



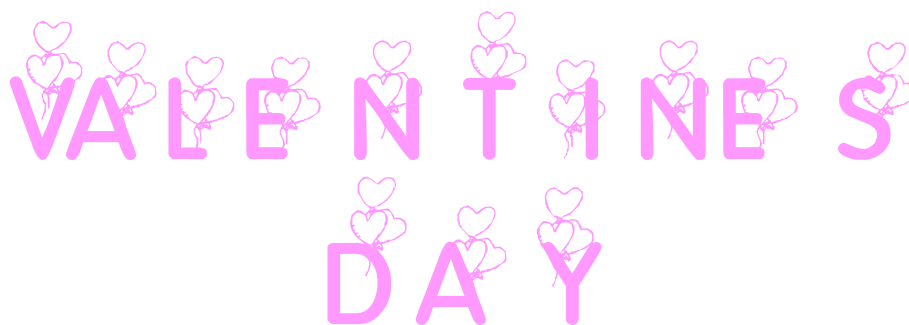
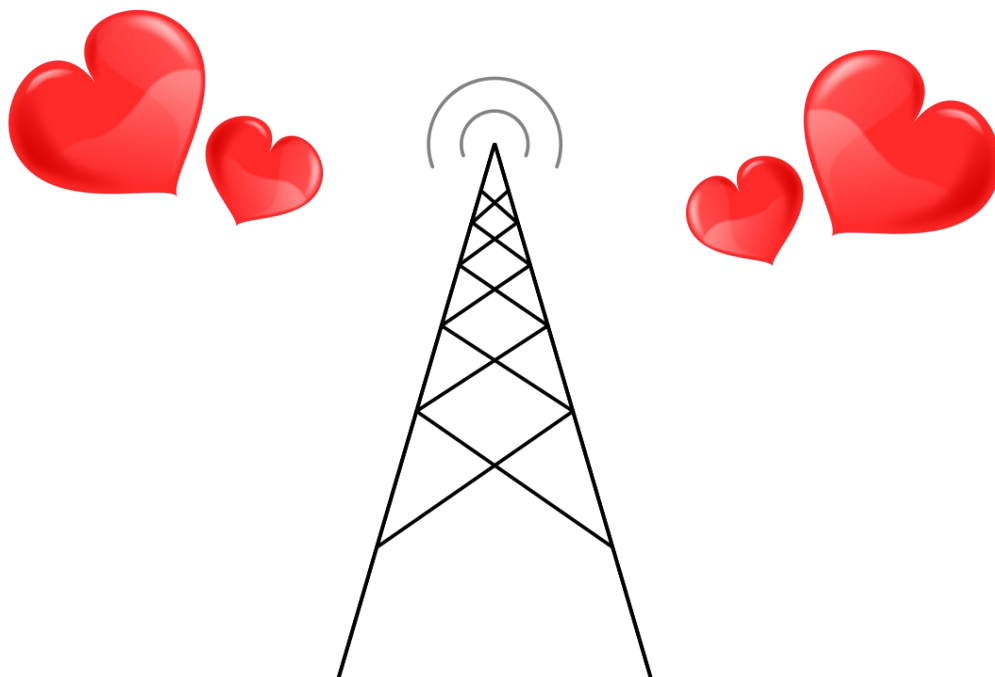
Inside this issue:

Editorial	2
President's Corner	2
Board Members & Committee	3
Treasurers Report	4
Meeting Program & Upcoming	5
Repeater Report	6
Repeater Status	7
ATV Status	8
Membership Report	9
Getting Back on 630 Meters	10
6 Meter Replacement Repeater	11
Yuma Hamfest	15
Back Page Fun	16



Palomar Amateur Radio Club

January 2018



It Appears By Spears



By the time most of you read this I will be off to Orlando Florida for a weeks vacation. The fact that the Florida State Ham Radio Convention is in town that week played no part in my decision:)

I promised my wife some time at the theme parks and shopping if I could visit the convention. I hope

to see lots of new and interesting things.

