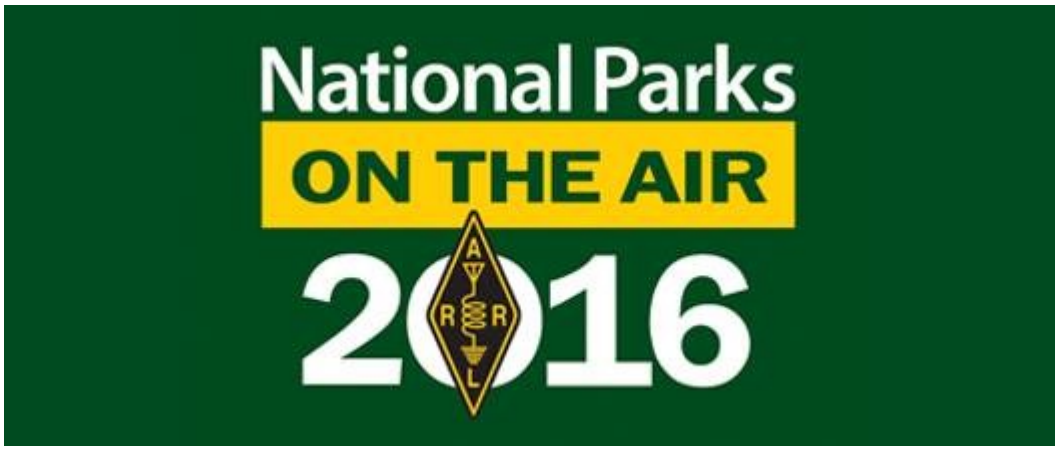
SCOPE

Palomar Amateur Radio Club April 2017

Inside this issue:



One of the first group of activators for National Parks on the Air at the Cabrillo National Monument on 12-31-15. From left to right, Ron Pollack, K2RP; Peter Singer, W2PWS; Geroge Runyan, WB6YEC and Bill Arndt, KC9IYR. Not shown is Ron's wife Rinkie.

It Appears By Spears

Welcome to Spring! In this issue we have another installment of the early days of ham radio. In addition a great article on how our repeaters function. Finlay we have some pictures from Ron's great NPOA trip.

We have a great program scheduled for this months meeting. Phil Karn, KA9Q will be giving a presentation about his weather balloon project he is working on with the kids at Mt. Carmel High School.

Finally, please keep those submissions coming. Without your input we would not have a newsletter.

73 de KM6CXW
Keith Spears
Editor

Hands Free Driving Law Update

"Reminder to exercise caution when using your mobile radio while driving!"

Here's an update on California's new hands-free driving law with a little background for reference.

The prior version of Vehicle Code Section 23123.5, while it contained no specific exemption for Amateur radio, effectively excluded Hams by virtue of the relatively narrow definitions of what that law covered. Assembly Bill 1785 was introduced in February 2016 by Hayward Assembly Member Bill Quirk, whose district lies in the Pacific Division. In its initial form, there was no adverse impact to Amateur Radio, as it applied only to reading, writing and sending text-based communications. Over the ensuing six months, however, the language was amended five times, with the end result being much broader in scope and including a prohibition of "specialized mobile radio device[s]" that were not hands-free. This opened the door to widely varying interpretations of what might fall under the umbrella of "specialized mobile radio device[s]".

We were first alerted to this bill by San Diego Section Manager Dave Kaltenborn, N8KBC, in September, by which time it had been passed by both houses in its final form and was less than a week from being signed into law by the governor. Vice Director Woll tried direct outreach to Quirk's office and to other potentially interested parties such as the California Trucking Association, but he received no responses. As this newsworthy change in the law began getting broadcast airtime, ARRL Division and Section officials started receiving many inquiries from concerned members. Woll contacted several of our local Volunteer Counsel attorneys, who did some research. In addition to getting the

(Continued on page 28)

Board Members and Committee Chairs

Board of Directors

President	Joe Peterson, K6JPE	(619) 630-8283
Vice President	Michael Gottlieb, KB6D	(858) 212-4646 Text Welcome
Treasurer	Tom Ellett,W0NI	(858) 546-1148
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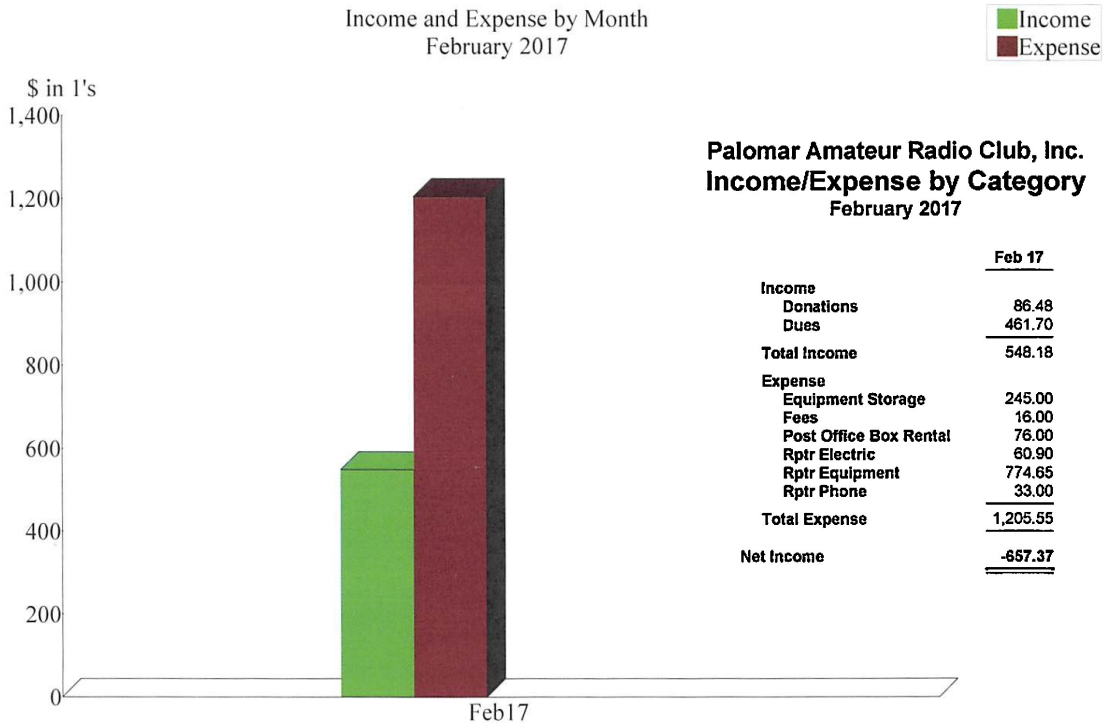
Director 1	Kevin Walsh, KK6FRK	(858) 722-5069 (Text Welcome)
Director 2	John Kuivinen, WB6IQS	(760) 727-3876
Membership Chair	Glen Christensen, AI6RR	(858) 735-1144
Repeater Technical Chair	Mark Raptis, KF6WTN	
Scope Editor	Keith Spears, KM6CXW	(858) 472-8442 Text Welcome

Not on Board

Repeater Site Chair	Mark Raptis, KF6WTN	(Acting)

