RF

ORANGE COUNTY AMATEUR RADIO CLUB, INC.

VOL. XLVII NO. 03 P.O. BOX 3454, TUSTIN, CA 92781-3454 March 2005

The Prez Sez:

OCARC continues the planning for Field Day in June. Set aside the week-end of June 25-26 in your calendar for this fun event. Willie – N8WP is the FD Chairman. We are down to considering two different possible locations at this time:

- Los Alamitos JTF Base
- Portola Park (Santa Ana)

Currently, the Los Alamitos base looks like a great choice. But, we still don't have the formal permission back from them, yet. Portola Park is a strong backup plan right now. We are looking for a Food Chairman for FD. You don't have to cook all three meals, just organize them. For example: pick up some pizza, etc. If you can help out, give Willie a call.

Read the article on Page 11 updating recent activities concerning BPL (Broadband over Power Lines).

Dues need to be paid by the end of March (Mar 31st).

We will be trying a new restaurant for the club monthly breakfast in April, the Katella Grill at Main and Katella in the city of Orange (very close the "Duck Pond"). See Page 2 and our WEB site for details

...de Ken Konechy W6HHC

A Club Project: Anyone Interested in 30M?

By Bob Eckweiler – AF6C

The 30 meter ham band sits between 10.100 and 10.150 MHz. This band is for CW and Digital modes only and is limited to 200 watts PEP. It offers good propagation and low QRM. Would you like to operate QRP there?

Small Wonder Labs makes a small QRP transceiver kit for 30 meters, the DSW-II-30. Perhaps a good club project would be for interested members to build these kits and help populate the 30 meter band. While the kit is…

- See **30M Club Activity** cont'd on pg 7

DUES REMINDER!

It is time to pay your OCARC dues for 2005!

The deadline for club dues is March 31st to remain as a member and stay on the private roster. Dues remain at the low price of just $20 **!!!** Please see Cheryl, KC6KTT at a meeting, breakfast or mail your dues to our P.O. box.

DUES are DUE!

The speaker at next meeting will be Steve Egert, K6UX from AMSAT on:

Working the Easy Satellites

Be sure to attend this informative meeting to learn all you need to know about making your first satellite QSO. Many satellites can be worked with just a standard VHF/UHF HT. This will be just in time to get us excited about making satellite contacts at Field Day!

Don't miss it. All members and visitors are welcome.

The next general meeting will be:

Friday, Mar. 18th
@ 7:00 PM

We will be meeting in Room 208 in the **east Red Cross B**uilding

In This Issue: **Page**

THE ORANGE COUNTY AMATEUR RADIO CLUB, INC.
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Monthly Events:

General Meeting:
Third Friday of the month
at 7:00 PM
American Red Cross
601 N. Golden Circle Dr.
(Near Tustin Ave. & 4th St.)
Santa Ana, CA

Club Breakfast:
First Saturday of the month
at 8:00 AM
Katella Grill (Main & Katella)
1325 W. Katella Ave.
(2 miles west of 55FWY)
Orange, CA

Club Nets (Listen for W6ZE):
7.086 ± MHz CW **OCWN**
Sun- 9:00 AM – 10 AM
Rick KF6UEB, Net Control

28.375 ± MHz SSB
Wed- 7:30 PM - 8:30 PM
Bob AF6C, Net Control

146.55 MHz Simplex FM
Wed- 8:30 PM - 9:30 PM
Bob, WB6IXN, Net Control

VISIT OUR WEB SITE

http://www.w6ze.org

for up-to-the-minute club information, the latest membership rosters, special activities, back issues of RF, links to ham-related sites, vendors and manufacturers, pictures of club events and much much more.

Club Dues:
Regular Members ...$20
Family Members* ...$10
Teenage Members ..$10
Club Badge** $3

Dues run from January thru Dec and are prorated for new members.
*Additional members in the family of a regular member pay the family rate up to $30 per family.
**There is a $1 charge if you'd like to have your badge mailed to you.

Tech Talk #39

Ham Radio Station Protection - Part 3

Article Courtesy of the PolyPhaser Corp.

I don't know about you, but with all the storms we have had over the last two months I'm finding this information to be very valuable. Properly grounding your ham station is a must for any ham who lives in areas where lightning is prevalent. In the beginning of this installment of Ham Radio Station Protection, our focus is shifted away from the coax and the antenna and looks at something that you and I might not give much thought to protecting from lightning: the rotator and its control lines. We will also see what a single point ground plate looks like and how it is used. Lastly, what would you do if you lived in a high-rise condominium complex and wanted to ensure proper lightning protection for your ham station? The answers to these questions are covered in this – Part 3 of this month's installment of Ham Radio Station Protection.