This month John, WBIQS gives us an update on his adventures in replacing the old 6 Meter Repeater. Once done we should have stable six meter system. It's amazing what you can make out of old parts you have laying around. Also in this

issue Bill updates about getting on 630 meters.

Thanks to all of you who sent in articles this month, please keep them coming.

I hope everyone remembers the valentine that lets have all this fun.

73 de KM6CXW
Keith Spears

Presidents Corner

*"Greetings and
Happy Birthday
to PARC! "*

Greetings and Happy Birthday to PARC! February is the birthday month of our club and I'm pleased that we all can celebrate the 82nd year! We are expecting a fantastic program this

month, so be sure to get to the General Meeting on Wednesday! Please note that the Board Meeting has been moved from the 2nd Wednesday (Feb 14 - we felt there were more important things

to do that evening!) to Feb 21, same location. We will also be moving both July meetings out by one week, as the 1st Wednesday falls on the 4th of July! More on that as the time draws nearer.

Board Members and Committee Chairs

Board of Directors

President	Joe Peterson, K6JPE	(619) 630-8283
Vice President	Charlie Riistorcelli, NN3V	619-368-7617
Treasurer	Tom Ellett, W0NI	(858) 546-1148
Secretary	Rainer Muller	
Director 1	John Kuivinen, WB6IQS	(760) 727-3876
Director 2	Greg Gibbs, K16RXX	760-583-9668
Membership Chair	Glen Christensen, A16RR	(858) 735-1144
Repeater Technical Chair	Mark Raptis, KF6WTN	
Scope Editor	Keith Spears, KM6CXW	(858) 472-8442 Text Welcome

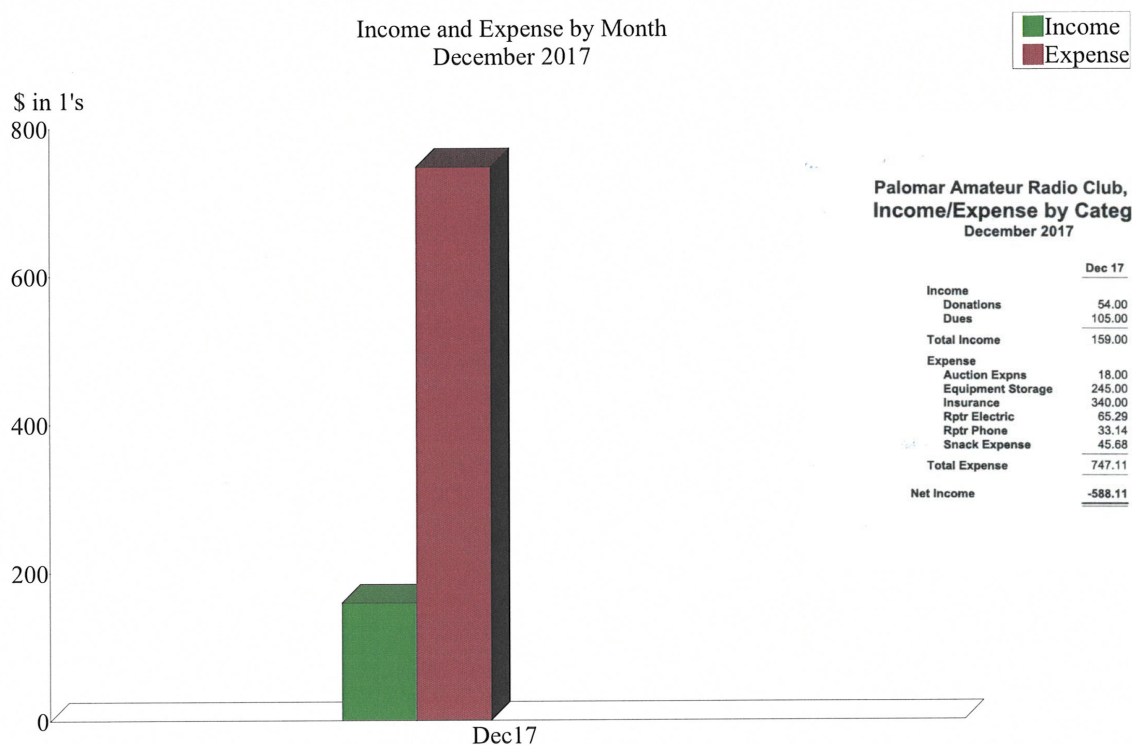
Non Voting Members

Repeater Site Chair	Mark Raptis, KF6WTN	(Acting)
Webmaster	Guido Sansoni, NO6I	(760)-224-6824
Trustee	Michelle Thompson, W5NYV	