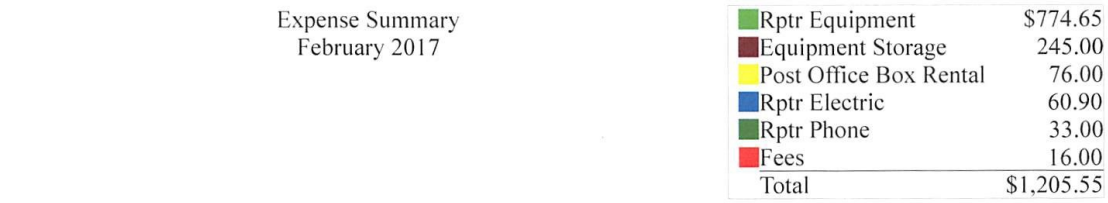
Committee Chairs

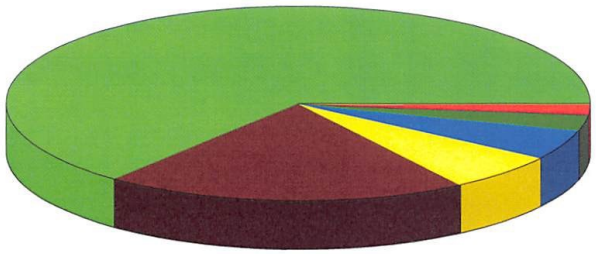
Boy Scouts	Michael Palugod	mpalugod@yahoo.com
Digital ATV	Open Group Forming	atv@palomararc.org
Echo Link	Bernie Lafreniere N6FN	N6FN@niftyaccessories.com
HF Remote	HF Remote SIG	hfremote@palomararc.org
Mesh Networking	Open Group Forming	mesh@palomararc.org
Operating Day	Tom Martin K6RCW	k6rcw@amsat.org
SANDARC Representative	John Walker AC7GK	ac7gkjohn@gmail.com
SANDARC Representative	Paul Williamson KB5MU	kb5mu@amsat.org
SD Microwave Group Liaison	Kerry Banke N6IZW	kbanke@sbcglobal.net



Palomar Amateur Radio Club, Inc.
Income/Expense by Category
February 2017

	Feb 17
Income	
Donations	86.48
Dues	461.70
Total Income	548.18
Expense	
Equipment Storage	245.00
Fees	16.00
Post Office Box Rental	76.00
Rptr Electric	60.90
Rptr Equipment	774.65
Rptr Phone	33.00
Total Expense	1,205.55
Net Income	-657.37





By Account

April Program– April 5th

Phil Karn, KA9Q is one of a group of hams that work with the kids running the Mount Carmel High School Amateur Radio Club. They have successfully launched several weather balloons and Phil will cover how they use WSPR, the weak signal propagation reporter network. You won't want to miss this exciting presentation. The meeting will be held at the Carlsbad Safety Center, located at 2560 Orion Way, Carlsbad, CA 92010.
The meeting starts at 7:30 but come at 7:00 for socialization.

Upcoming Events

Wednesday, April 5th	7:30	PARC Meeting	Carlsbad Safety Center
Wednesday, April 12th	7:00	PARC Board Meeting	Poway Fire Station #3
April 21st-23rd	8-5	DX Convention	Visalia, CA
Saturday, May 6th	10:00	On Foot T-Hund	Lindo Park, Lakeside
Wednesday, May 3rd	7:30	PARC Meeting	Carlsbad Safety Center
Wednesday, May 10th	7:00	PARC Board Meeting	Poway Fire Station #3
May 19th—21st	8-5	Dayton Hamvention	Dayton, OH
June 2nd—4th	8-5	Sea Pac Convention	Seaside, OR
June 17th & 18th	TBA	Mini Maker Fair	AGSEM, Vista

EARS
ESCONDIDO
AMATEUR
RADIO
SOCIETY

Auction

What: EARS Ham-radio-related annual auction
Cost: Sellers $2 for first tag, $1each additional tag, buyers free
When: Saturday April 8th, 2017, Seller check-in 8:30AM, Buyer 9AM, Auction begins 9:30AM
Where: Escondido Methodist Church social hall 341 S. Kalmia St. Escondido, CA 92025 (4th Ave. & Kalmia)
More Info: http://www.earsclub.org
Payment: Cash, Check, Paypal.

Repeater Status

This list includes W6NWG repeaters operated by PARC and other repeaters open to use by PARC members. All W6NWG repeaters are located on Palomar Mountain and are open to all amateurs.

Frequency	TX	Tone	Call sign	Remarks
52.680	-	107.2	W6NWG	Back on the air. Performance tweaking in progress
146.730	-	107.2	W6NWG	System Fusion enabled. See Note 1
147.075	+	107.2	W6NWG	System Fusion enabled. See Note 1
147.130	+	107.2	W6NWG	System Fusion enabled. See Note 1
447.000	-	107.2	W6NWG	System Fusion enabled. See Note 1 & 3
224.380	-	107.2	KK6KD	Americas Unidos. Down for repairs
224.900	-	107.2	WD6HFR	Convair/220 ARC
224.940	-	107.2	KK6KD	Sharp Hospital coverage
446.140	-	123.0	WB6FMT	Vista
146.175	+	107.2	N6FQ	Fallbrook ARC; linked to 445.600
445.600	-	107.2	N6FQ	Fallbrook ARC; linked to 146.175
145.050	s	N/A	W6NWG-1	Packet node; linked to metro 9600 net 1
146.700	-	N/A	W6NWG-3	Packet duplex repeater; Duplex 3

PARC operates an armature fast-scan television repeater. It's currently off the air. Currently there are not links to other ATV sites.

- ATV in: 915 MHz WBFM audio subcarrier 5.8 MHz
- ATV in 2441.5 MHz WBFM, audio subcarrier 6.0 MHz
- Intercom: 146.415 MHz NBFM simplex (tone 79.7). Currently not working.
- ATV out: 1241.25 MHz VSB, NTSC Standard

The PARC repeater site on Palomar Mountain is located at 5560 feet above mean sea level and 2132 above mean terrain. It covers most of San Diego County and beyond into Mexico and out to sea, and is shielded from the North.

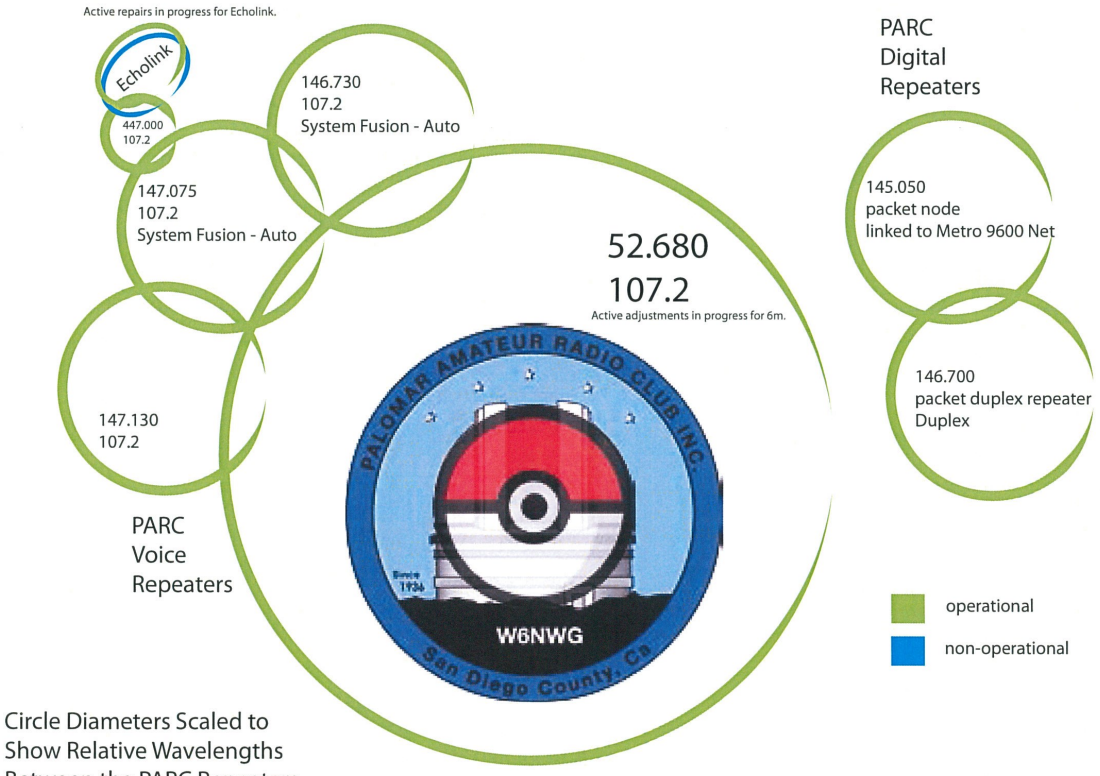
Note 1: All Fusion enabled repeaters require a CTCSS tone of 107.2 Hz to access the repeater and also transmit a 107.2 Hz tone. Since the repeater output has a 107.2 tone you can enable CTCSS receive tone squelch on your transceiver which will eliminate interference from spurious noise and other repeaters. Control operators have the capability of seeing the Fusion Repeaters to FM only operation. Consequently if you can't bring up the repeater in C4FM digital mode, try using normal FM mode. When in FM mdoe all Fusion repeater have a 3 minute maximum transmit time, after which the repeater will cut off transmission until after the received signal drops. To prevent timing out the repeater after someone finishes talking, wait until you hear the courtesy been which indicates that the 3 minute time ahs been reset. If a transmit timeout happens the repeater will provide a voice message indicating that the maximum transmit time has been exceeded.

