sign the log, and see what's happening with 10-10. At Dayton we will be in booth 486, north of the ARRL area and at HamCom[®] we will be located along the eastern corridor with other organizations.

10-10 Future Events

The 10-10 Spring CW/Digital QSO Parties will be held on 0001Z 7 May 2009 through 2359Z 8 May 2009. There will be two separate QSO parties on the same date and time. You can enter either or both. As is the case with all 10-10 QSO parties, it is open to all; however, logs can only be submitted by paid up 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

call, 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 needed to become a member. QSO Party logs must be returned to the QSO Party Manager and be postmarked not later than 18 May 2009.

The 'Open Season Contest' will be held starting at 0000Z 6 June 2009 through 2359Z 8 June 2009. The purpose of this contest is to stimulate PSK activity on 10 meters. This operating event is a joint PSK contest hosted by 10-10 and the 700 and EPC 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 700 club site is www.podxs.com/html/070_club.html and the EPC site is www.eu.srars.org. Open Season logs must be returned to the QSO Party Manager and be postmarked not later than 27 June 2009.

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

Information about 10-10?

The easiest way to obtain information about 10-10 is to visit the 10-10 web site at www.ten-ten.org. Everything you want to know about the organization is on the web, including a downloadable membership application form. From the following web www.lingerinc.com you can make inquiries into the 10-10 database, download a recent copy of the 10-10 NEWS or the 10-10 Information Manual. If you do not have computer capabilities, you can receive a copy of the 10-10 NEWS by writing to: 10-10 International Net, PMB 142, 643 N. 98th Street, Omaha, NE 68114-2342. Please enclose \$2.00 to cover the cost of shipping.

Thanks, Keith, for all the good information!

If you have been issued a 10-10 number and have forgotten your number, send me an e-mail and I will find your number. A 10-10 number is issued to you as an individual and 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 at: wa6poz@ten-ten.org

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Magnetic Activities Indices

By Carl Luetzelschwab, K9LA

Most of us are familiar with the K and A indices, at least in the general sense of how they impact HF and VHF propagation. If you're a little rusty on how they're derived and what they tell us, please visit mysite.verizon.net/k9la/, click on the General articles link at the top, and then read the paper titled "Where Do K and A Come From?"

The K and A indices are but two of many other measurements that come from ground based magnetometers to describe magnetic activity in the Earth's environment. This month we'll look at four additional indices. I picked these four as these are the ones you've likely heard of but perhaps wondered about.

The aa index

The aa index is a simple global geomagnetic activity index, with units of 1 nT. It is produced from the K indices from two approximately antipodal observatories in the United Kingdom and Australia.

Since it is based on data from only two observatories, it is a very simple 3-hour planetary index on a linear scale. Provided averages over 12 hours or longer are used, the aa index strongly correlates with the ap index (the linear equivalent of the logarithmic Ap index), which is derived using data from more extensive observatory networks.

The main advantage of the aa index is that the aa index time series spans further back (to 1868) than any of the other magnetic indices time series.

By the way, I've never seen an explanation of what the "aa" in the aa index stands for. My guess is it stands for "antipodal a" index.

The AE index

The "AE" in the AE index stands for "auroral electrojet", the name given to the large horizontal currents that flow in the D and E regions of the auroral ionosphere. Although horizontal ionospheric currents can be expected to flow at any

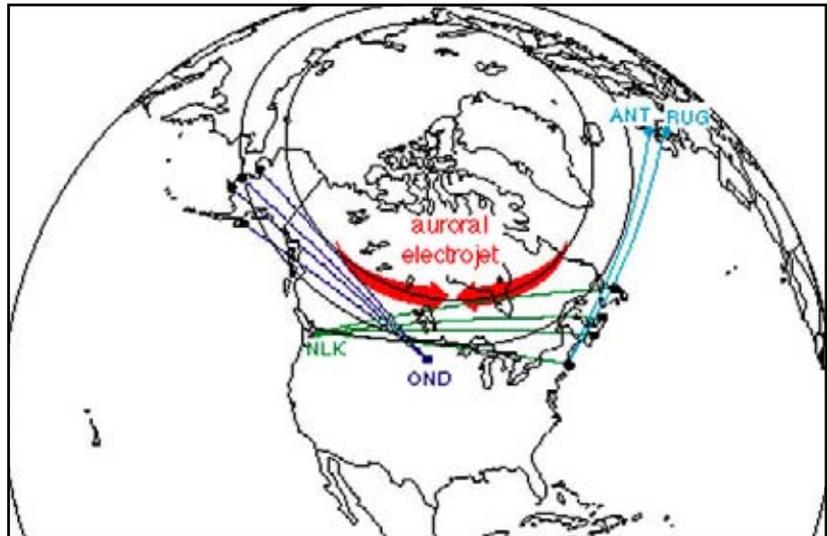


Figure 1 – Location of auroral electrojet

latitude where horizontal ionospheric electric fields are present, the auroral electrojet currents are remarkable for their strength and persistence.

The AE index is obtained from a number of stations distributed in local time in the latitude region that is typical of the northern hemisphere auroral oval. The AE index provides a measure of the overall horizontal current strength. It began in 1978.

During magnetically quiet periods, the electrojet is generally confined to the auroral oval. However, during disturbed periods the electrojet increases in strength and expands to both higher and lower latitudes. This expansion results from two factors: enhanced particle precipitation and enhanced ionospheric electric fields.

Figure 1 shows the typical location of the auroral electrojet. In reality the auroral electrojet is two currents. They are the two thick red arrows (the colored lines are radio paths that were used in a study of the effect of the AE on propagation). Note that there is a westward current flow and an eastward current flow. They meet at a shear line that is called the Harang Discontinuity, which occurs from rough-

ly 2200 to 2400 MLT (magnetic local time). The westward current flow is poleward of this shear line, while the eastward current flow is equatorward of the shear line (the shear line is not true north-south – it is slanted).

Dst index

The "Dst" in the Dst index stands for "disturbance, storm time". This is an index of magnetic activity derived from a network of near-equatorial geomagnetic observatories that measures the intensity of the globally symmetrical equatorial electrojet.

Large negative perturbations are indicative of an increase in the intensity of the equatorial electrojet current, and typically occur on scales of about an hour. The decrease in activity back to quiet levels may take much longer, on the order of several hours.

PC index

The "PC" in the PC index stands for "polar cap". This index is used to measure the geomagnetic activity over the polar caps. The polar cap is the circular

area centered on the magnetic pole and inside the auroral oval – in the quiet conditions of Figure 1, the outer perimeter of the northern polar cap touches the southern tip of Greenland, goes over Iceland, touches the northern tip of Scandinavia, goes over northern Alaska, and over Hudson Bay.

The PC index is calculated separately for both hemispheres from only one station in each hemisphere. These stations are Thule in the northern polar cap and Vostok in the southern polar cap.

Changes in the solar wind can cause disturbances in the magnetospheric-ionospheric currents, which in turn cause variations in the PC index. Many statistical investigations have shown that the PC index could be regarded as a signature of the magnetic activity driven by the Bz-component of the Interplanetary Magnetic Field (IMF).

Thus the PC index may be considered as a ground analogue of various interplanetary parameters, especially the southward component of the IMF. It may be used for diagnosing these parameters, in particular the electric field defining the polar cap convection.

Summary

Various magnetic indices are available, and they have been tailored to specific locations on Earth. **Figure 2** shows this concept.

The K, A, and aa indices are for mid latitudes. The AE index is for auroral latitudes. The PC index is for extremely high latitudes in the polar cap. And the Dst index is for near-equatorial latitudes.

A good question to ask is “Would any of these magnetic

indices, other than the K and A indices, be useful for our amateur radio activities?” For most of us, I think the answer is no – the K and A indices suffice. But if you’re in one of the specific areas with one of these specific indices, you may want to start monitoring the appropriate index to see how it correlates with your propagation.