Rotor Control Line Protection

Rotor control lines should be protected using a protector at both the top of the tower where the lines go to the control motor and inside the shack at the single point ground panel.

If it is not practical to protect the lines at the single point ground panel, they may be protected at the bottom of the tower. The protected lines should then be placed within EMT (metal) conduit that is grounded only at the tower-base end. The EMT conduit will act as a faraday shield from the tower's magnetic fields and will minimize the amount of induced energy.

Coax Line Protection

Coax protectors should be units that have dc blocking on the center pin. This serves as a high pass filtering that prevents the lightning's low frequency energy from continuing to your equipment. The strike energy is picked off and diverted into the ground system in a controlled way. The dc blocking ensures the operation of the protector regardless of the input circuitry of the equipment.

Did you know that spark gap protectors with dc continuity will not work on receivers and shunt fed duplexers? The shunt to ground inside a receiver (coil to ground for static draining) prevents the low frequency lightning energy from turning on the dc continuity protector. The coil shunts the energy to ground all right, but it is at the wrong place. If the coil can't handle the energy (half the coax surge energy is on the center pin), the coil will open up and the current will translate to a large open voltage source capable of arcing anywhere within the radio.

Single Point Ground

The next step in a good protection scheme is to provide a single point ground, a plate where all of your equipment I/O protectors can be located. The panel is best located near the ground to keep the inductance of the ground conductor low. However, if this requires the plate to be far from your equipment and if the magnetic fields of a nearby tower can easily couple into the interconnecting wires and cables, then the panel should be located close to your equipment. **[Note: Figure 1** shows a good example of this type of a single-point I/O cable ground plate.]

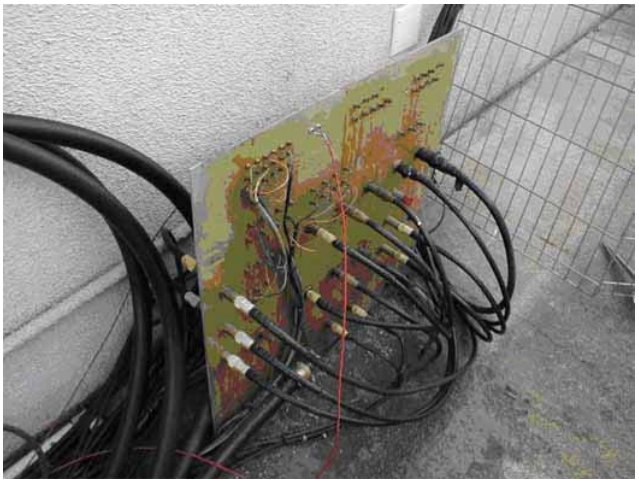


Figure 1 - Grounding Plate for Cables
Photo is Courtesy of Dan Dankert - N6PEQ

An alternative to the single point ground plate is to use a rack panel. This is recommended only if all of the I/O protectors are mounted on the panel and the ground connection is directly to the panel and not to any other piece of equipment.

The grounding of the plate or panel is very important. A low impedance path to ground is a necessity and only copper strap should be considered. Since the strap is flat, its susceptibility to magnetic fields is only towards its edges. To prevent coupling, the strap should be oriented with the flat side parallel to the tower (the most likely strike point and magnetic field source). The single point ground plate should also be oriented with its flat side parallel to the tower for the same reason.

In the equipment room, each piece of equipment must be bonded to the single point ground panel with a low inductance strap. This will maintain all chassis at the same potential during the strike event and minimize chassis-to-chassis current flow. The power, telephone and coax line protectors on each of the I/O's must be mounted on the single point plate. This will minimize I/O to-I/O current flow.

- See **Grounding** cont'd on pg 4 –

TechTalk - Grounding -- cont'd from page 3

Additional protectors may be used to protect the opposite side entrance locations for the power and telephone lines. They will provide added protection for jointly used equipment such as answering machines, appliances and etc. Ideally they should also be grounded and connected by a buried bare conductor to the ground system.

Remember that surge energy can enter your shack in either of two ways: from a strike down the road coming in on the power/telephone lines or from a strike to your tower. In either case, high quality protectors will dump the energy into the ground system. Because of varying propagation times, if the protectors are electrically spread out from each other, they cannot work in unison to keep the voltage levels between the equipment I/O's within a tolerable range for equipment survival. [Note: **Figure 2** shows one way to tie your antenna tower to ground.]