Note 2: PARC no longer operates an autopatch or packed BBS

Note 3: the 447 MHz repeater Echo Link node is offline and there is a project to restore it back to operation.

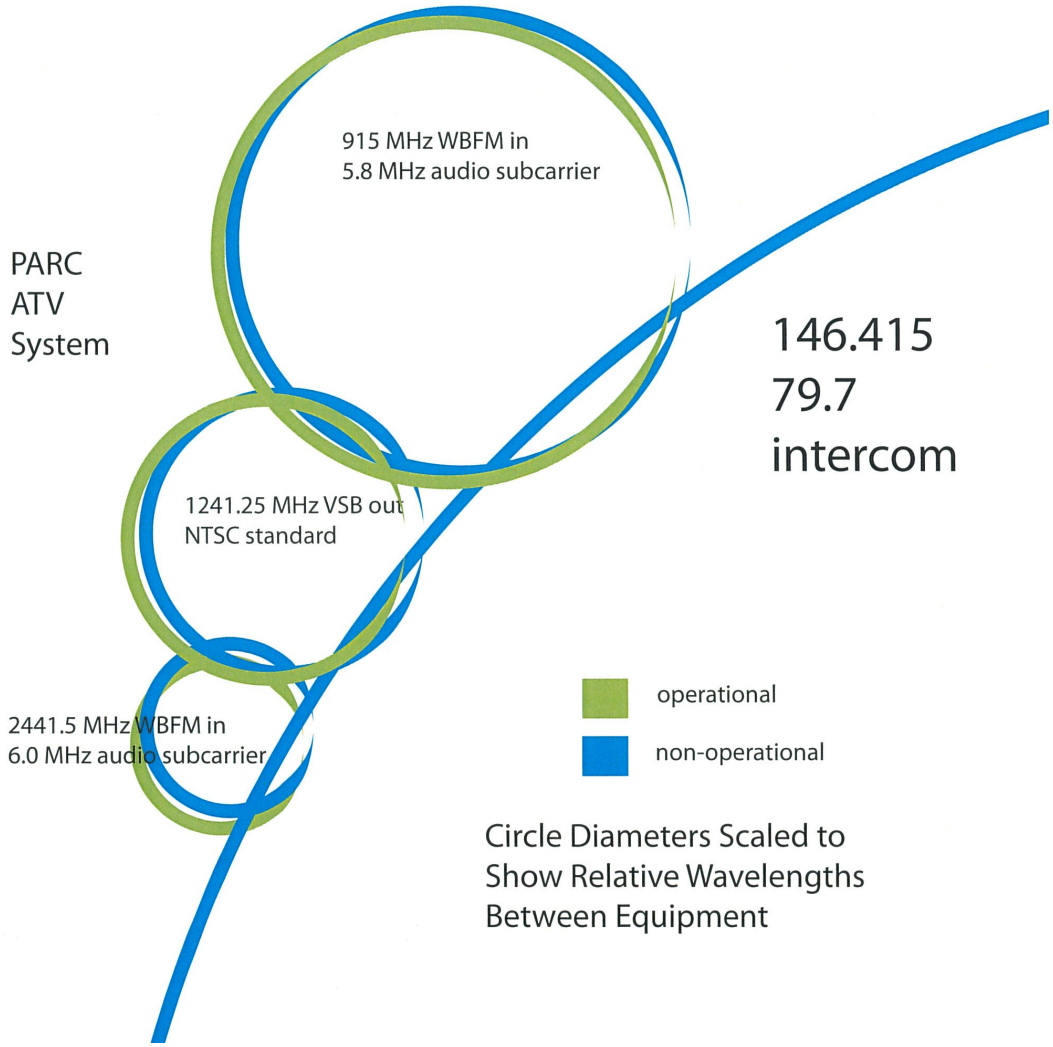
Another project is underway to investigate installing remotely-operated HF station at the repeater site as discussed. Join the Remote mailing list to participate.

Reported Repeater Status



Circle Diameters Scaled to
Show Relative Wavelengths
Between the PARC Repeaters

Reported ATV Status



Why are our Repeaters Talking ? By Bernie Lafreniere, N6FN

"we have been in the process of modifying the club's five Yaesu DR-1X repeaters so they can be controlled using an external controller. "

As you may remember from articles appearing in the SCOPE over the last several months, we have been in the process of modifying the club's five Yaesu DR -1X repeaters so they can be controlled using an external controller. This project was undertaken because as designed by Yaesu the DR-1X repeaters are very limited in what they can be used for, preventing many of the things the club would like to do, such as remotely enabling FM or digital mode operation, using them as EchoLink or IRLP nodes, or for performing other linking or control operations of various types. By modifying its program, the controller we selected is extremely flexible in what it can do. In addition to being able to perform the above mentioned operations, we now have the ability to create and transmit voice messages.
A few months ago, the 147.130 and 147.075 repeaters were converted to being controlled by an external controller. While we were in the process of converting two more of the DR-1X repeaters, the 147.130 and 147.075 repeaters served as a test bed for verifying performance before converting our main 146.730 repeater for operation with the external controller. On February 20th, Presidents Day, John Kuivinen, WB6IQS, and I installed two more converted repeaters and another controller, which were used to replace our very old Motorola Mitrek 447.000 repeater and the 146.730 repeater.

With four of the club's repeaters being controlled by external controllers you most likely have noticed that in addition to IDing in CW the repeaters now also ID by voice. What determines which ID is transmitted? If the repeater is keyed up after not having been used for a while, a voice ID announcing "*W6NWG, PL107.2*" is transmitted. As you know, FCC regulations require a repeater to ID at ten minute intervals while it is being used. Once a conversation is in progress the controller has been programed to broadcast additional ID's in Morse code. Here again things are a bit different than the way the repeaters operated before. Instead of just triggering an ID every ten minutes, which stands a good chance of occurring in the middle of a conversation, the new control algorithm starts looking for a break in the conversation to occur after eight minutes since the last ID. If a break occurs between eight and ten minutes a "normal" CW ID of "W6NWG/R" is transmitted during the break. If no break occurs between eight and ten minutes, to comply with FCC

Why are our Repeaters Talking? - Continued

"the 3-minute maximum transmit time out, also known as an "alligator timer", since it chops off a conversation if it exceeds three minutes"

regulations an "impolite" ID is transmitted on top of the conversation at the ten-minute interval. However, to minimize interference with the ongoing conversation, the ID is shortened to "W6NWG" (without the "/R") and is transmitted at a reduced audio level.

