



# YAVAPAI SIGNAL



The Yavapai Amateur Radio Club • Prescott, Arizona • DM-34 • Volume 22 – No.7 • July 2007

## YARC/ VVARA Amateur Radio Hamfest

By Patti Halgunseth, KD7VBG



On June 2<sup>nd</sup>, 2007 the Yavapai Amateur Radio Club and the Verde Valley Amateur Radio Association hosted the First Annual Prescott Hamfest. The event was held at the Granite Mountain Middle School in Prescott, AZ and the weather for the day was close to perfect. We started setup at 6 am and there were vendors arriving at that time all the way until 8 am when the event opened for buyers. There were quite a few vendors and people were buying. I was in the parking lot with Ken, WA6AQK, and we noticed that about 90% of people leaving had something in their hand. We had the vendors from Congress (North Ranch) and they said they had a good day. "RF Stuff," as I believe they are called, were pleased as they wanted to come and support the local clubs and attend our event.

We also held VE testing and that was a success with about 18-20 people testing. Standing in the parking lot, people were coming for testing and then they went shopping afterwards. Holding testing on the day of a Hamfest, in my

opinion, brings in a lot of people. I myself took my first test at a Hamfest and I did go shopping afterwards.

I believe we had around a 100 or so people in attendance. At one point the parking lot was full and we were making additional spaces so people did not have to walk so far -- it worked out very nicely. As the event grows, we will utilize the other parking lot, but it worked for this event not to have to do that.

In my attendance of Hamfests in Arizona, this was a very good show for the first one. We now know areas to work on and I am sure it will grow from here.

I wish to thank all those who helped put on a great event, and will hope to see everyone and more for next year's bigger and better event.

Patti Halgunseth  
KD7VBG

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### Welcome to the Yavapai Amateur Radio Club

The Yavapai Amateur Radio Club (YARC) is an ARRL affiliated Special Service Club. The club participates in many activities in the tri-city area by providing communications for local events, emergency communications, and promotion of the hobby throughout the community.

Membership in the YARC is open to any interested amateur or non-amateur alike. Dues are \$20.00/year (Full-time students \$15). The YARC meets at 7:00 p.m. local time on the first Thursday of every month in the Technology Room 404, at the Granite Mountain Middle School, 1800 Williamson Valley Road in Prescott. It is about ½ mile north of Iron Springs road, and all amateurs and non-amateurs as well are invited. Programs of interest are included as part of the meeting.

The weekly Net is held every Wednesday at 7:00 p.m. local time on 146.880- repeater. All amateurs are invited to participate, and visitors are always welcome.

The Yavapai County ARES/RACES Net is held on Monday nights approximately at 7:00 p.m. local time on the 145.290- repeater on Mingus Mountain. A PL of 127.3 is required.

### Club Repeater

The YARC 146.880- repeater is located on the hill above Willow Creek road and requires a PL of 100.0 Hz. If you hear a 1400 Hz pulsing tone, the repeater is on backup battery power and usage should be limited to necessary communications. Our deepest gratitude to Bill Kafka, W2YAV for allowing us to acquire this repeater. ■

## YARC Officers for 2007

### President

Terry Pemberton, KB7TRE  
kb7tre@cableone.net

### Vice President

Dick Hughes, W6CCD  
w6ccd@arrl.net

### Secretary

Pat Oliver, K7DUC  
joliver@commspeed.net

### Treasurer

Patti Halgunseth, KD7VBG  
kd7vbg@cableone.net

### YARC Board of Directors (includes Club Officers)

John Broughton, WB9VGJ  
Ken Severance, WA6AQK  
Richard Bozeat, KE7DTR  
Walter Schumann, KF6SPS

### Newsletter Editor

Joe Oliver, AC6AA  
joliver@commspeed.net

## Minutes of June 7, 2007 Board Meeting



KF6SPS; Ken, WA6AQK., and Richard, KE7DTR.

### • Hamfest

The recent hamfest was discussed in detail. It was deemed to be very successful for a first hamfest. Suggestions were presented for the next one. We would start planning and coordinating earlier with other groups.

There was a VE Testing session, and new technicians that had taken a club - sponsored course, will be offered a free one year membership in the club.

### • Other Agenda Items:

- Joint Field Day with VVARA: Bob, KC8BOB will report on this at the General Meeting.

-Club Family Cookout: will be reported on at the General Meeting.

- The Program tonight will be given by Dick, W6CCD, and will be "Navajo move into the electronic age". We have 3 months to solidify the speakers for the rest of the year.

The meeting was adjourned at 1855 MST.

Respectfully submitted,  
Pat, K7DUC  
Secretary

## Minutes of June 7, 2007 General Meeting

Dick, W6CCD called the meeting to order at 1900 MST. The Pledge of Allegiance was recited and visitors introduced themselves.

**Visitors:** Vi Hughes; Alan Elliott, KD7OEF; Jon Nelson; Jack Nelson; Jerry Brandt, KB7YVX; Diane Dutkevich; Lois Diddams; Mary Broughton; Irene Ragen; Terry Ford, W6KRN and Bob Erdmann, K7TQJ.