Committee Chairs

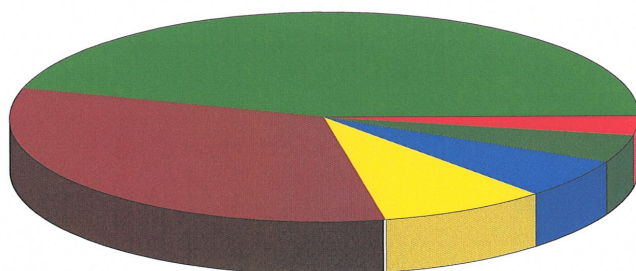
Boy Scouts	Michael Palugod	mpalugod@yahoo.com
Digital ATV	Michelle Thompson, W5NYV	mountain.michelle@gmail.com
Echo Link	Bernie Lafreniere N6FN	N6FN@niftyaccessories.com
HF Remote	HF Remote SIG	hfremote@palomararc.org
Mesh Networking	Michelle Thompson, W5NYV	mountain.michelle@gmail.com
Operating Day	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

Income and Expense by Month
December 2017



Expense Summary
December 2017

Insurance	\$340.00
Equipment Storage	245.00
Rptr Electric	65.29
Snack Expense	45.68
Rptr Phone	33.14
Auction Expns	18.00
Total	\$747.11



By Account

February Program

Exotic Adventure to T31A

No, the title of this month's program is not a misprint!

K6ZH (Jim Price) will describe the difficult work involved in going on a DXPEDITION to Central Kiribati.

Jim was licensed in 1963, originally as WN6DPV, holds an Extra Class license since 1968, and has had the callsign K6ZH since 1977. Jim is an avid DXer and contesteer having won numerous contest awards, operated from six different countries, and contacted every DXCC country at one time or another. He has been a member of the San Diego DX Club for many years and has served twice as its President. Jim has also operated with PARC several times as a CW operator during Field Day.

If you are unsure of where that is, the accompanying image will show where, and what it is. Consider it the middle of the Pacific Ocean. And don't count on exotic hotels! Its just a pile of rocks.

Many of us chase DX. Some of hams work very hard to activate those exotic places so DXers can chase them and earn they're DXCC endorsement.

Whether you are an avid DXer, or just curious about what those people do in chasing DX, come listen to this program.

Upcoming Events

Wednesday, February 7th	7:30	PARC Meeting	Carlsbad Safety Center
Wednesday, February 21st	7:00	PARC Board Meeting	Poway Fire Station #3
February 15th & 16th	All day	Yuma Hamfest	Yuma Fairgrounds
Wednesday, March 7th,	7:30	PARC Meeting	Carlsbad Safety Center
Wednesday, March 14	7:00	PARC Board Meeting	Poway Fire Station #3
Wednesday, April 4th	7:30	PARC Meeting	Carlsbad Safety Center
Wednesday, April 11th	7:00	PARC Board Meeting	Poway Fire Station #3

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	6 Meters is Currently being repaired
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	FM only for EchoLink Call Sign N6FN-R
224.900	-	107.2	WD6HFR	Convair/220 ARC
224.380	-	107.2	KK6KD	HARS Hispanic Amateur Radio Society Open
224.940	-	107.2	KK6KD	HARS: Sharp Chula Vista Hospital, Open
145.260	-	107.2	KK6KD	HARS: San Diego Open
147.945	-	107.2	KK6KD	HARS: System Fusion Mt. Miguel Open
448.460	-	151.4	KK6KD	HARS: Mt. Miguel, San Diego Open
145.460	-	110.9	XE2DXA	HARS: Tijuana, Mexico Open
146.970	-	107.2	KA3AJM	Vista-Sponsored by MetroNET
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.