Speaking of breaks in the conversation brings up the 3-minute maximum transmit time out, also known as an "alligator timer", since it chops off a conversation if it exceeds three minutes in length. The courtesy beep heard after someone unkeys lets you know that the 3-minute timer has been reset. If you transmit before hearing the beep, the timer is not reset and you will have less than 3-minutes of transmit time left, and stand a good chance of timing out the repeater.
If someone times out the repeater, listeners will hear the "*Repeater Timeout*" voice message, so they immediately know what has happened. The person transmitting may not hear this message unless he happens to unkey just as the message starts. After the person stops transmitting, a 5-second "quiet period" occurs and then the "*Three Minute Transmit Limit*" voice message is transmitted. The person who caused the timeout will hear this message and know what happened.
Another message that you may hear on the first Wednesday of the month is a reminder of the monthly club meeting. A voice message saying "*The monthly amateur radio club meeting is tonight at 7:30 PM*" is announced once an hour on the half hour starting at 7:30 in the morning with the last announcement being at 6:30 in the evening.
Each of the four Yaesu repeaters will be transmitting this message. However, to prevent interference with conversations that may be in progress, the message is inhibited if at the time it is to be broadcast the repeater is already busy.
Likewise, if the message starts transmitting and someone keys up on top of it, the message has been programmed to immediately terminate.
For now all four of the repeaters are enabled for both C4FM digital and normal FM mode operation. The repeater will recognize the type of signal being received and will reconfigure itself to repeat whatever type of signal is being received, Yaesu calls this AMS operation (Automatic Mode Select).
Via remote control signals to the repeater site, control operators have the capability of setting any of the repeaters to be an FM only repeater. In the future, when EchoLink operation is restored to

(Continued on page 12)

Why are Our Repeaters Talking? -Continued

the 447.000 repeater, by necessity it will be an FM only repeater, as C4FM signals are not recognized on the EchoLink network. If the club eventually has a local Internet connection brought into the repeater site it may be possible to design a system that will automatically switch the repeater to FM mode operation whenever EchoLink operation is in progress. This however, remains to be proven in practice.

"When operating in C4FM mode, repeater ID's are transmitted using CW."

Voice announcements and the other capabilities programmed into the new controllers only operate in FM mode. The repeater ID method described above and other voice announcements will not be heard when the repeater is operating in C4FM mode. When operating in C4FM mode, repeater ID's are transmitted using CW. This limitation is a consequence of the design of the Yaesu DR-1X repeaters.

Control operators have the capability of remotely controlling several repeater functions, some of which are summarized below.

- Analog (normal) FM operation only
- AMS (automatic mode select) mode, where the repeater automatically switches between analog FM and Yaesu digital depending upon the mode of the signal being received.
- Repeater transmission disabled for both FM and digital signals. This can be useful in case a jammer or some kind of interference is causing unacceptable transmissions.
- The DR-1X repeater can be powered down while the controller remains powered so that the other connected repeaters can still operate. Powering down might be useful if the repeater is exhibiting undesired behavior, such as stuck transmitting. An additional use might be when the repeater site has lost power and is running on the backup battery bank. To extend battery life, one or more non-essential repeaters could be shut down.
- The repeater can be powered back up, restoring it to that particular repeater's normal/ default operating state. Any commands altering the repeater's normal/default operating mode that may have been previously used will

(Continued on page 13)

Why are our Repeaters Talking? -Continued

"A number of test and diagnostic functions have also been programed into the controller ."

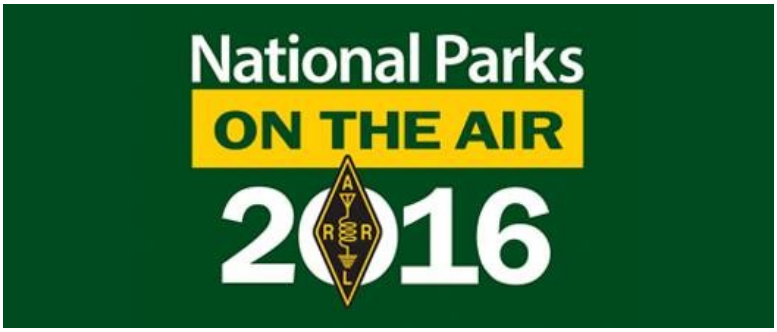
be reset back to the normal state for that repeater.

- The repeater can be power cycled, where the repeater is powered down for 3-seconds and then automatically powered back up. In this case, the repeater's mode of operation will be left unchanged from however it was set prior to powering down. If commands had been issued that altered the repeater's behavior from its normal/ default condition, those conditions will remain set after powering back up from the power cycle command. This command has proven useful when on rare occasions the Yaesu repeater locks up, a known problem with these repeaters. Power cycling the repeater restores normal operation.

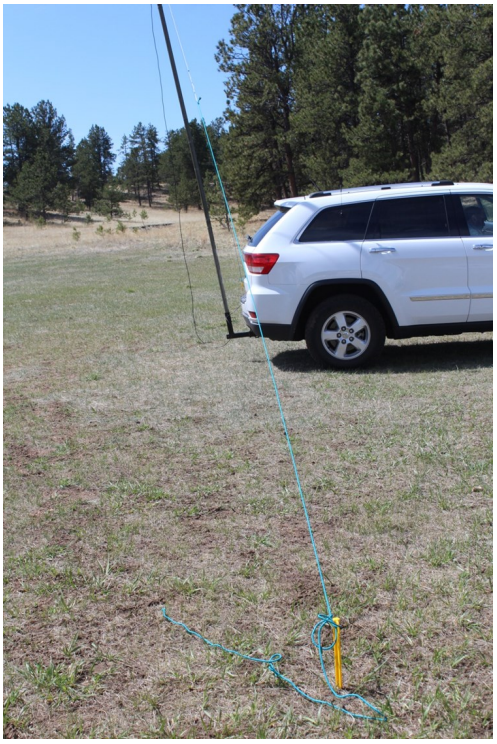
A number of test and diagnostic functions have also been programed into the controller. These are used to verify performance and set CTCSS tone and transmit deviation when a repeater is converted for operation with the controller. Most of the diagnostic functions transmit tones and/or voice messages which you may hear if someone is performing maintenance functions at the repeater site. As you can see, the performance capabilities of our Yaesu repeaters have been greatly enhanced via the use of the external controllers. Since these controllers have a very flexible architecture they provide a solid foundation by which the club can add different repeaters and address future requirements as they arise.

At this time there are three projects under development or consideration that will make use of (require) these enhanced capabilities.

1. Restoring EchoLink operation to the 447.000 repeater. EchoLink has special requirements for the repeater ID's and for faster turnaround from transmit to receive
2. Providing the repeater site eventually gets a local Internet connection, the EchoLink could be converted to make use of the connection. A local Internet connection provides improved EchoLink performance
3. At some future time, a project to connect our old 6-meter repeater to one of the ports on the controller could be undertaken. .



Colorado National Monument



Ron's Antenna

From May 9th through June 8th Ron Pollack, K2RP and his wife Rinkie took a road trip to Dayton and stopped at several National Parks and Monuments along the way.