**Meeting Minutes:** A motion to approve the General Meeting minutes of April 5, 2007 was made by Doug, KV8TD and seconded by Jack, W3IVQ. The General Meeting minutes were approved.

**Treasurer's Report:** Patti, KD7VBG gave the Treasurer's Report. The previous balance was \$1732.92 and the ending balance was \$1923.94. The Repeater fund has \$1097.94.

A motion to approve the report was made by Lloyd, WA6ZZJ and seconded by Bob, KC8BOB. The Treasurer's Report was approved.

### Committee Reports:

• **ARES/RACES/Public Service:** Lloyd, WA6ZZJ reported that we had received a plaque from the YMCA for the Marathon. The next event is the Prescott Cycling Club Loop Challenge on Sept. 16th.

The equipment is coming along in the new vehicle.

• **Patches/Shirts/Badges:** Patti, KD7VBG has club patches for \$3.00; Dick, W6CCD has club shirts for \$19 for all sizes, except for XXL which are \$21. Name and call sign add \$2 to each, and Bob, WB6ODR has badges for \$5.75.

• **Club Repeater:** Bob, WB6ODR was unable to attend, but sent a



## Plan to Join the ARRL or Renew Membership ?

Ask our Treasurer for a special ARRL Club Membership Application or download the Application from the YARC Website. Complete the Application and return it to the Treasurer with the application fee.

There is no extra cost to you, and our club gets to retain a portion of the dues.

## Membership Count:



1st Thurs. in May....**105**

Gain/Loss.....-2

1st Thurs. in June....**103**

report indicating that he had read several good reports on the Kenwood TKR-750 and TKR-850. Bob has not hooked up with a dealer yet.

- **VE Testing:** Mary, AB7NK stated that the last test conducted on Saturday, June 1, was quite productive. The next testing will be held on Saturday, June 30, 2007 at 9:00 A.M. at Orchard Ranch Activity Room, 11250 East Highway 69, Dewey, AZ 86327.
- **Elmer/Technical Specialist:** Neil, KA7JAS indicated that all was going well and he was working on some jobs.

### Old Business:

- **Hamfest with VVARA:** The June 2 Hamfest was quite successful. Vendors and buyers were quite satisfied. Planning for our next one will be started next year, with some modifications to make it even better.
- **Club Family Cookout:** - John, W5VJH and the committee are working on the Cookout. July 14th will be the date and we should be starting about 11A.M. The club had decided to provide hamburgers and hot dogs and it will be potluck. We will bring our own drinks.
- **Club Repeater:** Doug, KB6TWC indicated that Shorty, K6JSI has a proposal for the club which will be further discussed and considered.
- **Joint Field Day:** Bob, KC8BOB reported on the joint Field Day on Mingus Mountain. A barbeque will be held and one can also operate on several of the transceivers that will be available.

The Program for this evening will be given by Dick Hughes, W6CCD on his years at the Navajo reservation.

A motion to adjourn the business meeting was made by John, WB9VGJ and seconded by David, K6UWV. The meeting was adjourned.

Patti, KD7VBG won the 50/50 drawing for \$19.50.



Respectfully Submitted,

Pat, K7DUC  
Secretary

## From the Editor



In July 2005 I assumed the responsibility of Editor and Publisher of the Yavapai Signal. There was a concern that not enough material would be available to fill each issue. With the cooperation, suggestions, and input from many members, this turned out not to be the case. A few members have faithfully submitted articles each month and other members have continually submitted articles and pictures of club and other ham-related activities. To accommodate additional material, we increased the number of pages of the Yavapai Signal from 8 to 12 -- the maximum number allowed for mailing copies with a 41 cent stamp.

We have always tried to include some type of technical article in each issue, such as a construction project, computer tips, theory of operation of an electrical device, explanation of radio-related device, etc. On the other hand, we never have intended to duplicate a lot of the Ham news readily available from other sources, such as ARRL bulletins, magazines, and popular Internet websites. Since everyone enjoys a bit of humor, a cartoon or joke often is included, but ham radio related items always take precedence.

I would like to thank all of you who have so generously contributed to the newsletter for the past two years and urge you to continue doing so.