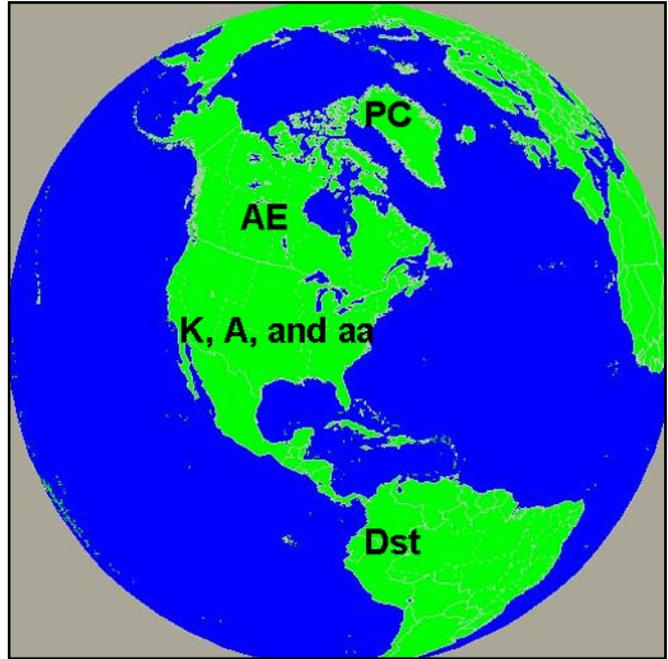


Figure 2 – Worldwide Magnetic Activity Indices

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Here's a peek at CQ's April issue

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DX Predictions

APRIL 2009

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 Janeiro. Smoothed sunspot number=6. Chance of contact as determined by path loss is indicated as bold *MUF for good, plain MUF for fair, and in parentheses for poor. UTC is hours.

WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SA
10	(11)	11	*18	(9)	*15
12	(17)	10	*15	(14)	(13)
14	21	*12	*13	17	20
16	23	12	(13)	18	*24
18	*24	15	(12)	17	*27
20	22	*20	22	15	*29
22	19	*20	27	(12)	*28
24	16	*20	*29	(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	(11)	(10)	*19	(9)	*14
10	(15)	*9	*17	14	*13
12	20	*13	*15	*17	*19
14	22	(11)	*14	*19	*24
16	24	(10)	(13)	*19	*27
18	*24	(9)	(12)	*18	*28
20	*22	15	23	16	*29
22	19	18	28	13	*28
24	*16	19	*30	9	*27
2	*14	16	29	9	*22
4	*15	14	*29	*11	*18
6	13	(12)	*23	*10	*16

EAST COAST

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



CONTEST CORNER

CONTEST: Missouri QSO Party

DATE & TIME: 1800Z 4 Apr - 2400Z 5 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 4 Apr - 1500Z 5 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: DX Contest Committee P.O. Box 320 00-950 Warszawa, Poland
Cabrillo to: spdx-logs@pzkc.org.pl Rules at: www.spdxcontest.info/reg/reg_g.html

CONTEST: QCWA QSO Party

DATE & TIME: 1900Z 4 Apr - 1900Z 5 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 at: www.qcwa.org/2009-qso-party-rules.html

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: ea1mv@ure.es
Web page: www.ure.es

CONTEST: Georgia QSO Party

DATE & TIME: 1800Z 11 Apr - 2359Z 12 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) per 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>

CONTEST: Japan International DX

DATE & TIME: 0700Z 11 Apr - 1300Z 12 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: www.handrack.net/contest/canzeige.php?ID=27

CONTEST: Michigan QSO Party

DATE & TIME: 1600Z 18 Apr - 0400Z 19 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; Others give serial # + State/Province; DX gives serial # + DX

ENTRY CATEGORIES: Single Op QRP<5W; Low <100W; High >100W; Multi Op Single XMTR; Multi Op Multi XMTR/Iti Op; Mobile

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: 0000-2359Z 18 Apr

BANDS/MODE: 160-10M SSB/CW

POINTS: 1 Pt. 20/15/10M; 2 Pts 160/80/40M

MULTIPLIERS: Very complicated! See web page!

EXCHANGE: RS(T) + Serial #

ENTRY CATEGORIES: Single Op - SSB only; Single Op - CW only; Single Op - Mixed mode; Multi Op - (single XMTR only!)

ENTRIES: 31 May Contest Manager 4Z4KX Israel ARC Box 17600 Tel Aviv, 61176 Israel; 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 18 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: Single op

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: Run for the Bacon

DATE & TIME: 0100-0300Z 20 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 AUTOLOG link, only!
See web page: www.fqprp.com/fqprprun.php

CONTEST: Florida QSO Party

DATE & TIME: 1600Z 25 Apr - 2159Z 26 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)

ENTRY CATEGORIES: Single Op; Multi Op, Single; Multi-Multi; Mobile; Club;

(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

CONTEST: Nebraska QSO Party

DATE & TIME: 1700Z 25 Apr - 1700Z 26 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

ENTRY CATEGORIES: 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, 16111 Hickory St., Omaha, NE 68130. ASCII or Cabrillo to: nqp@hdxa.net. Rules at: www.hdxa.net/neqso/09nqp_rl.pdf



New Birds and the AMSAT-DC Workshop

Terry Douds, N8KI

Hi everyone! As always, there is lots of news in the world of Amateur Satellites, so let's get started.

The Japanese have launched a satellite whose focus will be to observe the concentration and distribution of greenhouse gases from space. The launch of the Ibuki satellite (also known by GOSAT - Greenhouse Gases Observing Satellite) took place on January 23rd at 03:54 UTC from the LP1 launch platform of the Yoshinubo launch complex on Tanegashima. Information about the primary mission is on-line at:

http://www.jaxa.jp/countdown/f15/overview/ibuki_e.html
http://www.jaxa.jp/projects/sat/gosat/index_e.html

The small satellites with Amateur Radio capabilities launched with this satellite are SOHLA-1, PRISM, KKS-1, STARS-1 and KAGAYAKI. Their contact information is as follows:

Satellite	Downlink	Beacon	Mode	Callsign
KAGAYAKI	437.375	437.375	FSK9k6/CW	
STARS	437.485/465	437.305/275	FM/CW	JR5YBN/ JR5YBO
KKS-1	437.445	437.385	AFSK/CW	JQ1YYY
PRISM	437.425	437.250	AFSK/ GMSK/CW	JQ1YCX
SOHLA-1	437.505	437.505	AFSK/CW	
SPRITE	Scientific observation satellite			
SDS-1	Small demonstration satellite			

These birds will add greatly to our abilities to communicate around the world!

SA AMSAT announced that South Africa's second satellite, SumbandilaSat, will be launched from the Russian Baikonur Cosmodrome on March 25, 2009, weather permitting.

SumbandilaSat has been unpacked and is undergoing testing at SunSpace in Stellenbosch before being shipped to Russia for integration with the launch vehicle. Engineers at the launch site are preparing a special adapter ring to accommodate the Sumbandila structure on the rocket.

The amateur radio payload will be operating in conjunction with the University of Stellenbosch Software Defined Receiver project, as it will share the VHF receiver and UHF transmitter used by the SDR project.

The bird will feature a V/U FM voice transponder, a parrot repeater (voice digipeater), and a voice beacon.

I hope that by the time you read this, the bird will be in the air. I will have more information about this in my next column.

Speaking of new birds, after the successful launch of the earlier Japanese satellites, JAMSAT tossed out a very surprising bit of new information recently. It is collaborating with the Japanese University Space Engineering Consortium (UNISEC) to send an amateur radio payload into a Venus transfer orbit with the primary JAXA Planet-C Venus Orbiter mission planned for May, 2010.

UNITEC-1, developed by the teams who have already launched many cubesats, has the following engineering missions:

1. Onboard computers developed by several universities will be tested in the harsh space environment in the form of a competition; i.e., the computer which can survive to the last in the radiation-rich deep space environment will win the competition.
2. Technologies to receive and decode very weak and low bit rate signal coming from deep space will be developed and tested.
3. Technologies to estimate orbit and signal Doppler shift of the satellite based on the received RF signal will be developed and tested. These technologies are essential for tracking and receiving signals from a satellite in deep space.

The UNITEC-1 website provides the latest mission information (such as orbit parameters, data formats and current status). UNITEC-1 will be the first university developed interplanetary satellite as well as the first amateur interplanetary satellite. The team sincerely hopes that UNITEC-1 will provide unique and exciting opportunity for the radio amateurs all over the world to enjoy reception of signals from deep space.

The UNITEC-1 website may be viewed at:
http://unitec-1.cc.u-tokai.ac.jp/en/news_en

This very ambitious project will definitely require lots of collaboration from around the globe. If you are up for the challenge, it will be an incredible learning experience.

Even more is on the horizon, as AMSAT-UK reports it is getting ready to support the European Student Earth Orbiter (ESEO) with on board transponder and telemetry equipment. AMSAT will provide some of the satellite communication functions and enable the ESEO flight operations to access both the Global Educational Network for Satellite Operations (GENSO) and the worldwide amateur radio network.