Figure 2 - Shows one way to tie your antenna tower to ground with the use of a tower rung grounding clamp (from ICE Corporation)
Photo is Courtesy of Dan Dankert - N6PEQ

No Sharp Bends

Route all ground straps and grounding conductors so they have a gentle bending radius. Bends sharper than 8-inch radius will add unwanted inductance to the desired ground path. Even for conductors buried in the ground, try to prevent sharp bends.

Ham Shack Location

The basement is the best location for the ham shack. It is closest to ground and will have the lowest inductance connection to the grounding system. Because it is below grade, some magnetic shielding may occur. Most basements have concrete floors. Since concrete is a conductor, your equipment must not sit directly on the concrete. Doing so will allow surge energy to enter the shack and find a ground path through your equipment to the floor. Insulate your equipment with material that does not absorb water. Wood is not a good choice. Polypropylene is better than nylon to use as a full footprint sheet insulator. Obviously, you should not be on the concrete floor touching the equipment when a storm is near!

The first floor is the next best location. The magnetic shielding is less than the basement and the inductance to ground is higher than the basement. If your tower is close to the building, the recommended grounding strap, running down the outside wall, may inductively couple some energy from the tower. This is also true for other lines such as coax, tower lights and rotor lines. The longer this parallel run, the more energy will be coupled. Our recommendation is to protect these lines at the tower base then run them in EMT (electrical metal tubing) steel conduit. The conduit should be grounded to the tower base ground point. This will act as a faraday shield for the cables inside. Do not run unprotected lines in the EMT. The protectors must be grounded to each other as well as to the tower ground. The best way to do this is to place the protectors inside a weatherized NEMA type box. Make sure the box is grounded, as well as the inside mounting plate. To do this correctly, remove the paint from the box's outside and inside surfaces at the ground point and use proper joint compounds to weatherize the connections. Stainless hardware may be used. Crimp lugs must be crimped, soldered and weather covered. Solder (60/40) will not hold up to sunlight and ozone without protection. Use a short section of strap to bond between the inside surface of the box and the inside protector mounting plate.

High Rise Buildings

Our definition of a high rise building is different than the upper stories of a house. The antennas on a high rise are not on a ground mounted tower, but are usually attached to the building structure. Therefore, a single point grounding plan is a must for a high rise equipment room. Grounding both the antenna and the single point ground connection in the equipment room is easy for buildings with structural steel frames - just bond to the building steel. Buildings other than steel construction

See **Grounding** cont'd on pg 10 -

OCARC General Meeting Minutes

February 18, 2005

The February General Meeting of the Orange County Amateur Radio Club was held at the Red Cross East Building. The meeting was called to order by President Ken W6HHC at 7:00 PM. All Directors were present except for Rich KE6WWK and Steve N1AB. A total of 21 members and visitors were present.

Program:
Vice Pres. Willie N8WP introduced a great video tape presentation on the 2000 DXpedition to Clipperton Island.

Old Business:

- Willie N8WP volunteered as FD Chairperson
- Need a food chairperson for Field Day.
- Bud WA6VPP offered to use his pickup truck for moving club towers to FD.
- Ken W6HHC announced that the board had voted to change the quorum for club meetings from six Directors to five Directors

For the Good of the Club:

- Rotating newsletter editors;

January	Kenan-N6CCE,
February	Kristin-K6PEQ.
March	Ken-W6HHC
April	Willie-N8WP
May	Bob-AF6C
June	Kenan-N6CCE

- OCARA Report: Kristin K6PEQ led discussion on OC Fair Ham exhibit in July. More to come next month.
- Bob, AF6C, would like to build 30M QRP transceivers from Small Wonder Labs as a club project. Ken, W6HHC, suggested a shortened vertical dipole project for 30M.
- Dan, N6PEQ reported Peter I DXpedition has been canceled. 10M & 15M has very good openings in the afternoons. 30M & 40M have very good via long path in the evenings. The ARRL CW Contest going on now.
- Visitor, Kevin KG6MIH, announced Scouts Night Net on the CLARA 2M repeater.
- New Member: Jim N6DHZ of Whittier

Motion to close the meeting was duly carried at 20:55.

Submitted by Willie N8WP
Acting Secretary

OCARC Board Meeting Minutes

March 05, 2005

Meeting called to order by President Ken W6HHC at 8:25 AM. All Board Members present except: Cindy–KC6OPI, Bob-AF6C, and Ken-N6CCE. There were a total of 12 members and visitors attending.

