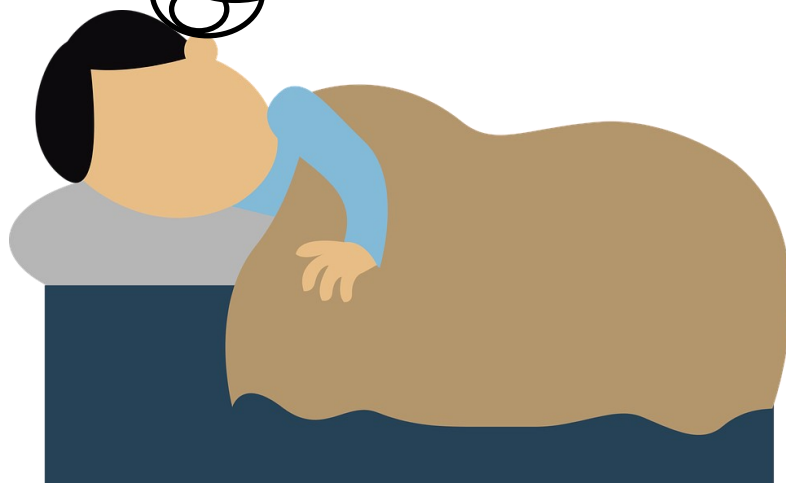




**Inside this issue:**

Presidents Report	2
Board Members & Committee Chairs	3
Treasurers Report	4
Meeting Program & Upcoming Events	5
Scholarship Committee Report	5
Repeater Status	6
Repeater Chart	7
ATV Status	8
Membership	9
Repeater Site Report	10
SDR Interference Reduction	11
Back Page Fun	12

# SCOPE



***“While Visions of Radios Danced in their Heads”***

## President's Report



2018 has been a busy year for PARC, we haven't done anything like this before, but I figure if it's good enough for the Union, we might as well do a State of the Club address!

We have obviously moved from our "home" of 20+ years at the safety center to this brand new facility, and although we now have to pay for it, we have an agreement on paper, which makes us a bit more confident saying that we will be here for the foreseeable future. The only exception of course is the auction, which we need a bit more space to conduct and therefore will hold it across the street.

The club continues to show a slow decline in membership, and that is something that the board is very aware of, and continues to discuss ideas on generating new membership as well as encouraging renewals of from existing membership.

Although we own the property on the mountain, the corporation still has ongoing expenses to keep the repeaters powered, pay taxes, and other utilities, as well as our routine events such as field day and the picnic. Be sure to check with Glen AI6RR to make sure your membership is up to date!

Thanks to several generous donations, and countless hours spent by Bernie N6FN, John WB6IQS, and Mark KF6WTN, we have replaced the packet repeater, regained remote control of the equipment through the use of a controller that was highly customized, and done several other time consuming projects on the mountain.

We have a lot of plans for 2019, including finally getting Wires-X going on one of the repeaters, as well as moving to a smaller (and less expensive) storage unit.

Financially the club is in decent shape, with sufficient funds in our self insurance CDs, as well as ongoing cash flow to cover current expenses, but at our membership level we remain about even on a yearly basis, which is good news and deserves a hat tip to our treasurer Tom W0NI who helps the board keep on track with income and expenses.



Please continue to keep an eye on your SCOPE newsletter for ongoing updates.

Joe, K6JPE

## Board Members and Committee Chairs

### Board of Directors

President	Joe Peterson, K6JPE	(619) 630-8283
Vice President	Charlie Riistorcelli, NN3V	(619) 68-7617
Treasurer	Tom Ellett, W0NI	(858) 546-1148
Secretary	Tony Zuppero, K5TZ	
Director 1	John Kuivinen, WB6IQS	(760) 727-3876
Director 2	Greg Gibbs, K16RXX	(760) 583-9668
Membership Chair	Glen Christensen, AI6RR	(858) 735-1144
Repeater Technical Chair	Mark Raptis, KF6WTN	
Scope Editor	Keith Spears, KM6CXW	(858) 472-8442 Text Welcome