- The drove 7500 miles
- They passed through CA, NV, UT, CO, KS, IL, OH, MI, WI, MN, ND, SD, CO, NM, AZ
- They had 20 activations in 20 days
- The completed 2000+ QSO's both SSB and CW

Membership Report

From the Membership Table You can check the status of your membership 24/7 at Member List (or go to the club's website and navigate to Join and click on "here" at the top of the page. Enter your call sign into the box and click the "Look up my membership status now" button.

To renew your membership or extend your membership, fill in the form on the Join page. Make sure you select the correct value from each of the drop-down menus (Type of Membership, How many years, I'm an ARRL Member, Newsletter option and License Class). If you want to receive an email when your membership is coming due for renewal, please make sure that I have a valid email address for you. To do that, please send an email to Membership@palomararc.org.

"

Callsigns for already expired memberships or those that will be expired before the April 5th General Membership meeting. (click on your call to check your status)

AA6BP AB6O AC8Q AD6LP AE6HF AE6O AF6UA AG6MQ AI6KO AI6NY AI6QA AK4XK AK6AK K0CSD K6BLL K6DRH K6EQ K6GOR K6ISS K6JQE K6OT K6SC K7WYV K7YMG KA6AAG KA6KIW KA6OYD KB6CPZ KB6CUT KB6NXC KB6PCF KC6HUK KC6YSO KC9IYR KD1BD KD6AEB KD6EKQ KD6YJB KE6AFH KE6GNH KE6LGY KE6MYA KE6NPL KE6PHE KE6UYI KF4LL KF6C KF6MPI KF6SMB KF6UPP KF6XA KF6YWE KF7SJE KG6MDQ KG6OMH KG6QWR KG6RCW KG6RLA KG6TTZ KG6TUL KG6UTS KG6VVN KG6WJD KG6WWY KH6GK KI6AUP KI6AZQ KI6DBL KI6IET KI6JMH KI6LEX KI6NCA KI6SYM KI6YEW KJ6DPE KJ6EDU KJ6KDM KJ6KLJ KJ6QQD KJ6TIM KJ6WUY KJ6YPR KJ6ZBQ KK6BHA KK6CTF KK6DRA KK6EME KK6GHF KK6GO KK6IJN KK6IRZ KK6JDM KK6LBQ KK6LJ KK6LNV KK6MBQ KK6MTF KK6MZF KK6NLS KK6NLV KK6NLW KK6NLZ KK6NMY KK6NON KK6QOS KK6RIP KK6RRW KK6RWK KK6SIA KK6TNO KK6TYQ KK6TYY KK6UFP KK6UYP KK6WOF KK6WPQ KK6YAU KK6YLO KM6ARO KM6CXW KM6DLC KR6FU KW6Q N1BL N6APA N6ERD N6ISC N6IZW N6KI N6MDU N6NAU N6NCP N6RY N6TBA N6TWO N6UWW N6XLZ N6XT N9JZ NA6DC NC7V NE6AA NE6O NN6X NU6L W6ADF W6AOZ W6BQZ W6DTO W6GDK W6GNI W6OYJ W6XM W9BOI WB6LMD WB6UIR WB6ZBP WB9COY WD6FZA WN6K WQ6V WX6AAA ZZ9CR ZZ9DM ZZ9DR ZZ9JJ ZZ9MJM

Polo Shirts

We're ordering Polo shirts! Some of you already have orders in with me from the last meeting, please be ready to pre-pay for them so we can get the order placed ASAP! We need 20 shirts to get the price I've been quoted. If we end up with 30+ then the price goes down and I'll have a little change for those who have pre-paid once your shirts come in!

Base price: $21.00 includes printing on the front, PARC logo on one side and your name/callsign over the pocket.

Add $2.00 for 2XL, $3.50 for 3XL, or $5.00 for 4XL

Add $5.00 if you also want the logo printed large on the back.

73 de K6JPE
Joseph Peterson

December 15, 2016

Dear Amateur Radio & DX Enthusiast,

Are you waiting to see how Dayton does in its new home, but still want to meet and mingle with all your DX friends? Are you saving money for yet another tower, rig or amp? Then Join us next year for a fun event: The 68th International DX Convention in Visalia, CA., April 21 – 23, 2017!

IDXC 2017 is sponsored by the Northern California DX Club at the beautiful Visalia Convention Center in downtown Visalia, CA. IDXC is the premier DX Convention in the United States, and is attended by hundreds of serious DXers and Contesters looking to improve their skills, upgrade their stations and spend some quality hands-on time with the vendors' latest equipment offerings. If you're interested in getting involved in DXing, this a great place to start!

Convention Highlights:

- We've added a day!
- Onsite Registration begins on Thursday afternoon, April 20, 2017 at 3:00 PM local time
- Convention is now a full 2.5 Days: Friday (April 21); Saturday (April 22); 1/2 day Sunday (April 23)
- 15-20 DX & Technical Seminars now on both Friday & Saturday
- Excellent Keynote Speakers
- 35-40 Exhibitors in large Exhibit Hall offering all the latest gear Friday and Saturday
- ARRL QSL Card Checking
- Great Raffle Prizes
- Open DX Forum; Contest Forum; ARRL Forum; YL Forum
- Optional training on Friday : Contest Academy - Basic & Advanced Contesting Techniques
- Eyeball QSOs with your DXing friends, or make some new ones!
- Optional Friday Dinners: Top Band Banquet or IOTA Banquet or Contest Banquet
- Optional Saturday Visalia Tour
- IDXC Registration is now open!
- For more information and to register, visit our website at: dxconvention.org

IDXC 2017 will be the biggest and the best International DX Convention yet, and we hope you'll be able to join us to enjoy it all!

73,

John Miller, K6MM
Rich Seifert, KE1B
Kevin Rowett, K6TD
IDXC 2017 Co-Chairmen

The STEM Committee of the San Diego Imperial Council of the Boy Scouts of America needs
YOUR HELP
WITH THE FOLLOWING EFFORTS:

1. **Help with the Radio Merit Badge at the Boy Scout Fair on April 8th, 2017. We need on site operators with rigs and remote operators. This is the 100th Anniversary of Boy Scouts in San Diego!!! Contact KK6FRK to enlist.**
2. **Radio Scouting Technician Exam and HT sponsors. After a Scout earns is Radio Merit Badge, the next step is to pass the technician exam. Upon passing the exam, a PARC member can sponsor the cost of an HT radio for the Scout. Sponsorship cost approximately $65.00 per Scout. The sponsor can present the HT to the Scout at the monthly PARC meeting. Contact KK6FRK for more info.**
3. **Camp Balboa Radio Room Reboot: We need volunteers who can:**

A .Replace electrical subpanel and wiring in radio room per current electrical code. Problem = circuits trip under load and not to current code.
B. Remove water-damaged drywall and install new drywall, lower horizontal half of radio room walls.
C. Radio room antennas – repair or replace per your antenna engineering imagination; HF and UHF/VHF.

CONTACT KK6FRK FOR MORE INFORMATION ON HOW TO HELP

Scout Fair 2017

Qualcomm Stadium, April 8, 2017

'A Century of Timeless Values'

"

Donate to PARC by Shopping at Amazon

As publicized earlier this year, PARC is now a not-for-profit charity, and fund donations to PARC are eligible for tax deduction itemization for those who are eligible for such a tax itemization. PARC also announced that in cooperation with Amazon, it is now possible to shop on Amazon at NO cost increase, and have Amazon distribute a percentage donation to PARC.

This is done by shopping on www.smile.Amazon.com.

If you choose to avail yourself of this opportunity, when shopping on www.smile.amazon.com, specify Palomar Amateur Radio Club as your charity of choice for donation.