The development team consisting of 10 different universities and AMSAT completed a workshop in December, 2008 which completed a preliminary definition of the new ESEO configuration and the definition of the corresponding preliminary system budgets (mass, power, data links), as well as the identification of potentially critical areas that will require further attention at a later date.

The Amateur Radio Payload is planned to include:

- + U/S Transponder - either FM voice and/or linear/with DSP
- + U/V Transponder - linear with DSP
- + C-Band beacon

Additionally, telemetry will be provided in a number of different formats. The latest news can be found on the ESA Education website. See: <http://www.esa.int/SPECIALS/Education/>

AMSAT-NA here in the US is already announcing that the 2009 AMSAT Space Symposium and Annual Meeting will be held on October 9th and 10th, 2009, at the Sheraton Four Points Hotel, located at the Baltimore Washington International Airport. 2009 will be the 40th Anniversary of AMSAT, which is why the announcement is being made this early. It should be a fantastic meeting; I know I'm planning on attending! They will also have special activities and displays about the anniversary at the 2009 Dayton Hamvention®, which will be held from May 15-17, 2009, so if you're planning on attending, it should be quite a show!

Since I just mentioned Baltimore and Washington, D.C. in the last paragraph, if you find yourself in or near the area this spring, you may be interested in learning more and participating in an AMSAT-DC workshop, which simulates building, testing, launching, and receiving signals from an Amateur Radio satellite.

AMSAT Area Coordinator for the Maryland-DC area, Pat Kilroy, N8PK is proposing such a workshop for the 2009 AMSAT-DC Meeting and Space Seminar. This meeting is historically held in early spring at or near the NASA Goddard Space Flight Center in Maryland.

Pat is proposing individuals and groups of Amateur Radio operators form teams who compete at this AMSAT-DC workshop to create and operate a satellite mission.

The first group will build a PICetSat II flight module from a kit of electronic parts on a small printed circuit board. You can see an example of the original PICetSat module at:

<http://patkilroy.com/simsat/3/>

The second group will set up simple satellite ground stations to operate on 433.920 MHz SSB. These team members need to provide a radio, antenna, and feedline for the 70 cm band.

The third group will be in charge of setting up and loading software into computers at the ground stations to decode the telemetry and analyze it according to a set of instructions.

This event will be perfect for beginners and advanced satelliteusers alike, all ultimately

working together to "launch" the flightmodule, receive the downlink, and decode the telemetry. Instructions will be provided in advance of the event to enhance preparation.

Pat requests that interested amateur radio operators RSVP to him via e-mail at n8pk@amsat.org, and indicate which group you would be most interested in working with. The cost of the Workshop is still "TBD" to cover the materials and meeting space. Those choosing the PICetSat II will keep their completed project.

ARISS contacts were up over the holidays, as many participated in the 25th

anniversary of Ham Radio in Space. School contacts all over the world were up as well, with successful contacts in India, Canada, New Zealand, Ecuador, Belgium, Italy, France, and the US. I bring this up to make you realize that our work on the amateur satellites is truly an international one. There is a much bigger picture at stake as we all help in advancing our worldwide technical knowledge.

Well, that's a lot of exciting information for this month's column. I'm out of space once again, but there will be more news in the next one. I hope to hear you all soon on the birds!

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An Open Mind, Open Spaces and the W3EDP Antenna

By Richard Fisher, KI6SN

With so many radio amateurs living on cramped city lots, in condominiums and apartment buildings, backpacking radio can give us an opportunity to stretch a bit – especially where antennas are concerned.

Open spaces, after all, have a way of opening the mind. When you are out in the field, often the sky is the limit, quite literally.

Without property lines or CC&Rs to worry about, big antennas can be an awful lot of fun to play with on the trail. And they needn't be a burden to carry.

In a 1936 QST magazine item, the late Yardley Beers, then W3AWH, described an antenna designed by his friend H.J. Siegel, W3EDP, that employs an 84-foot end fed longwire with a 17-foot counterpoise.

Find yourself in an open field with a single tree or in a canyon in the shadow of a towering rock face and you're in business. You will need only one support to get this skywire flying.

The W3EDP, as it has come to be known, has all sorts of things going for it: It's lightweight, portable, easy to store and erect, multi-band, inexpensive, and a snap to construct.

It has produced good results on almost all amateur high-frequency bands. Since 40- and 20-meter CW are the most popular hangouts for backpackers, that's where the experimentation has focused at KI6SN.

Mr. Siegel derived the configuration from painstaking experimentation. "A 100-foot roll of wire was hung up to (W3EDP's) mast and tried out for several weeks on 7 (MHz)," 'AWH wrote. "The results were carefully tabulated, with due allowance being made for adverse conditions. Four feet of wire was then cut off and this process repeated. Almost every reasonable antenna length was tried, and then the entire process was repeated several times. When all the tabulations were complete, a length of 84-feet seemed to stand out as being the best of all the combinations tried."

W3EDP then experimented similarly to find the perfect counterpoise, fixing on 17 feet for best multi-band results.

"Roughly speaking, the antenna seems to give best results in a direction at right angles to its length," 'AWH wrote in his 1936 article.

Over the years, it was determined that the 17-foot portion of the array was actually acting as a parallel feedline that – for optimum results – should be spaced about 6-inches from, and parallel to, the 84-foot wire. That presents a 500 to 800-ohm load at the transmitter, so an antenna-tuning unit is necessary. That's a small price to pay, though, for such a versatile and easy-to-carry system.

There are many gauges to choose from when selecting the wire for a W3EDP. Keep in mind, however, that the sheer weight of a combined 101-feet of wire (84 + 17 feet), plus spreaders



Garden-variety 1-inch PVC is cut into 7-inch long pieces, divided and slotted to accommodate the W3EDP's 84-foot longwire and 17-foot parallel feedline – ingredients for a versatile, lightweight, multi-band, trail-friendly antenna.

creates a load that is going to put quite a strain on thinner gauges. Here, we've used No. 22 insulated stranded hookup wire with success. You can buy this type of wire right off the shelf at Radio Shack.

The 7-inch spreaders can be crafted from just about any insulating material. At KI6SN we've used sprinkler-system-style PVC, found at local home improvement stores.

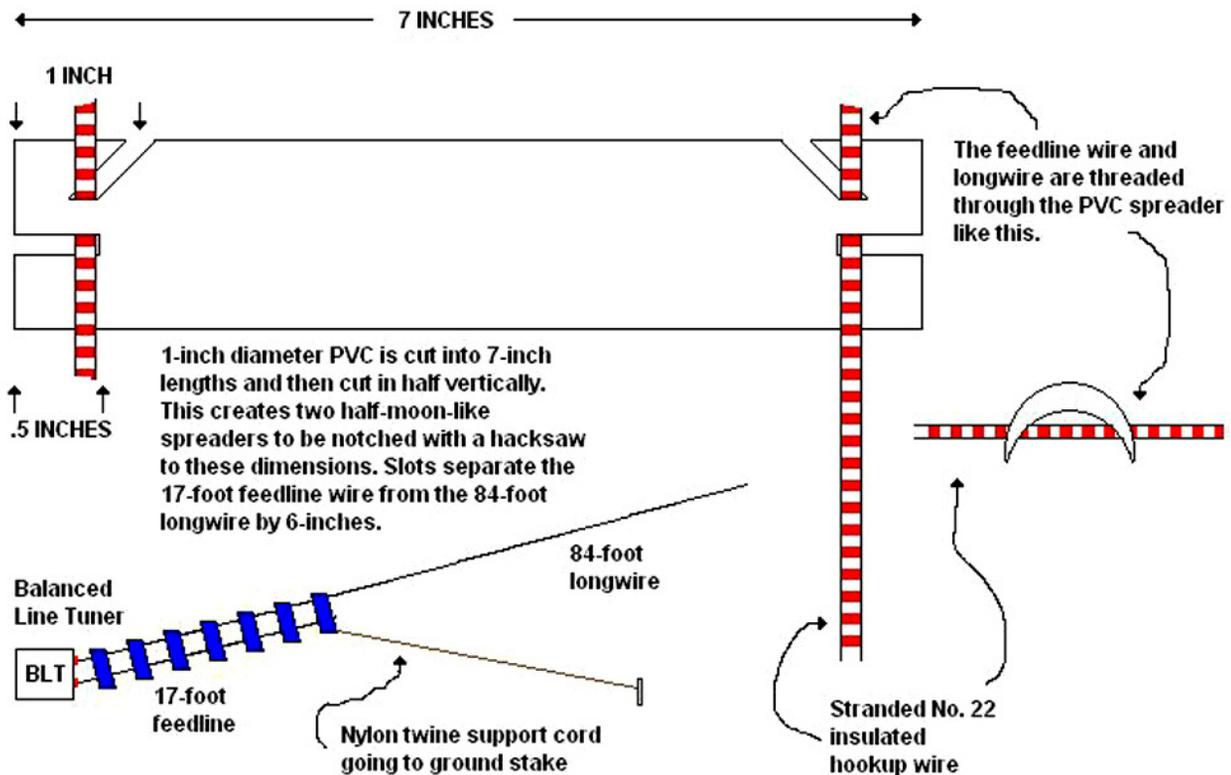
The accompanying illustration explains how 1-inch PVC is cut and slotted to create the 6-inch spacing between the longwire and parallel feedline.