### Non Voting Members

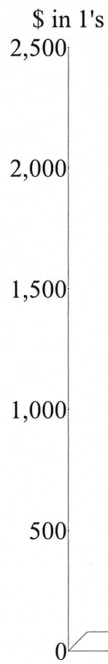
Repeater Site Chair	Mark Raptis, KF6WTN	(Acting)
Webmaster	Guido Sansonia, NO6I	(760)-224-6824
Trustee	Michelle Thompson, W5NYV	mountain.michelle@gmail.com

### 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		

SD Microwave Group Liaison Kerry Banke N6IZW kbanke@sbcglobal.net

Income and Expense by Month  
October 2018



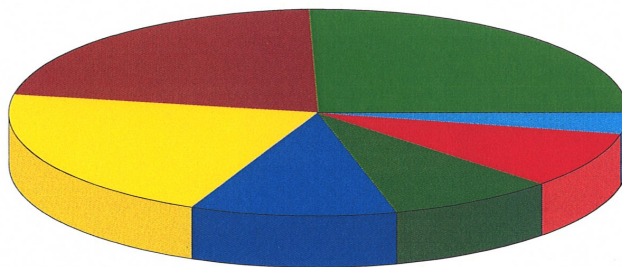
Income  
Expense

Palomar Amateur Radio Club, Inc.  
Income/Expense by Category  
October 2018

	Oct 18
<b>Income</b>	
Amazon Smile	37.54
Donations	1,193.00
Dues	840.66
<b>Total Income</b>	<b>2,071.20</b>
<b>Expense</b>	
Auction Expns	240.20
Equipment Storage	245.00
Meeting Room Expns	99.00
Picnic	123.11
Rptr Electric	99.59
Rptr Phone	34.40
Taxes	
Property	289.22
<b>Total Taxes</b>	<b>289.22</b>
<b>Total Expense</b>	<b>1,130.52</b>
<b>Net Income</b>	<b>940.68</b>

Expense Summary  
October 2018

Taxes	\$ 289.22
Equipment Storage	245.00
Auction Expns	240.20
Picnic	123.11
Rptr Electric	99.59
Meeting Room Expns	99.00
Rptr Phone	34.40
<b>Total</b>	<b>\$1,130.52</b>



By Account

## February Program

73 de NN3V  
Charlie

### Scholarship Committee Report

Thanks to the incredible work by Gayle KG60, Michelle W5NYV, and Charlie NN3V we have funded a scholarship with ARRL Foundation under the Palomar Amateur Radio Club name! We will have further information on how your interested family and friends may apply, what the requirements are, and how the decision is made in the coming months. The first scholarship will be available for the 2018-2019 school year! We are still pushing for some additional funds to create a second scholarship, but that will be for the 2019-2020 school year. Keep an eye out for further information later in the year, and remember us when you're preparing your tax write-offs for 2018!

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### Upcoming Events

January 2nd	7:30	PARC Meeting	Pine Ave. Community Center
January 9th	7:00	PARC Board Meeting	Poway Fire Station #3
February 6th	7:30	PARC Meeting	Pine Ave. Community Center
February 13th	7:00	PARC Board Meeting	Poway Fire Station #3

## Repeater Status

This list includes W6NWX repeaters operated by PARC and other repeaters open to use by PARC members. All W6NWX repeaters are located on Palomar Mountain and are open to all amateurs.