In the Beginning-Early Memories of Ham Radio Part III

(*Editor's Note: Al Martin, W6SE provided this memoir from his father John Martin, W6SE about the early days of Ham Radio in North San Diego County. We will be publishing excerpts from it over the next several months.)*

To carry on with my story, it was in late 1928 or early 1929 that another amateur appeared in Oceanside in the person of Fred Pierce, W6FP. He was assigned to Oceanside as line superintendent for the San Diego Consolidated Gas and Electric Company, as it was then called. Shortly thereafter, in 1929, Bud Davis, who had a radio sales and repair shop in Oceanside, was licensed. His call was W6AEP. As I recall it, Fred built a rather interesting transmitter consisting of a pair of 210 tubes, paralleled, in a tuned plate-tuned grid circuit. The parts were installed in an oak table phonograph cabinet. The tubes, coils and variable condensers (capacitors to you youngsters) were all mounted on the top, where the turntable and the pickup arm had been. The power supply was installed below in the space meant for the wind-up motor, where there were one plate and two filament transformers, a smoothing choke, a pair of 2 mfd. filter condensers (capacitors, son) and a pair of UX 281 half-wave rectifier tubes. This supply was capable of delivering 750 volts DC and was the first high voltage power supply using thermionic (vacuum tube) rectifiers I'd ever seen. Bud, having no transmitting gear at the time, bought it on the spot.

It was at about this time my continuing power supply problem was solved. Up until the late twenties most radios (I'm speaking of broadcast receivers, son) were battery powered. Among the batteries available to the public were small lead-acid "B" cells in 50 volt banks. Actually 24 lead-acid cells when connected in series would produce approximately 50.4 volts DC when fully charged These would deliver as much as one ampere to a load for a time (I've long since forgotten their ampere/hour ratings) and therefore were highly desirable as plate voltage sources for low -powered transmitters and sources of bias voltage for high powered rigs. As some of you will recall, "B" battery eliminators operating from commercial power mains first became available in the twenties and thereafter totally AC powered receivers appeared in the late twenties, relegating the old storage "B" battery to the fate of the dinosaur. I came by twelve of these beauties for the price of carting them off. They made a wonderful plate supply. I charged them 100 volts at a time using a rectifier and a

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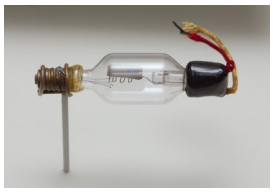
John Martin in his Shack

"As some of you will recall, "B" battery eliminators operating from commercial power mains first became available in the twenties "



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small light bulb in series with the 110 volt AC line. With the battery plate supply I received PDC reports, as one would expect. There was a double pole single throw knife switch, mounted on a porcelain base, used for the plate voltage controller. On one occasion the thing was accidentally shorted. The fat arc developing across the switch blades was a thing of beauty, if not a joy forever. Allow me to now confess that the arc was frequently struck to impress visitors. You ask me, why didn't the fuses blow? My reply is that we didn't worry very much about safety in those remote times. While one might shudder at the thought of such reckless disregard for the rudimentary rules of safety, I thankfully take comfort in the fact of my survival. By the way, one extinguished the flaming arc by merely blowing it out! There was a considerable advantage secured in using a bank of two, three or more of these batteries as the source of biasing voltage for the very hard driven class C amplifiers of the day, in as much as the hefty grid current developed in the final amplifier tube was a charging current. Consequently there was never any drain on the battery except, of course, for internal leakage. About the only attention the batteries ever needed when employed as a source for bias voltage was an occasional check of the electrolyte level. I add this observation for the benefit of generations of amateurs who have had no experience with those hard driven class C amplifiers. In the old days the practice was for Hams to run their amplifiers at a grid bias voltage of several times the tube's specified cut-off figure. In so doing plate current would flow over only the peak portion of the positive drive current cycle. Naturally much more driving power was needed, This, of course, made for greatly enhanced efficiency in the amplifier's operation, a figure said to approach 85 percent in some cases. Because the signal emitted from such a device was heavily laden with harmonics, hard driven heavily biased class "C" RF amplifiers are not much used today, if at all. Final amplifier tubes employing tantalum plates were highly prized then because of their ability to absorb gas when operated at high temperatures. The result was that the plates of tubes such as the Eimac 250 TH would often turn white hot when the key was held down for a few seconds. Because the VHF and UHF segments of the spectrum were not much used in those days, we could get away with those harmonic producing devices. Television and FM broadcasting changed all of that, and for the better, I suspect.

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"one extinguished the flaming arc by merely blowing it out! "

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In 1929, for the princely sum of $7.50, I acquired a type 210 triode vacuum tube, the rated plate dissipation of which was seven and one half watts. At the time it was the 2generally accepted "work-horse" for low powered amateur transmitters. A tuned platetuned grid oscillator was fabricated and put to work with the battery plate supply. A UX-222 tetrode was added to the receiver as an untuned RF stage. This combination lasted until mid 1930 when a "master oscillator" (VFO to you late comers) was included in the transmitter and the 210 was modified to become a class "C" power amplifier.

After learning how to neutralize the amplifier, I discovered the modified rig was a winner. If the amplifier wasn't loaded down too heavily, I received PDCX reports regularly. This meant my signal was pure dc with crystal stability. Perhaps it wasn't that good, for we had already begun the practice of bargaining for signal reports at that early date.

It was in 1930 that I became personally acquainted with Ralph Culbertson, W6CHV. We had chatted with each other occasionally on CW and it was by this means that we arranged a visit. Driving from Oceanside to Escondido I met him at B and C Electric Company, where he was then employed. From there we went to his residence, situated on a hill west of the city. There I saw his Ham station - one of the classics of the day. His transmitter was a Hartley oscillator powered by a 203-A, a tube called a "fifty watter" in those remote days, inasmuch as its plate dissipation was allegedly 50 watts. The receiver was the standard of the day - an autodyne detector followed by two stages of audio, powered by batteries. The power supply for the transmitter was situated under the operating table, of course, and consisted of a pole transformer, chemical rectifier, a very large smoothing choke and a couple of very large filter capacitors. Additionally he had a cute little monitoring device - a completely shielded receiver with the A and B batteries enclosed within the shielding. With the monitor he could hear his transmitter, how it sounded when fully loaded, and additionally, could spot where he was in the band, for the monitor's oscillating detector could be heard faintly in the station receiver. His antenna was a 40 meter end-fed zepp. Even then Ralph was interested in pursuing DX, for he had a collection of QSL cards that was impressive, including one from Moscow, a rarity in those days. By the way, when I last talked with him, not a long

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John Martin's Shack, 1957

"His transmitter was a Hartley oscillator powered by a 203-A, a tube called a "fifty watter" in those remote days, "

In the Beginning-Early Memories of Ham Radio-Continued

"In the day of the self excited oscillator-transmitter one usually considered himself lucky if he could establish his transmitter frequency within plus or minus ten or twenty KHz of where he wanted to be. "

time before he left us behind, he showed me his log book from the early thirties, and sure enough, we were able to find log notations of our contacts. Also he had a photograph of the station set-up described above. It seems that he saved everything from his early days in amateur radio. Let us hope that some individual or group was able to take possession of his memorabilia, for it deserved preservation.

Thus far you have been told little or nothing about the operating practices and procedures that were followed in the late twenties and early thirties. In the day of the self excited oscillator-transmitter one usually considered himself lucky if he could establish his transmitter frequency within plus or minus ten or twenty KHz of where he wanted to be. So, if one elected to call CQ he would listen for replies starting at his nearest band edge and thereafter tune the receiver either upwards or downwards, at the band edge indicated. When looking for DX, the shrewd ham located himself as close to the band edge as possible, calculating that the DX station would begin to search for an answer to his CQ at that spot. In those days most of us who were interested in DX would arise at about 4 o'clock in the morning and listen on forty meters for Japan, China, the Malay Peninsula, as well as for Australia, New Zealand, and the Pacific Islands. At that time there was a lot of Ham activity in China, particularly in the Shantung Peninsula, where numerous missionaries kept the forty meter band well occupied. South America was relatively easy to reach. Twenty meters was the place to look for Europe. South Africa could occasionally be heard in the evenings and early mornings on forty meters, if one listened closely.

