

SCOPE

THE PALOMAR AMATEUR RADIO CLUB NEWSLETTER

Field Day 2014: June 28-29!

ARRL Field Day is the single most popular on-the-air event held annually in the US and Canada. On the fourth weekend of June of each year, more than 35,000 radio amateurs gather with their clubs, groups, or simply with friends to operate from remote locations. Field Day is a picnic, a campout, practice for emergencies, an informal contest and, most of all, FUN!

It is a time where many aspects of amateur radio come together to highlight our many roles. While some treat it as a contest, others use the opportunity to practice their emergency response capabilities. It is an excellent opportunity to demonstrate amateur radio to the organizations that amateur radio might serve in an emergency, as well as the general public. The contest part is simply to contact as many other stations as possible and to learn to operate our radio gear in abnormal situations and less than optimal conditions while having fun. Field Day is/not a contest.

Field Day is one of the main highlights of PARC and a good effort is put forth each year. Last year we scored 4th place in our category



of 5A and had lots of fun while doing so. In addition we placed first among all the San Diego (SDG) clubs. We set up 5 main stations plus a satellite station and GOTA. We hosted a Radio merit badge class for the Boy Scouts and had the help of the Young Marines during setup and takedown. There was a testing session that took place on Saturday and as a result, two new hams were licensed into the hobby. We even had a world class BBQ prepared by the famous Psycho Kitchen.

Whichever aspect Field Day sparks your interest, whether it be the contesting, setup and takedown and seeing how all the equipment goes together, commanding a station, the Saturday picnic BBQ, or just hanging out with good friends, I hope you will join us this year for the Palomar Amateur Radio Club 2014 Field Day effort.

Field Day is a group/club effort. We did not achieve the results of last year without having fun and we certainly didn't do it with just one person. If you are interested in helping in any way, please contact me. No former FD experience is needed.

Field Day is scheduled for June 27, 28, and 29 2014. If we are allowed to use the site at Santar and Rancheros in San Marcos, this will be the Club's last time. Permission, if we receive it, should come in the next week. We, the Club, need to start looking now for a new site for future use.

Plans are starting now for the Field Day preparation nets, to help coordinate Palomar's efforts. A few station captain offers have already been received. Thank you for your offers. One item of concern, at least to one Club officer, is the transportation of Club equipment by private means. The club may be required to contract (rent) a transport unit or company to move Club equipment to alleviate their concerns.

The sooner we identify our needs, the sooner we can solve these hurdles to provide a great Field Day.

Looking forward to seeing you there.

Greg Gibbs
KI6RXX
760-583-9668

Save the Date

Club Meeting 5 March 2014

Dr. Henry Richter
on "Long distance
communications"

Board Meeting 12 March 2014

Palomar Amateur Radio
Club board meeting at
7:00pm at W6GNI QTH.

Club Supported Event 15 March 2014

Shelter Valley 50k and
30k runs. Hams will be
providing the comms on
the course. See pg. 9.

Advertisements are free for members

Have items that need to find a new home? Advertise here! Send your ads to scope@palomararc.org

March Meeting is Way Out

Our next meeting is March 5, 2014. The presentation will be by Dr. Henry Richter on "Long distance communications"