Our members live full and interesting lives. We know you have stories to tell and we would like to hear about them. We strive to make the Yavapai Signal an outstanding newsletter, and with your help we can continue to make it better. ■

Joe, AC6AA

### Upcoming Events of Interest



**June 30, 2007 -**

**VE Testing at 9:00 a.m. in Orchard Ranch Activity Room, 11250 E. Hwy 69, Dewey, AZ**



**July 6/7, 2007 -**

**Williams Hamfest/AZ State Convention, Williams, AZ**



**July 14, 2007 -**

**Club Family Cookout at Watson Lake Ramada.**



**July 24, 2007**

**Weather Spotter Training - 6:00 - 8:00 p.m. in Yavapai County Public Works Ready Room at 1100 Commerce Drive in Prescott.**

# Treasurer's Financial Reporting Sheet



Club / Group Name: YARC  
Reporting Date: June 2007

By Patti Halgunseth, KD7VBG  
Treasurer

Members Name	Dues Paid	Repeater Fund	Donations	Prize Money Paid Out	Net Cash In per Member
Hans Pieper/R-KB6AH	\$18.00	\$2.00			\$20.00
Robert Tilman/R-K7CJW	\$18.00	\$2.00			\$20.00
T-Shirt - Ellis-KE7NAP			\$19.00		\$19.00
50/50			\$39.00		\$39.00
Patti Halgunseth-KD7VBG				\$19.50	(\$19.50)
2 Patches			\$6.00		\$6.00
					\$0.00
<b>Total:</b>	<b>\$36.00</b>	<b>\$4.00</b>	<b>\$64.00</b>	<b>\$19.50</b>	<b>\$84.50</b>

Miscellaneous Club Expenses	Cash Out	Check Number	Club Funds Summary	Totals
David Passell/Refreshmenst	\$33.71	944		
Joe Oliver/Stamps	\$41.00	945	Starting Balance	\$1,923.94
City of Prescott/Rental 7/14	\$187.50	946	Net Expenses	\$393.59
City of Prescott/Clean 7/14	\$100.00	947	Net Income	\$84.50
Insty Print/Newsletter	\$27.38	948		\$1,614.85
Repeater Fund	\$4.00	Cash	Repeater Fund:	\$1,101.00
<b>Total:</b>	<b>\$393.59</b>		Cash Flow:	-309.09

## **2007 ARCA/Williams Hamfest & ARRL Arizona State Convention** **July 6, 7, & 8, 2007**

WILLIAMS RODEO GROUNDS, 800 RODEO ROAD, WILLIAMS, ARIZONA

GATES OPEN AT 5 P.M. THURSDAY, JULY 5 FOR SET-UP

HAMFEST OPENS AT DAWN FRIDAY, JULY 6

HALL OPENS AT NOON FRIDAY, JULY 6.

**FREE ADMISSION!**

Talk-In Frequency: 146.78 (91.5 PI)

See ARCA website for additional information:

<http://www.arca-az.org/arca/main/convention.asp>

## This Month's Featured Ham

By Pat Oliver, K7DUC



**Bob Tilman, K7CJW**

Bob earned his first license in 1956 with an Air Force buddy, while stationed in Bermuda. In 1957, when back in the United States, he earned his first U.S. license -- a General. He now holds an Advanced ticket.

He operates mostly on 2 meters and sometimes on 70 cm. When his son lived in Mexico, Bob talked to him regularly on 40 meters.

Bob has not entered any contests for a long time. Some of his most memorable contacts were Cubans, prior to Castro.

He has built several radios, several Heathkits, both transmitters, receivers, and hand held transceivers.

Bob has received radio related mail from Northern Europe, mainly from Yugoslavia and Norway, as a result of CW contacts.

He presently operates on a Kenwood TS-707 Dual Bander and a Heathkit SB-104.

Bob worked for the FAA for the whole of his professional life -- 28 years in air traffic control, after his military service. Needless to say, he really enjoyed his job and did not consider it stressful at all.

This very calm, relaxed man was born in Oklahoma, but eventually migrated toward Arizona and lived in Tucson and Phoenix, prior to moving to Prescott around 35 years ago.

Bob has been Secretary of YARC some years back and was the President of a club preceding YARC. At present, Bob is a member of ARES/RACES and enjoys the SKY-WARN program.

He feels that the club is doing well and would very much like to see Hamfests every year.

Bob has been a long time member of our club and his faithful attendance has contributed to the success of the Yavapai Amateur Radio Club. ■

### *Weather Spotter Training...*

For those interested in being a weather spotter for the National Weather Service and for those involved in Skywarn there will be a weather spotter training session on Tuesday, July 24, 2007 in the Yavapai County Public Works Ready Room located at 1100 Commerce Drive in Prescott. The meeting will be from 6:00 until 8:00 p.m. George Howard from the National Weather Service in Belmont will be here to present the training and also talk about lightning.

Please call Lloyd Halgunseth at 717-2706 or Lee Cunningham at 771-2055 to get your name on the list. You can also email either contact if you desire. The session will be limited to 20 persons.

Lee Cunningham-KC7CBK

kc7cbk@arrl.net



## Program Speakers

**July** - Lee, KC7CBK --- "Grounding"

**August** - Bud, N7CW -- "WINLINK 2000"

**September** - Bob, WA7YUL -- "Vibroplex Collection".



**By Lloyd, WA6ZZJ**

## **ARES/RACES...**

In emergency communications we must remember that the number one objective is to forward the message(s) to its final destination. Remember the mantra: "Move the message forward". Our mission is to use any available communication technique to forward the message to its final destination. Whether it's via amateur radio, landline telephone, satellite phone, Marine VHF, GMRS, FRS and yes, even CB if it is the only alternative.