It should be mentioned that I was not much interested in DX in those days, so I'm certain a knowledgeable old timer, Dick Shanks, for instance, could give you a more exhaustive and accurate report on this subject.

In the fall season of 1931 I betook myself off to UCLA, which stay lasted only one school year inasmuch as depression related problems cut my cash flow seriously. In the fall term of 1932 I enrolled at San Diego State, there to attend classes from time to time as my financial fortunes dictated. While there I became acquainted with Bernie Bernardini, who then had a dance band, one appearing to have an edge in performing for sorority dances. Perhaps Bernie's youthfully importunate blandishments intrigued the girls. I don't know, but suspicion so. Anyway I was given a job playing trumpet in his organization. The group was known, only

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among its members, as "Muzz Bernardini and his Woptonigans." Because of Bernie's generous and forgiving nature I managed to retain a position for a year or two as one of his side men. Thus it was possible for me to keep body and soul together while attending classes. Bernie was a fellow Ham with the call of W6IZW, if I remember correctly. It seems to me that he spent considerable time on 160 meter phone in those days. As a matter of fact, some of his evening sessions on 160 became known among the local denizens of that band as the "Bernardini Hour".

The depression years, in one way or another, produced a great many Radio Amateurs, for numerous intelligent folks fell upon hard times in those evil days. In order to keep themselves occupied, some of the more intelligent took up Amateur Radio as a hobby and thereafter managed to secure employment in the expanding electronics industry as the result of what they'd learned from it.

Radio listening was the evening project in most homes, while the radio "soap operas" kept a legion of housewives entertained during the day. Evening programs such as Amos and Andy, Lum and Abner, Fibber Magee and Molly, One Man's family, the Fred Allen and Jack Benny shows became staples in Everyman's life. The only problem Amateurs suffered from this mushrooming development was called BCI, or broadcast interference. Compared with the difficulties we encountered with TVI at a later date, the disability was relatively simple in its cure.

During those periods when I was not going to school, I managed to acquire a state-of-the-art transmitter consisting of a type '47 crystal oscillator, 210 buffer and a 211 final. This line-up was complicated by the fact each of the vacuum tubes utilized in it required a different filament voltage. This must have been in 1933 or 1934, when such a device was considered a medium powered rig. It wouldn't be that nowadays, as the 23 input power never exceeded 250 watts when it was fully loaded. Under optimum conditions the output power would run 150 watts or so, if I didn't hold the key down too long. By way of explanation, in those days we usually kept our final amplifier tube in plain view in order not to melt down the plate of the poor thing. We were slow to realize that a doubling of the output power will make a small difference at the other chap's receiver. Hence, squeezing out that last watt did little other than to inflate our confidence. Actually there was no means of measuring the power out other than loading into light bulbs of known wattage, so

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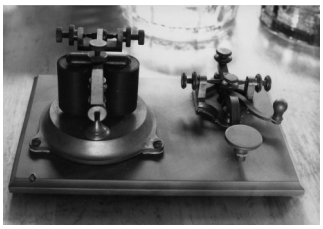
"in those days we usually kept our final amplifier tube in plain view in order not to melt down the plate of the poor thing. "



In the Beginning-Early Memories of Ham Radio-Continued

the effort was really nothing more than a guess. At about the same time I managed to acquire a Hammarlund Comet Pro superheterodyne receiver, considered the standard of excellence in its day.

With this arrangement I became interested slightly more in DX, managing to make my transmitter operate on ten and twenty meters. Unfortunately the logs and QSLL cards have long since disappeared.

School work and other demands on my time prevented me from doing much with amateur radio in the middle and latter part of the thirties. It should be noted here that with the advent of cheap crystals and multi-element vacuum tubes the Amateur bands became quite different from what they had been in the twenties.

"First, with crystal control one knew, confidently, where he was transmitting frequency wise, . . "

First, with crystal control one knew, confidently, where he was transmitting frequency wise, provided that one of the stages following the crystal oscillator in his transmitter was not unstable. If one had a lot of crystals he could move around a chosen band readily. As the bands were harmonically related, one could easily multiply the operating frequency to another band.

The development of class "B" modulators made it possible for the 'phone man to run his station more efficiently, as prior to the early thirties practically all Amateur 'phone work was done with the Heising, or class A modulation system, which was notable for its inefficiency. The new modulator design ended all that, inasmuch as sufficient modulator power could be gained with smaller and less expensive vacuum tubes operating at lower plate voltages, and this resulted in the popularization of AM 'phone activity.

But then we saw that go the way of all flesh in mid- century with the advent of the single sideband-suppressed carrier system we find in vogue today. If my recollection is correct, it seems that the single sideband-suppressed carrier mode was first suggested in the early thirties, and I wondered about it at the time, asking myself why use two sidebands when they both say the same thing? Additionally, if the carrier may be inserted locally and the modulation applied at a very low level, why pay tribute to the utility company for all the juice used to support the then conventional phone transmitter which, operating at the legal limit of one kilowatt, required about 500 watts of audio power to sustain one hundred percent modulation?

But in those days I was a CW addict, and remain so until today.

The thirties produced a great many changes in the field of Amateur Radio aside from those noted above. Perhaps the greatest of these

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In the Beginning-Early Memories of Ham Radio-Continued

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was in the appearance of commercially manufactured Ham equipment. Art Collins produced a very nice little transmitter early on - an artifact now much sought after by collectors of antique gear. National manufactured the SW-3 and FB-7 receivers while Hammarlund, Breting and Hallicrafters made competing models. Numerous transmitter kits were offered and one or two manufacturers introduced transmitters. It became the practice of Hams to buy their receivers and to build their transmitters, for the ready availability of vacuum tubes and parts made it much easier to put together a high powered rig. By high powered I mean a transmitter capable of operating at a final amplifier power input of one kilowatt.

Eitel-McCullough produced transmitting tubes with tantalum plates, an element capable of absorbing gas while operating at high temperatures. Thus they would not go "soft" if mistreated.

It is rumored, spuriously no doubt, that there were some who exceeded the magic number of one kilowatt input to the final amplifier, for who would commit such a dastardly act? And it was in the thirties that the VFO came into its day. At first these devices seemed to universally suffer from drift and instability.

The CW gang sought to key them in order to accomplish break-in operation, meeting with varying degrees of success, mostly poor. A construction article or two appeared in QST, and perhaps another magazine, showing how to build a heterodyne type VFO, a device that would cure most of the VFO problems encountered with break-in CW, but we hams were slow to take up the idea. And to add further to the accomplishments of that fateful decade, the rotary beam made its appearance! My old friend, Harold Ulmer, W6EPM, built one of them, later writing an article about his project which appeared in the pages of QST.

TUNE IN NEXT MONTH FOR ANOTHER EXCITING CHAPTER OF THE EARLY DAYS OF HAM RADIO.