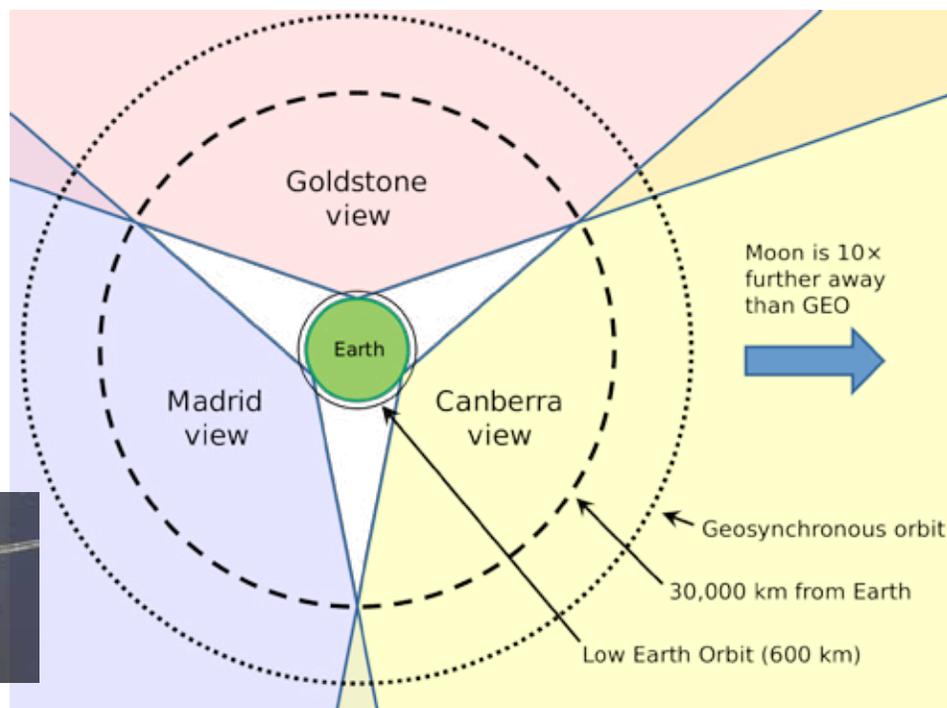
DXing Europe? No, a bit farther than that. Come and hear how NASA communicates with Voyager at 11,700,000,000 miles. Radio transit time about 18 hours (distance=2/3 of a light-day). NASA operates a deep space net (DSN, see diagram below) in three locations, spaced 120 degrees around the globe. They each have a 210-foot diameter antenna plus several smaller ones about 85 feet in diameter. They stay in touch with the two Voyagers, plus 32 other spacecraft like Cassini orbiting Saturn, the Mars rovers, the Mars orbiters, and a bunch more.

If you missed the talk at the Escondido Amateur Radio Society, here is another chance to hear it.

Dennis
Palomar ARC

At right, view from the Earth's north pole, showing the field of view of the main DSN antenna locations. Once a mission gets more than 30,000 km from earth, it is always in view of at least one of the stations. Below, Voyager 1.

Find out more at
<http://deepspace.jpl.nasa.gov/dsn/>



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At left, a bolt from one of the largest antennas at the Goldstone Deep Space Network site. For size comparison, here it is below on my work bench.

Want more space comms? Send text messages to ISS! Video:

<https://www.youtube.com/watch?v=HdS3EqRooN8#t=103>



Club Email Discussion and Announcement Lists

by Michelle W5NYV

PARC has two email lists. The two lists offer additional ways to stay up to date with your fellow amateur radio operators. Signing up is very simple.

Go to

<http://www.palomararc.org/mailman/listinfo>

Click the link corresponding to the list you want to sign up for.

Fill in the form, and you're on the list.

PARC-Announce is a very low-traffic mailing list for announcements approved by the club. Expect only a few messages per month, maximum, including a notice about each club meeting. If you have an announcement you'd like to have published to this mailing list, please send your request to

board@palomararc.org for approval

PARC-Talk is an open list for PARC members to discuss anything related to amateur radio and to the club. Please post in plain text. Don't attach files.

We will not use Scope-notice, Scope-pdf, Meeting-remind or any other mailing list for unsolicited messages or announcements.

Don't forget - PARC is on Facebook too!

Find us at <https://www.facebook.com/groups/194674987710/>



Ham radio operators do it
until their gigahertz.