We bought a 10-foot long section at the Home Depot for \$1.94, which would provide more than enough spreaders for a W3EDP – with plenty left over for future projects.

The spreaders were designed by Charles Lofgren, W6JJZ, and have been used at KI6SN with all sorts of antennas. For field use, they are particularly easy to carry and install. They're waterproof, rugged and relatively lightweight.

The accompanying illustration describes how they are made. With a hacksaw, they're notched horizontally and diagonally on each end to create force-fitting slots for the 17-foot parallel feedline and end-fed longwire to fit through. The notches are measured and cut in such a way that upon completion you'll have parallel wires spaced exactly six-inches apart.

W6JJZ'S W3EDP ANTENNA SPREADER DESIGN



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To get started, we cut four pieces, each seven inches long, from that 10-foot long piece of PVC from Home Depot.

We took each of those seven-inch pieces and cut them in half vertically. That gave us eight half-moon style pieces ready to be notched. That's enough for the seven spreaders we'd need, plus a spare.

Using a flexible measuring tape, we drew the slotting pattern on each piece, and then cut the slots with a hacksaw. A bit of light sanding gave us some darned nice looking spreaders.

The measuring, cutting, slotting and deburring took less than an hour. Measuring and cutting the 84-foot longwire and 17-foot parallel feedline took practically no time at all. In less time than it takes to watch an episode of "Nova," we had a superb multi-band antenna system that was crying to be taken into the field.

When assembling the W3EDP, use the spreaders to separate the parallel wires at the tuner-transmitter end of the antenna. We evenly spaced seven of them along the lines.

"Terminate the short wire with a top (spreader) at the 17-foot point along the longwire," W6JJZ wrote in an article in the Adventure Radio Society on-line magazine The ARS Sojourner, "and run a (nylon twine) support cord outward from the same short-wire end of the top (spreader). Run the remaining 67-feet of the longwire outward as the flattop portion of the (W3EDP)." The support cord keeps the parallel feedline taut and properly spaced.

If you don't have an antenna tuning unit for balanced lines, take a look at Hendricks QRP Kits' BLT Plus and SLT kits.

"In less time than it takes to watch an episode of 'Nova,' we had a superb multi-band antenna system that was crying to be taken into the field."

They are reasonably priced and are designed to match antennas such as the W3EDP with 50-ohm output transceivers.

In a piece written in 2003 for the American QRP Club's Homebrewer magazine, we recounted our experience using the W3EDP during the Adventure Radio Society's Flight of the Bumblebees field operations contest:

"Using the NorCal BLT (antenna) tuner, a gel-cell powered NorCal-20 transceiver on 14 MHz running 2 watts, a NorCal-40A transceiver running 1-watt on 40 meters, and the classic W3EDP antenna, just about every station that was heard was worked.

"Operating on the edge of the California desert between Los Angeles and Palm Springs, the W3EDP was hung on low brush and trees. At its droopiest, the wire was about three feet above the ground.

"By the end of the four-hour sprint, six U.S. states had been worked between operation on 40 and 20 CW. Reports ranged from 589 to 339 in band conditions that from this location were at best marginal."

Is this a backpacker's antenna? You bet it is.

For more photographs and links to other data on the W3EDP antenna, visit the KI6SN Trail-Friendly Radio Extra Web site: <http://www.TrailFriendlyRadio.blogspot.com>

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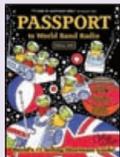
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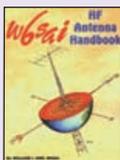
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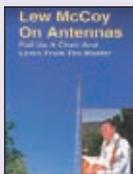
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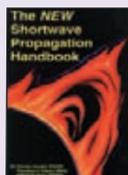
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Green Valley Amateur Radio Club. Meets 7:00 p.m., 2nd Wed. of the mo. @ SAV Building. Nets weekly on 2M, & 20M in the summer. Come join us for breakfast every Wed. 7:00 a.m. Contact Gene WOKAD, 214 N. Crocodile Rock Dr., Green Valley, AZ 85614 or 520/207-4706 or theschou@cox.net. 12/09

Old Pueblo Radio Club, (W7GV). P.O. Box 42601, Tucson, AZ 85733. Meets 2nd Wed./monthly, 7:15 p.m., Tucson Med. Ctr., Grant & Beverly St. in the AZ Bldg. Info: Ron, N7SPW, 520/207-3852. 4/09

CALIFORNIA

Amador County ARC, P.O. Box 1094, Pine Grove, CA 95665. Usually meets 1st Thurs./monthly, 7:30 p.m., Jackson Sr. Ctr., 229 NY Ranch Rd., Jackson, CA 95642. Alternate days or locations will be announced by the board. Info: 146.835 10/09

ARC of Anderson, (ARCA). P.O. Box 1334, Anderson, CA 96007. Meets 2nd Thurs./monthly, 7:30 p.m., 3644 Avtech Pkwy, Redding, CA 96002. Net Tues., 7:30 p.m. on 146.640(-) pl 88.5. www.qsl.net/arca. Testing every 2nd Sat., of even months, info: 530/244-6456. 4/09

Catalina Amateur Rptr. Assn., P.O. Box 425, Garden Grove, CA 92842. Meets 2nd Sat. (even months) 8:00 a.m. Hometown Buffet, corner of Knott & Lincoln Ave., Buena Park, CA. Rptrs: AA6DP 147.09(+), 224.42(-) PL 110.9 on Catalina Island; www.cara.nu 12/09

Contra Costa Communications Club, Inc., WD6EZR. P.O. Box 20661, E. San Ramon, CA 94520-0661. Meets 2nd Sun./monthly (except May & Dec.), 8:00 a.m., Denny's, El Cerrito, CA. 145.110, 224.300, 444.275w/ PL 82.5 Info: Victoria Thompson, KE6FSU, 510/724-4966. 9/09

Downey ARC, Inc., W6TOI. Meets 1st Thurs./monthly, 7:30 p.m. at the First Baptist Church, 8348 E. 3rd St., Downey, CA 90240. Info: k6tv@arrl.net. Nets: Tues. 7 p.m., 445.640(-) pl 156.7 & Thurs., 7:30 p.m., 145.595 simplex, www.downeyarc.org 9/09

East Bay ARC, Inc. Meets 2nd Fri./monthly, 7:30 p.m., Salvtn Army, 4600 Appian Wy, El Sobrante, CA. Info: 510/233-7509, w6cus1@juno.com. 7/09

El Dorado County Amateur Radio Club, Meets 4th Thurs./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

Golden Empire Amateur Radio Society, W6RHC, meets 3rd Fri./monthly, 7:00 p.m. (rag-chew 6:30 p.m.), Search & Rescue Building, 2591 Morrow Lane (East end), Chico, CA. Visitors welcome. Net Tue, 2000 hrs, 146.850 pl 110.9; K6RSC@randallstone.net 10/09

Independent Radio Club, W6AIRC meets 7p.m., last Friday of the month, Lampighter Restaurant, 5043 Van Nuys Blvd., Van Nuys, CA. We are a family-oriented radio club whose members are interested in all aspects of Amateur Radio. Check out our weekly nets Tues. 6 p.m. & Thur. 8 p.m. on 445.340 (-) PL 103.5 & 224.480 (-) PL 110.9. More info, www.icradio.org or 3624 Foothill Blvd., #1, La Crescenta, CA 91214. 12/09

