



HAM RADIO OPERATOR
ON THE AIR

**Field Day 2016 - Get On a Station
and Work the Nation!**



PARC Board
of Directors
Meeting 7pm
8 June 2016

14322 Pomerado Road,
Poway, CA 92064

Club Meeting
7:30pm
1 June 2016

Carlsbad Safety Center, 2560
Orion Way, Carlsbad

Brian Tagg AG6CF **Field Day**
Program followed immediately
by a **Workshop on**
Programming Your
Radio!





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For our June membership meeting, we present a double header!

Our very own Field Day Chair Brian Tagg AG6CF will reveal the details for our event on June 25-26. There is a wide variety of activities planned for PARC Field Day, and you're invited to enjoy our social, relaxed, and welcoming event!

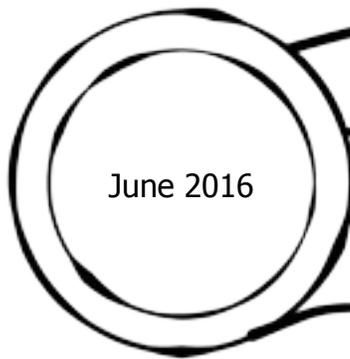
After the Field Day program, PARC will host a workshop on programming your HT. Bring your HT and your questions! The goal is to get your radio in shape so that you're getting the best possible use out of your investment.



Please help us test a potential upcoming feature for our repeater site. We have a Wires-X node on 147.555. It's KK6OOZ, and we would like to invite club members with C4FM capability to use it, upload text and pictures, and report if you are able to reach it in its current location.

The equipment is set to low power. Eventually, this node may be moved in frequency to link one of our digital repeaters to the Wires-X international network. We need a simplex mapping in order to best evaluate the correct power settings and decide whether or not the node's location will work out.

Attempt to check in and report your success to board@palomararc.org
Thank you!



Field Day Info!

SPONSORED BY PARC

The location of PARC's Field Day is the corner of Valley Center Road and Lilac Road. We will begin set-up of the Field Day site on Friday, June 24th. Field Day radio operations will start at 11:00 AM on Saturday morning the 25th., and will end at 11:00 AM on Sunday 26th.

We will be serving the great tri-tip BBQ for lunch on Saturday, and having excellent breakfast on Sunday. Everyone is invited to attend, and hopefully participate and operate during the event.

You do not have to operate a station to enjoy the BBQ. Just come out and support the event.

Our major work party was held March 20th at NN3V QTH, and saw successful completion of all technical tasks!



PARC Field Day **Handy Talkie No Cost Drawing!**

A Great Chance To Get A Dual Band Handy Talkie **For FREE!**
2 M / 440, 5 Watts

RULES for winning!

Drawing **only applies to PARC Club Members.**

Only Applies To Club Members **Who Visit FD Site**

No need to operate FD stations

No need to labor in Set-up or Tear Down

(But that would be nice!)

Member Must sign PARC participation sheet at FD site

Available from FD Chair (AG6CF) at FD site

Member may sign in **ONLY ONCE PER FD DAY**

FRIDAY June 24th. – Sunday June 26th.

Drawing will take place twice

During Saturday Tri-tip BBQ (15:00 – 17:00)

During Sunday FD Tear Down (11:00 – end)

Saturday non-winning tickets will be entered in Sunday Drawing

No need to be present to win.

Absolutely no proxy sign-in

Must visit site in person and sign participation sheet in order to qualify



Palomar Amateur Radio Club

Field Day

28305 Valley Center Road, Valley Center

June 24 – 26, 2016

For more info, see : www.palomararc.org



FD Site Schedule
 Friday 24
 Set-up 1:00 – 6:00 PM
 Saturday 25
 Complete set-up: 6 – 11 AM
 Start 24 Hour Operation
 11:00 AM – 24:00 PM
 BBQ Lunch 4:00 – 7:00 PM
 Sunday 26
 Breakfast 6 – 8 AM
 FD Operating Time
 00 AM – 11 AM
 Close Down FD
 11 AM – 3 PM

FD Preparation Activity
 Weekly FD Planning Net
 Wednesday 8:00 M
 146.73 Repeater, PL 107.2
 Develops complete list of FD resources & activities
 Volunteers WELCOM
FD is all about community & FUN!

OPERATING PLAN
 3a Operation
 1 CW station All Bands
 2 SSB stations All Bands
 GOTA Station:
 HF, VHF, UHF

NO NEED TO BE A CLUB MEMBER
 Come out & Operate
 CW, SSB, DIGITAL
 Operate all bands, all modes

NEW LICENSEES
 Learn by doing
 Get On Air (GOTA) Station
 Learn HF radio operation
 See variety of equipment

DIRECTIONS TO SITE

Easiest
 Enter site address on GPS & GO!

ROAD NAVIGATION
 Take I-15 towards Escondido.
 Exit EAST on El Norte Parkway
 Travel EAST approx. 10 miles
 Turn LEFT on Valley Center RD
 Drive approx. 15 miles.
 Turn LEFT on Lilac RD.
 Site on corner:
 Lilac Rd. & Valley Center RD.
 Left Hand Side

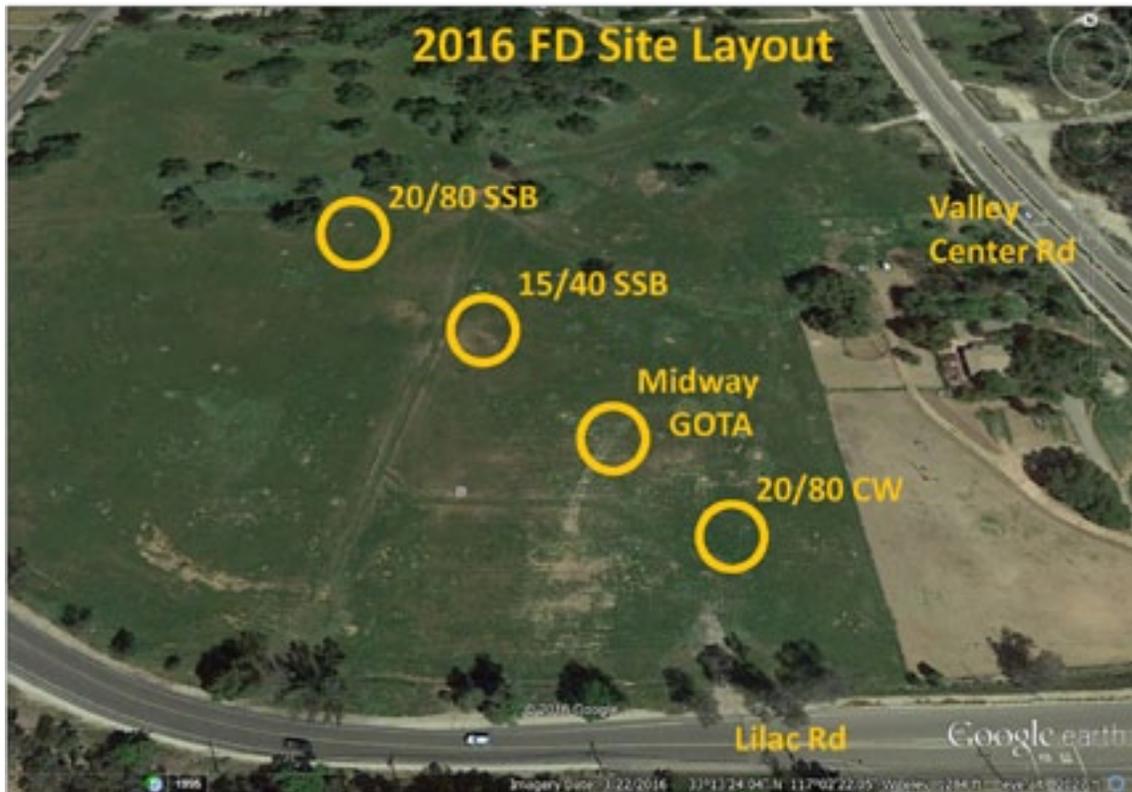
PLANNED ACTIVITIES

VE License Testing, Saturday, 1:00 – 3:00 PM APRS Hands ON Demos courtesy N6GO

PAPA Systems & DSTAR Hands ON Demo C4FM Fusion Demonstrations & action

Community Emergency Response Team (CERT) Pavilions

Saturday 1500 – 1900: Best Tri-tip BBQ in HAMDOM! No cost, but Donations welcomed!



PARC Field Day is only weeks away. Preparations are progressing well. Various kinds of help are still needed, but first the good stuff.

Field Day will be held at the same site as last year, the corner of Valley Center Rd and Lilac Rd, in Valley Center. It is a great site, large and mostly flat and level. It is easily accessible. From the west, it is about 10 miles past the I-15 & CA-78 interchange. From the south, it is about 12 miles up the back side of Escondido from North County Fair.

The plan for this year is a 3A setup. Station captains are Mike NA6MB with 20/80 voice, Charlie NN3V with 20/80 CW, and Brian AG6CF with 15/40 voice (with some CW activity welcomed). Jim NE6O is the GOTA captain. He will be bringing out his hex beam, and a 40m mag loop. Valley Center CERT will also be a part of GOTA, and will have some of their own gear for demonstration and for use at GOTA. We are visiting their home turf, and it is great to have them be part of the event.

Eric N6GOF, who presented on APRS at the May meeting will be bringing out some APRS gear for demonstration and show. He is very knowledgeable and excited about APRS, so this is a great opportunity to get hands-on and learn. We will also be setting up some of the new Yaesu Fusion C4FM gear, and offering a chance to see, touch and ask questions.

The Escondido VE team will be available from 1-3 PM on Saturday for license exams. If you know someone who is thinking about getting a license or upgrading encourage them to come out. Getting a license or upgrading at Field Day is a special thing. Also, this will be the last chance for the current Extra class question pool. If you've been studying, this is the time to push on through. Of course, it wouldn't be a PARC Field Day without tri-tip from the Psycho Kitchen. Gina N1OW puts on a great meal, starting mid-late afternoon. There are then leftovers into the night, and a nice breakfast in the morning.