- Program Chairperson Willie N8WP reported that the March Program would be on AMSAT. The April program will be on PSK31.
- Secretary Rich KE6WWK has not yet submitted the club Special Service Club application to ARRL. It will be done this month.
- Treasurer Cheryl KG6KKT reported a current balance of $2,483 and a copy of her report will also be available at the general club meeting.
- Activities Chairperson Kristin- K6PEQ reported that the club meeting raffles are going well.
- There were no reports for Technical, Publicity, or Membership.
- Director-at-Large Steve N1AB reported that he is successfully working with the ARRL on obtaining the names of new, upgrading HAMS and those who just joined ARRL. Director-at-Large Dan N6PEQ reported that the RF is now being sent to new HAMs.

OLD BUSINESS

Field Day - Willie N8WP has been in contact with Los Alamitos station for possible use and he has sent a letter to the Governor's Office of Emergency Service outlining field day activities. A meeting with the city of Santa Ana is pending as a back up plan. A cook is still needed for Field Day. After discussion, a motion was duly moved by the Board to buy a set of I.C.E. filters for the club FD. These filters will be for 80, 40, 15, 20 and 10 meters.

NEW BUSINESS

Discussion was had regarding changing the location of the Board meeting. Willie N8WP will research other locations and advise President Ken of his finding later this week. Kristin K6PEQ offered to have a club pot-luck at her house with a date to be determined later.

GOOD OF THE CLUB

Ken W6HHC reported that Bob AF6C is working on 30-meter activities for club members.
Ken also reported that sign-ups for the OC Fair booth are still needed.

Meeting adjourned at 9:02 AM.

Respectfully submitted
Rich Helmick KE6WWK - Secretary

Backpacking and QRPing In the Santa Ana Mtns

by Kenan Reilly – N6CCE

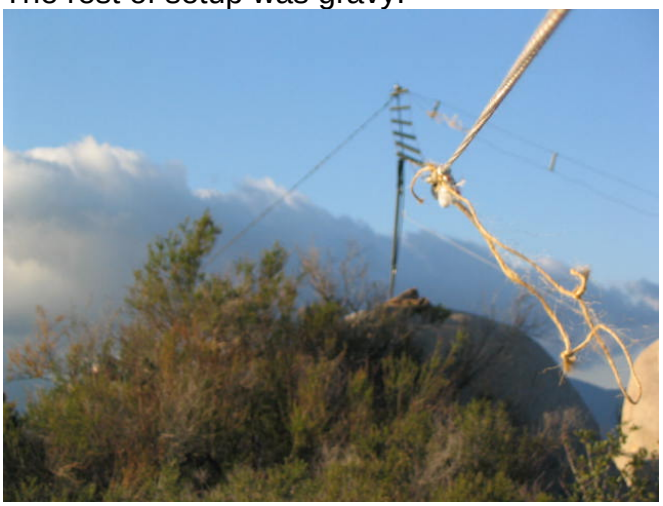
Yep. Mike Gaude - WK6O and I went backpacking in late January up to Sittin Peak in the Santa Ana Mountains - off of Hwy_74 (Ortega Hwy). It was a perfect day for a hike: sunny with just a few clouds to keep the temperature just right.

We got to the trail head, which is located just outside of this mom-and-pop general store called The Candy Store at around 11:00 AM and hiked roughly 6 miles to Sittin Peak which is at an elevation of about 3,500 feet. The hike was easy (about a 3 on a scale of 1 to 5) with clearly marked trails, and of course a good map and compass always helps, hi hi.

Kenan-N6CCE (L) and Mike-WK6O (R)

Mike never believes is packing really light, so he brought along his 20/40 parallel dipole (fed with 450-Ohm ladder line) and an MFJ-949C tuner. The funny part came when we needed to get the dipole in the air. Mike brought along this real long tent pole (the kind that breaks down with a bungee-like cord in the center), and he fastened the center of the dipole to the top of this tent pole using electrical tape (use #957 for electrical tape). We tried our best to keep the whole thing from bending and flexing -- ***which is really what tent poles were designed to do after_all.***

So while I was standing on this big rock, holding the center of the dipole, Mike was running around like a chicken with its head cut off trying his best to secure the two dipole ends and the ladder line, all of which acted like the antenna's guy wires. During all this activity, I spotted Mike's two hiking poles and had a brilliant idea! I took the poles and, removing the pick portion of one of the poles, fastened the two poles together and then extended them both out further until I had a makeshift tower. Using some more electrical tape I secured the hiking poles to the tent pole and it worked like a charm! We now had our dipole antenna in the air. The rest of setup was gravy.