Frequency	TX	Tone	Call sign	Remarks
52.680	-	107.2	W6NWX	Back on the air
146.730	-	107.2	W6NWX	System Fusion enabled. See Note 1
147.075	+	107.2	W6NWX	System Fusion enabled. See Note 1
147.130	+	107.2	W6NWX	System Fusion enabled. See Note 1
447.000	-	107.2	W6NWX	FM only for EchoLink Call Sign W6NWX
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	W6NWX-1	Packet node; linked to metro 9600 net 1
146.700	-	N/A	W6NWX-3	Packet duplex repeater; Duplex 3

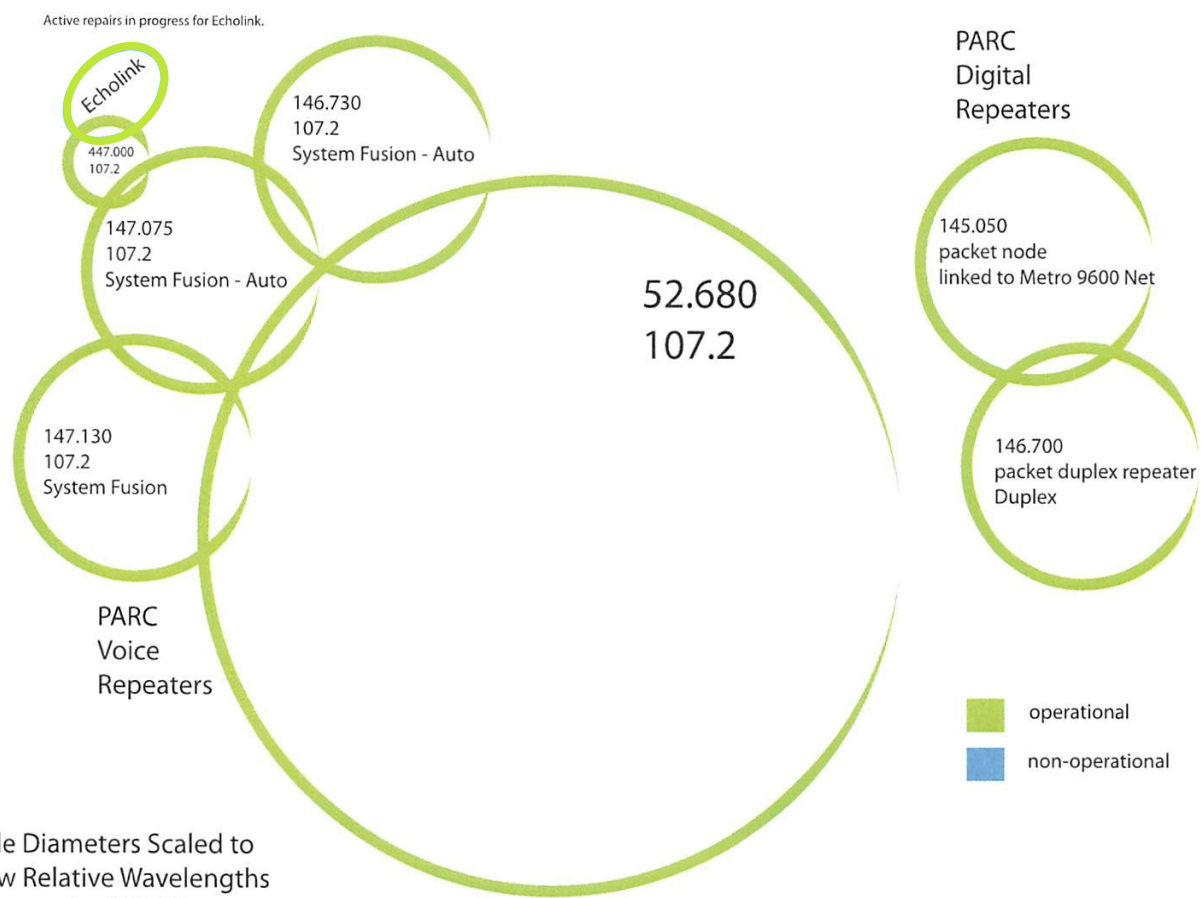
PARC operates an armature fast-scan television repeater. It's currently off the air. Currently there are not links to other ATV sites.

- 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.