This year PARC is adding an attraction. Elsewhere in this Scope you will find details of the FREE handy talkie drawings that will take place for PARC members who attend FD. Two drawings. One Saturday, and one Sunday. All you have to do is come to the FD site and sign in! You might wind up with a nice 2M / 440 Handy Talkie!

Now back to the preparations. We have just about everything that we NEED to put on Field Day. We have our station captains, radios, antennas and towers. I'm still sorting out generators, tables, chairs, canopies and other general needs. I still need to round up enough tables, chairs, shelters. Any picnic useable chairs and tables are great. It is even great stress relief to know that we have reserves we can call on if something falls through, so even if it LOOKS LIKE we have "enough", don't be shy if you have something to offer.

As I write this, we could use a hard shelter (camper, trailer, box, tent or something) for the 20/80 voice station. We have generators, but need a fire extinguisher to accompany each. The site has a lot of rabbit holes, so carpet scraps or something like that would be helpful to cover them in high traffic areas.

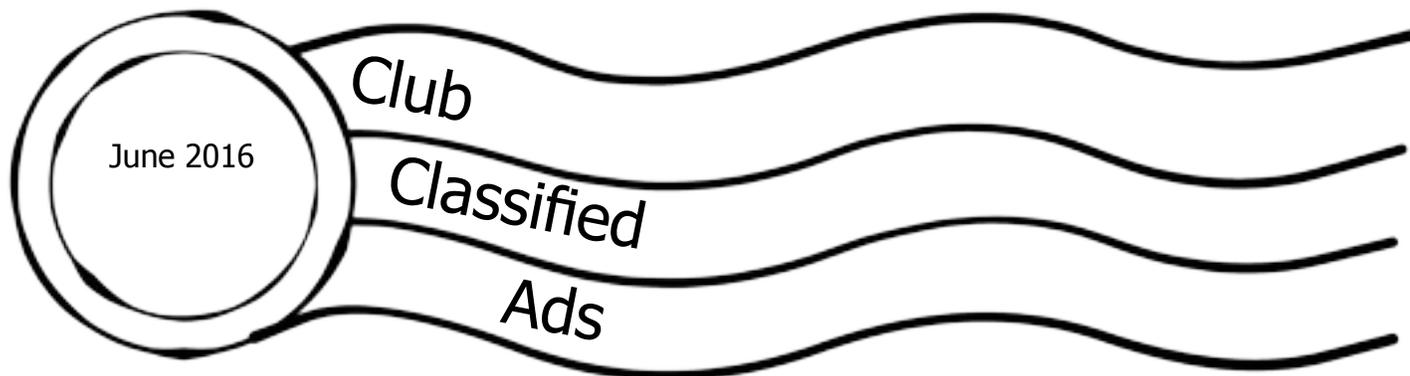
Another big thing every year is setup and teardown. At setup, we have towers that have to come off a trailer, have an antenna attached, and be put upright. At teardown, they have to be tipped over, the antenna removed, and loaded back onto the trailer. It takes several strong bodies to get through these.

We always need transportation for items large and small. Also tools for assembly and disassembly of equipment. Help around the site, light duty or heavier is always appreciated. Just being there and enjoying the event will give encouragement to the workhorses.

Back to fun, we need operators. Contact any of the station captains (Mike, Charlie or me) to schedule a time slot. If you will be around and can take a shift as GOTA coach, contact Jim.

There will be discussion on Field Day at the upcoming club meeting. Bring questions and ideas. After that will be planning nets at 8 PM on the Wednesdays (June 8, 15 and 22) leading up to Field Day. It promises to be much fun, yet again.

If you'd like to get involved, follow the preparations or whatever, you can email me and I will add you to my distribution list, or visit the net (or both). My email is ag6cf@arrl.net.
73 de AG6CF



FOR SALE!

Sony Trinitron 9" color CRT and a B&W CRT video monitor. Designed for side by side 19" rack mount. 120 VAC power. Composite video inputs. One with composite video or RGB 480P color input. Works well for ATV or security monitors. \$5.00 each. WB6IQS@att.net, John, Vista, CA.

Two HyGain TH6DXX tri-band (20/15/10) antennas. Make two into one working antenna. Complete with two main mast sections, one complete set of rebuilt traps, extra hardware and manual. Much cheaper than a stepper auto tune antenna. \$100 or best offer. WB6IQS@att.net, John, Vista, CA.

FOR SALE!

Yaesu FT-2900R -- Rugged High Power 2m Mobile

75/25/10/5 watts RF, 3 watts audio for noisy environments, no fan, extra large bright display. New condition, two months old, never used in the field. Includes packaging, documentation, etc. \$100, firm. Email to KK6LWE@arrl.net

Yaesu FT-270R -- Rugged 2m HT

5 watts RF, 800mW audio for noisy environments, submersible 30 min at 3 feet (IPX7). New condition, two months old, used once in the field. Includes packaging, documentation, etc. \$100, firm. Email to KK6LWE@arrl.net

Advertisements are free for members

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

Club Members ONLY!

PARC has a tube bank that includes many 6 & 12 volt receiving tubes (and some transmitting types) for use by club members to repair their own personal equipment. Not for commercial use or resale. If we have your requests, we will pre-check the tubes and deliver them to you at the next club meeting.

Contact John WB6IQS WB6IQS@att.net

June 2016

Committee Chairs
and
Board Members

Contact
Info

Current Board of Directors

President	Charlie Ristorcelli NN3V	(619) 368-7617
Vice President	Joe Peterson K6JPE	(619) 630-8283
Treasurer	Tom Ellett W0NI	(858) 546-1148
Secretary	Sandy Pratt KK6EED	(858) 748-2611
Director #1	Kevin Walsh KK6FRK	(858) 722-5069 (text welcome)
Director #2	John Walker AC7GK	(949) 212-5533
Membership Chair	Glen Christensen KJ6ZQH	(858) 735-1144
Repeater Technical Chair	Mark Raptis KF6WTN	(760) 672-0223
Scope Editor	Michelle Thompson W5NYV	(858) 229-3399 (text welcome)

Not on the Board

Repeater Site Chair	Mark Raptis KF6WTN (acting)	(760) 672-0223
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The board members might have callsign@amsat.org mail aliases.

Committee Chairs

EchoLink	Bernie Lafreniere N6FN	N6FN@niftyaccessories.com
mesh networking	Phil Karn KA9Q	karn@ka9q.net
Operating Day	Tom Martin K6RCW	k6rcw@amsat.org
SANDARC Representative	John Walker AC7GK	ac7gkjohn@gmail.com
SANDARC Representative	Paul Williamson KB5MU	kb5mu@amsat.org
SANDARC Alternate	Michelle Thompson W5NYV	w5nyv@amsat.org
SD Microwave Group Liaison	Kerry Banke N6IZW	kbanke@sbcglobal.net

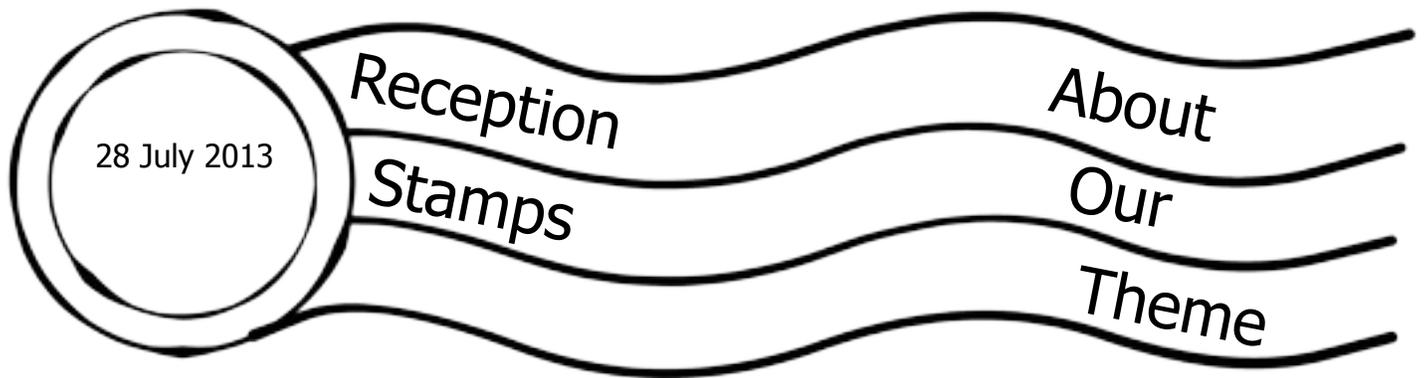
Upcoming Event

National Parks on the Air

Take part in this 2016 operating event, celebrating the US National Park Service Centennial.

Start Planning Now

National Parks ON THE AIR 2016



Ekko Radio Reception Stamp Hints at Early Days of Radio at Haverford College

by Jennifer Waits on July 28, 2013

Below, WABQ verified reception stamp



I was doing a random search on Twitter this weekend when I ran across a photo of a radio reception stamp for the first Haverford College radio station WABQ. It turns out that some of the current radio station participants at Haverford College found this gem on eBay, just in time for this year's 90th anniversary of the launch of WABQ.

I'd never seen a WABQ radio reception stamp and was curious to learn more about what it was. I figured that it was related to the QSL (Query Station Location) cards that DXers use to track their listening habits. There is a connection, as it turns out that these radio reception stamps were part of a collecting frenzy in the 1920s. An issue of Radio News at the time even had a cover story devoted to the "new radio stamp fad." The WABQ stamp has the letters E K K O and American Bank Note Co. written on it, as well as the words "verified reception stamp."

According to an article on Antique Radio Classified, "Ekko stamps...are the 1920s broadcast radio's equivalent to ham radio's QSL cards." Listeners were encouraged to send "proof of reception cards" to stations in exchange for a commemorative stamp as evidence that they were able to hear the station. As a side benefit, stations were able to get a sense of where people were listening from. Ekko, a company out of Chicago, began the stamp collecting promotion in 1924 and managed to get more than 700 radio stations to

participate.

It would be interesting to learn more about where WABQ listeners wrote in from. Located in Haverford, Pennsylvania (not far from Philadelphia), WABQ had a powerful broadcast range, rumored to be second to KDKA in Pennsylvania. Listeners tuned in from Maine to Michigan, according to accounts at the time.