20M/40M antenna with 450Ω Ladder line Feed

So now with the antenna in the air, I set up my Yaesu FT-817 powered with a 4-AmpHr 12-volt, gel cell battery; and the MFJ-949C tuner and we were on the air. Since, we got to the peak at around 2:30PM, we didn't have a whole lot of time to operate. We set up some schedules with friends back in OC on 40M, and Mike managed to work some other stations in the US and in Central America. And then it started getting late.

- See **BackPacking** cont'd on pg 7

30M Club Project/Activity -- cont'd from page 1

not inexpensive ($150 including cabinet), it offers many features found on more expensive radios including a DDS (direct digital synthesis) chip that provides a stable and accurate VFO, 5 watts (adjustable) RF power out, PIC microprocessor control, as well as RIT (receiver incremental tuning), a built-in crystal filter and iambic keyer. The kit already has the small surface-mount components installed. Full details for the kit, including the construction and operating manual is available on the Small Wonder Labs website.

http://www.smallwonderlabs.com/swl_dsw.htm

If you are interested in joining in on this club project adventure, please send me **AF6C@ARRL.net** or our President **W6HHC@W6ZE.org** an e-mail. As soon as there are enough participants, we'll plan for ordering the kits and setting up construction, alignment and testing gatherings. One experienced member will probably build a kit first to have available for others to use as an example. Ken-W6HHC also has ideas from his antenna modeling program for a short (14-ft long) inexpensive 30M dipole that we can homebrew (see page 7)

Note: The kit also comes in versions for 80M, 40M and 20M. Some members have shown a preference for the 20M version; however, our QRP experts state that 20 is a significantly harder band to work QRP.

Join us in a fun project! …de Bob, AF6C

Backpacking/QRPing -- cont'd from page 6

I became worried that we were not going to get out of there before the sun went down.

Sure enough; my fears quickly became realized. The sun was going down, and fast! Mike and I scrambled to dismantle our whole set up and get the heck outta there! To make this long story short, we hurried down the mountain, back on to the trail and practically ran back to the trail head. About halfway down the trail, we found ourselves hiking in the dark, with no lights. Okay, dumb move on my part, but I'll admit that I did not expect the hiking back in the dark, so I didn't think to pack my head lamp. Fortunately, we had a very clear evening, and that, combined with Mike's superhuman ability to see in the dark, helped us get back to the trail head and to the car. Wheeeww!

Kenan-N6CCE in "the Shack"

All in all, we had a lot of fun, and this will be a hike that neither Mike nor I will forget.

A Shortened 30M Dipole – Part 1 of 3

by Ken – W6HHC

The OCARC is trying to increase the membership activity on 30M (see article on page 1). Well, you need a reasonable antenna if you want to work outside of Orange County on 30M. So here is my idea of an easy to make – fits in anyone's back yard – "home brew"antenna for 30M. Part 1 will go over the basic concepts and the design decisions that were made.

The ARRL Antenna Modeling class is just the correct education for this project. The decision to shorten is easy. A normal 30M dipole is almost 45 feet long. I wanted something much smaller…so I set a goal of about 14 ft…literally 3 times shorter in length. **Figure 1** shows the basic results my WinNEC model program calculations.

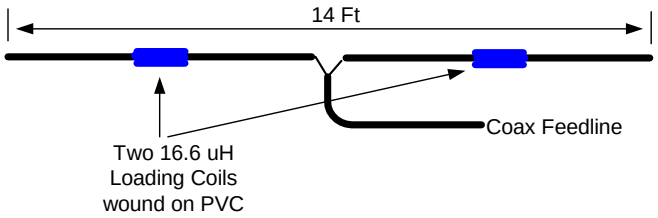


Fig 1 – Concept of 14ft-long Shortened Dipole using Four Pieces of Aluminum Tubing

This concept in **Figure 1** looks pretty simple. But, my first question is really…how well will it work??? I don't want to go to a lot of effort on this project, so I made up my mind that I want to stick this up in the air on a 10 or 12 ft piece of wood (cheap tower). But, I recognized that 12 Ft elevation is not a lot of distance above ground for a 30M antenna. A good rule of thumb for a horizontal 30Meter antenna is ½ wavelength above ground…and my plans are only 12 ft. In **Figure 2** let's look at the angle of attack using a WinNEC elevation output for this 30M horizontal antenna at 12 foot of height.