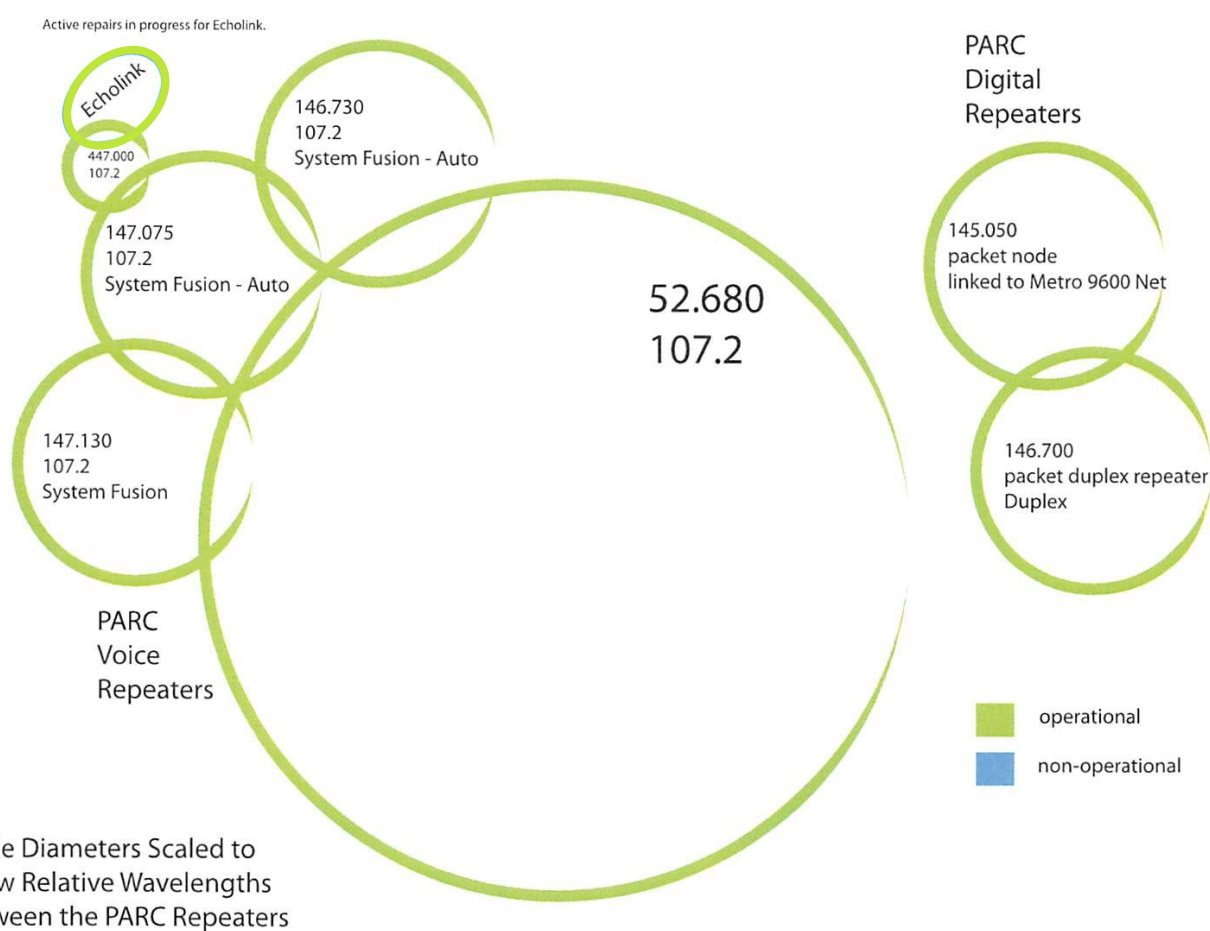
- ATV in: 915 MHz WBFM audio subcarrier 5.8 MHz
- ATV in 2441.5 MHz WBFM, audio subcarrier 6.0 MHz
- Intercom: 146.415 MHz NBFM simplex (tone 79.7). Currently not working.
- ATV out: 1241.25 MHz VSB, NTSC Standard

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 setting 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 mode all Fusion repeaters 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 beep which indicates that the 3 minute time has been reset. If a transmit timeout happens the repeater will provide a voice message indicating that the maximum transmit time has been exceeded.