To learn more about WABQ's short history in the 1920s, see my article on SpinningIndie. More on the history of Ekko stamps can be found in this Buying Guide on eBay and in this article (which includes an image of a reception card as well).

Just one dollar a month makes you a patron of Radio Survivor. Help us through our Patreon Campaign!



About Jennifer Waits

Jennifer Waits is co-founder of Radio Survivor and is its College Radio and Culture Editor. She's fascinated by the culture of radio and has visited more than 80 radio stations in the United States and in Ireland. She is passionate about radio history and is a Research Associate on the Library of Congress' Radio Preservation Task Force. A long-time college radio DJ herself, she hosts a weekly show at KFJC 89.7FM in Los Altos Hills, California.

Goodie Table "For Sail" Items. Donated recently to the club.
The following items will be offered at the June meeting.
Reasonable offers will be accepted immediately.
Unreasonable offers will be considered.

Item	Description
Yaesu FT7	80 - 10 Mtr transceiver, small early 80s solid state radio. Partial coverage on 10 meter band.
CB Portable	23 Channel cigarette lighter emergency Xcvr.
VSWR Meter	CB Type, with sensitivity meter
CW Code oscillator	Cheap straight key w/ audio oscillator
R/S HTX-100	10 Meter Xcvr (Realistic)
Cobra 19GTL	CB Xcvr (5 Watt AM)
R/S DX-160	SWL Receiver (Realistic) with external R/S speaker.

See John, WB6IQ!S at the June meeting.



SAN DIEGO



HAMFEST 2016

DATE: OCTOBER 1, 2016



Time: 7AM—3PM

6AM “Old Radio Trade Show”

Old Radio Trade Show In parking lot !

Ham Fest Cost: \$5.00

Old Radio Trade Show “\$5.00 To Show”

Location:

Lakeside Rodeo Grounds

12584 Maplevue St. Lakeside CA.

Free Parking and Antenna Friendly.

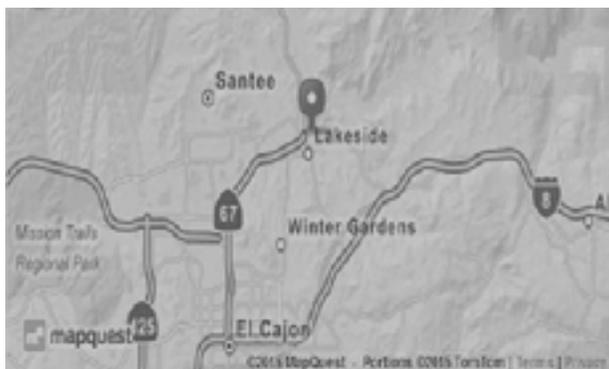
*You are cordially invited to attend the
2nd Annual San Diego Hamfest 2016. We*

plan on starting out the day with a Old

Radio Trade Show, Vendors,

Speaker Forums, and VE Testing.

So come on out and let's Ham it Up!



SPONSORED BY: LAKESIDE AMATEUR RADIO CLUB

VISIT US AT: WWW.LAKESIDEARC.ORG

**Like us on
Facebook!**

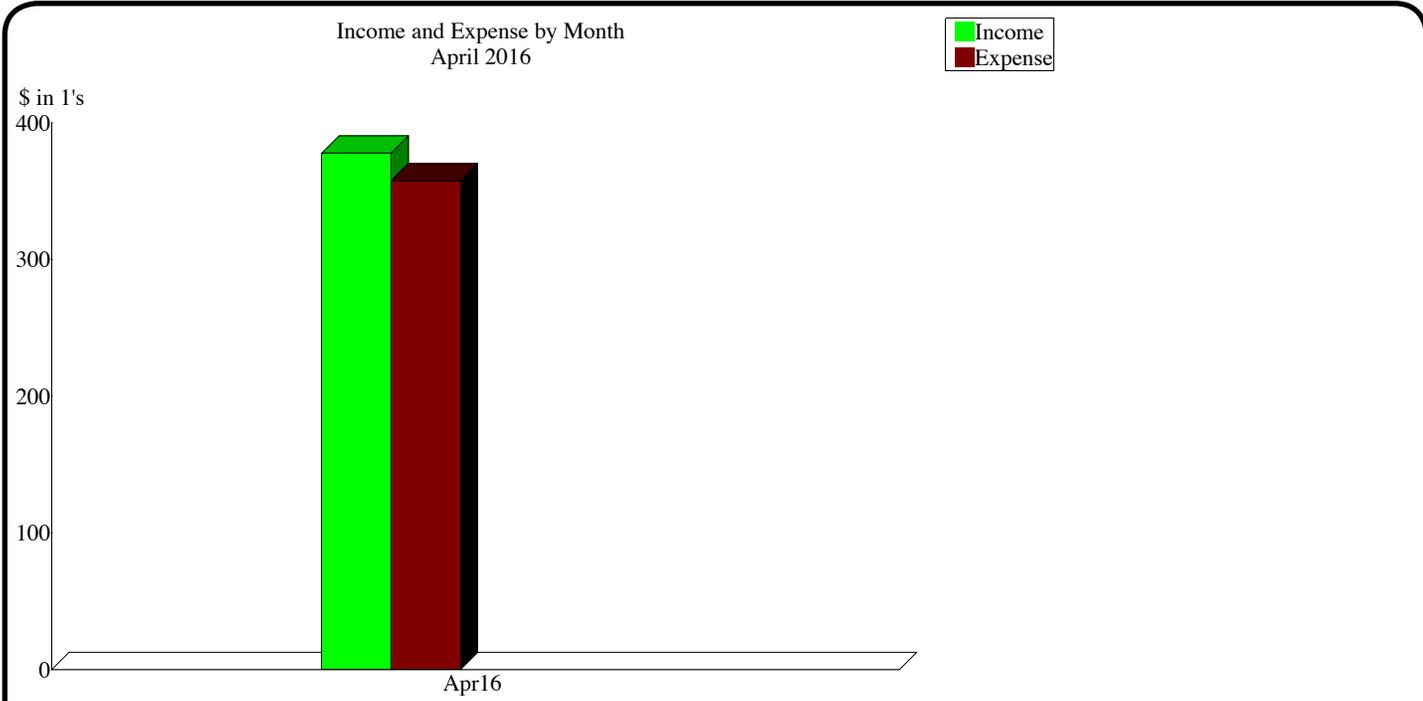


**For the most up to date information
please visit: www.SDhamfest.org**

QLS/SDHAMFEST2016-ver1.0

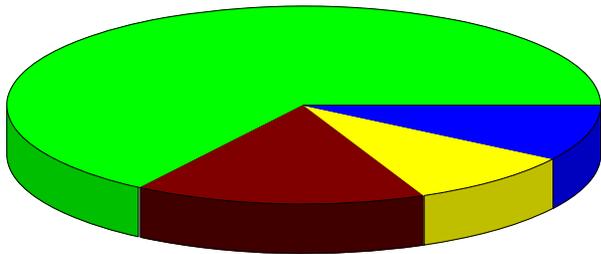
15 May 2016

Club Financial Update



Expense Summary
April 2016

Equipment Expns	\$235.03
Rptr Electric	57.25
Field Day Expns	33.07
Rptr Phone	32.20
Total	\$357.55



By Account

Reported ATV Status

1 June
2016

ATV system renovations have begun!
Contact board@palomararc.org if you
want to be involved.

At a minimum, upgrades to include
DVB-T transmission, ATN linking,
and substantially reduced cost and
complexity to enjoy this mode.

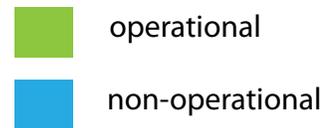
PARC
ATV
System

915 MHz WBFM in
5.8 MHz audio subcarrier

146.415
79.7
intercom

1241.25 MHz VSB out
NTSC standard

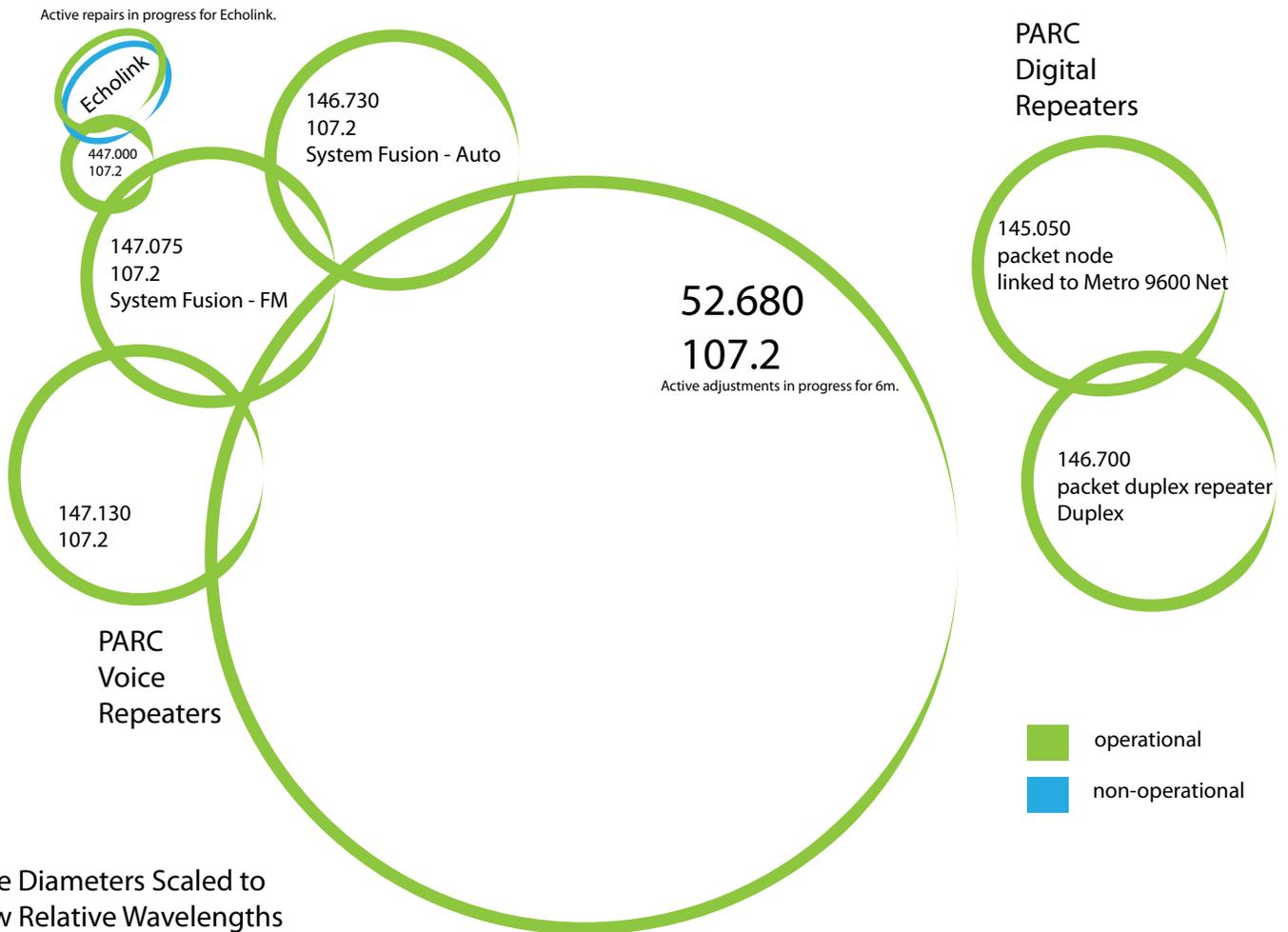
2441.5 MHz WBFM in
6.0 MHz audio subcarrier