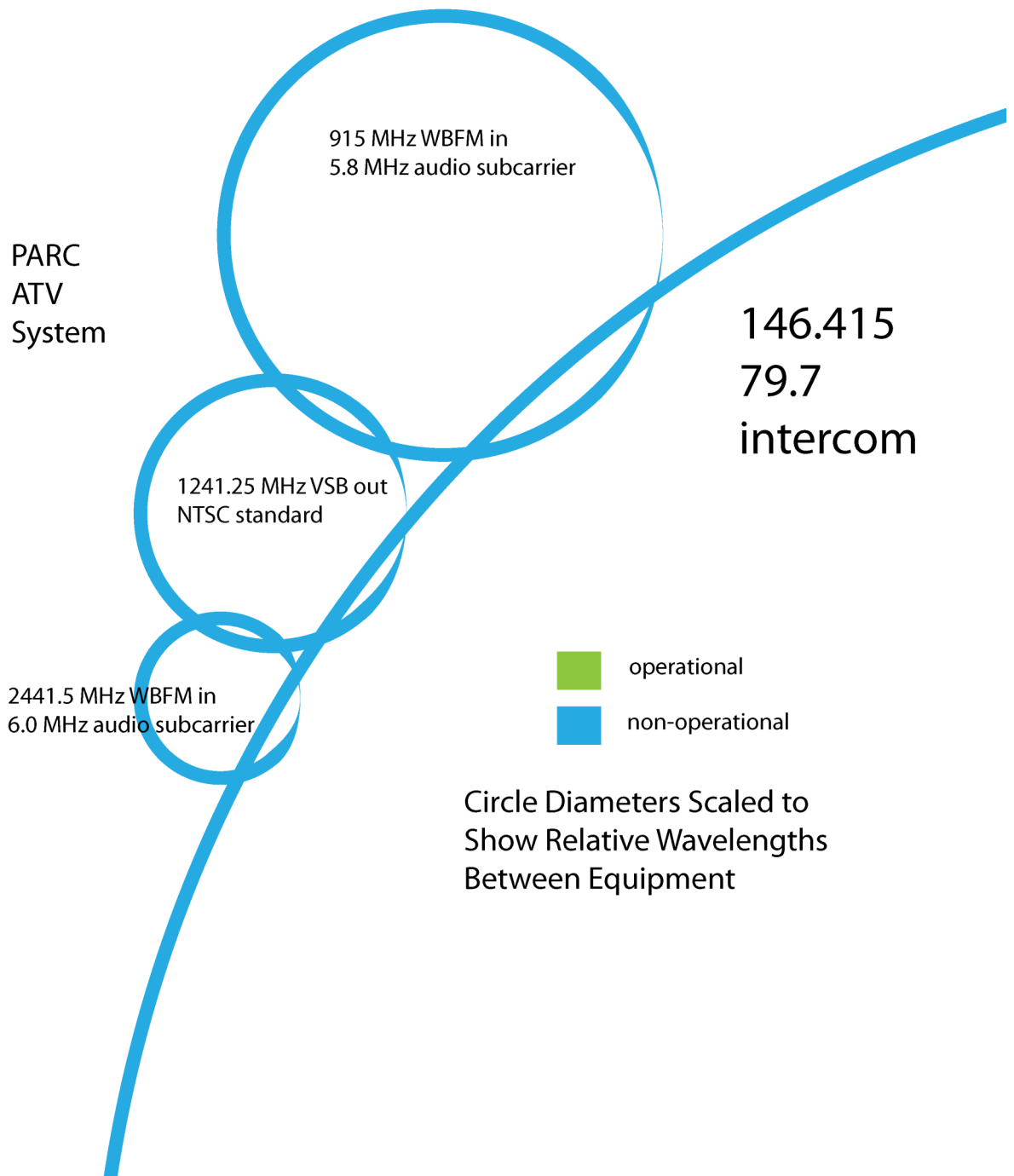
# Reported Repeater Status



Circle Diameters Scaled to Show Relative Wavelengths Between the PARC Repeaters

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 [MembershipChair@palomararc.org](mailto:MembershipChair@palomararc.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 [MembershipChair@palomararc.org](mailto:MembershipChair@palomararc.org).