This month we will look at some of the alternate radio resources that could be used in a communications emergency.

### General Mobil Radio Service (GMRS).....

GMRS (formerly known as the Class A of the Citizens Radio Service). This is a personal radio service available for the conduct of an individual's personal and family communications. It is regulated by Subpart A of part 95 of the FCC Rules and Regulations.

GMRS uses commercial grade UHF-FM radios with an output power of up to 50 watts. Repeater stations are allowed for use in GMRS. There are no antenna height limits except as required by the FAA and Environmental Impact.

FCC Rules prohibit auto patch operation or connection to a public switched telephone network.

A FCC license is required to operate in the GMRS. Only individuals 18 years or older are eligible to obtain a new GMRS license. The fee is \$80.00 for a five year license and the license covers the licensee and his/her immediate family.

### Multi-Use Radio Service (MURS).....

MURS is a private, two way, short distance voice or data communications service for personal or business activities of the general public. It is not available for the transmission of images.

MURS is the new Citizens Band Radio Service which was created in late 2000 by the FCC. They reassigned 5 low power VHF channels from the Private Land Mobil Radio (PLMR) Services to the part 95 Citizens Band Radio Service and eliminated licensing requirements for these frequencies.

The five frequencies set aside for the MURS are 151.820, 151.880, 151.940, 154.570 and 154.600 MHZ. Maximum Transmitter Power Output (TPO) allowed is 2 Watts. No devices which amplify power output are allowed. There is no limit on antenna gain. Antenna height is limited to 20 feet above structure or 60 feet above ground, whichever is greater (These are the same limits that apply to the original Citizens Band Radio Service at 27 MHZ).

MURS Rules prohibit any kind of repeater device, conventional or 'store and forward' systems. Data transmissions as allowed in Part 95.633 of the FCC Rules are allowed. MURS Rules prohibit auto patch operation or connection to the public switched telephone network.

MURS radios may be operated anywhere the FCC Rules permit CB operation. [95.1303] Only radios that are FCC certified to operate in the MURS may be used with the exception of radios manufactured for use under the Business Radio Service prior to the implementation MURS rules.

### Family Radio Service (FRS).....

FRS is a private, unlicensed, two-way, very short-distance communications service for facilitating family and group activities [95.401(b)]. FRS is the first and only 'UHF CB' in the United States.

FRS is allowed 14 channels in the 462 through 467 MHZ frequency range. FRS Rules do not specifically bar repeaters, but the FCC has not authorized any repeater equipment for use in FRS. Transmit power is limited to .5 Watts. External antennas are not allowed. An FRS antenna must be an 'integral part of the transmitter' and have no gain as compared to a half wave dipole.

Only FM voice communications are allowed in FRS and connection to the public switched telephone network is prohibited. FRS radios may only transmit tones to make contact or continue voice communications with a particular FRS unit. FRS radios may be operated in the United States and certain locations specified by the FCC [95.192].

***See ARES/RACES, Page 7***

# The (Original) Invisible Antenna

California Dreamin' Pays Off

By Rod Newkirk, VA3ZBB/W9BRD

Amateur radio's enthusiastic comeback after World War II was nearly aborted by the onset of television. Early TV reception was so vulnerable to the slightest interference that Hams were shutting down in droves. At fault or not, we must all live with our neighbors.

The most aggravating aspect of this widespread TVI was that your station, if known to exist, would likely be blamed for any and all reception problems in the area. Being out of town or at the office, nowhere near your equipment, was unacceptable denial. No wonder the hobby was literally being driven underground.

Anything on your premises that could be construed as an RF radiator was evidence of doubtless culpability. Lynching might well be too good for you. So, Rule No. 1 was to let no one know you were a wireless hobbyist. Not a pleasant situation after working hard to become a proud FCC licensee.

Then ARRL's February 1949 *QST* came out with a welcome suggested means of counterattack, a rollicking article by Arthur Scotten, W6ZMZ, titled, "The Invisible Antenna." Its subtitle, "Getting on the Air Unobtrusively" summed up the solution nicely. OM Scotten's radical departure in antenna design and construction was delightfully embellished with cartoons by the immortal, W1CJD. Spectacular.

Over the years our handbooks and periodicals had been describing skyhooks made of substantial No. 12-, 14- or 16-gauge copper conductor. It was generally reasoned that extremely skinny wire could hardly be expected to radiate properly. W6ZMZ challenged that assumption and hung up an 80-meter dipole of No. 40 enameled. If you've ever seen No. 40 wire, even close up, you have darned good eyesight. With 20 watts he received signal reports identical to those observed on a No. 16 comparison dipole.

Equally fascinating, W6ZMZ found that his draped hair-wire was rugged enough to remain aloft indefinitely. Wind stress was negligible, birds magically avoided it, and there is no icing weather in southern California. Readers rushed to affirm his findings, causing local runs on the purchase of miniscule magnet wire. W9BRD, operating portable in Con-

necticut, joined the fun with a No. 32 horizontal about fifteen feet high in downtown Hartford. A few watts through a random-wire tuner on 40-meters quickly captured ZS2MI on rare Marion Island.