Circle Diameters Scaled to
Show Relative Wavelengths
Between Equipment

Reported Repeater Status

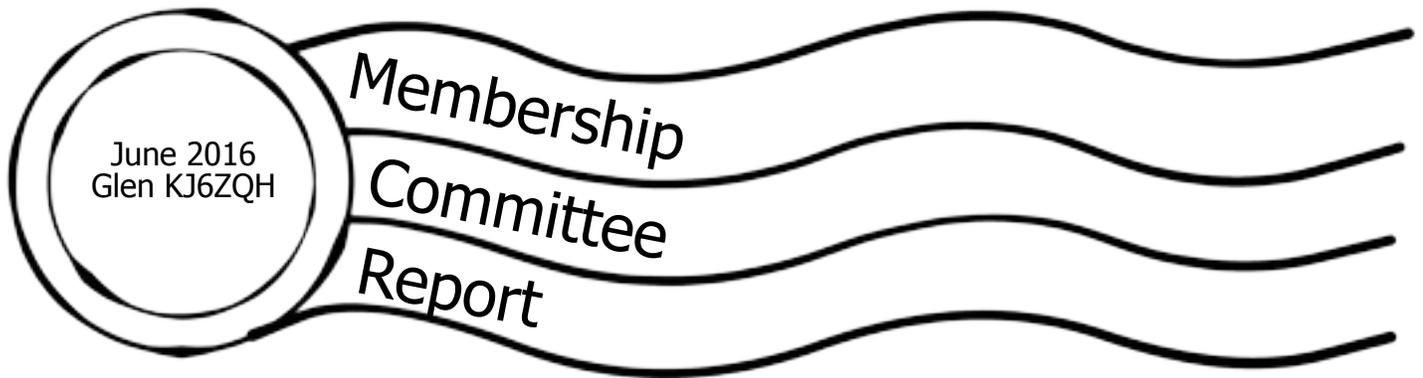
1 June 2016



Circle Diameters Scaled to Show Relative Wavelengths Between the PARC Repeaters

The 6m repeater has been repaired! Some additional work remains to fully tune the repeater, but essential functionality has been restored after a 3+ year hiatus. Thank you to Mark KF6WTN, John WB6IQS, the PARC board of directors, and our 6m cavity donor. Please find work party photos in this issue of the Scope.

Try it out and send your reports to board@palomararc.org



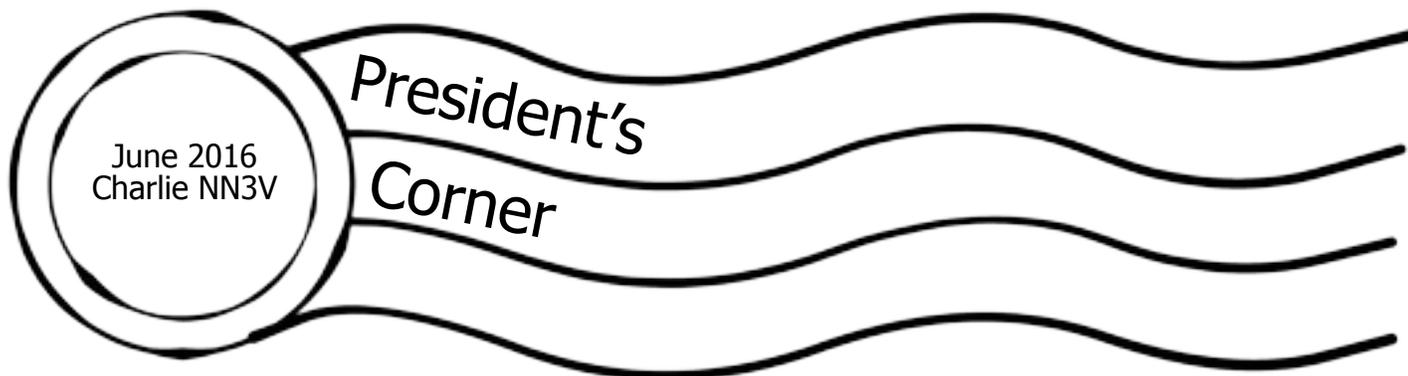
From the Membership Table

You can check the status of your membership 24/7. 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.

Soon to expire (on or before July 1st club meeting) or already expired PARC memberships:
(in alphabetic order by callsign - as of 5/11/2016)

- <http://www.palomararc.org/memberlist/search.php?callsign=AB6O>
- <http://www.palomararc.org/memberlist/search.php?callsign=AE6HF>
- <http://www.palomararc.org/memberlist/search.php?callsign=AF6GM>
- <http://www.palomararc.org/memberlist/search.php?callsign=AG6EK>
- <http://www.palomararc.org/memberlist/search.php?callsign=AI6KO>
- <http://www.palomararc.org/memberlist/search.php?callsign=AK6R>
- <http://www.palomararc.org/memberlist/search.php?callsign=K1NJH>
- <http://www.palomararc.org/memberlist/search.php?callsign=K6DRH>
- <http://www.palomararc.org/memberlist/search.php?callsign=K6GOR>
- <http://www.palomararc.org/memberlist/search.php?callsign=K6ISS>
- <http://www.palomararc.org/memberlist/search.php?callsign=K6OT>
- <http://www.palomararc.org/memberlist/search.php?callsign=K6PLR>
- <http://www.palomararc.org/memberlist/search.php?callsign=K6SC>
- <http://www.palomararc.org/memberlist/search.php?callsign=K6SML>
- <http://www.palomararc.org/memberlist/search.php?callsign=K6WJH>
- <http://www.palomararc.org/memberlist/search.php?callsign=K7ELH>
- <http://www.palomararc.org/memberlist/search.php?callsign=K7MRP>
- <http://www.palomararc.org/memberlist/search.php?callsign=K7WYV>
- <http://www.palomararc.org/memberlist/search.php?callsign=KB6CPZ>
- <http://www.palomararc.org/memberlist/search.php?callsign=KC6HUK>
- <http://www.palomararc.org/memberlist/search.php?callsign=KC6YSO>
- <http://www.palomararc.org/memberlist/search.php?callsign=KC7CJ>
- <http://www.palomararc.org/memberlist/search.php?callsign=KD6AEB>
- <http://www.palomararc.org/memberlist/search.php?callsign=KE6NPL>
- <http://www.palomararc.org/memberlist/search.php?callsign=KG6HSQ>
- <http://www.palomararc.org/memberlist/search.php?callsign=KG6MDQ>
- <http://www.palomararc.org/memberlist/search.php?callsign=KG6OMH>
- <http://www.palomararc.org/memberlist/search.php?callsign=KG6QWR>
- <http://www.palomararc.org/memberlist/search.php?callsign=KG6TFL>
- <http://www.palomararc.org/memberlist/search.php?callsign=KG6TTZ>
- <http://www.palomararc.org/memberlist/search.php?callsign=KG6UTS>
- <http://www.palomararc.org/memberlist/search.php?callsign=KG6VVN>
- <http://www.palomararc.org/memberlist/search.php?callsign=KG6ZUW>
- <http://www.palomararc.org/memberlist/search.php?callsign=KH6GK>



As I embark on the annual trek to Dayton, it is nice to think of the ham fun ahead, in May as well as June.

If you have never been to the Dayton Hamvention, then you must do so. All hams should make at least one pilgrimage to the center of Hamdom! And whether you know it or not, many has been the advancement in communications that has seen the light of day at Dayton. There are innumerable contributions to the world of electronics that were pioneered by hams, and were first demonstrated at Hamvention.

I wonder what I will see unveiled this year. Last year hams saw the unveiling of Icom and Kenwood top of the line HF, VHF transceivers available for \$17K more or less! Just what every ham wanted to carry home from Dayton. This year marks the 60th anniversary of Yaesu, and rumors are that they will introduce a game changing ham radio. Will it be the ultimate SDR radio with a \$10K knob so it can be used as a legacy product? Only the true technology cognoscenti know!

Elsewhere in this issue of Scope you will find pictographic evidence that PARC hams are advancing in the home ham equipment capability. Do you think you can find that graphic proof?

The Club had an excellent operating day experience at Fry's in San Diego. Great turnout, and a lot of amateur radio clubs presence that were showing some great technology to the casual customers at that Fry's. Furthermore it was a real pleasure to see that PARC members attended, and one PARC member walked away with a handheld VHF/UHF radio courtesy of the Club.