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## 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](http://www.smile.amazon.com). If you choose to avail yourself of this opportunity, when shopping on [www.smile.amazon.com](http://www.smile.amazon.com),




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## 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



## Repeater Work Party

Rich NI6H and myself went to Palomar Mountain today to work on the 145.050 digi-peater.

All radio functions were working OK and the transmitter power output was normal. The old Motorola Micor mobile radio was working OK and Rich was able to connect to it via his portable packet radio system.

As we started testing back from the cavities to the antenna we found that the RX/TX common antenna had a >3:1 VSWR. Essentially an open circuit.

The VSWR was measured using both my MFJ 269 Pro antenna analyzer and the Bird RF directional Wattmeter. They both agreed that we had a bad antenna.

Shaking the antenna's coaxial cable did not change the VSWR, nor did slightly pulling on the cable.

Rather than take a chance on damaging the transmitter I removed the antenna connector at the lightning arrestor and capped off the coaxial cable.

### CONCLUSION:

We have another bad antenna and/or coaxial cable. I have several replacement 2 meter antennas that could be used here at my home but we will need an antenna work party to do this installation.

The 146.700 duplex packet repeater can continue be used for now but that repeater does not have the Metronet function. A few people need the Metronet for out of the area communications.

I will finalize the wiring of the 145.050 replacement digi-peater and pass this on to Bernie for integration into the SCOM 7330 repeater controller.

When we have an antenna work party perhaps we can also change out the two packet repeaters.

John Kuivinen  
WB6IQS  
Vista, CA

## Next Generation SDR Interference Reduction—John Fallows VE6EY

Next generation SDR interference reduction should be tackled by Spatial Interference Filtering Techniques. Here is why and how.

Simply put, next generation SDR interference reduction should be achieved by **spatial filtering**, often called beamforming. In this series, I will describe spatial filtering and how it can address some of our biggest challenges to radio reception at medium and high frequencies.

At present, and for the foreseeable future, our biggest challenge to radio reception is local RFI and the increasing man-made noise floor. In particular, radio frequency interference spewed out by consumer equipment and switched-mode power supplies destroys our listening interests. I have described these challenges in my [RFI Survival Guide](#).

Many of us have implemented external spatial filtering using the so called “noise cancelers” such as ANC-4 and MFJ1026. We also use similar phasing devices to create antenna patterns in certain directions. But these are outboard analog devices that have many limitations and few modern features. It’s time to incorporate spatial filtering into our SDR receivers.

Most of our SDR radios already do an excellent job of temporal and spectral filtering. These are time-based approaches that include noise blanking and reduction, as well as notch and bandwidth filtering. But when the buzz from a nearby plasma television or SMPS shows up on your frequency, your fancy modern radio has no tools to eliminate it.

Just for fun, I am calling the new solution SIFT, standing for Spatial Interference Filtering Techniques. It is time for makers of mid-range SDR to incorporate these basic requirements, as follows.

SDR receivers should contain at least two separate channels. In effect, they should all be dual receivers with separate antenna inputs for each receiver, and separate IQ data outputs. Dual receivers will share synchronized frequency translation and sampling clocks. Data output will also be synchronized. Thus, we will have coherent receivers capable of spatial filtering or beamforming.

Data should be time stamped, likely using VITA Transport Layer (VITA 49) standard, which also contains context meta-data. Supporting control and demodulating software will support diversity reception, beamforming and anti-phase interference cancellation.

There are presently a few hardware and software solutions that can achieve the SIFT requirements. We will describe these shortly. Next up, though, we describe the theory behind beamforming.

Spatial filtering has been around for decades. It shows up pretty much everywhere except the SDR used by hams and shortwave listeners. Let’s change this.

For more information visit <http://play.fallows.ca>

SCOPE  
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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](mailto:scope@palomararc.org)

## Palomar Amateur Radio Club

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