<p>HAM RADIO OUTLET</p> <p>Jose XE2SJB Jerry N5MCJ Joe N6SIX</p> <p>H R O</p>	<p>KENWOOD rf CONCEPTS DIAMOND US TOWERS KANTRONICS YAESU, MFJ, ICOM BENCHER, Inc. HUSTLER COMET AMERITRON</p>	<p>Astron, AEA, OUTBACKER Larsen Antennas TEN-TEC Hy-gain, Tri-EX, Cushcraft And Others too Numerous to Mention!</p>	<p>Drop in to see our display of working equipment. Find out about Pkt location determining equipment (APRS). Check our complete line of magazines, ARRL books, license manuals, and Bulletin Board with all sorts of Goodies listed.</p>
<p>Open: 10a.m. – 5:30p.m. Monday thru Saturday <i>Ask about our great prices</i> 858 560-4900 or toll free 1-800-854-6046</p>	<p>Directions: On 163, take Clairemont Mesa Blvd. off ramp to East. Stay in right-hand lane. Turn right at stoplight. As you are turning right you can see our beams in this shopping center. Travel 100 yds. On Kearny Villa Rd. and U-turn back to shopping area and HRO sign. Be sure to see our equipment in action on real antennas!</p>		

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EMCOMM Net!

Next SDG North County Emergency
Communications Net -- Wednesday, Feb 26,
2014 at 7pm

ALL interested Amateurs, including ARES, CERT,
EARS, PARC, and RACES members are invited to
participate.

Repeater check-ins begin at 7:00pm on the
147.030 (+103.5) ECRA Repeater on Palomar
Mountain. After that, a frequency will be
announced for a simplex mapping net in
each local area. Please use 147.480 simplex
to contact stations east of Mount Woodson,
146.445 to reach stations along the I-15 inland
corridor, or 146.550 for the cities along I-5 and
the coast.




**2014 ARRL Southwestern
Division Convention**

September 12 - 14, 2014
Will be held at the
Sheraton Four Points Hotel
8110 Aero Drive, San Diego CA. 92123

Palomar Amateur Radio Club and the San
Diego Six Shooters Club will conduct an
Operating Day April 26th for public
demonstration of Amateur Radio. This event
will be hosted on the parking lots of FRY's
ELECTRONICS in San Marcos and San Diego,
respectively. Plans are to be operational by
9:00 AM and continue to 5:00 PM. We plan
to demonstrate different formats and have
asked supported agencies to come show how
amateur radio supports their needs.

ARRL Centennial Operating Event Report

by Jeff Davis N0DY

The team at NX6T helped to celebrate the ARRL Centennial by participating in the Centennial Operating Event. The W1AW call sign is being passed to all 50 states, and stations in each state are given the opportunity to represent the ARRL by giving out QSOs with, in this case, W1AW/6. NX6T was honored by being one of the stations asked to help represent California. As a special bonus, the week selected for W1AW/6 operations included the weekend of the ARRL DX CW contest.

Normally, Dennis, N6KI, does all the coordination for contests and events at NX6T. This time, however, Dennis would be out of town at the Yuma Hamfest and operating the ARRL DX CW contest from there. Since I'm the New Guy at NX6T, Dennis asked if I would coordinate the operators for the W1AW/6 event. I didn't really know what I was getting into when I said yes!

One thing I did know – the ARRL DX CW contest and the Centennial Event would occur over the Valentines Day weekend. I knew that "special coordination" would be required with the XYL in order to play radio that weekend. What's worse, the contest started at 4:00 PM on Friday, February 14. Timing could not have been worse. Fortunately for me, my XYL was very understanding when I approached her, only requesting that in exchange I be sure to be home to watch the Super Bowl with her! (Dennis, the bill for the large batch of roses delivered to her workplace will be in my expense report).

We got off to a late start with the operator coordination as emails from Glenn, K6NA, the statewide coordinator, were being rejected by my email provider. By the time we figured that out, we'd lost about a week. I sent out an all points bulletin for operators and quickly discovered what radio silence sounds like for email! Fortunately, members of the team stepped up in the next few days and we got a slate of operators sufficient to give a good showing.