Finally, June marks the height of ham operating activity with the trials and tribulations of Field day. PARC is fortunate to have AG6CF (Brian) planning the club's activities for this year's FD. The Club's FD site is the same as last year, and the activities are many. This year PARC will focus on SSB and Digital operation, but CW will be operated from one station. There will also be the annual PARC Tri Tip BBQ, the best food in ham radio of San Diego county. This will take place on Saturday June 25th , 3:00 PM – 6:00 PM. I encourage all PARC members to come out and see the site, observe the operating effort of some of the club's members, and spend a minute "Getting On The Air". If you are unaware, FD will take place June 24th – 26th with the 24 hour operation taking place 11:00 AM Saturday June 25th through 11:00 AM Sunday June 26th..

Hope to see you there.

73 de NN3V

7 May 2016

Simplex Search Exercise Report

SPONSORED BY PARC

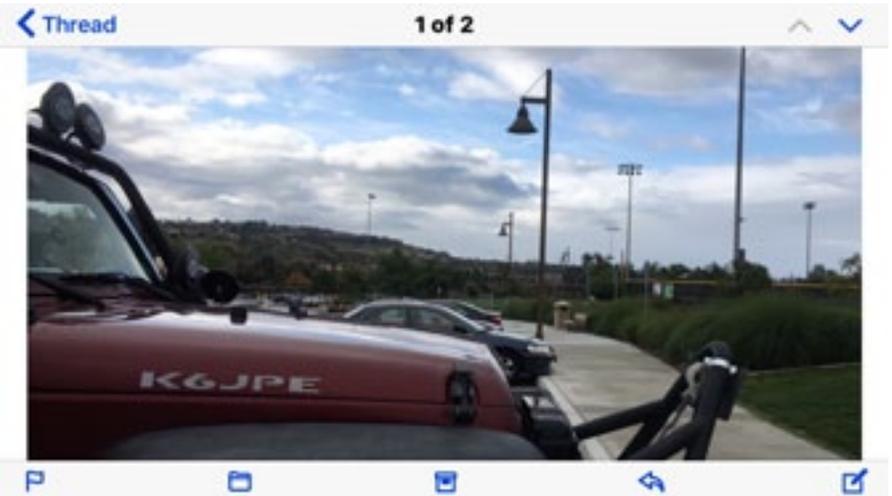
New hams and seasoned hams alike were invited to join the Simplex Search exercise, an enjoyable hour spent locating hidden radio operators stationed around a park by setting in and calling the specific simplex frequency used by each.

The Search was held on Saturday May 7, at Agra Norte Park, located off Poinsettia one-half mile east of El Camino Real.

The Simplex Search was meticulously planned, with maps, route slips, log sheets, and instructions all set into packets. Frequencies were laid out and carefully dovetailed. The guest list of PARC members duly invited and publicity done and the venue secured. But one guest who was not invited apparently decided to come anyway and take revenge for the slight: the one-and-only Mr. Murphy, and he was thorough about it.

First, through a series of events such as glitches at work, unexpected family happenings, physical accidents, the threat of rain, and other occurrences, only three of the original guests could come plus the organizer. Three non-members of the club also showed up and made a welcome addition to the group. Once the script was modified to fit the smaller number (with resultant chances for error), the exercise got under way. But then began a series of murphysms, such as radio malfunction, programming difficulty, verbal misunderstanding, and location error that all caused constant stumblings and corrections amid the successes until the climactic ending when the rain, which had held off so as to make an impressive entrance, began coming down in a grand finale.

The little group, huddled together under a shelter, marvelled at how much they had learned that day and, with great laughter and camaraderie, agreed that they had all enjoyed a fine time and would like to do it again. This is living radio. There is nothing else like it.



25 May 2016
San Diego DX
Club News

"Journey to the Edge"



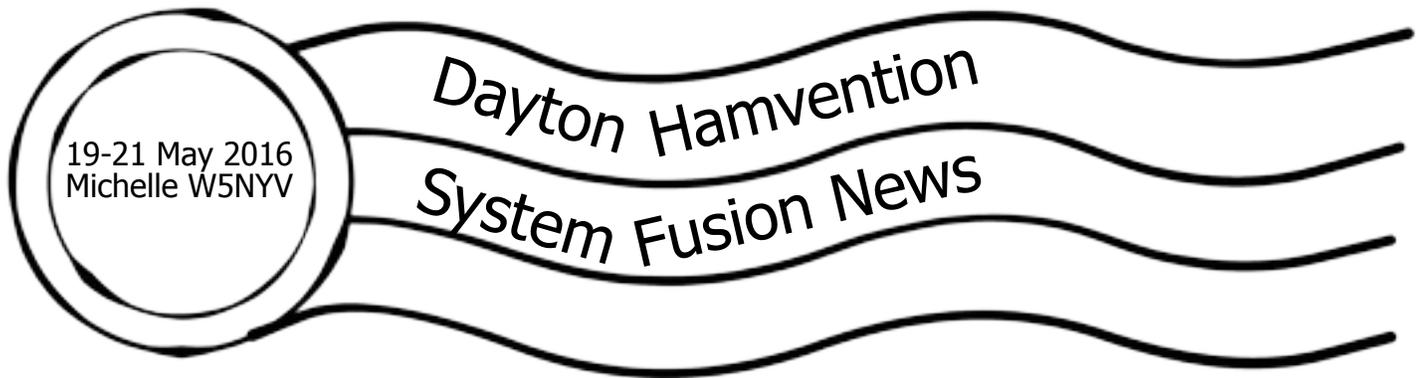
San Diego DX Club's guest speaker for May 25th was Ned AA7A who presented, "Journey to the Edge - The 2016 VP8 DXpeditions to South Sandwich and South Georgia Islands".

At left, Ned working the RTTY station at VP8SGI.

Below, a serene moment on South Thule Island hours before the Big Storm.

Active area of discussion amongst many DXers is how to best prepare for the declining solar cycle.





Dayton Hamvention 2016 was held 19-21 May 2016 in Dayton, Ohio. One of the largest gatherings of ham radio enthusiasts in the world, Dayton covers almost every aspect of amateur radio through workshops, forums, vendor booths and demonstrations, club exhibits, activities, contests, giveaways, and a sizeable flea market.

Organized and run by Dayton Amateur Radio Association (DARA), the event has been held yearly since 1952. Hamvention moved to the Hara Arena in 1964. The decision to stay there has not been without controversy, but some would say that the spirit of the event compensates somewhat for the limits of the elderly facility.

There were plenty of remarkable activities and announcements this year at Dayton.

Yaesu announced the DR-2X during the System Fusion forum. From a sheet seen at Dayton, here are some details.

DR-2X features include:

- Modulation modes of FM and C4FM digital.
- AMS function automatically recognizes the received signal as C4FM digital or conventional FM.
- 3.5 inch full color touch panel operation.
- Extremely reliable high RF output power 50 W/20W/5W.
- Emergency operation supported by auto-switched backup battery power operation (US and Asian versions). Front panel microphone connector is provided for repeater transmitter testing and enables base station operation.
- Rear panel control I/O port permits connecting to the S-COM 7330 repeater controller allowing the control of up to 3 DR-2X units.

DR-2X exclusive features include:

- Dual receive operation.
- The ability to assign separate downlink frequencies according to the uplink frequencies.
- Improved "news station" feature permits sharing the voice and text messages to members.
- Group Monitor feature supports easy Groupings Set-up.
- Stable high power output with large heat sink.
- Commercial grade components for long-term reliable operation.
- IMRS (Internet-linked multi-site repeater system) function for simple expanded area coverage via the internet (option).

The DR-2X replaces the DR-1X.

C4FM/FM Dual Band Digital Repeater



YAESU DR-2X is a C4FM digital/Conventional FM dual mode and Dual-Receive capable repeater that covers the VHF and UHF amateur radio bands. DR-2X incorporates the use of conventional FM communication integrated with the C4FM digital communication through its unique AMS capability.

144/430 MHz Dual Band Dual Receive Heavy Duty C4FM/FM Digital Repeater



DR-2X

US and Asian versions

DR-2XE

European and Australian versions

Standard Accessories: AC cable (US, Asia only),
DC Cable, RF connection cable SCJ-20, Rubber Feet (4)

DR-2X Features

- Modulation Modes: Conventional FM, C4FM Digital
- AMS (Automatic Mode Select) function automatically recognizes the received signal as C4FM digital or conventional FM signal
- 3.5-inch Full Color Touch panel Operation
- Extremely reliable, high RF Output Power: 50 W/20 W/5 W
- Emergency Operation: Supported by auto-switched backup battery power operation (US and Asian versions)
- Front panel microphone connector is provided for repeater transmitter testing and enables base station operation
- Advanced Operation: The rear panel Control I/O port permits connecting with the "S-COM 7330" repeater controller (Control up to three (3) DR-2X units)

DR-2X Exclusive Features:

- Dual Receive Operation
- Improved "News Station" Feature permits sharing the voice and text messages to members
- Group Monitor Feature supports easy Groupings Set-up
- Stable High Power Output with Large Heat sink
- Commercial grade components for long-term reliable operation
- IMRS (Internet-linked Multi-site Repeater System) function for simple expanded area coverage via the Internet (Option)

C4FM provides Excellent Audio Quality and Reliable Communication

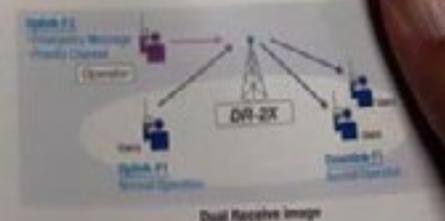
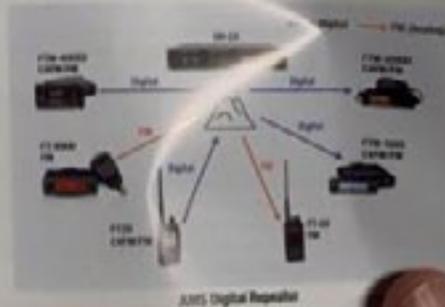
C4FM modulation has better BER (Bit Error Rate) characteristics when compared to other Digital modulation systems, and guarantees reliable Communication. The YAESU C4FM digital clear voice technology uses a 12.5 kHz bandwidth which permits high quality voice communication.

FM friendly Digital with AMS (Automatic Mode Select)

System Fusion enables interconnection between all users with different modes. This is made possible in System Fusion by AMS. The AMS function automatically recognizes the signal as a C4FM digital or a conventional FM signal, then the DR-2X transmits the signal in the preset communication mode.