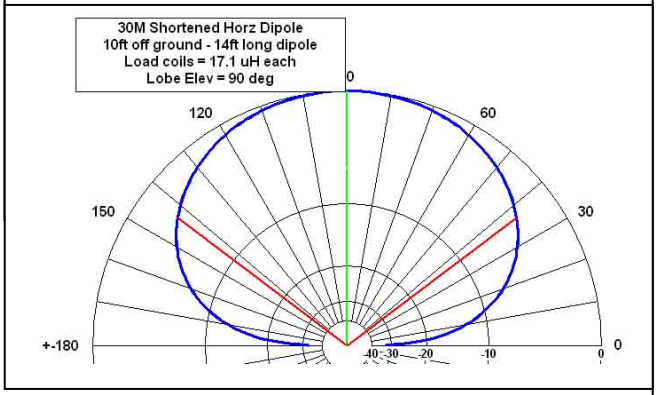


Fig 2 – Elevation Plot of 30M Shortened Horizontal Dipole at 12 Ft off Ground.

Well this elevation radiation plot for the horizontal dipole looks terrible! The antenna is too low to the ground and the result is an angle of the main radiation lobe at 90 degrees. Most of the radiation energy is going straight up!!!

- See **30M Antenna** cont'd on pg 9

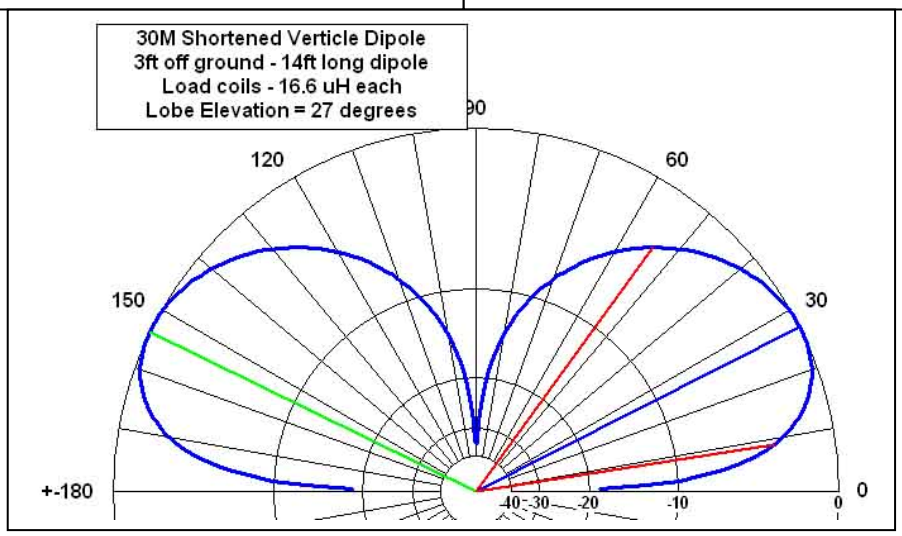


Fig 3 - Elevation Plot of 30M Shortened Vertical Dipole at 3 Ft off Ground.

Answer to February's "A Ham's Puzzle"
Provided by Bob – AF6C

While the most obvious answer to February's puzzle is C, the correct answer is B: If you swap your first choice for the remaining box, your odds of winning the radio are two in three or 0.67%. If you choose to stay with your first choice your odds are just one in three or 0.33%.

This is a version of the Monte Hall Puzzle. When it was originally published in Parade Magazine many people including mathematicians and engineers wrote in claiming that the odds were 50-50 and so it didn't matter. They were wrong!

When you choose one of the three boxes, (one box containing the prize and the others junk) your odds are one in three. These remain the odds that your box contains the prize no matter what happens with the other two boxes. The odds that one of the two remaining boxes contain the prize is two in three. Again this doesn't change when the person conducting the contest removes from play one of the two remaining boxes that he knows is not the prize. The odds that the prize is in the box you originally picked are still one in three and the odds that it is NOT in the box you picked are still two in three! Since there is only one box remaining that you didn't pick, your best chance is to change boxes!

A new Ham's Puzzle:

Three hams were finalists in a contest. The grand prize was a complete ham station including tower, antennas, ICE filters and a Henry 3K amplifier. The two other prizes were only a Henry 3K amplifier, (not a bad prize either!)

To determine the grand prize winner, the contest emcee produced a box and told the finalists that there were five hats in the box; two white hats and three red hats.

The emcee then walked behind the contestants and placed a hat on each head in such a manner that none saw the color of the hat on their own head, but could see the other hats.