Cary, VE4EA foreground; John, WA2OOB background

Dennis and John, WA2OOB, offered to help set up the station for the event. We decided to set it up in a "Multi-2" configuration, with two independent operating positions, each with a K3, a P3 Panadaptor with SVGA monitor, an ACOM 2000 linear and the ability to select any of the multitude of available antennas (2-3 element SteppIRs, 2-2 element 40M yagis, an Inverted V each for 80 and 160, and a receive loop antenna). Dennis was insistent that we have a "Plan B" in case a radio died, and WA2OOB pulled together a Plan B kit consisting of a TS-590 and all the cables and operating manuals. Should something happen, we wouldn't have to scramble to find the right cables and hookups to get back on the air. This worked as planned to keep Murphy away, and we had very solid performance from all the equipment the entire week of the event.

Finally, the day of the Centennial Operating Event arrived. We started operations at 4 PM on Tuesday, February 11 (0000Z Feb 12). I was on 20m CW and John, WA2OOB, on 40m phone. I found where the station from the previous week, W1AW/KH6, was operating on 20 meters with a

steady run going, and precisely at 0000Z they went QRT and W1AW/6 was on the air on their frequency. The steady run for W1AW/6 lasted only a minute or so, and soon became a torrent of calls as hams from all over the world clamored to get W1AW/6 into their logs. The wall of sound from so many callers was a complete thrill! I quickly went split and it was amazing to see the pileup on the Panadaptor display. Starting about 1 kHz up from my transmit frequency was what appeared to be an S9+ signal varying from 5-10kHz wide. The pileup was really well behaved and we were giving out W1AW/6 at a rapid clip. Band conditions were wide open and we had callers from Asia, North and South America, Europe and Oceania all at the same time. What a rush!

We're not normally a RTTY station, but for the operating event we decided we would try to give out RTTY contacts. Being a complete noob at RTTY, I looked to my buddy Paul, KB7V to put together some cables to get us on the air with RTTY. Between Paul, WA2OOB, and myself, we fiddled around enough to finally get RTTY working and although we had a few teething



Ron, WQ6X foreground; Gayle, K6GO background

pains early in the week, we were giving out RTTY QSOs with gusto by day 2 or so.

In the station setup and planning, we were very careful about interstation interference. Each operating position has its own bandpass filter, and of course we never scheduled ourselves to have two stations on the same band at the same time. What we didn't think of, though, was the interstation interference that occurs in the shack when you have a phone operator and a CW op going at the same time. It's tough enough to keep your rate high with a big noisy pileup, add to it a guy operating phone about three feet from you, all excited from the pileup, and almost shouting into the mike! VE4EA, WA2OOB and I took turns that first night QRMing each other in the shack. Lesson learned: keep the phone ops acoustically isolated from the CW ops if at all possible – best is not to have simultaneous phone and CW operations going at all. It was a challenge we would have to live with for much of the week.

It was a great week. All of the ops, WA2OOB, VE4EA, N6ERD, KB7V, N6CY, W2PWS, WQ6X, NA6MB, K6GO, K4RB, N6KI, and DG1CMZ all did a great job. I couldn't keep myself away, even when I wasn't scheduled to operate. Between the all nighters during the ARRL DX CW contest and my brain refusing to shut off with all the excitement, I got very little sleep during the week. But it was worth it!

Final tally: 6,115 QSOs, of which 3,627 were on CW, 2004 on phone, and 484 on RTTY.

DAILY OPERATIONS

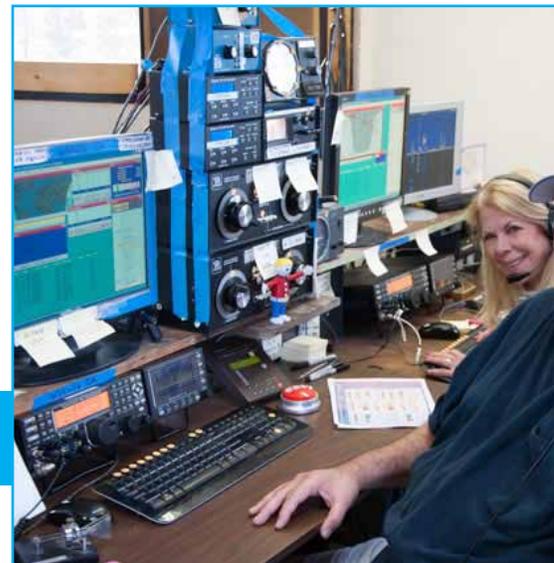
BAND	SSB	CW	RTTY	OTHERS	DUP
160	0	47	0	0	0
80	317	23	75	0	7
40	67	698	0	0	15
30	0	0	0	0	0
20	604	1166	91	0	59
17	0	0	0	0	0
15	294	660	308	0	24
12	0	0	0	0	0
10	722	174	10	0	19
50	0	0	0	0	0
TOTAL	2004	2768	484	0	124