Dual Receive Feature provides Flexible Operation

The unique simultaneous Dual Receive Repeater DR-2X allows the control operator to assign an additional frequency for controlling the repeater, transmitting emergency messages, or simply a second up-link frequency. The control operator may also assign separate Downlink frequencies according to the Up-link frequencies.



POWER GENIUS XL

The long awaited amplifier is finally here. Meet Power Genius XL.

SPECIFICATION AND FEATURES

- 1.8 – 54 MHz coverage
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- User friendly Win and Android applications
- FlexRadio compatible
- First ever harmonic level display
- Ultra fast SWR protection
- Only 12 kg
- Dimensions 13cm(H) x 33cm(W) x 43cm(L)
- 90 - 250VAC power supply



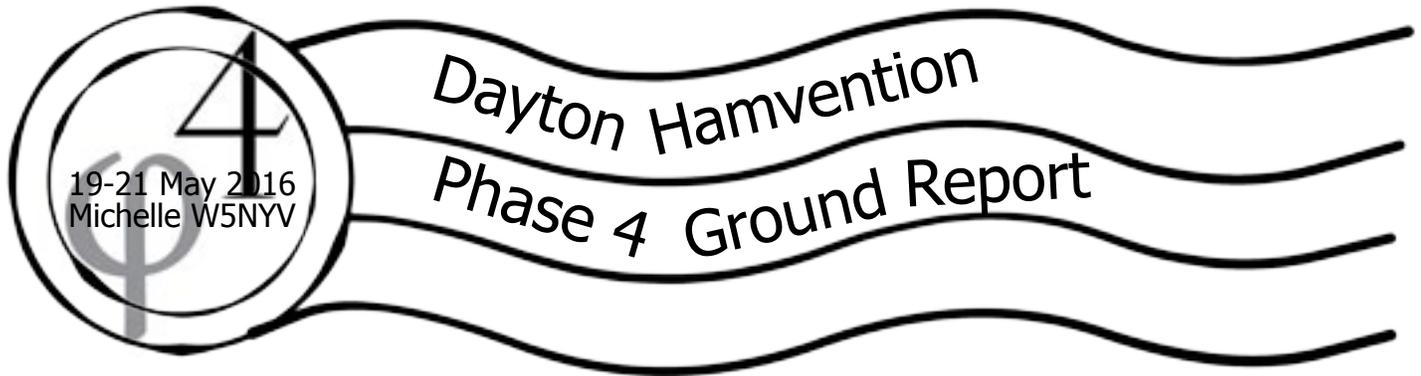
PG uses a LAN network interface to communicate with FlexRadio series 6000. It is also compatible with other radios using CAT to obtain band data. With a FlexRadio series 6000 it is a complete SO2R setup. All of it fits in just one bag.



At the Flex Radio booth, generous quantities of Maestros were made available for extensive hands-on experience. A mobility scooter duel with Arrow antennas resulted in victory for Michael Ossman of HackRF fame. His opponent, Travis Goodspeed, was soundly defeated.

Flex had their upcoming amplifier at the booth, but not in Flex livery. This 403A amplifier is from a far off land! The enclosure will be re-engineered by Flex to upgrade the controls in order to establish a Flex-centric look and feel. Above is more information from the 403A website <http://new.403a.com/>

A source provided the following: "Ranko, 403A, was at the banquet along with a couple of his engineers. Gerald K5SDR announced that they had signed an agreement with Ranko to sell and support a new legal limit 403A amp (The Power Genius XL) and associated line of automation gear for the Flex 6000 series radios. ... Gerald said info would be posted to the community when they get back to Austin. The 403A site has some info on the Genius. Looks pretty nice."



It was my great privilege to be invited this year to be the Friday evening AMSAT/TAPR banquet keynote speaker at Dayton Hamvention.

The Amateur Satellite Corporation (AMSAT) and Tucson Amateur Packet Radio (TAPR) jointly hold an annual banquet at the Dayton Hamvention. The two corporations take turns organizing the banquet. This includes selecting the speaker for the event. 2016 was AMSAT's turn.

When first invited by Barry Baines, the AMSAT president, I hesitated. Not because I don't enjoy gabbing in front of crowds (boy do I!) but because he wanted me to speak about Phase 4 Ground.

Again, not a problem. I can talk about Phase 4 Ground development until the cows come home, and then talk those bovines to sleep. However, we don't yet have a complete system, our launch schedules are fraught with peril, and fund-raising hasn't been completed. On the other hand, every week we have been adding amazing volunteers, making substantial progress, and learning something new. Any of the recent successes could easily be a compelling program to a group composed of digital and satellite enthusiasts.

The goal of the Phase 4 Ground project is to design and enable the building of digital radios that will support any 5GHz/10GHz payload that complies with the Phase 4 Ground air interface. This means that our radios will work with any launched payload or any terrestrial payload that produces the correct waveforms. Having a re-usable digital microwave radio that works with satellites as well as terrestrial Groundsats is an exciting, motivating, and completely enjoyable job. Getting a chance to share the project at Dayton would be a huge opportunity.

I told Barry that I would love to speak, but wanted to wait until the accommodation study for the Phase 4B payload was complete. This study, paid for by AMSAT, would answer the question of whether or not a particular payload (our 4B geosynchronous in particular) would pose acceptable risk to the primary payload. The accommodation study was scheduled to be completed in another week. As the week went by, I had plenty of time to think about what I wanted to talk about, and what I would do if the accommodation study found that our secondary communications payload was found to be too great of a risk for the primary mission. Other missions stretched out in the future, such as a high elliptical orbit (HEO) opportunity, and the NASA cube quest challenge (CQC). But this geosynchronous opportunity was the furthest along. Phase 4 Ground was already firmly associated with the GEO mission.

When we received the very welcome news that the accommodation study had successfully completed, and that we were clear to proceed, I called Barry Baines back and formally accepted the invitation to speak. The date was just a few months away!

It wasn't until I was sitting at the banquet, looking around the room, that I realized just how many of my friends and colleagues were there. A substantial number of Phase 4 Ground volunteers were in the audience along with almost everyone I work with in AMSAT. All of the teleconferences and email correspondance and phone calls and studying and reviewing and writing and travel was worth it. Here, in one room, was a vibrant network of people keeping amateur radio in space, and expanding digital radio on the ground.

The president of TAPR knows me well enough to have some serious fun with the AMSAT-TAPR

"rivalry". His introduction was quite the gauntlet fling, but I was more than up to the challenge.

I've worked with and deeply respect so many of these people, both those that were present and those that were elsewhere this year, that speaking in front of them was not just a great opportunity, but was also an absolute joy.

I gave an overview of the project, making sure to answer who, what, when, where, why, and how. Being a long-time Burning Man participant, I'm all about interactivity. I opened the floor to questions as soon as I could.

I did have a small amount of trepidation that I would get a minimal number of questions. I should not have worried. I lost count! The questions covered an enormous amount of ground, from practical concerns about the antennas to questions about launches, access policies, scientific missions that could be accomplished in collaboration with our communications payloads, protocol questions, software architecture trade-offs, features, and curiosity about how we would support the ensemble of solutions ranging from do-it-yourself to off-the-shelf.

One question was a follow-up about something I discussed in the presentation, the ionospheric topsounding project. Ionospheric topsounding is a scientific experiment that makes measurements of the ionosphere from above the ionosphere, looking down, as opposed to what we have to do from earth, which is make measurements from below, looking up.

As you probably can guess, topside sounding is possible only with a satellite above the ionosphere. A geosynchronous mission would provide a remarkable platform for this type of sensor. Currently, there are no ionospheric topsounding missions aside from a few rockets and some past low-earth-orbit missions. Nothing permanent is up there. After I introduced this as a possible future scientific payload for missions like 4B, a banqueter mentioned that receivers for Jupiter's radio emissions would be greatly desired as well. This sparked a two-day conversation with the Society of Amateur Radio Astronomers SARA <http://www.radio-astronomy.org/>

I could not have asked for a more enthusiastic and welcoming audience.

For Friday and Saturday, when I wasn't up front at a podium, I was at the AMSAT booth in the exhibit hall. Paul KB5MU and I had bought a whiteboard, markers, eraser, and tripod at Wal-Mart after arriving in Dayton, and we put it into use in the engineering section of the AMSAT exhibit. We'd also brought along some Phase 4 swag, "round tuits". Made on the laser cutter, these wood and acrylic disks had the Phase 4 logo and "tuit" written on the bottom. They were completely fun to give out and we have extras left over for the next event.

I truly enjoy talking to people at booths. I've staffed booths at Dayton before, as well as Maker Faires, STEAM Fests, Qualcomm outreach, and other big events. The enjoyable thing about Dayton is the variety and curiosity of the people that come to the booth. The education, experience, and genuine enthusiasm from so many people interested in finding out more, offering their help and support, and cheering us on is a energizing and uplifting experience. The only downside is that it's extremely difficult on the feet!

I prefer to stand up when I do booth duty, and after many, many hours over Friday and Saturday standing, even gym-toughened feet, ankles, and legs were very much "done" by Sunday's flight home.

Another big aspect of Dayton this year was deal-making and recruiting. I have a lot of good news to report here. Phase 4 Ground added substantial resources to our project and made some big steps forward across the board. This sort of collaboration is what makes Dayton a truly amazing and rewarding opportunity.

I am already looking forward to the next opportunity to represent Phase 4. This will be at the Wireless Symposium at Virginia Tech in early June and at DEFCON in late July. Representing Phase 4 means representing Palomar Amateur Radio Club. PARC is a partner in Phase 4 progress and has provided a site for equipment as well as technical and morale support. Clubs are the heart and soul of the hobby, and PARC is a big part of Phase 4 Ground's success.