Inland Empire ARC, P.O. Box 1433, Ontario, CA 91762 meets first Sat. monthly in the conference room at the Pomona First Federal Bank, 333 N. Euclid Ave., Ontario, CA 91761. Contact Chuck Sweeten AI6I, 909/623-2933; ai6i@ca.rr.com for information. Talk-in 145.460 PL 77.0 4/09

Nevada County ARC meets 2nd Mon./monthly, 7 p.m., Salvation Army Bldg., 10725 Alta St., Grass Valley, CA. Net Tues. 7 p.m. 147.285, www.ncarc.org. For info. e-mail president@ncarc.org 12/09

North Hills Radio Club meets 3rd Tue monthly, 7:30 p.m., North County Corporation Yard, Elkhorn Blvd & Don Julio Blvd. in Sacramento. Field Day, annual picnic, code classes, antenna builds & more! Contact Maynard Wright, W6PAP; P.O. Box 417370, Sacramento, CA 95841-7370; 916/726-1673; k6is@arrl.net; www.k6is.org. 7/09

Oakland Radio Communication Association (ORCA) meets first Sat./monthly (no meeting July - weekend after Labor Day Sept.); Oakland Fire Station #1 OES Media Room (17th & MLK); weekly net Thurs. 7:30 p.m. 146.880 + 77. Talk-in on same frequency. P.O. Box 21305, Oakland, CA 94620-1305, wb6ner@arrl.net; www.w6or.com 9/09

Orange County ARC meets 3rd Fri./monthly, 7:00 p.m., Orange County Red Cross, 601 N. Golden Cir., Santa Ana, CA. Talk-in 146.550 (S). Nets Wed: 7:30 p.m. 28.375 MHz SSB & 8:30 p.m. 146.550 MHz FM simplex, W6ZE net control. Monthly breakfast 1st Sat monthly. Contact Ken Konechy, W6HHC, 714/744-0217; w6hhc@w6zi.org; www.w6ze.org 6/09

Rio Hondo ARC, P.O. Box 1781, Whittier, CA 90609, meets 2nd Mon/monthly, 7:00 p.m., Parnell Community Center, 15390 Lambert Rd. @ Scott Ave., Whittier. Net Wed., 8:00 p.m., 146.175 (+) PL100. Contact Vi Barrett, W6CBA, 562/947-1356; w6cba@juno.com 5/09

River City A.R.C.S. Meets 1st Tues./monthly, 7:30 p.m., N. County Corp. Yard Facility, 5020 Don Julio at Elkhorn, Sacramento, CA. Message Phone: 916/492-6115; www.n6na.org 12/09

Sequoia Amateur Radio Group meets the second Saturday each month (except Dec) 9:30 a.m., Kern River Valley Youth Center, 3640 Golden Spur, Lake Isabelle, CA. VE exams follow at 11a.m. each month. For more information contact Mike, K6IYS, 760/378-1028, www.sarg-krv.org or sarg-krv@mchsi.com. 5/09

Sonoma CRA, Inc. W6LFIJ, P.O. Box 116, Santa Rosa, CA 95402; 707/579-9608. Meets 1st Wed./monthly, 7:00 p.m., 2050 Yulupa Ave., Santa Rosa. Net each Tues. 7 p.m., W6SON. Rptr. 147.315 MHz (+) PL 88.5 www.sonomacountyradioamateurs.com 9/09

South Bay Amateur Radio Association. Fremont, Newark, Union City - SBARA meetings, 2nd Fri./monthly 1930 hours, local Hurricane Electric, 760 Mission Ct., Fremont. Visit www.sbara.org. 5/09

South Bay Amateur Radio Club. P.O. Box 536, Torrance, CA 90508. Meets 3rd Thurs./monthly, 7:30 p.m., Torrance Memorial Hosp., 3330 Lomita Blvd., Torrance, CA. Talk-in on W6SBA rpt. 224.38(-). Info: 310/328-0817; www.w6sba.org 12/09

Southern Sierra ARS meets 2nd Thurs./monthly, 7 p.m., except Jul. 600 Dennison Rd., Tehachapi, CA 93561 (The club house at Mountain Aire Estates). Info: N6MLD, 661/203-7005, 224.42(-) PL 156.7. APRS 144.390(S). ARS nets 7 p.m. 147.51(S) Mon. 1/10

Stanislaus ARA, Inc. (SARA), P.O. Box 4601, Modesto, CA 95352; Meets 3rd Tues./monthly, 7:30 p.m., Modesto Police N/E area Substation, 3705 Oakdale Rd., Modesto, CA. Net 1.2+4 Tues. 7:30 p.m. 145.390(-) PL136.5. www.saraclub.net 5/09

Tri-County ARA (TCARA). Meets 7:30 p.m. 2nd Wed monthly, Administration Building, Brackett Field, La Verne, CA, in the Pilot's Lounge. Different guest speaker every month. Anyone may attend, Ham & non-Ham welcome! Club net Sun., 7:00 p.m., Mt Baldy Rpt. 145.440 MHz -600 PL 136.5; web site: www.tcara.org, e-mail: k6ag@arrl.net 12/09

United Radio Amateur Club, K6AA. Club station open to members and guests in the Los Angeles Maritime Museum (LAMM), Berth 84, Foot of 6th Street, San Pedro, CA 90731. Meetings held 3rd Fri. monthly (except Aug & Dec), 1900 local in the LAMM. All are welcome. Monitors 145.52 simplex Tue-Sat 1000-1630 & Sun 1200-1630. 7/09

Victor Valley ARC. P.O. Box 869, Victorville, CA 92392. Meets 2nd Tue./monthly, 7 p.m., Lewis Ctr, 17500 Mana Rd., Apple Valley, CA. Talk-in 146.94(-), PL 91.5. Net Sun. 7 p.m. 146.94(-), www.vvarc.org 01/10

West Coast ARC, (WCARC). P.O. Box 2617, Costa Mesa, CA 92628. Meets 3rd Thurs./monthly, testing 6 p.m. meeting 7 p.m., Rogers Senior Center, 1706/1718 Orange Ave., Huntington Beach, CA. Info: Russ, N6QZV, 714/848-4501. 8/09

Willits Amateur Radio Society, (WARS). P.O. Box 73, Willits, CA 95490. Meets 4th Mon. 7 p.m., Brooktrails Fire House, Birch St. near Brooktrails Dr. http://www.k6mhe.com/wars. Talk-in: 145.130, PL 103.5. 4/09

COLORADO

Boulder Amateur Radio Club (BARC) Meets 3rd Tues. monthly, 7 p.m., Bld J, Boulder Municipal Airport or Valmont Community Presbyterian Church, 3262 N. 61st St., Boulder, CO. Talk-in: 146.70(-) Info: BARC70@arrl.net or www.qsl.net/wOdk/ 11/09

CONNECTICUT

Connecticut DX Association, (CTDXA). Meets at ARRL HQ, Newington, CT. 1st Wed. (except Summer) 7:30 p.m. Contact Dan, W1ZTQ; 860/583-1165 11/09

FLORIDA

Englewood ARS. P.O. Box 572 Englewood, FL 34295. Meets 3rd Thurs./monthly 7:30 p.m. Englewood United Methodist Church, 700 E. Dearborn St., Englewood, FL, Rm: Fellowship Hall. Info: Vic Emmelkamp, K4VHX, 941/473-5560 or www.earsradioclub.org. 11/09

Gulf Coast ARC. P.O. Box 595, New Port Richey, FL 34656. Meets 4th Mon./monthly, 7:00 p.m., 6909 Tierra Verde St., Port Richey, FL. Rptrs. 146.67(-), 145.33(-), 444.650, serving all of Pasco County. VE testing 6:30 p.m. 1st Wed/monthly. See website for more info. www.gulfcoastarc.org 5/09

Port St. Lucie ARA. P.O. Box 7461, Port St. Lucie, FL 34985. Meets 4th Wed./monthly, 7:30 p.m., St. Andrews Lutheran Church, 295 Prima Vista Blvd. Info: R. Cox, 772/340-4319; kt4pa@comcast.net; www.qsl.net/pslara 4/09

GEORGIA

North Fulton Amateur Radio League meets 3rd Tues., 7:30 p.m. See www.NFARL.ORG/meetings.html for meeting location & directions; 145.470(-) PL100, 147.060(+), PL100; 404/434-4499; www.nfarl.org; info@nfarl.org 5/09