TOTAL QSO : 5 256

ARRL DX CW

BAND	QSO	DXC	DUP	POINTS	AVG
160	0	0	0	0	0.00
80	0	0	0	0	0.00
40	0	0	0	0	0.00
20	0	0	0	0	0.00
15	859	86	7	2223	2.59
10	0	0	0	0	0.00
TOTAL	859	86	7	2223	2.59

by Doranne Jacobson



John WA2OOB foreground; Gayle, K6GO background



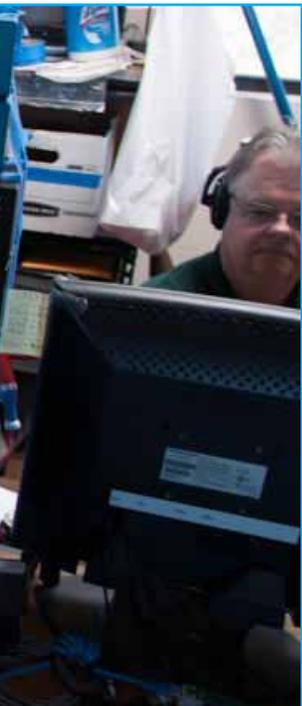
NODY (left) and KB7V (right) in deep concentration



Paul, KB7V foreground; Jeff N0DY background



ARRL Centennial Operating Event Photos from Jeff Davis N0DY.



KB7V foreground, left; WA2OOB background, right

February 18th Poway City Council Meeting Report

by Charlie NN3V

I am writing on behalf of all the Poway hams to give you an after action report of the Poway City Council meeting held last night. First, in brief, THANK YOU, THANK YOU, THANK YOU. THANKS to

All the San Diego county hams, Powegians included, who showed up at the meeting (some 60+).

All who signed petitions to support our recommendation of a 65 ft antenna height approved with a building permit and neighbor notification.

The many attendees who brought non-ham family members to wear the PARS badges and show support.

Hams and non-hams who spoke to the Council and staff (the antenna issue at the meeting lasted from 7:18 PM until 10:15 PM).

The hams who at the last minute filled the Councilmen's email in-boxes with notes of support (last minute, because it was only at the last minute we discovered that email yes/no votes are tallied in the political nose count. Several clubs rallied to support the urgent request).

The volunteers who staffed the sign-in table to distribute the PARS badges.

The Boy Scout troops who led the Pledge of Allegiance, and paraded the colors for the opening ceremony, all wearing the PARS logo.

The ARRL for supporting us with ARRL officer presence.

The success of last night's meeting would not have been possible without all that support.

But, success sometimes is partial. And so it was last night. PARS will distribute a detailed summary of results shortly. There was a lot that happened, in various separate comments and actions, and we need a couple of days to analyze it.

In brief, we had some 20 speakers from the amateur radio community including a summary PowerPoint presentation supporting our

request, and we had some 8 "opposition" speakers from the Green Valley Civic Association (GVCA) who opposed the idea of granting permission to amateurs for erecting antennas above 35 feet, as antennas are ugly and cause a lowering of property values. (GVCA members commented that it was obvious the hams had stacked the deck for last night's meeting and GVCA would be better prepared the next time! ATTENTION: next time we still need the San Diego County hams to rally to Poway 's help!

After all the pro and anti speakers were heard, we were regaled by the gut-wrenching discussions among the councilmen and the city development staff in looking for ways to decide whether or not it was necessary to have separate processes to decide if a tower could be permitted at 55 instead of 50 feet.