Initially raising such a radiator can be an adventure in itself. Tiny slivers of twinlead insulation go well as insulators at the hot far end. Do avoid kinking. Installation is not as delicate as one might expect. Suspended flat-tops can stretch several percent without breaking.

We're talking extreme stealth here. The job must be done surreptitiously and quickly. Best to prepare some kind of explanation if, during the project, a friend or neighbor should happen along to find you waving your arms at nothing in mid-air. How about having your family out practicing diversionary Tai Chi?

Anyway, in a few years TV stations were emitting more respectable signals, TV sets improved, and Hams were building cleaner transmitters. The TVI panic gradually subsided. This strange interlude in our hobby's history left behind an interesting question. How microscopically thin can an antenna be while still serving as a practical radiator? Perhaps someone out there in the *K9YA Telegraph's* expert scientific readership can provide an analytic answer. ■

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## • ARES/RACES (Continued from Page 6)

### PUBLIC SERVICE COMMUNICATIONS...

At this writing, it looks like the next public service communications event will be the "Prescott Cycling Club Loop Challenge" to be held on Sunday, September 16, 2007.

The Prescott Road Rally will be coming up on October 5 and 6, 2007. More information as the date gets closer.

The Prescott Diabetes Walk and Fun Run will be held on Saturday, October 20, 2007. ■

# ELECTRICAL TAPE TIPS

Reprinted with permission from George Dowell, KØFF

**D**id you ever notice that electrical tape, like a hammer, comes with no instructions? Perhaps the makers figure that everyone automatically knows all the "tricks of the trade". Read on, you may pick up a new wrinkle.

Vinyl electrical tape has been around since 1945, but for a long time after it was introduced, black cotton friction tape was still used for most applications, partly because of the cost difference, partly because of tradition. I remember tearing long strips of half-inch friction tape into quarter-inch wide strips as a cost savings. A unique feature of the adhesive on the friction tape is that it gives off an eerie blue light when the tape is peeled from the roll. It is bright enough to be easily seen in a darkened room. Aside from that trivial fact today's friction tape is used for special applications only as a topcoat for delicate rubber tape as used on high voltage cable splices. Modern materials are superior in every respect. The first vinyl tape I ever saw on the job was gray in color, not black; I suppose it was a telephone company spec.

**Today I recommend using only Scotch 33+ tape for all ham radio uses, except as noted at the end,** as it has predictable characteristics and is good for every indoor/outdoor application. The temperature range is zero F to 220 F.

Make sure to get the type with the + sign, as there is also a plain type 33.

3M also makes product called Temflex, but again type 33+ is suitable for every application, especially outdoors.

When taping over coax connectors, or coax splice kits, it is helpful to first wrap the connector with a self-amalgamating Silicone Tape product. The 3M version is Type 70, and Radio Shack also sells it in small rolls under the part number 64-2336.

This is NOT the same product as the coax-seal, or Radio Shack #278-1645 "sealant for RF connectors". I do not care for that sticky material, dum-dum, or any other putty type material that is hard to remove later. The silicone-tape peels off cleanly and easily, so easily in fact that it needs to be covered with a topcoat of Type 33+ to protect it. This two layer approach, when applied as explained below will give a waterproof seal that is weather resistant, and stays flexible for years, but can easily be removed if changes need to be done to the system.

Any time you wrap tape on a threaded component; make sure you **wrap it in the direction that tends to tighten the screw threads**, not the other way. That means if you are taping a splice, for example two PL-259's screwed into a double barrel female (PL-258/83-1J) you must tape each connector from the cable end to the barrel center.

**Always run the tape "uphill"** that is from the smaller diameter to the larger diameter.

Start at the smallest end, make several tight turns of one-quarter lap for a good seal, then run the tape in one-half laps to the center, with moderate stretch so the diameter of the 33+ is reduced to about five-eighths of its original width. On the last few turns reduce the stretch tension until it is zero at the last turn, to prevent flagging. Use a scissors to cut the tape end square, as a knife or ripping will add stretch to the last lap and cause it to come loose. Repeat the same strategy from the other side, and meet in the center (if it is a splice kit), overlap the left hand side tape with the right hand side tape. If the connection is to be removed at a relatively short timeframe, fold the last lap so it does not stick. If the tape job is permanent, simply lay the last lap down flush. Now for the best-kept secret, spray the entire assembly with clear coat enamel or other dielectric spray. I use **Krylon Crystal Clear**. The over-spray absolutely seals the joint and keeps the ends flat.

## Non-electrical uses for electrical tape:

For taping cables to tower legs and other such jobs, consider using the Temflex or straight Type 33 as they both are less expensive and have a slightly higher breaking strength. The superior conformal qualities of the 33+ are not needed in these applications.