"And it was in the thirties that the VFO came into its day. . "

INTERNATIONAL STYLE ON-FOOT T-HUNT

Saturday May 6th, 2017

Lindo Lake County Park, 12660 Lindo Lane, Lakeside,CA 92040

Sponsored by the San Diego T-Hunt Group & CQ Magazine World Wide Fox Hunting Weekend

Starting times will be 10:00 AM to 2:00 PM at 5 minute intervals. If you start at 2:00 you will have until 3:30 to complete the course. NO REGISTRATION FEES! There will be 5 hidden T's using the MOE-MOI-MOS-MOH-MO5 format. You will be issued a "Punch card" and there will be orange & white flagging tape at each punch located close to the T's which will be concealed. Antennas will all be vertically polarized with approximately the same radiated power from each "T". This will be a very flat and short course compared to past hunts! For information on "International Style Transmitter Hunting" you may go to Joe Moell, k0ov's excellent website..... www.homingin.com/intlfox.html We will have limited equipment for loan for those that do not have small 2-M beams. Bring a connector to go from your HT antenna connector to a BNC cable (Chinese HT's not recommended). There will be experienced Hams present to demonstrate techniques for those that want to learn about "On-Foot" Amateur Radio Direction Finding (ADRF) and a "Practice T" to experiment with before you start the course. You do not need a Ham Radio License to participate! You will be issued a map of the area with major features delineated. A compass, clipboard and pencil may be handy to plot bearings with. Dress appropriately and plan on taking water with you while hunting. There are several restrooms in the Park.

A BBQ is planned for about 3:00 PM for those interested. We will have burgers & hot dogs, buns, condiments, potato salad, drinks, chips & salsa. BBQ donations can be made on site. For information contact :

Joe Corones, N6SZO @ H-858.484.3582, C-858.603.5545, jcorones@gmail.com OR... ...
Joe Loughlin, KE6PHB @ H-619.461.7845, C-619.403.3149, ke6phb@cox.net

Directions: From Interstate 8 take Hwy 67 North and from E/B 52 take Hwy 67 North to the Winter Gardens Blvd. exit staying to the right. Immediately after you turn onto Winter Gardens make a left on Woodside Ave. and go straight until you hit the Park, about 6-7 streets. The road curves to the right and then to the left, after the left curve turn into parking lot on your left by the VFW and Park entrance. Look for signs/banner for T-Hunting towards the back end of the parking lot. Coordinates are 32° 51' 24" N, 116° 55' 07" W.

COME OUT AND EXPERIENCE A DIFFERENT ASPECT OF HAM RADIO


SEA PAC
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Hands Free Driving Law Update-Continued

"the California Highway Patrol is expected to disseminate guidance within a month or two. "

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complete legislative history of the bill, we eventually obtained a statement from a staff member of the Assembly Transportation Committee that the intent was not to include Amateur Radio and the absence of some exclusionary language was an oversight. Meanwhile, private and public statements from members of both law enforcement and the judiciary were coming out with adverse interpretations for Amateur Radio, adding to the level of member consternation and validating our initial concerns.

State government officials will generally not engage in communication with voters outside their respective districts. An exception may be made, however, if the voter's own representative makes an introduction". Now-retired Volunteer Counsel Len Shaffer, WA6QHD (Palmdale case attorney), requested and received such an introduction and was then able to schedule a meeting in Sacramento for himself and Vice Director Woll with Quirk's legislative deputy. That meeting took place on Tuesday, March 14, 2017, and future action looks promising.

Woll and Shaffer came armed with specific documentation of inconsistent interpretations, including names, dates and contact information, and the deputy appreciated this level of detail. She advised us that her office had already been approached by lobbyists for several non-Amateur interests which also saw the new law as a threat to mobile radio communications. Their proposed solutions, however, were industry -specific or employment-based, none of which would protect Amateur Radio. We discussed the kinds of public service work Hams do that would be adversely impacted without some form of exemption, and she agreed that broader exclusionary language would be more appropriate than individual carve-outs.

As to the mechanics, we suggested a letter from Quirk to the state government's Legislative Journal clarifying the legislative intent. That would provide more immediate defense for mobile radio users than would an amending bill, which is in the works (AB-1222) but would not take effect until 2018. She told us that such a letter is being developed and agreed to advise us when it is ready to go. We also suggested adding clarifying language to the Committee's omnibus bill. The deputy said they would consider

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Hands Free Driving Law Update-Continued

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doing so but that some procedural pitfalls could eliminate that route.

Finally, the California Highway Patrol is expected to disseminate guidance within a month or two. Through a Ham contact at the Los Angeles County Sheriff's office, Vice Director Woll had already received a preliminary version of that guidance. It states that using wired radio microphones would not be considered a violation but that using hand-held radios would be cause for a citation. If the final CHP guidance comes to a similar conclusion, it will be a less-than-perfect but, in our judgment, somewhat acceptable conclusion. The deputy also promised to advise us when that interpretation is issued in final form. Of course, CHP guidance will not filter down to all law enforcement agencies in the state, so citations by local police may still occur, and authoritative evidence of legislative intent will still be important for any Amateur who has to challenge a citation in court.

From the above, it appears that no grass-roots action is needed at this time. However, until and unless we receive authoritative guidance to the contrary, we advise against using handheld radios while driving unless they are equipped with external, corded microphones. As always, avoid any radio usage or other activity whenever you feel it detracts from your ability to control your vehicle fully or to maintain awareness of surrounding traffic.

ARRL Southwestern Division
Director: Richard J Norton, N6AA
n6aa@arrl.org

"avoid any radio usage or other activity whenever you feel it detracts from your ability to control your vehicle "

Wanted

SLOW COMPUTER WANTED: Old slow Windows XP working computer with XP operating system. Nothing special required except for usable USB and/or DB-9 RS-232 ports. Have old fashioned keyboard / mouse with round connectors available. Needed for programming some Midland Radios. Windows 7 will not work with the older program from 1994. WB6IQS@att.net, John.

John Kuivinen, WB6IQS
Vista, CA

SCOPE
PUBLISHED BY THE
PALOMAR AMATEUR RADIO
CLUB

EDITOR
KEITH SPEARS
KM6CXW

Editorial Policy

The Scope welcomes and encourages members to submit articles, photos, stories, equipment reviews and any other items of interest to ham radio.

The Palomar Armature Radio Club reserves the right to edit all submissions for content and length.

Please submit documents in MS Word format and photos as JPEG or GIF. Flyers may be submitted in PDF.

All submissions need to be received by the 20th of the month.

Send submissions to:

scope@palomararc.org

The Back page is a place for ham radio humor. If you have a joke, cartoon or just a fun story about ham radio, please share it with me.

Understanding Engineers By John

An engineer was crossing a road one day, when a frog called out to him and said, "If you kiss me, I'll turn into a beautiful princess." He bent over, picked up the frog, and put it in his pocket. The frog spoke up again and said, "If you kiss me, I'll turn back into a beautiful princess and stay with you for one week." The engineer took the frog out of his pocket, smiled at it and returned it to the pocket. The frog then cried out, "If you kiss me and turn me back into a princess, I'll stay with you for one week and do anything you want." Again, the engineer took the frog out, smiled at it and put it back into his pocket. Finally, the frog asked, "What is the matter? I've told you I'm a beautiful princess and that I'll stay with you for one week and do anything you want. Why won't you kiss me?" The engineer said, "Look, I'm an engineer. I don't have time for a girlfriend, but a talking frog - now that's cool."

The Magic Potion

A father and his daughter were driving down the road when a rabbit hopped out in front of them. The father slammed on the brakes but was unable to avoid the rabbit.

They hopped out of the car and looked sadly a the rabbit laying in the road.

A ham radio operator happened upon the scene and after seeing how sad the little girl was he ran back to the car and using his radio called his wife.

His wife soon drove up and handed him a bottle. He went over and sprayed the rabbit.

To everyone surprise the rabbit got up and started hopping down the road. Every few feet he turned and waived at the little girl.

Amazed the father asked the ham what was in the that bottle?

The ham replied "Oh that was just hare restorer with a permeant wave"