And so, did hams win or lose?

Well, we knew going in there would be no "decision" at the meeting. We hoped to see our position supported. The "core" of everything we said is contained in the PowerPoint presentation.

We heard several city councilmen loosely say they thought 65 ft was a reasonable accommodation; we heard unanimous consensus they want the permitting steps in Poway cleaned up and simplified; and as they discussed antenna height there was no denying they agreed we should be allowed to have antennas higher than 35 ft.

The difference is to be found in the various "ways of getting to higher height" that they talked about. As always, the fine print can get you.

The city councilmen decided to send the development staff back to work on a draft ordinance that meets the federal regulations, and bring it back to the city council in 90 days with at least an 80% completion status.

PARS challenges remain many. But the bottom line for us is to remove the 35 foot height limit altogether; do away with the "3 choices of antenna elevation permits" currently in the flawed draft ordinance; simplify the byzantine permitting process used by Poway; and eliminate the staff's effort to try and "design antennas in the ordinance language".

More on all this soon.

73 de NN3V

Old West Trails 50k Ultra and 30k Fun Run

by Conrad KG6JEI

This is a new event being held in Shelter Valley. It is a perfect place to practice your emergency radio skills. This event will kick off our endurance run season leading up to several other events later this year. If you have never worked a run before and wish to get involved this event should prove to be an enjoyable low-stress introduction.

We have recently seen new hams become involved in helping in these endurance runs and the one thing we keep hearing is that they provide chances to see all the beauty of the county that most are not even aware exists and to have a great time with fellow amateur radio operators doing what we do best. Our friend and Shelter Valley resident Ed informs us that this time of year is usually the best time to experience the beauty of the desert, with warm days and cool nights.

Unlike other events that often require a mobile to be effective we will have great coverage and the only required equipment will be an HT.

The run starts at 0700 Saturday March 15th and all runners are expected to be finished by 1700.

Please go to

<http://www.oldwesttrails50kultra30kfunrun.com>

for more details of the event.

Our radio volunteers are invited to visit the start finish line to enjoy the festivities after their stations close.

The point of contact for this event for those wishing to volunteer is W6ABE Ed Genest who can be reached at w6abe@arrl.net.

Contest Report

from Dennis N6KI

While attending Yuma Hamfest, I joined up with veteran contester Dave K6LL at his modest station in Yuma and operated Friday and Saturday evenings and night and a few hours on Sunday afternoon.

We bested our 2013 score and enjoyed the great conditions on Saturday, but the A index shot up on Sunday making conditions mediocre.

Dave does not really have very effective antennas on 80 and 160 meters due to his 48-foot tower and postage stamp size lot but we felt we did really well on 40 - 10 meters.

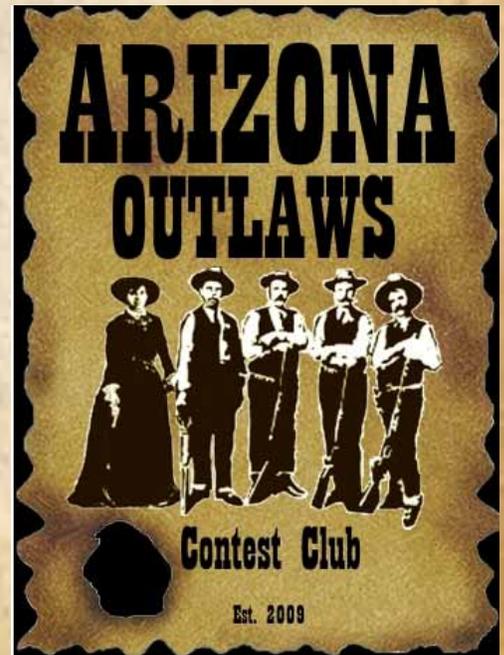
Call: K6LL
Operator(s): K6LL N6KI
Station: K6LL
Class: M/S HP
QTH: AZ
Operating Time (hrs): 40
Location: USA

Band	QSOs	Mults
80:	60	35
40:	460	84
20:	631	96
15:	754	108
10:	793	102
Total:	2698	425

Total Score 3,437,400

Club: Arizona Outlaws Contest Club

Comments: Saturday was fabulous! Sunday, not so much.