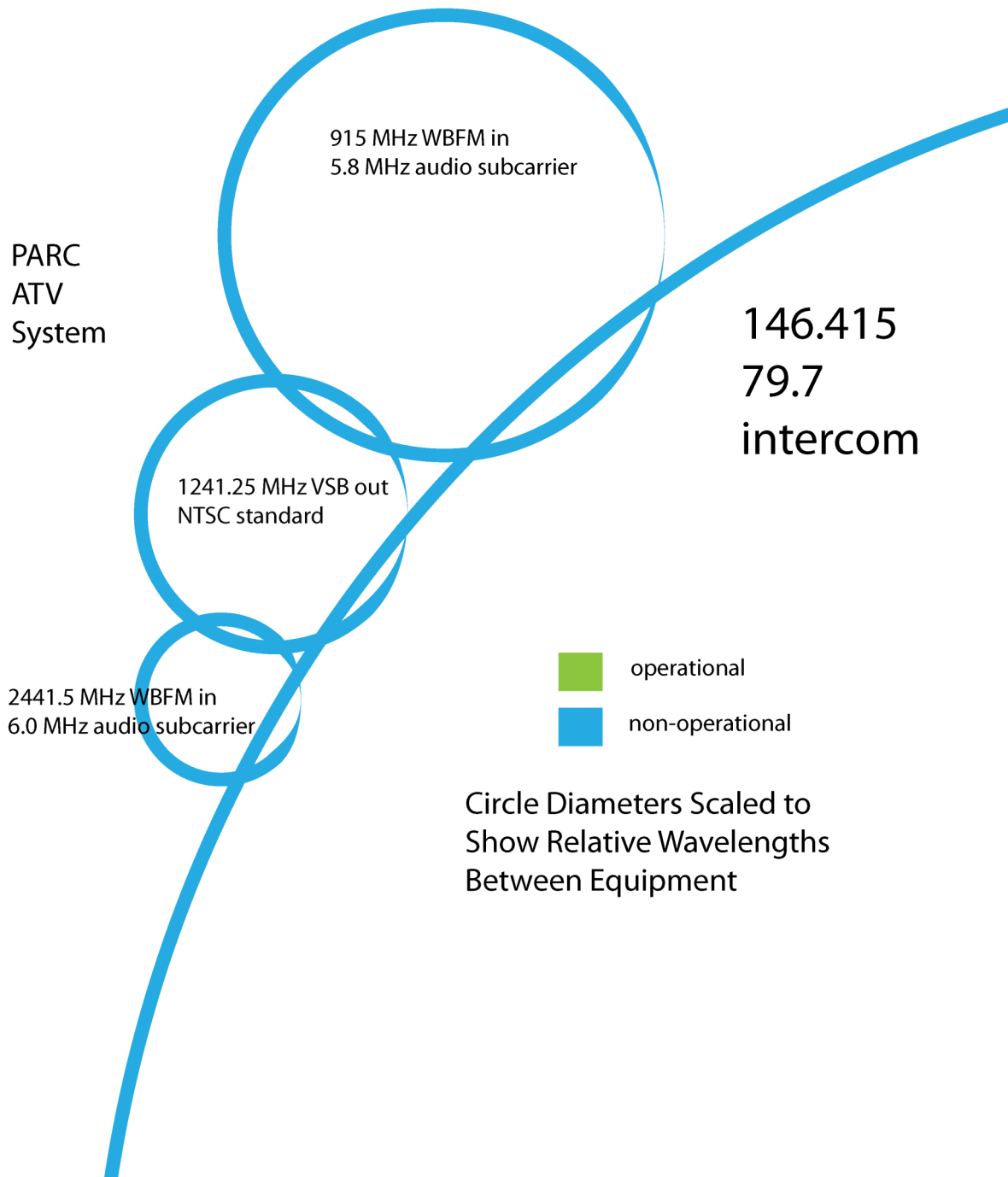
Note 2: PARC no longer operates an autopatch or packet BBS

Reported Repeater Status



Thanks to Michelle Thompson, W5NYV for the repeater status graphics.