Above left, I speak with Bill Reed NX5R. Bill Reed works on Phase 4 from Texas, and is very active in the effort to increase FPGA design skills in AMSAT. He is also very involved in several active payload projects. Above right, I'm giving the keynote at the AMSAT/TAPR dinner. Below, my partner Bob McGwier N4HY. He is the lead for the Phase 4B and Phase 3E payloads, while I'm the lead for the ground terminal. Bob is a professor at Virginia Tech, and is the director of research at the Hume Center for National Security and Technology. He is singularly responsible for finding the launch and satellite opportunities that Phase 4 Ground is working hard to take full advantage of. One of his many goals is for Palomar Amateur Radio Club to benefit as much as possible for being one of the earliest sponsors of Phase 4 Ground. He's a member of PARC Facebook and visits San Diego often.





Above left, Tom Clark K3IO shows off the most recent array of Phase 4 Ground uplink power amplifier experiments at the Dayton 2016 AMSAT booth. Tom won the 2016 ARRL President's Award for 2016 for 60 years of advancing amateur radio technology. Above right, Hope KM4IPF signs copies of a new book by AMSAT. All of us featured in the book (myself included!) were invited to sign a small number of copies that were sold at the AMSAT booth. Hope is an active and competitive satellite operator. I tried to recruit her for Phase 4, but she is too busy contesting!



Above: With Marcus' permission Howard KY6LA demonstrated Marcus, DL8MRE's new alpha version iPad App at Dayton Flex Dinner and at the Flex booth. Above, Howard demonstrates it at the AMSAT booth.

Here are some highlights of the differences:

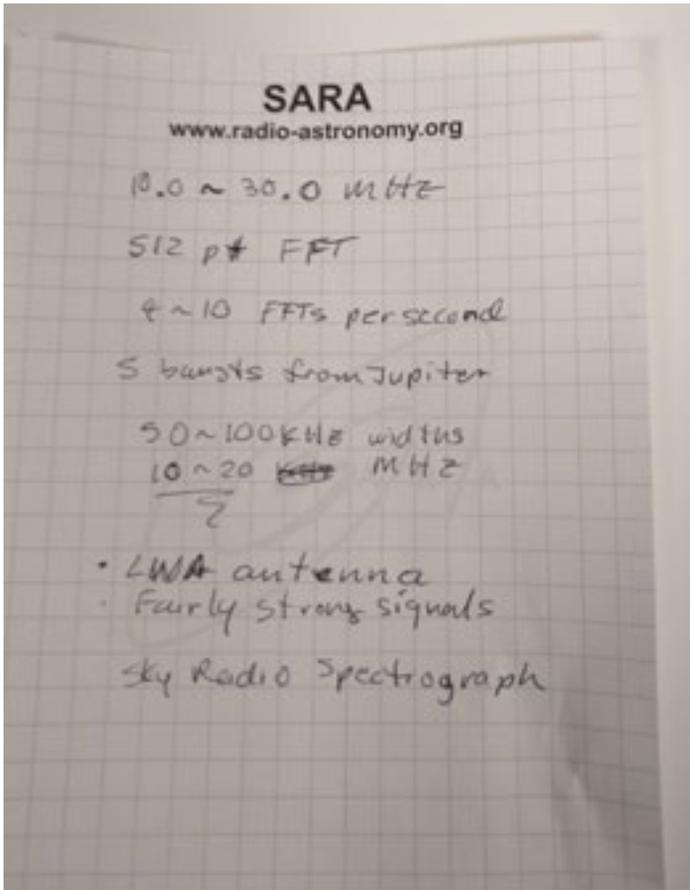
1. Spots on the display work
2. Snap to frequency selection is much easier to tune than K6TU
3. CWX works
4. TNF works
5. Close emulation of SSSDR.
6. Region Band map included but USA does not obey the rules

The jury is out as whether the touch screen emulation as K6TU is more Ipad centric. Each will have people who prefer one over the other It is still an alpha and he needs more testers but it's likely ready by July in App Store.



Michael Kirkhart KD8QBA takes a photo after he signs the page that has his \$50 cubesat photo. He was part of a team that put up a \$50 cubesat. Yes, \$50! More information:

<https://amsat-uk.org/2013/11/22/50sat-eagle2-pocketqube-operational/>



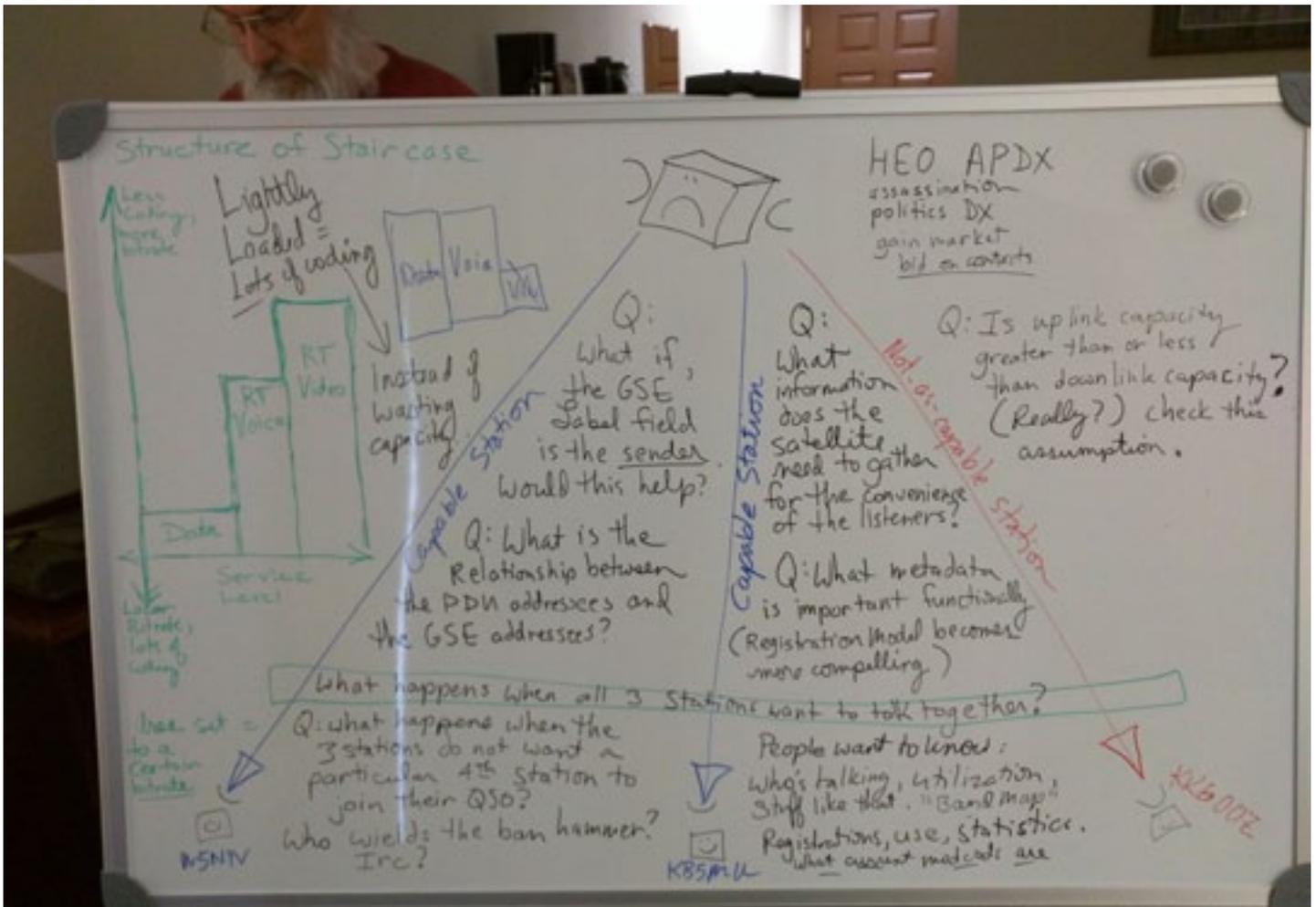
At left, this is how new projects start!

These notes were jotted down by Phase 4 volunteer Michael Kirkhart KD8QBA (the very same \$50 cubesat team member pictured on the previous page) while speaking with Society of Amateur Radio Astronomers about a possible science experiment package for an extra-ionospheric mission. This one focuses on Jupiter.

Below, you can see part of the process of thinking out loud on a whiteboard about how to fully use the functionality of generic stream encapsulation while providing a amateur-centric experience.

With the wide variety of feedback, enthusiasm, and gracious support that we received, the weekend was a resounding technical and social success.

If you haven't gone to Dayton, then you should consider it. It's well worth the trip and the jetlag. Volunteering puts you on the fast track to meeting an enormous amount of people, and gets you a front seat to many of the events and announcements that hams talk about for the rest of the year.



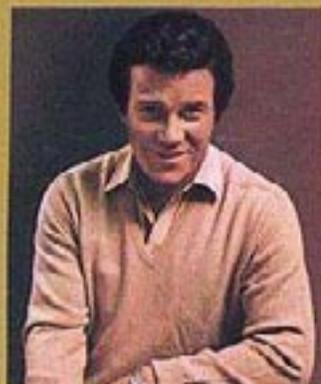


Setting up and staffing a booth takes a lot of enthusiastic volunteers. Above, Jerry Buxton, AMSAT's Vice President of Engineering, brings items to the AMSAT booth during the early stages of the Hamvention. Below, the AMSAT forum on Saturday is about to begin. Six speakers updated the crowd on all aspects of AMSAT engineering, operations, and activities. Forums are multitrack and offer a tremendous amount of information. Plus, there's seating for your weary feet!





Above, Kevin KK6FRK staffed the Ham Radio & Scouting booth at the ARRL "quarter". ARRL had a huge presence at Dayton, with booths representing all of their initiatives and activities.

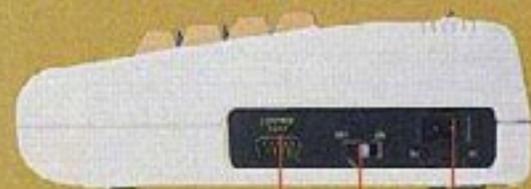


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Read the chart and see why COMPUTE! Magazine¹ calls the VIC-20 computer "an astounding machine for the price." Why BYTE² raves: "... the VIC-20 computer unit is unexcelled as a low-cost consumer computer." Why Popular Mechanics³ says "... for the price of around \$300, it's the only game in town that is more than just a game." And why ON COMPUTING INC.⁴ exclaims: "What is inside is an electronic marvel... if it sounds as if I'm in love with my new possession, I am."