The emcee announced, "I will ask you each in turn If you know the color of the hat on your head. If you answer correctly you will win the grand prize. However, if you are wrong, you will not only loose the grand prize, you will not win the amplifier either, and will leave the contest empty-handed; so don't guess."

The first ham thought for a longtime and them said; "There is no way I can know the color of my hat."

After thinking a little longer the second ham also said; "There is no way I can know the color of my hat, either."

The third ham, who was **blind**, then said; "If my fellow hams are telling the truth then I am wearing a red hat."

He was given the grand prize!
How did the third ham know the color of his hat? (see April RF)

30M Antenna -- cont'd from page 8

Not too much DX is straight up in the air**!!!** Even for local stations, very little radiation from **Figure 2** is pointed near the horizon.

Well, let's look at using a shortened vertical antenna instead. The solution for a better antenna could be rotating the dipole into a vertical orientation because vertical antennas do not have the same "above ground" radiation patterns as horizontal antennas. Now a classic 1/4 – wave vertical requires "messy/awkward" radials. But, if I rotate the dipole to become vertical, the lower half of the dipole works exactly like a well laid out set of radials. So, no "messy" radials to worry about.

Figure 3 (on Page 8) shows what the radiation elevation plot looks like for the 30M dipole that has been turned vertical. This is a much better radiation pattern than shown in **Figure 2**!!! The main radiation lobe is 27 degrees above the horizon. There is no radiation going "straight up" at 90 degrees.

So the lesson learned is at small heights (measured in wave lengths) above the ground, a vertical antenna is much better than a horizontal antenna. Sure, I can obtain an equally shaped radiation pattern for horiz dipole, but I would have to mount it on a tower at least 40 feet high.

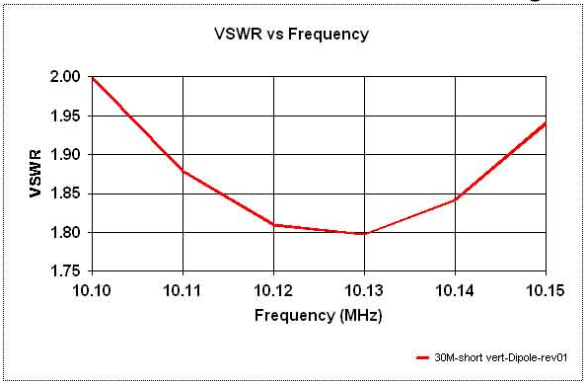


Fig 4 – SWR for 30M Shortened Vert Dipole

- See **30M Antenna** cont'd on pg 11 –

"Hams are family, here and everywhere"

Inland Empire Council of Amateur Radio Organizations
Proudly Presents the

2005
ARRL SOUTHWESTERN DIVISION CONVENTION

RIVERSIDE CONVENTION CENTER
RIVERSIDE, CALIFORNIA

September 9-11, 2005

ARRL Forums
Antenna and Propagation Forums
Contesting / DX Forums
Sunday T-Hunt
Wouff Hong
W1AW/6 Special Event Stations

Saturday Luncheon
Sunday Breakfasts (DX & VHF/UHF)
Grand Banquet guest speaker:
H. Ward Silver, N0AX
Author of
"Ham Radio for Dummies"

Convention Highlights Include:

Low Power (QRP)
Public Safety Demonstrations
Prize Drawings in every program
Thousands of dollars in prizes
(see our web site for a list of prizes & raffle info)
VE Testing
Non Ham Forums

For hotel and updated information see our web site at: *http://arrlswdconv.org*

Mail–In Registration Form

11-12(WS)

ITEM	*QUANTITY*		*COST*	*AMOUNT*
Early Bird Registration (before April 30, 2005)	_____	@	**$10.00**	$ _____
Pre-Registration (May, 1 to Aug 21, 2005)	_____	@	**$12.50**	$ _____
Late or On Site Registration (after Aug 21, 2005)	_____	@	**$15.00**	$ _____
Kids Registration (16 & under with paid adult)	_____	@	**FREE**	
Saturday Luncheon (before Aug 21, 2005 ONLY)	_____	@	**$20.00**	$ _____
Saturday Grand Banquet (before Aug 21, 2005 ONLY)	_____	@	**$35.00**	$ _____
Sunday DX Breakfast (before Aug 21,2005 ONLY)	_____	@	**$17.00**	$ _____
Sunday VHF/UHF Breakfast (before Aug 21,2005 ONLY)	_____	@	**$17.00**	$ _____
(ALL registrations must be paid for or postmarked by dates shown above)			**TOTAL**	$ _____