Reported ATV Status



Membership Report

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@palomarc.org.



Check the status of your membership 24/7 at [Member List](#). If you don't find your name and callsign on that page, then your dues have lapsed. If you have questions, send email to Membership@palomarc.org.

Donate to PARC by Shopping at Amazon

As publicized earlier this year, PARC is now a not-for-profit charity, and funds donated to PARC are deductible for income tax purpose if you itemize. 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,



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



Getting Back on 630 Meters, Part II by Bill N6PIG@Amsat.org

Since my previous article in the Scope July 2017 "What does it take to get on 630 meters" a lot has changed in my life. My station was ready for air when I accepted a job in Richland Washington working for Pacific Northwest National Laboratory. So I packed everything away for the move. The most important part I could not take was the ground radial system as they were in the ground and could not be moved.

While in transit to Washington the FCC announced the opening of the filing with Utilities Technology Council to ensure no interference to powerline communication. To register go here <https://utc.org/plc-database-amateur-notification-process/> and begin the 30 day wait to see if we might disrupt some utility.

We purchased a new home in October, and I setup my shack in the basement of a WWII Hanford Q house. <http://hanford.houses.tripod.com/>. All the equipment that I had made works well but I have found little time to get a good antenna setup.

My previous antenna was a hustler BTV-5 that I modified to do 60 meters rather than 80 meters. I got rid of the mobile whip on top and is now about 28 feet tall. My radial system was considerable and set in an area that was clay and always Boggy wet. The antenna radiation resistance was about 0.1 ohms with a ground loss of about 21 ohms. So an approximation of the efficiency would be $= 0.1/21.1$ or 0.5% efficient. I generally operate the amplifier at 200watt output so my radiated power would have been about 1 watt. This is 7dB or 1 S unit below the maximum of 5 watts.

My new antenna is just #17 aluminum fence wire. I have 3 50 ft. radials stapled to the ground, Using a tree for support I have 40 feet vertical with 12 ft of top hat capacitive loading. I still have about 0.1 ohms of radiation resistance but the ground loss is 110 ohms. So an approximation of the efficiency would be $= 0.1/110.1$ or 0.09% efficient. With 200watt output so my radiated power would have been about .2 watt. This is 14dB or 2 S unit below the maximum of 5 watts.

In the old configuration I used a step down transformer to go from 50 to 21 ohms, I have turned the transformer around to step up from 50 to 110 ohms. I will keep you posted on the antenna progress when I figure out what to do.

Wanted

Wanted: Low pass filter HF - 30 MHz to retune into the six meter band. Typically have SO-239 connectors on each end of a rectangular copper plated box. The new 6 meter repeater has more harmonics than are desirable and needs some additional antenna filtering. These were made by Drake, B&W, Johnson / Viking, Heathkit, etc. Plan on retuning the high freq. to be 55 MHz. Alternately a dedicated 6 meter band-pass filter could be used. Needs to be able to handle 100 Watts minimum.

WB6IQS John 760-727-3876.

Six Meter Replacement Repeater, John Kuivinen, WB6IQS

Background:

I've been beating on a mid-70's GE Mastr II 6 meter repeater for several years. It has been highly intermittent with cracks in PCBs (Printed Circuit Boards) and bad connectors. The final straw was when it remained broken for three weeks and then just two days before we planned on going up to the mountain it started working.

Glen (AI6RR) and I still went to the mountain to pull down the repeater and then put it on my home workbench. I decided then that rather than spend time fixing an unreliable broken system it would be more useful to replace it with something more modern.

Planning:

I had been collecting low priced Midland 70-3051C 40 – 50 MHz two way radios with the idea of eventually building a more modern repeater system. These radios are all SMT (surface mount technology), smaller and twenty years newer technology. They are well documented with full schematics, service manuals and PCB layout diagrams available from different ham radio web sites. Several repeater builder web sites rated these as reliable trouble free radios.