One of the most common non electrical uses of vinyl tape is to secure rolls of wire, bundles of tubing, cables to rungs, and many other odd jobs that use the material for other than its weatherproof or electrical qualities. To tie up a roll of cable, the cheapest grade of black vinyl tape is adequate, except that it leaves a gooey mess behind when removed. The secret here is to make the first full two turns with the sticky side OUT. Then simply twist the tape around on itself and continue making a few more turns with the sticky side IN. This same trick can be used with cellophane tape to secure hardware store bundles of conduit, pipe etc, so that it removes cleanly. Wish I had a nickel for every minute wasted trying to get that sticky mess off copper water pipe before soldering!

*See Electrical Tape, Page 9*

• **Electrical Tape** (Continued from Page 8 )

Another slick idea Scotch came up with is the color-coded vinyl tape. I've tried many schemes over the years of using red, blue, green white and other color tapes to identify certain cables, for example coax cables in a bundle run up the tower. After toughly confusing myself, I decided to simply use the white tape, and mark the ID on it with a Sharpie permanent marker. Foolproof, and lasts for years.

A final note, the better tapes like 33+ have a shelf life rating of 5 years, but still be careful of "surplus finds", as the age and storage conditions are unsure. Best to buy fresh tape from a known, trusted source.

Go to the 3M web site for more information on Scotch Electrical Tapes: <http://tinycl.com/mccx> ■

George Dowell

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Comments, criticism and questions will be appreciated and may be directed to the author by email to:

[GEOelectronics@netscape.com](mailto:GEOelectronics@netscape.com)



**Did You Know?.**

Only two people signed the Declaration of Independence on July 4th, John Hancock and Charles Thomson. Most of the rest signed on August 2, but the last signature wasn't added until 5 years later.

# VE Tidbits



By Mary Vince – AB7NK

June 2, 2007 VE testing at the Hamfest at Granite Mtn Middle School was more than we ever expected. Notification was received via email from 8 applicants, another 5 via lurking & 7 came out of woodwork!!! (aka walk-ins)

A big thanks to Terry, KB7TRE, for the use of his classroom. At one time we had every chair filled & needed to wait for a few people to finish testing before seating others.

20 applicants showed up - taking 27 elements. Final results were: 7 new Technicians, 6 upgraded to General & 3 upgraded to Extra. Congratulations to everyone!

We did have 1 young man come in to take the technicians exam, passed 35/35 and we talked him into taking the general, again he passed 34/35 so we talked him into trying the extra. He wasn't quite so successful with that but plans on returning.

A special thanks to all the VE's who helped out - K6VVR, N6MY, W6CCD, AB7NK, WB6ODR, KB6AH, W7HAM, KC8BOB & WB9VGJ Think of it as \* I \* saved you from spending \$\$\$ at the hamfest on items you really didn't need.

Pete, K6VVR, presented me with the largest oatmeal raisin cookie I've ever seen. It was absolutely delicious, only I'm not so sure I care to have another, anytime soon. ■

## Next Test Session

- Saturday, June 30, 2007 9:00 A.M.
- Orchard Ranch Activity Room
- 11250 E. State Route 69, Dewey

If you plan on taking the exam on the 30th or have any questions - please e-mail [ab7nk@arrl.net](mailto:ab7nk@arrl.net) so we know how many VE's to have on hand.

Remember -- anyone taking a YARC sponsored class and PASSES their exam, will be given a year's free membership in the Yavapai Amateur Radio Club.

73, Mary, AB7NK

## CQ DX de YARC – JULY 2007

By Dick Diddams, W7QHE



During the first part of July, three or four Swedish amateur radio operators will activate **Märket** (Market Reef as it is called in English).

**Märket** is a small skerry<sup>1</sup> in the Baltic Sea between Sweden and Finland (in the area of the autonomous Åland Islands), that since the Treaty of Fredrikshamn (Hamina) defines the border between Sweden and Finland. The westernmost land point of Finland is on Märket.



The 6 nautical mile (11 km) wide *Understen–Märket Passage* links the Bothnian Sea to the Baltic proper.

The area of the skerry, which measures roughly 350 m (1150 ft) long by 150 m (490 ft) wide, is said to be 3 hectares (30,000 m<sup>2</sup> or 32,000 sq ft) which is argued to make it the smallest "sea island" shared by two countries.

The smallest island shared by two countries, by comparison, is not the unnamed western islet in Boundary Lake, between Manitoba, Canada, and North Dakota, United States, as many sources on the Internet suggests.

This island measures a mere 150×60 m (490×190 ft), about 9000 square meters or 2.2 acres. However, in the lakes between Norway and Sweden, for example Lake Stora Le, there are several very small islands which are divided between Sweden and Norway. The smallest one is the middle island in Södra Boksjön, it's area is 0.2 acres or 810 square meters about eleven times smaller than the island in Boundary Lake.

There is an unmanned lighthouse on the Finnish side of the island.