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

Big Bend Amateur Radio Club (BBARC), KC9LMF, meets 3rd Thur monthly, 1006 Wabash, Carthage, IL 62321. Annual Hamfest 2nd Sat. in December. N9BLD@myway.com 4/09

Bolingbrook ARS meets 3rd Mon., monthly, 7:00 p.m. at Bolingbrook Fire Station Number 5 on Rodeo Dr. Talk-in is usually 147.33 MHz +0.600. ARRL affiliated club number: 1271. Club web page is www.k9bar.org. 10/09

DuPage ARC, (DARC). P.O. Box 71, Clarendon Hills, IL 60514. Meets 4th Mon., 7:30 p.m. (no meeting July & Dec.), Holy Nativity Church, 275 S. Richmond Ave., Clarendon Hills (NE corner 55th St. & Richmond Ave.) Net Sun. 9 p.m., 145.43. W9DUP rptrs: 145.43(-) 107.2PL, 442.55(+), 114.8PL, 224.68(-); 110.9PL; www.w9dup.org 4/09

Fox River Radio League, www.frrl.org. Open meeting 2nd Tue./7:30 p.m. Rasmussen College, 2363 Sequoia Dr., Aurora, IL 60506; 147.21 MHz (+600 kHz, 103.5 Hz), 444.30 MHz (+5 MHz, 114.8 Hz, IRLP), 2M net Tue. 7:30 p.m., except 2nd Tue. P.O. Box 673, Batavia, IL 60510-0673. 11/09

McHenry County Wireless Association (MCWA). Open to all interested in Amateur Radio. Meets 1st Tuesday monthly, 7:30 p.m., Nunda Township Office, Bay Road between Crystal Lake & McHenry, IL. Talk-in by calling first 107.2. VE testing in Woodstock by calling first - Steve, 847/516-1292, 3rd Tuesday 7:00 p.m. every other month - see web site, www.mcwa.org 6/09

Peoria Area ARC, (PAARC). P.O. Box 3508, Peoria, IL 61612. Meets 2nd Fri./monthly, 7 p.m., Red Cross Chapter House, 311 W. John Gwynn Jr. Ave., Peoria, IL. Superfest each Sept. Rptrs: 147.075(+), 146.85(-). D-STAR: 144.505 (+), 448.46875 (-), 1272.4000(+). Web: www.w9uvi.org; e-mail: w9uvi@arrl.net. Voice mail: 309/692-3378. 12/09

The Starved Rock RC, W9MKS. P.O. Box 198, Tabor St., Leonore, IL 61332. Meets 1st Mon./monthly, 7 p.m. Rptr. net 7 p.m. Wed./weekly, 147.12(+), PL 103.5. w9mks@qsl.net; http://www.qsl.net/w9mks 12/09

Wheaton Community Radio Amateurs meets 1st Fri./monthly, 7:30 p.m., First Presbyterian Church (Jefferson & Ellis streets), Wheaton. All are welcome. See our website at www.w9ccu.org for all club info or call 630/604-0157. Annual Hamfest each January. Rptrs: 145.390 (-) 107.2, 444.475 (+) 114.8. 9/09

LOUISIANA

Baton Rouge ARC meets last Tue./monthly, 7 p.m., St. Luke's Episcopal Church, 8833 Goodwood Blvd., Baton Rouge, LA. Net: 146.79MHz, 8:30 p.m. Sun. www.brarc.org e-mail: brarc@cox.net 7/09

Delta DX Association ARC meets on our repeater every Tuesday night at 8:00 P.M. local time. At 147.360 (+), sub-audible tone 114.8 in & out. Contact John Uhl, W5ZE, 504/347-0272 for info. Or at w5ze@cox.net. And on our club web site www.deltadx.net. 3/09

Ozone Amateur Radio Club of Slidell meets the first and third Thursdays of each month. 7:30 p.m. at the Emergency Communications Building at 4th and Cousin Streets in Slidell. Everyone Welcome. Net: 147.27 pl 114.8 every Friday at 7:30 p.m. Club website: www.w5sla.net, email: w5py@arrl.net. 5/09

MAINE

Saint Croix Valley ARC meets at the Calais Methodist Home, 10 Sunrise Circle, Calais, ME, 04619, third Sunday of each month, 8:30 p.m.. Contact Mike Breckinridge N1JXP, 207/454-8571. 9/09

MASSACHUSETTS

Boston ARC meets 3rd Thurs. 7:00 p.m. (except July/Aug), Salvation Army Boston HQ, 147 Berkeley St. Boston, MA. Free parking in adjacent lot. Talk-in: 145.23MHz (-) PL 88.5, www.barc.org, email: w1bos@arrl.net. 12/09

Framingham Amateur Radio Association meets 1st Thurs., 7:30 p.m., Sept-June in the basement of the Danforth Museum, Framingham, MA. Contact Gordy, K1GB, 781/891-5572; k1gb@arrl.net 01/10

MICHIGAN

Genesee County Radio Club, Inc. Meets 3rd Tues. of the month during school year. 7:30 p.m. Davison High School, 1250 N. Oak Rd., Davison, MI 48423; www.qsl.net/w8acw/; e-mail: w8acw@arrl.net 10/09

Hiawatha ARA of Marquette Co. P.O. Box 1183, Marquette, MI 49855. Meets 1st Thurs./monthly, 7:30 p.m. Marquette County Health Department, R. Schwenke, N8GBA, 906/249-3837; www.qsl.net/k8lod 12/09

L'Anse Creuse ARC meets Sept.-June. ARRL Special Service Club. Meeting place: L'Anse Creuse High School, on Reimold, just off Crocker Blvd. Field Day; club repeater; annual Fox Hunt. Contact L.C.A.R.C. Box 180072, Utica, MI 48318-0122; www.n8lc.org 04/09

MINNESOTA

St. Cloud ARC meets 3rd Thurs./monthly, 7 p.m., Radio Club Bldg., 401 4th St. N., Waite Park, MN 56387. Info: 320/255-1410, 146.94 or 147.015 or www.w0sv.org/ 04/09

MONTANA

Yellowstone Radio Club meets 3rd Mon except July-Aug., 7:30 p.m., North Park Center, 19th & 6th Ave., N., Billings, MT. Contact 147.36/100 Hz tone. Box 883, Billings, MT 59103. Testing odd months, 3rd Sat.; <http://www.k7efa.org/> 09/09

NEVADA

Las Vegas Radio Amateur Club (LVRAC) meets 3rd Tuesday monthly, 7 p.m., Salvation Army building, 2900 Palomino Lane, Las Vegas, NV. Talk-in 146.94 (K7UGE Repeater) PL 100, Offset - 600 Hz; <http://www.lvrac.org> 6/09

NEW JERSEY

The Garden State ARA, (GSARA). Meets 1st Wed./monthly, 8 p.m., Fort Monmouth MARS Station, Eatontown, NJ. Info: B. Buus, W2OD, 732/946-8615. 7/09

Gloucester County ARC meets 7:30 p.m. 1st Wed./monthly, Pfeiffer Community Center, Blue Bell Rd. & Main St., Williamstown, NJ 08094. Contact Ken Newman, N2CQ, P.O. Box 370, Pitman, NJ 08071; 856/848-4345; n2cq@comcast.net; <http://www.w2mmd.com> 10/09

North America DX Assoc., Inc. (NADXA). P.O. Box 357 Bradley Beach, NJ 07720. Jersey Coast Chap. 1 meets 4th Mon./monthly, 7:00 p.m. Contact: Mike, KC2Q, 732/927-0171; kc2q@arrl.net; nadxa@juno.com; w2dx@yahoo.com 8/09

NEW YORK

Amateur Radio Assn of the Tonawandas, (ARATS), P.O. Box 430, No. Tonawanda, NY 14120. Meets 3rd Tue./monthly (except Jul. & Aug.), 7:30 p.m., Sweeney Hose Co., 499 Zimmerman St., No. Tonawanda, NY. Talk-in: 146.955(-) PL 151.4 rpt. W2SEX; <http://w2sex.org> 4/09

Genesee Radio Amateurs, (GRAM), P.O. Box 572, Batavia, NY 14021-0572. Meets 3rd Thurs./monthly, 7:00 p.m. (except Jul, Aug, Dec), Salvation Army Community Center, Corner N. Spruce & E. Main St., Batavia, NY, 14020. Public Information Officer, gram_radio_club@yahoo.com; http://www.geocities.com/gram_radio_club/index 07/09