It requires a special DB9P serial I/O programming cable for these radios. They use an older Windows 98 or XP laptop computer and a custom Midland program. You enter the channel number, frequency, PL tone, power levels, etc. into the program and it writes to EAROM memory inside of the radio.

Initially wanted to reuse the original 6 meter WB6JHQ Chuck Miller repeater controller. However, the documentation was incomplete for I/O interface connections and would have had to add a number of "kludge" circuits to interface the Midland radios.

After discussions with Bernie (N6FN), then updated my design with the idea of using the 3d port on the SCOM 7330 repeater controller.

This new smaller repeater could be placed on the tall 19" rack cabinet over the existing SCOM 7330 controller.

CTCSS (aka PL) decode and encode is performed within the radios with a program feature to set the PL receive decode and transmit tones. A microphone "hang up" connection can disable the PL decoder feature in the receiver.

Upon power up these radios always revert to channel one. This channel was used for our repeater's frequencies. In the event of a power failure they will "reboot" themselves back to a known channel.

Six Meter Replacement Repeater Continued

Basic Construction:

For a basic repeater it is much easier to build a repeater using two separate radios. One complete radio for the transmitter and another for the receiver. The transmitter can then be used without modifications and the receiver only requires some tap offs in the receiver discriminator circuit. A COS (Carrier Operated Signal) is available from the LED front panel display driver.



The only downside of two radios is that the standby current is slightly higher due to the extra unused receiver, but it is much simpler to design and build.

More sophisticated repeaters with programmable channels or PL frequencies require more sophisticated designs.

The SCOM 7330 controller is very flexible and can handle low to high or high to low going input switching, different transmit audio levels and raw or pre-

emphasized audio.

A 9 pin DB9P connector interfaces the repeater to the SCOM 7330 controller.

Cabinet:

Purchased a surplus 7" tall 19" standard aluminum rack panel U-Chassis from Escondido Surplus Sales. Escondido Surplus Sales on Mission Road in Escondido is a good source of parts for experimenters.

The chassis already had DC power input terminals and a reasonably "un-holy" front panel. Needed to fabricate back supports for the feed-thru bypass chassis EMI capacitors and a place to mount fuses and a hi-current RF choke.



Modifications were required for the front panel for repeater service:

1. Toggle switches to switch between local microphone audio and remote repeater audio and one to fill an extra 1/2" hole.
2. A PL disable push button for testing.
3. 2 Watt 4" diameter loudspeaker.
4. 4-pin microphone connector and local microphone hanger.
5. Cabinet cut out for the receiver's front panel. This cut out provides access to local volume, noise squelch adjustment, etc
6. On the rear panel, needed to make a cut out for the transmitter power amplifier and antenna ports.

Six Meter Replacement Repeater Continued

Receiver:

The receivers use a MC3361 dual conversion IF IC. Measured 500 mV P-P at the equivalent of the discriminator output for 4 KHz deviation. From reading the interface specifications of the SCOM 7330 this looks OK. Only needed to add a 1 uF DC blocking capacitor to isolate the receiver's audio signal from the MC3361 IC's internal DC bias.



PL tone is present at the discriminator output. The SCOM 7330 has hi-pass audio filtering built into the audio path but this feature needs some further bench testing. You must reject the PL tone from the receiver to the repeater audio otherwise the transmitter's PL encoder will beat against receiver's PL audio and cause distortion.

I found a 0 - 4 Volt signal that is a reliable COS signal: +4 Volts = signal present, 0 V = squelched.

Made some mobile mounting brackets for interior mounting of the radios. Added a new receiver DB-15S connector and 9 pin Molex power connector.

Transmitter:

The push-to-talk signal (PTT) and microphone audio are readily available by tapping into the front panel microphone connector.

PL signal is generated by the programmable PL generator. The 107.2 Hz sine wave encoder has 700 Hz deviation.