However, when it was built in 1885 there were no clear maps of the island. After the completion of the lighthouse, it was discovered that it was built on the Swedish part of the island. As a result, the border was adjusted in 1985 so that the lighthouse is now located on Finnish territory. However, the overall land area given to each country could not change, and neither could the coastline so as not to interfere with each country's fishing rights. This dilemma resulted in an unusual design of the border. Since the adjustment of the border, it takes the form of an 's', the lighthouse only connected to the rest of Finland by a short stretch of land.

The lighthouse is in immediate need of maintenance and a Finnish interest group is trying to raise funds for its preservation. The lighthouse has been automatic since 1976 and the surrounding buildings are no longer used.

Market Reef is a "separate country" for Amateur Radio Operators since it is the only Finnish territory with another country's territory in between. The Swedish part of the island does not have this status and is therefore not a separate country among radio amateurs.

Market Reef is one of the worlds most wanted "countries" among radio amateurs due to its special status and inaccessibility. Usually there are one or more amateur radio expeditions to the island every year, weather permitting. During these expeditions tens of thousands of radio contacts are made with the entire world. At high seas landing is only possible with a helicopter.

<sup>1</sup>A **skerry** is a small rocky island, usually defined to be too small for habitation. It may simply be a rocky reef. The term skerry is derived from the Old Norse *sker*, which means a rock in the sea. The Old Norse term *sker* was brought into the English language via the Scots language. It is a cognate of the Scandinavian languages' words for *skerry* – Danish: *skær*, Swedish: *skär*, Norwegian: *skjær* and Finnish: *kari*.

**NOTE: It has been reported solar minimum has arrived. Sunspots have all but vanished. Solar flares are nonexistent. The sun is utterly quiet.**

Like the quiet before a storm, the next sunspot cycle may be the second strongest cycle in history.

Researchers announced that a storm is coming--the most intense solar maximum in fifty years. The prediction comes from a team led by Mausumi Dikpati of the National Center for Atmospheric Research (NCAR). "The next sunspot cycle will be 30% to 50% stronger than the previous one," she says. For more information see [http://science.nasa.gov/headlines/y2006/10mar\\_stormwarning.htm](http://science.nasa.gov/headlines/y2006/10mar_stormwarning.htm).

### July is National Ice Cream Month

### Top 15 Most Popular Ice Cream Flavors are:

1. Vanilla (29%)
  2. Chocolate (8.9%)
  3. Butter Pecan (5.3%)
  4. Strawberry (5.3%)
  5. Neopolitan (vanilla, chocolate, & strawberry) ( 4.2%)
  6. Chocolate Chip (3.9%)
  7. French Vanilla (3.8%)
  8. Cookies and Cream (3.6%)
  9. Vanilla Fudge Ripple (2.6%)
  10. Praline Pecan (1.7%)
  11. Cherry (1.6%)
  12. Chocolate Almond (1.6%)
  13. Coffee (1.6%)
  14. Rocky Road (1.5%)
  15. Chocolate Marshmallow (1.3%)
- All Others (23.7%)

In 1984, dessert-lover Ronald Reagan designated July as a time to honor America's favorite sweet. This is a good month to learn about ice cream and its history and benefits. It is also a great excuse to take mom, dad, brother, sister, or even your best friend out to get a cool cone, or an ice cream popsicle.

Source: Int'l Ice Cream Association, 888 16th St., Washington, D.C. 20006

# Power Factor in Electrical Devices

Reprinted with permission from Bob Eckweiler, AF6C

Power factor comes into play in electric circuits. Any load you plug into an AC outlet might appear as either an inductor or capacitor in series with a resistance to the generator back wherever the power is being generated. While we're talking about capacitors, inductive loads (motors especially) are the more common type of load encountered.

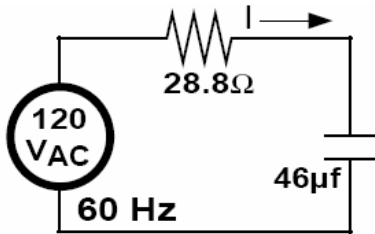


Figure 2 – Circuit for our example

Figure 2 shows a simple RC load circuit that might appear across your AC line. It's composed of a 28.8 ohm resistive load in series with a 46 μf capacitor. At 60 Hz the capacitor has a capacitive reactance of:

$$X_C = \frac{1}{2\pi fC}$$

$$= \frac{1,000,000}{2 \times 3.1416 \times 60 \times 46} = 57.6\Omega$$

The total impedance of the circuit is:

$$Z = \sqrt{R^2 + X_C^2}$$

$$= \sqrt{28.8^2 + 57.6^2}$$

$$= \sqrt{829.44 + 3317.76}$$

$$= 64.4\Omega$$

The series current is then (from Ohm's law):

$$I = \frac{E}{Z} = \frac{120}{64.4} = 1.86 \text{ amps}$$

Let's look at the power in each component. For the 28.8Ω resistor:

$$P_R = I^2 R = 1.86^2 \times 28.8$$

$$= 100 \text{ watts}$$

And for the capacitor, which you will recall from last month stores power from the circuit for part of each cycle and returns it back to the circuit for the remainder of the cycle (and thus does not dissipate power), we get:

$$P_C = I^2 X_C = 1.86^2 \times 57.6$$

$$= 200 \text{ var}$$

Since the capacitor cannot dissipate power, engineers use the term *var* for *volt-amperes reactive* to show that it is reactive power. Remember that the voltage across the resistor is in phase with the current, but the voltage across the capacitor is lagging the current by 90°.