Hall of Science ARC. P.O. Box 150131, Kew Gardens, NY 11415. Meets 2nd Tue./monthly, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park, 8:00 p.m. Rptr. 444.200 PL 136.5. Info: Voice mail 718/760-2022; www.hosarc.org 10/09

Orleans County ARC, (OCARC). Meets at the Orleans County EMO 14064 W. County House Rd., Albion, NY 14411, 2nd Mon./monthly 7:30 p.m. Contact: Marion Toussaint, KA2BCE, 585/798-0861. 1/10

NORTH CAROLINA

Azalea Coast ARC Wilmington, NC meets 3rd Thurs./monthly, Winter Park Baptist Church on Park Ave. Mon. ragchew 8:00 p.m. 147.180(open). ARRL Affiliate. VE Test Sessions, 2nd Sat. even mos @ Winter Park Baptist Church. See Web Page @ www.ac4rc.org. Info: Ed, W4EBR, 910/686-5206. 04/09

Orange County Radio Amateurs meets monthly 2nd Mon. at 7:30 p.m. at Sunrise Church, 1315 New Hope Trace, Chapel Hill, and weekly Sat. at Hillsborough Bojangles, 330 S. Churton St., abt 9:30 a.m. W4UNC/R on 442.150 (131.8). Contact Woody Woodward, K3VSA, 4008 New Sharon Church Rd., Hillsborough, NC 27278; 919/732-9895; www.ncocra.org 8/09

Stanly County ARC Albemarle. Meets 4th Thurs./monthly 7 p.m., Stanly Community College. Talk-in 146.985 (-) tone 100 Hz. Nets: Wed. @ 9 p.m. Club/ARES Net on 146.985. Fri., @ 9 p.m. Tech Net. 147.390 (+) Tone 100 Hz. Contact: Bill Greene, K4VET 704/463-1202. 8/09

OHIO

Ashtabula County ARC. K. Stenback, W8KS, 440/964-7316. Meets 3rd Tue./monthly, 7:30 p.m., County Vo-Ed School, Jefferson, OH. County rpt., 146.715(-). 7/09

Clyde ARS (CARS) meets 1st Tue./monthly, 7:30 p.m., Municipal Bldg., Clyde, OH 43410. NF8E rpt. 145.35(-) and 442.625(+) MHz. Net Sun. 9 p.m. Info: E. Remaley, K8BCAS. 10/09

OREGON

Umpqua Valley ARC, Inc. P.O. Box 925, Roseburg, OR 97470. Meets 3rd Thurs./monthly, 7:00 p.m., Douglas County Court House, #310, Roseburg, OR. Info: K7AZW 541/679-9338 or 146.90(-) (PL100), <http://www.aa7gc/uvarc/index.html> 12/09

PENNSYLVANIA

RF Hill ARC meets 7:30 p.m. last Thurs./monthly, Perkasio Fire Company, 5th St., Perkasio, PA. Info: Jim Soete, WA3YLQ, 215/723-7294; wa3ylq@hotmail.com; www.rhill.ampr.org 12/09

Washington Amateur Communications Radio Club (WACOM) meets 1st Thur./monthly, 7:30 p.m., Washington Co. Bldg., 100 Beau St., Washington, PA 15301. Contact Elmer Plants, N3TIR, 724-484-0207. 145.490. www.wacomarc.org 11/09

VIRGINIA

Mt. Vernon ARC, K4US (MVARC). Meets 2nd Thurs./monthly (except Jul. & Dec.), 7:30 p.m., INOVA Mt. Vernon Hospital, 2501 Parkers Ln., Alexandria, VA. Contact: Bob, KT4KS, 703/765-2313 or 146.655-. 10/09

WASHINGTON

San Juan County Amateur Radio Society meets 2nd Fri./monthly 11:30 a.m., Friday Harbor Firehouse. Serving hams throughout the San Juan Islands, Washington, we welcome members and visitors to our weekly nets, Wed. 8:00 p.m. local, through linked repeaters N7JN, 145.250MHz PL 133.8 Hz & 443.45MHz PL 103.5 Hz & CW @ 7:30 p.m. local on 3710 kHz or nearby. Contact Dan Drath, N6AU, for more information; drathmarine@rockisland.com 11/09

WEST VIRGINIA

Tri-State ARA meets 3rd Tues./monthly, 7 p.m., Museum of Radio & Tech., 1640 Florence Ave., Huntington, WV 25701; 304/525-8890. 9/09

WYOMING

University ARC N7UW, University of Wyoming, Dept. 3625, 1000 E. University Ave., Laramie, WY 82071 meets 1st Tues./monthly in the Wyoming Student Union room 2 or 10 at 7:30 p.m. local time. All interested persons are welcome. johnmh@uwyo.edu 12/09



For information on how to get your club listed in Visit Your Local Radio Club click here!



Amateur Radio 2009/10 Ham Radio Operators Calendar



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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 VE group is scheduling an exam for December, please have the information to us by October 1st. World Radio Online, VE Exams, 25 Newbridge Road, Hicksville, NY 11801 .List the location (city and state), any information examinees should have (advance registration, etc.) and the name of the person to contact for further information. Examinees should bring their original license (along with a photo copy), two forms of identification (at least one should be a photo), and required fee.