I/O Cabling:

A DB-9P SCOM 7330 cable was made using standard SCOM 7330 color codes. This cable then goes to two DB15P connectors. One DB15P was made for the receiver and one for the transmitter. None of the pins except for the chassis ground signal are common to either connector.



RF Noise Isolation:

At the DC power input, to prevent RF transmitter noise from desensitizing the receiver added EMI filtering using a high current choke and feed-thru bypass RF capacitors. Added separate fuses for the transmitter and receiver.

Six Meter Replacement Repeater Continued

The GASFET RF pre-amplifier is remotely mounted about 12' away from the repeater at the receive cavity. Made 50 Ohm RG-142/U low loss extension RF cables (transmitter and receiver) for the cavity duplexer and a GASFET DC power supply cable.

Conclusions:

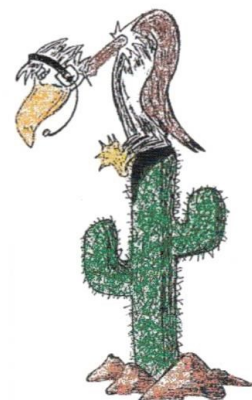
Bernie and I have some further bench testing to perform. Bernie is familiar with writing "scripts" for the SCOM 7330 controller. To enable different modes we have a number of channel 3 SCOM 7330 printed circuit board jumpers to install.

Due to vacation schedules and time constraints expect this to back on the mountain in early March. Hopefully it will be much more reliable and more sensitive than the old GE intermittent repeater.

John Kuivinen, WB6IQS
Vista, CA



Six Meter Replacement Repeater Continued

Six Meter Replacement Repeater Continued**2018 Southwestern Division Convention****Yuma Hamfest****Yuma, Arizona****Feb. 16 & 17, 2018**Yuma County Fairgrounds
2520 East 32nd Street, Yuma, Arizona**www.yumahamfest.org**

Check the Website for Additional Information

Gates Open for Camping Thursday, 2 pm Vendor Setup Friday, 7 am - Noon	Event Hours Friday, Noon - 5 pm Saturday, 8 am - 5 pm	Hamfest Dinner & Grand Prize Drawing Saturday Night 6:00 - 8:00 pm
---	---	---

Vendors & Exhibitors
Consignment Sales
License Testing
Hourly Door Prizes
On-site RV Camping
Hamfest Dinner
ARRL Speakers
Transmitter Hunt
\$5.00 Admission

Tailgating (Swap Meet)
Full Seminar Schedule
DXCC Card Checking
\$25,000 in Grand Prizes
Emergency Preparedness
Admission Prizes
Hospitality Area
Near Space Balloon Launch
Antenna Clinic & T-hunt

W1AW /7 Special Event Station

Hamfest Talk-In Frequency: 146.780 (–) PL 103.5 Hz

Email Contact: **info@yumahamfest.org**

We are proud to have the Amateur Radio
Council of Arizona (ARCA) as a sponsor of
our event.

The Yuma Hamfest is an American Radio
Relay League (ARRL) sanctioned event.



Presented by the Yuma Amateur Radio Hamfest Organization

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.

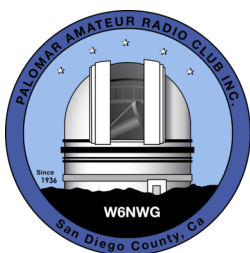
The Palomar Amateur Radio Club reserves the right to edit all submissions for content and length.

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



Palomar Amateur Radio Club

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.



Valentines Day Jokes

Q. Where do all the hamburgers take their girlfriend on Valentines day?

A. The Meatball

Q. What did the girl cat say to the boy cat on Valentines Day?

A. You're Purr-fect for me

Q. What did the valentines day card say to the stamp?

A. Stick with me and you'll go places

Q. Do skunks celebrate Valentine's Day?

A. Sure, they're very scent-imental!

Q. What did the chocolate syrup say to the ice cream?

A. "I'm sweet on you!"

Q. What did the paper clip say to the magnet?

A. "I find you very attractive."

Q. What did the French chef give his wife for Valentine's Day?

A. A hug and a quiche!