I Hate Magic!

W6PUG

Did you ever have one of those occurrences in life where something really weird happens, and you use every logic you can imagine, talk to your peers and mentors, trying to figure it out, but then the problem "fixes itself" and you never really understand what just happened? I call that 'magic'. My two favorite Wikipedia definitions of magic are "the use of paranormal methods to manipulate natural forces" and "attributed to extraordinary beings or objects". Most engineers are very familiar with the variations of Murphy's Law, but even Murphy's infamous Law has some boundaries, but not so with magic.

For almost a year, I have been deaf on 75m, absolutely stone deaf. I have two radios, an Icom 756PIII and an old Collins 75S-1 receiver, which exhibited the same characteristics. I looked at my radio setup (which has not changed much since I first got it, and at which time 75m worked just fine). It behaved quite well on 15, 20 and 40, which did not help my troubleshooting direction.

I tipped my antenna over (commercial multiband vertical dipole) and went through every single connection with nothing visible. I ordered and changed the capacitor at the TOP of the antenna in my process of "Easter-egg troubleshooting" (which 'Doug-ikipedia' defines as 'I have no idea what I am looking for but I will change some parts and see if I get lucky'[which I didn't]). No change: deaf as a stump. I hate magic!

My Elmer, N7TLL/ZL1TV, had blown a cap in his antenna some time ago, and what he had learned was that resonance for 75m on that antenna shifted from 3.8MHz up to 4MHz when it blew, and told me to check that. I dragged out my AIM 4170 antenna analyzer, downloaded the latest version of software for it, spent a half day re-learning how to run the thing, swept the antenna on all of its frequencies, ran the TDR (time domain reflectometer) on the coax, and basically did not find anything too out of normal for the antenna, based on its history. Resonance on 75m is dead on 3.8MHz. Growl ... growl ... grizzle ... groan ... maybe a little bit of whining thrown in for good measure ... so nothing seems to be wrong with the antenna. I even called the antenna manufacturer and sent

him copies of my frequency sweeps of the antenna and he offered up, "Looks good to me ..." More growling ... more grizzling I hate magic.

Antenna ok ... Coax looks good.... Radio seems to be normal on all other bands.
Whiskey Tango Foxtrot?!

Gotta be magic!

Another ham friend of mine, K6YNP, who is a fairly accomplished DXer, came down from Orange County (hundred miles away) and poked and twiddled at it for a while, and could come up with nothing ... absolutely nothing ...

So I gave up and just figured I would run 15m to 40m. Did I say how much I hated magic?

I had just helped a ham friend of mine, who is approaching 80, put up a beautiful horizontal dipole cut for 75m so he can ragchew with friends in the evenings, and he invited me to join, since I know about half of them, and it was with total humiliation that I admitted to him that I had never found out why I was deaf on 75m. Dogs occasionally go deaf for no definable reason other than perhaps advancing age. Wonder if I can use that excuse? No? More growling ... more grizzling

Finally one day I am sitting here in the shack while the XYL is traveling for work for a week, and this is just bugging me to death. It does not go away. It nagged at me, confusticating (confusion + frustration = confustication) me because I cannot figure out what paranormal activity has invaded my shack!

My whining is now reaching a fevered pitch and the pugs are looking at me with no small hint of fear in their eyes. Maybe it was my drooling; I don't know. As an extreme variant of my Easter-egg troubleshooting (totally abandoning myself to having no idea what I am doing), I decide I will do a factory reset on the Icom, so I dragged out the manual on it, and it instructs to hold two buttons down and cycle the power switch. Now, the Icom is powered by an external Icom power supply, and I had developed the (bad) habit of shutting the radio off by shutting off the power supply, so I hold down my two buttons and cycled the power supply just like I always do, and nothing happened, no reset, just turned itself on and same operation as

before. Now I am doing a loud growl and more than a little grizzling. After trying to reset it more than a few times, it dawned on me that the instructions did not say to cycle the power; they said to cycle the power switch! In my last breath of hope before I swear off ham radio, I held down my two buttons and cycled the power switch - and it WORKED! The radio reset itself to factory defaults, and then it came alive on 75m!