Please makes checks payable to: IECARO and send to: 2005 ARRL Convention P.O. 6532 Norco, CA 92860-8051
Below information will be shown on registration badge, so please print legibly

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NAME: _____ CALL: _____

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STAFF USE ONLY: Date:_____ Amount:_____ Check #: _____ Pins: _____ Processed By:

The Baker-to-Vegas Race

April 23 – 24

Communications Support Needed

Every year, over 170 different law-enforcement teams compete in a 120-mile-long running relay race. B2V contains a total of 20 individual relay legs and starts outside of Baker, goes through the cities of Shoshone (Calif) and Pahrump (NV), goes over the mountain at Mountain Springs and ends in Las Vegas

COAR (City of Orange Amateur Radio), Cypress RACES, and Garden Grove RACES are combining forces to jointly provide radio support for their respective running teams at this years Baker to Vegas Challenge Cup run. The run starts Saturday April 23 and ends Sunday April 24. You are invited to join the communications effort. We need HAMS to operate throughout the course and even if you can only give us a short part of your day, we welcome you. For more info, contact Rich Helmick KE6WWK (714) 343-4522 **R2535@sbcglobal.net** or Debbie Klein at the Orange PD (714) 744-7328 **volunteers@OrangePD.org** .

Update on BPL Happenings

By Ken W6HHC

Over the past 2 months - three significant events have happened in the world of BPL, Broadband-over-Power-Lines. As you probably know, there is a grave concern that BPL could become the source of S9+ interference in the Short Wave bands (2-to-80 MHz) where ever it is installed.

The three significant BPL events are:

- San Diego Gas & Elec has announced that they are going to start a pilot project soon in the San Diego County.
- The California PUC has drafted a report to include BPL technology.
- The ARRL has submitted a new formal petition requesting the FCC to "Reconsider, Rescind and Restudy" the existing BPL Order.

30M Antenna -- cont'd from page 9

Figure 4 (on Page 9) shows a very reasonable SWR plot for the 30M Vertical Dipole over the band of less than 2.0:1. The reason that the SWR is not 1:1 is that the impedance of the vertical is about 28 ohms, and this creates a little mismatch with 50 ohm feed lines. But, certainly this small mismatch could be optimized with just about any antenna tuner, if needed. So…the question now is "will the built shortened antenna really work as well as the antenna modeling software predicts"???

Next month, in Part 2 of the 30M Antenna project, I will provide some construction details for home brewing this antenna, including materials, number of turns for the windings, and mounting suggestions to erect the vertical using a piece of 2x4 lumber. If time permits, I will give some measurements made with the actual antenna…and compare to the model.

TechTalk - Grounding -- cont'd from page 4

are not as simple. Some high rise buildings have a fire riser with a straight run to the basement where a super charger pump is usually connected. The riser may be used as a ground path if the pump's power is protected and a strap jumper installed to take the strike energy past the pump's gasket on both its input and output ports. If the riser is over 50 feet away, it may not be the best ground path to use. Check for other paths such as existing building lightning rods with down conductors or large electrical conduits. Do not use drain pipes or vent stacks. If none are available, regardless of the path distance, and it is impossible to run a strap down the side of the building, then the antenna just can't be grounded! When an ungrounded antenna is hit by lightning, the energy will traverse the coax line to your single point equipment ground location. This may be many meters from earth and the inductance/ resistance voltage drop will be very large (hundreds of thousands of volts).

The ideal plan is a single point ground with no sneak paths. Sneak paths are loops that allow lightning current to flow into the equipment room. The easiest sneak paths to miss are the safety ground and the concrete floor (discussed above). The safety ground can be fixed by adding a distribution panel and protector at the single point ground location or, for small sites, a plug-in protector grounded on the single point ground panel. All l/O's (input/output) must be protected at this single point. The next thing to measure is distance. During a strike, distance equates to voltage drop to earth, the entire room of equipment will be elevated. The sharp corners of equipment cabinets can breakdown the air, causing current to flow. This will be a very low current unless another path is found by these streamers. Heater vents and electrical conduits that are not grounded to the single point can become such paths. It is a good idea to bond (ground) all conductive objects within 1 meter of any single point earthed equipment in the room.

Tower mounted equipment is similar to the above high rise situation. The l/O's must be protected and the protectors must be located and bonded together. Single point grounding should be easy to do if the equipment is mounted inside a metal enclosure.

Next month…

Part 4 of this Tech Talk series on grounding will shatter the myth that you should simply unplug your coax and lay it on the floor thinking that this is adequate lightning protection.

Notes and pictures added by Kenan-N6CCE

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