

# The Pasadena Radio Club

December 2019

# Bulletin

## President's Message

It's been a wonderful year for the club. Here are some of the highlights:

We've had a good round of speakers, are financially sound, have a wonderful Bulletin and talented editor, have members interested in a wide spectrum of ham radio subjects, have a wonderful website and great webmaster, had an amazing Field Day and FD chairman who was determined to break through the interference problems and did, and more. We have had a great Field Day spot at the Art Center, somewhat secluded to allow for safety of our equipment, yet open enough for the public to come see what it's all about. It even has a great takeoff angle for our radio waves to get out.

I look forward to the year ahead. There is some new blood on the Board and some of our most devout members. Please step up and offer them a little of your help and expertise. There will be an interesting mixture of new directions mixed with the traditional. I believe that the year ahead will be even better!

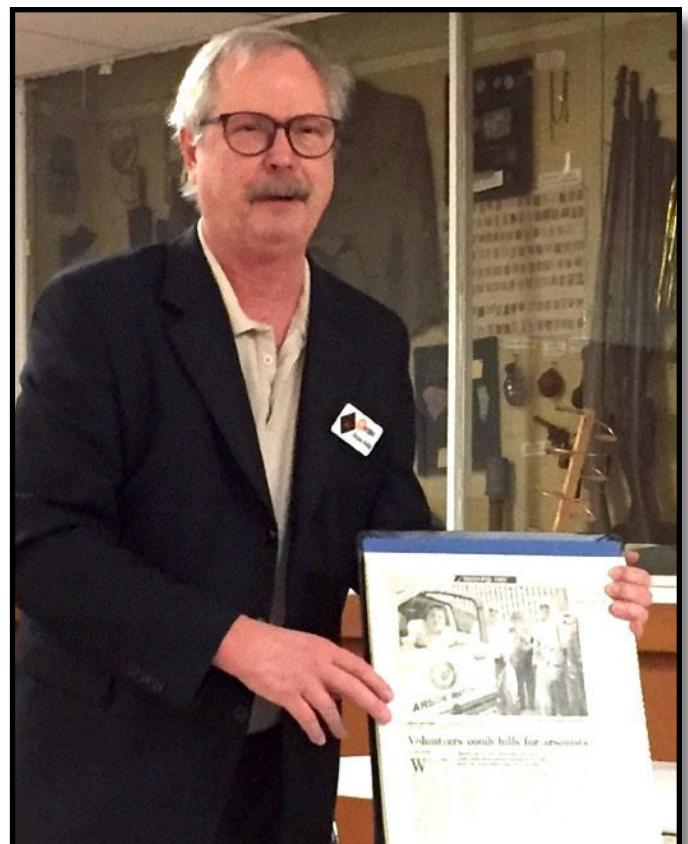
See you there! Mark W6MES



*W6MES presenting AA6QI a Presidential Award.*



*K8NBD and her BOB (Big Orange Box)*



*N1BN and his ham news article collection*

# Repeater and Station Operations

by Allen Wolff, KC7O

As a longtime PRC member, I monitor TELCO most of the time. Listening to the ALERT, PRC and SPARC Nets I notice a number of conditions making communication difficult.

These are:

- Doubling – two stations transmitting at the same time.
- CTCSS – Stations not using PL decode and hear San Diego or Santa Barbara repeater outputs on 145.180 and think that someone's interfering with TELCO
- Inadvertent keying of a radio – sitting on the microphone 😊
- Intentional interference – not very often but it happens
  - Spectral recordings are being made by a number of PRC members
  - DF antennas are being used
- Equipment being used by Net members
  - Radio and output power
    - Handi talkie
    - Mobile/base radio
  - Radio power supply
    - Stock rechargeable battery – weak or dying
    - AC power supply
    - External battery
  - Antenna used
    - Rubber ducky - poor
    - Aftermarket antenna on the radio – better but
    - Coax to external antenna inside – better
    - Coax to external antenna outside and in the clear - best



**KC7O**

The last issues seem to be the prominent communications problem. To address this issue one must understand TELCO (and other repeaters) and the equipment the Ham is using.

- A repeater is NOT a telephone and doesn't work like one
- A signal on the input frequency is simultaneously retransmitted on the output frequency
- TELCO uses PL tone (156.7 Hz) decode to "know" a valid signal should key up the repeater and includes the same tone on its output transmission
  - There are six selective RF cavities, three on the receive frequency and three on the transmit frequency which prevents the receiver from being desensed by the transmitter
- There is no guarantee that when an operator keys his/her radio that sufficient signal is getting to the TELCO receiver to either key up the transmitter at all or if it does have sufficient received signal strength to be audible on TELCO's output
  - All receivers have a level of sensitivity needed to work properly
- And, just because you hear the repeater it doesn't mean that you can get into it
  - Remember the repeater is 14 stories above Pasadena with a good transmitter and a good antenna
  - That is not reciprocal if the user has poor transmitter/antenna system

If one were to grade the stations that use TELCO and either are good full quieting signals or poor noisy signals we might be able to put their stations in classes.

Station classes:

Platinum	Mobile/base type radio, AC/battery backed power supply, 25+ watts, coax & outdoor antenna
Gold	Mobile/base type radio, AC power supply, 25+ watts, coax & outdoor antenna
Silver	Handheld, external mic, AC/battery backed power supply, 5 watts, coax & outdoor antenna
Copper	Handheld, stock battery, 5 watts, coax & outdoor antenna
Iron	Handheld, stock battery, 5 watts, coax & indoor antenna
Lead	Handheld, stock battery, <5 watts, rubber ducky

No matter what station class you have, making improvements along the way will help communications not only through TELCO but also for general simplex rag chewing and emergency communications.

It is also recommend that a scanner or a cheapo handheld is available so the station operator can hear (use headphones) what their signal sounds like through TELCO. Many users assume that the problems they are experiencing, on TELCO, are caused by others – by checking your signal you will have a better idea what is going on.

Other station accessories that really help are a watt/SWR meter and a dummy load. These will show you the “health” of your transmitted signal.

Bill Westphal, WB6YPF, TELCO (W6MPH) Trustee, adds this description of the repeater:

The “Repeater” actually consists of several pieces. In the Photo 1 you see the Hardline Coax coming through the vent in the wall from the antenna outside. It passes through a PolyPhaser mounted on a Ground Bus Bar for Lightning Protection. The Coax then goes to the 6 Cavity Duplexer at the top of the photo where transmit and receive frequencies are isolated from one another. Separate transmit and receive coax then goes to the “radio” part of the repeater.

The radio equipment is all mounted in a data rack. From top to bottom, we have the Controller, Power Amplifier (old PA shown), Transmitter (exciter), Receiver and Backup Batteries on the bottom. The Power Supply is mounted on the rear.

Photo 2 shows the new Power Amplifier mounted in the rack along with an adjustable regulated power supply made by Allen Wolff (KC7O) with which we can control the output of the exciter and in turn the Power Amplifier.

Photo 3 show the antenna in the clear.

73,  
Allen – kc7o