The magic gremlins woke up! In fact, the Collins also came alive (which makes absolutely no sense to this day)!

I'm back! WOW !!

Here I am, in control of my shack again! I don't know what happened, or how it happened. Just gotta be magic!

I was pretty happy about that, but it nags my very soul to not know how or why the radio got into this lockout mode and like I said, I hate magic! I sent an email to Richard VK3TXD, and went through this whole scenario with him, and lamented about how I missed almost a year of playing on 75m, and his response was classic:

"Doug, Doug, Doug. You should know that as soon as you stick a computer in a radio [and a few kind words to make me feel better but not really].

What made you think it needed a factory reset? I doubt I would have considered that".

I really wanted to go back to him with some exotic explanation of how I figured it out using some esoteric differential diagnostic process (ever watch "Dr. House" on the television?), but in all honesty, the only answer I can give him is just dumb luck based on an illogical approach to a problem that I never really understood brought on by the only thing I can find reasonable: pure magic.

So now that I am radio-operational, I am going to (again) tackle that computer sound card that refuses to work even though all of the diagnostics say it is working fine.

I really hate magic.



Some Magic at the November 2013 Operating Day. PARC has another operating day planned for April 2014. Will you come out and play with us?



Visalia Convention Registration Opens

Registration Information

When:
April 04-06, 2014

Where:
Visalia Convention Center, Visalia, CA USA

Pre-register (Before March 4, 2014) to be eligible for pre-registration drawing.

Please complete the online registration form then select to pay online or print your filled out form and mail your form and payment.

NOTE: If paid by PayPal save the e-mailed receipt from PayPal as that is your only proof of registration and payment. You will NOT get any other confirmation. The confirmation number (2014xxxx-xxxxxx) on this receipt will be required for banquet seating to be assigned.

For questions regarding registration please e-mail the [convention registrar](#).

DX stations who need assistance please e-mail [Joe Locascio, K5KT](#).

[Online Registration Form](#)

<http://www.dxconvention.org/reg/>



November 2013 Operating Day. Come in April!



OPERATING DAY

Saturday, April 26, 2014



FRY'S ELECTRONICS
150 South Bent Street
SAN MARCOS, CALIFORNIA 92069
9:30 AM to 5:30 PM

HOSTED BY PALOMAR AMATEUR RADIO CLUB

www.palomararc.org

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Come operate on the ham bands at Fry's
70cm, 2m, 6m, 10m, 15m, 20m



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Return service requested

Scope (USPS #076530) is published monthly by the Palomar Amateur Radio Club 1651 Mesa Verde Drive, Vista, CA 92084. POSTMASTER: Send address changes to SCOPE, P.O. Box 73, Vista, CA 92085. Periodicals postage paid at Vista, CA 92084. Dues are \$20 per year or \$35 per year for a family. Dues include a subscription to Scope.

You can join or renew your membership on the club's web site <http://www.palomararc.org>

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Featured Program:

At 7:30pm on 5 March 2014, Palomar Amateur Radio Club will present a program. The presentation will be by Dr. Henry Richter on "Long distance communications"

DXing Europe? No, a bit farther than that. Come and hear how NASA communicates with Voyager at 11,700,000,000 miles. Radio transit time about 18 hours (distance= $\frac{2}{3}$ of a light-day). NASA operates a deep space net (DSN, see diagram below) in three locations, spaced 120 deg around the globe. They each have a 210-foot diameter antenna plus several smaller ones about 85 feet in diameter. They stay in touch with the two Voyagers, plus 32 other spacecraft like Cassini orbiting Saturn, the Mars rovers, the Mars orbiters, and a bunch more.

We look forward to seeing you at the Carlsbad Safety Center, 2560 Orion Way, Carlsbad, CA.