The total power supplied from the AC line can be determined by:

$$P_{VA} = I^2 Z = 1.86^2 \times 64.4$$

$$= 223.6 \text{ VA}$$

Since this power incorporates both the real and reactive components, it is given the term VA which stands for *volt-amperes*. You'll see a lot of appliances marked with VA instead of watts, especially devices with motors. Figure 3 shows the relationship between the power, var and VA given in the above example.

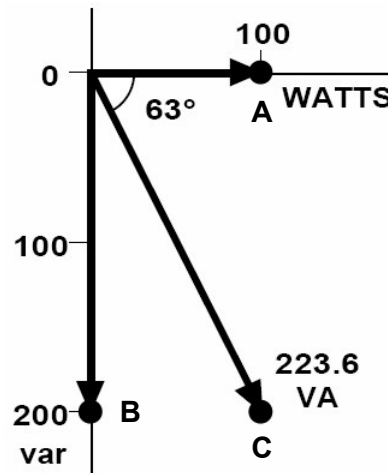


Figure 3: Point 'A' is the power in the resistor. 'B' is the power in the capacitor and 'C' is the overall circuit power

Power factor (PF) in AC circuits is sometimes expressed as an angle. That angle is shown in figure 3. It is more often given as a number between 1 and 0, which is just the cosine of the angle. A PF of one says all the power is being delivered to the resistance.

In the example we're effectively using only 100 watts. But the power company must deliver the full 1.86 amps of current to produce that power. Many new appliances have devices built in that correct the power factor to save energy and add to the product's reliability. While our example used capacitance, a majority of the high PF devices are inductive. The power company can correct the PF to some extent by placing capacitors in the line. You can often spot these large capacitors on high voltage power poles. ■

## Weekly Breakfasts



### Tues. Morning Breakfast –

7:00 a.m. at

**Back Burner Cafe**

8400 E. Long Mesa Drive

& N. Robert Road

*Informal – all are invited.*

### Wed. Morning Breakfasts:

7:00 a.m. at

**Iron Horse Restaurant**

(Hwy 89 in Chino Valley)

(N 34°43'56.5" W112°27'15.4")\*

*informal – all are invited*

8:00 a.m.

**Masonic Lodge**

(1280 Willow Creek Road,

2<sup>nd</sup> Floor; above Bank of America)

*informal – all are invited*

\* Location data (per WGS84) provided

by Fred Zimmermann, N7PJN

## Area Repeaters

Frequency	PL	Location	Owner/Club	Auto-Patch	Rem. BaseOr Linked	Vo IP	Notes:
52.560-	100.0	Mt. Union	N7NGM			Echo	-500KHz Offset
53.040-	None	Prescott Airport	WB7BYV				-1MHz Offset
145.290-	127.3	Mingus Mtn.	ARES/RACES				
146.780-	91.5	Williams Mtn.	BWARC			IRLP	
146.880-	100.0	Prescott	YARC				
146.980-	162.2	Flagstaff	CARC				
147.000+	162.2	Mingus Mtn	MMRG				
147.040+	100.0	Prescott Heights	W2YAV				
147.140+	162.2	Flagstaff/-Mt. Elden	ARA		Linked to Mt. Ord 147.360-		
147.220+	162.2	Mingus Mtn	VVARA				
147.260+	103.5	Mt. Union	ARES/RACES				
442.150+	100.0	Mingus Mtn	W1OQ/Northlink				
442.350+	100.0	Glassford Hill	N7KPU			IRLP	
445.300-	100.0	Prescott	WINSYSTEM		Node 3727	IRLP	
448.475-	100.0	Flagstaff-Elden	ARA	Yes			
448.500-	100.0	Prescott	K6JSI				
448.875-	100.0	Flagstaff-Elden	Northlink		Linked		
449.175-	100.0	Towers Mountain	Northlink		Linked		
449.675-	88.50	Prescott Airport	WB7BYV		Linked to P Mtn. 927.3875		
927.3875-	151.4	Prescott	WB7BYV	Yes	Yes	Echo	Be Nice

### Y.A.R.C. IRLP NODE

Node Number 3182

**442.350+ MHz with a  
PL of 100.0 Hz**

For more Repeater Information & Listings refer to:

- [www.w7ara.org/Web/](http://www.w7ara.org/Web/)
- [www.azrepeaters.net](http://www.azrepeaters.net)
- [www.azfreqcoord.org/listings.htm](http://www.azfreqcoord.org/listings.htm)

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Many thanks to Bob Smith, WB6ODR, our Webmaster