p/r pref. = pre-register preferred but w/i OK
p/r = pre-registration only-no w/i

w/i = walk-in only
w/i pref. = w/i preferred to p/r

CITY	DATE	CONTACT	NOTES	CITY	DATE	CONTACT	NOTES	
ARIZONA				MISSISSIPPI				
Mesa	3rd Mon	Steve KY7W, 480-804-1469, kj7wk@cox.net	w/i	Harrison County	1st Sat	Don, W5DJW, 228-868-5670, donw5djw@bellsouth.net	w/i ok	
Phoenix	4th Sat	Gary Hamman, 602-996-8148, K7GH@arrl.net, George Cooney, 602-274-6212, KQ7C@arrl.net		NEVADA				
				Stagecoach	2nd Sat	Jack, AC6FU, 775-577-2637, ac6fu@arrl.net		
ARKANSAS				NEW JERSEY				
Harrison	2nd Sat	Bob, AJ5C, 870-365-3871, aj5c@cox.net		Bellmawr	3rd Thurs	Diane, N2LCQ, 609-227-6281	p/r	
Sherwood	3rd Sat	Daryl, N5VLZ, 501-227-9183, n5vlz@arrl.net	p/r w/i ok	Roselle	4/25	Gerry, AA2ZJ, 732-283-2795, aa2zj@arrl.net		
CALIFORNIA				NEW YORK				
Highland	4/18	Ed Slaughter, WU6I, 909-864-0155, wu6i@arrl.net	p/r w/I ok	Canandaigua	1st Wed	Squaw Island ARC, David A. Foster, 585-398-0216, D1161F@aol.com	w/i	
Lake Isabella	2nd Sat	Mike, KA6IYS, 760-378-1028	w/i pref					
Long Beach	3rd Sat	Louise, N6ELK, 562-429-1355	p/r	Canandaigua	1st Wed	David Foster, 585-398-0216, www.siacr.us	w/i	
Manteca/Tracy	4th Sat	David, N5FDL, 209-835-6893, n5df@arrl.net	p/r	Yonkers	4/5	Paul, AC2T, 914-237-5589, w2rcr@hotmail.com, www.yarc.org	w/i ok	
Mission Viejo	4/20	Ernie Senser, W6ETS, 949-458-2504, w6ets@aara.org, www.soara.org	p/r pref.	OHIO				
Redwood City	4/18	Al, WB6IMX@arrl.net, www.amateur-radio.org	w/i	Cincinnati	1st Sat	Dale, KC8HJL, 513-769-0789	p/r pref	
Sacramento	Hotline!	916-492-6115, n6na@arrl.org	w/i ok	Sandusky	4/21	Luther Gantz, N8HC, 419-684-7864, n8hc@arrl.net	p/r	
Santa Rosa	Hotline!	Hotline-Recording 707-579-9608		OREGON				
Sebastopol	Hotline!	Recording 707-579-9608		Astoria	Call!	AA7OA, 503-338-3333	p/r	
Sunnyvale	4/11	Gordon, W6NW, Sv@amateur-radio.org, www.amateur-radio.org	w/i	Bend	Weds	Joe, K7SQ, 541-385-3152	p/r	
FLORIDA					Lincoln City	1st Sat	Carl, w7i@arrl.net, 503-965-7575	w/i ok
Melbourne	1st Sat	John, AA8IS@earthlink.net, 321-412-2779	w/i ok	McMinnville	Call!	Mike, W7MJ, 503-843-4042	p/r	
North Port	Call	Bill Norris, KC7TSG, 941-426-0214	w/iprof.	Sisters	Call!	Dave, N7TYO, 541-549-7831	p/r	
St. Pete	Call	Mark, NP3R, 727-528-0071	w/i pref.	Tigard	Call!	John, KSOF, 503-626-7399	p/r	
GEORGIA				PENNSYLVANIA				
Athens	Last Mon	Ed, FUQUA, 706-354-1727	w/i pref.	Erie	3rd Sat	Ron, KB3QBB, 814-833-6829, kb3qbb@arrl.com, www.wattsburg-wireless.us	p/r	
HAWAII					Pittsburgh	4/11	Bob Benna, N3LWP, 412-366-0488, n3lwp@verizon.net	
Oahu	Call	Lee, KH6BZF, 808-247-0587, 808-551-3494, leewical@aol.com	p/r	PUERTO RICO				
ILLINOIS					San Juan	Last Sat	Hotline: 787-789-4998, prarl@prarl.org	w/i
Aurora	3rd Tues	Fox River Radio League, Doug, W9RD, ve@frrl.org, www.frrl.org	w/i pref.	SOUTH CAROLINA				
Bolingbrook	3rd Sat	Dale, W9KHX, 815-723-3332	w/i ok	Charleston	3rd Wed	Robert Johnson, ae4rj@amsat.org; www.qsl.net/wa4usn/	w/i	
Burr Ridge	Any Day	Argonne Amateur Radio Club, W9DS, 630-986-0061	p/r	Charleston	2nd Sat	Riley, 843-832-9105, k4hyy@sc.rr.com	w/i	
Roselle	2nd Tues	Sam Baribeau, W9SFB, 630-894-0708, W9SFB@aol.com	p/r	VIRGINIA				
INDIANA					Alexandria	2nd Sat	John, WZ4A, 703-971-3905, wz4a@arrl.net	w/i
South Bend	3rd Mon	Alan, NY9A, 574-232-6883	p/r	Stafford	Every Sat	Bart, N3GQ, 540-373-4506, n3gq@arrl.net, www.wv4va.org	p/r	
IOWA				WASHINGTON				
Vinton	4/23	Al Hammond, k0hwe@inav.net, 319-446-7570	p/r pref.	Tacoma	2nd Tues	Radio Club of Tacoma, 253-759-2040, www.w7dk.org		
Vinton	3rd Thurs	Ken, NØEGV, 319-223-5739	p/r pref.	Vancouver	Hotline!	CCARC, 360-896-8909	p/r	
KANSAS				WISCONSIN				
Salina	2nd Wed	Sid Ashen-Brenner, NØOBM, n0obm@arrl.net, 785-823-6560	w/i or p/r	Racine	1st Sat	Robert, W0WLN, 262-886-8551	w/i pref	
MASSACHUSETTS					Tomahawk	Last Sat	Terry, KB9AUP, 715-453-4633, dcollins@newnorth.net	w/i ok
Brookline	2nd Mon	Dick Doherty, KA1TUZ, 617-527-2968, ka1tuz@arrl.net, www.barc.org	w/i ok	Add your local VE Exam information to this free monthly listing! Click here for posting information.				
Chelmsford	2nd Wed	Bruce, w1lus@att.net	w/i					
MINNESOTA								
Apple Valley	2nd Thur	Jim, NØOA, 612-384-7709, NØOA@arrl.net	p/r pref.					



Elevated Radials

Kurt N. Sterba

A reader asks: “Could you please forward this e-mail discussion to Kurt N. Sterba. There seem to be a lot of different opinions on how to ground the radials on an elevated vertical and whether or not a balun is needed. Perhaps he could explain which grounding method is right or if both will work what the difference will be. Also if a balun would be recommended for 10-40 meters on an elevated vertical antenna.”

Krusty Olde Kurt read over the e-mail discussion which was too long to reproduce here. Some advised grounding the antenna; others said no. Some advised using a balun; others said “These people just want you to buy a balun or choke or something from them.”

To arrive at a good answer let us look at the elevated vertical and its above ground radials, as shown in the figure.. There are two paths for currents to flow. Current through C1 flows to ground, through the ground resistance, and back to the antenna through C2. The other path is C3 where current flows to the radials and through them back to the antenna. We'd like to have as little as possible of the current flowing through the ground because it is lossy. We want most of it to flow through the radials because they are low resistance and thus have little loss.

One way to improve things is to raise the antenna and its radials higher away from ground. When we do this C3 does not change because the radials are still just as close to the antenna as before. But C1 & C2 become smaller because the antenna is farther away. Their reactances become higher so less current flows into the ground. If you go up high enough the ground currents are negligible and we have an antenna completely isolated from ground. It does not need to be grounded to work.

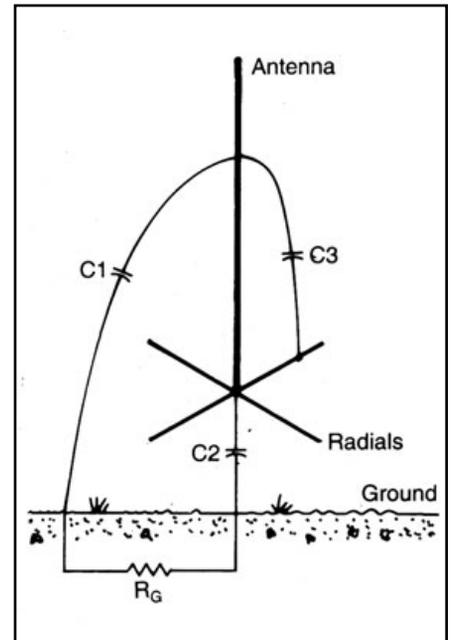
There is one problem: A coaxial feedline will be connected to the antenna, center conductor to the antenna, shield to the radials. The shield of the feedline will be grounded to the station ground. So the antenna is now grounded. To prevent this you need to put a balun on the feedline

just as it leaves the antenna. This can be about 6 inches of ferrite beads placed over the cable, sometimes called a “line isolator”. This makes the cable shield look like a high impedance so no current will flow down it. The antenna remains isolated from ground.

When you move the antenna very far up, as in a VHF antenna, the only place the antenna currents can go is to the radials because ground is so far away. So now you don't need as many radials to collect the current. In his book on low band DXing, ON4UN tells the story about George Brown, the inventor of the ground-plane antenna. He found that two radials were all that were needed. But the sales department felt that customers wouldn't believe that, so the antennas went on sale with four radials. Just remember that the higher the antenna above ground, the fewer radials you need. Never mind what you may read elsewhere.

If you are installing a 40 or 20 meter vertical you are not going to have your radials far up (in wavelengths). You are near the ground and C1 and C2 are fairly sizable, meaning they are low reactance. So a fair amount of current will flow through the ground. You can reduce this by adding more radials, thus making C3 larger. Or you can install ground radials to reduce ground losses. It seems strange to install ground radials when you already have elevated radials but there will be ground currents when the antenna is close to the ground. So there will be losses when RF currents flow through the ground resistance (remember Ohm's law: $P = I^2R$). Radials reduce the resistance and thus reduce the losses.

There is another major consideration if you live in areas that have lightning storms or, like New Mexico, where dust storms generate high DC voltages on antennas. In these cases you must ground the antenna. This done by running a heavy copper wire from the center of the radials directly to a ground rod or, preferably, to about three ground rods. Also put a balun on the feedline. The idea is to get most of the lightning current to go directly to ground



instead of through your station. The lightning current is going to go to ground! If the antenna is not grounded the only way it can go is down your feedline, through your equipment and to your station ground or house wiring ground or both.

A good antenna ground keeps most of the current out of your house. The feedline balun increases the impedance of the feedline path and so reduces the current going that way. The only negative is that the direct ground shorts out C2 and reduces the impedance of the ground path to just C1 and the ground resistance. You can reduce the effects of this as described above for low antenna installations.

To summarize the most important points:

1. You always need a balun, or as it is sometimes called, a line isolator. You need this for any frequency of operation and whether the antenna is grounded or not.
2. You can operate the antenna ungrounded but if you want protection from nearby lightning strikes or from static electricity you need to ground it.

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