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1 April '81 issue 2 May '81 issue 3 November '81 issue 4 Fall '81 issue

*Manufacturer's suggested retail price Jan. 1, 1982. Includes BASIC cartridge required for programming.



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6-meter Repeater Repair

15 May 2016
John WB6IQS

6-Meter Repeater Report, Trip to the Palomar Site on May 15, 2016

Report written by John Kuivinen, WB6IQS

Mark (KF6WTN) had a number of business trips and has been unable to go to the mountain to install the new cavities. He called John (WB6IQS) and asked to go this weekend as he knew that WB6IQS was planning on a short vacation from his retirement and would be leaving soon.

We had a new home-made 6-meter ground plane antenna that will survive much better than the old one. The previous all aluminum vertical antenna had been destroyed due to ice loading and wind damage. The new ground plane antenna is made out of 1/4" solid steel galvanized rod for the radials and the radiating element is a cut down CB stainless steel mobile whip antenna. With a mobile type spring at the base it is planned that wind damage will not be a factor in the future. The insulating support for the radiating element is 1/4" welded steel rod using a modified brass welding electrode connector. Five radials were used and the 3/8" thick aluminum U-channel base plate will support any imagined ice and snow load. The radials will tend to shed ice and snow as they drop down at a 45 degree angle. A large U-bolt attaches the base support to the tower.

A MFJ antenna analyzer showed <1.5:1 VSWR from 50.5 to 54 MHz with the best VSWR at 51.5 MHz. It was nearly perfect for the repeater. The cable was weather sealed with duct tape, outdoor heat shrink tubing and clear silicone rubber.



We started unpacking a tremendously large box in the repeater building. It was about 9' long and a little over 2 feet square. There was a lot of protective packing material in the box and was very awkward for two people to handle. Large cavities like these represent a deadly combination of very awkward and very delicate at the same time. We could not afford to put a dent in the cavities nor could we drop them during the installation. Any of these events would de-tune the cavities and cause problems.

The cavities are 7' 2" tall and the building's ceiling is only about 6' 6" tall so it was "Houston, we have a problem" time.



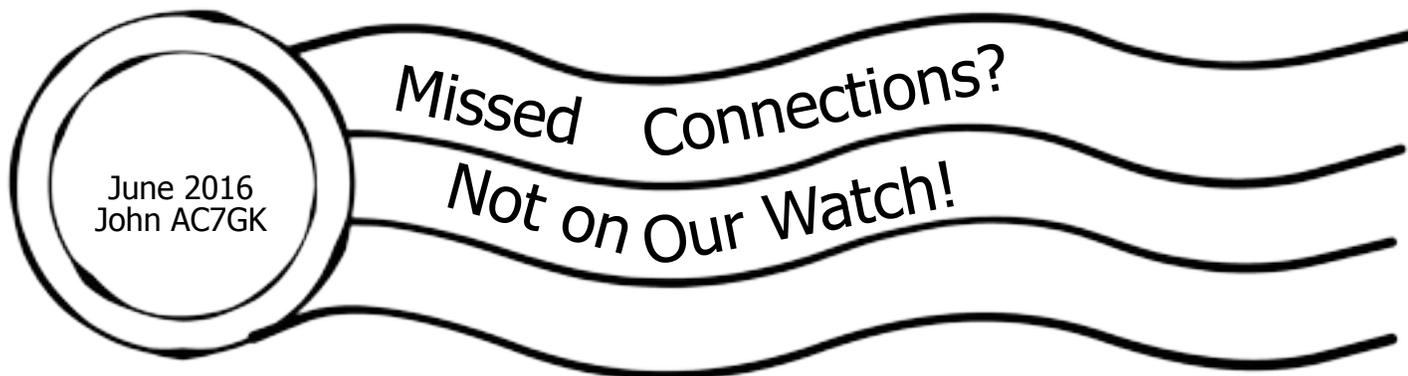
These are much better cavities than the previous home-made versions. The old cavities were only about 5' tall and 5" in diameter. The only way temporarily to install the cavities was to lay them on the floor but now they block access to the 6-meter and other repeaters. A ceiling bracket or perhaps a wall mounted shelf must be created. That has yet to be decided.

Due to physical limitations and no access to the repeater's input / output wiring after the cavities were in place, we did some quick tests and called it a day. There are still some problems with the repeater's operation. We suspect a bad cable or bad adapter. Not sure which one is responsible. KF6WTN will have to sort this out a little later.

The repeater is operational but power output is low and the sensitivity is not as good as we had hoped. We will have to make a permanent space for the cavities and then we can troubleshoot the RF issues.

Submitted by John, WB6IQS
May 16, 2016





Drill Reveals the Value of Amateur Radio Partners

By John AC7GK

It is always a pleasure to see how amateur radio can come to the attention of large segments of the population when we normally operate behind the scenes in supportive roles. I remember one occasion in my emergency service when this actually happened, and hams twice saved the day during a large drill involving great numbers of official people.

It happened during a drill when the main airport at Salt Lake City had to stage a mock plane crash as part of its regular certification process with the FAA. A wrecked plane was set up, and all of the emergency personnel and many of the regular operating personnel of the airport, the city, the Red Cross, and the utility companies were given their roles for the active response. As a member of the SLC ARES organization, I was assigned to be net control for the whole amateur radio backup communications operation. I decided to do it in a way that would be the least vulnerable to failure, so I drove to the point of the Uintah mountains that overlooks the whole Salt Lake Valley and set myself up to do it on simplex. From that point, I could see, both visually and electronically, every one of the entities that I mentioned above without being dependent on possible repeater failures. I contacted all of my operators, both on the scene and in the various support locations, and settled down for a long exercise.

Most of our operations were routine but the important action was not long in coming. At one point in the script, the coroner was to make his appearance with his team to lay out a grid of the area, and recover and mark the bodies and body parts. He didn't respond, even though I could hear that they were calling for him on the fire frequencies. So I called my operator standing right behind him and said: "Tell Rudy to get his crew up there right now." The coroner, who had missed it by listening on the police frequencies instead, headed up immediately and did his job right on schedule.

Later, it was time for the mayor of the city to make her appearance as part of the official response as well as a photo op. But she didn't respond either, even after they called her repeatedly on the police frequencies because, as it turned out, her people were listening to the fire frequencies. So I called the ham who was standing right there, and I said: "Tell DeeDee that they are calling for her to come up." He did, and she took off and did her bit.

You can imagine the accolades heaped on the ham radio operators in the after-action debriefing, and when I explained how we had been in contact with all of the players, even though they were scattered all over the airport and the city, with signals that could not be interfered with and did not depend on commercial power or overloaded regular channels, they were quite impressed. Ham radio, properly used, can be such an important resource in times of disaster that it behooves us to keep the constantly-changing emergency and support personnel in our areas apprised of what we can do, and then be prepared to do it.

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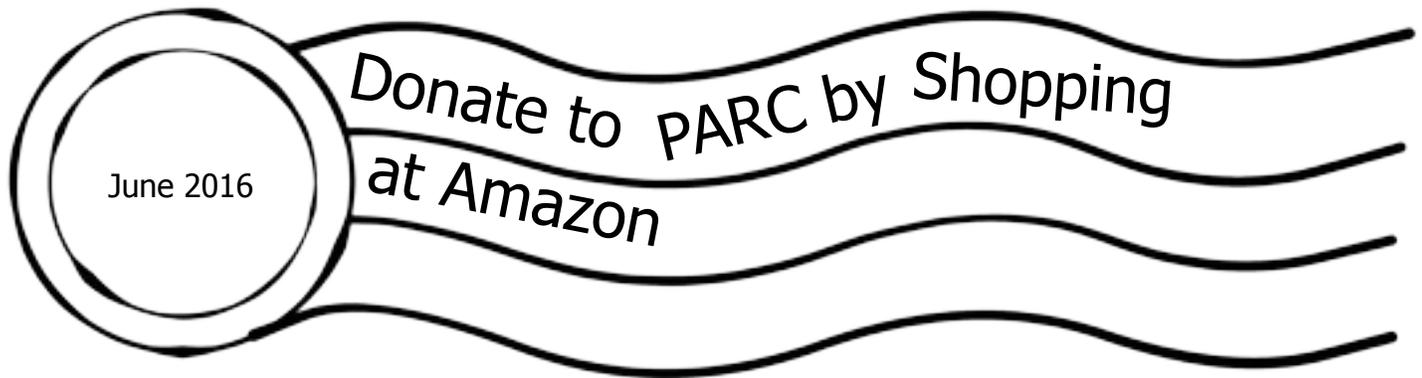
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There is good news about our club's non-profit status. As mentioned in December, PARC is now a tax exempt non-profit public corporation. If you choose to donate money or equipment to PARC, and if you itemize deductions, you can take a tax exemption for the value of the donation.

BUT There is even an easy way to donate to PARC! Do you shop online at Amazon?

PARC is now registered with smile.Amazon.com as a not-for-profit public corporation. If you so choose, any purchase you make on Amazon can be identified as a purchase for which you desire that Amazon donate funds to PARC!

Here is how it works.

If you wish to designate that some funds of your Amazon purchases be donated to PARC, go to www.smile.amazon.com and log on to make your regular purchases just as you always do. After logging in, you proceed to order your purchase as usual, and in the checkout procedure you are offered an opportunity to designate a portion of the purchase to be distributed by Amazon to any of thousands of charities. There we ask that you select "Palomar Amateur Radio Club" as the non-profit to which the funds will be donated by Amazon.

This will have absolutely NO EFFECT on the regular purchase price of your item.

What happens is that without any further action on your part, Amazon will forward to PARC's bank account 0.5% of the purchase price of what you bought.

You can learn all about this further by visiting the following link:
<https://smile.amazon.com/ch/95-3737299>

Amazon is aware of one problem with this initiative. **The Amazon smartphone shopping app DOES NOT work for charity designations. You must use the web browser.**

Your PARC Board of Directors hopes you will consider donating to PARC as you shop on Amazon. The Board of Directors is evaluating a series of projects to update the Club's infrastructure, to bring remote capability to PARC members, to upgrade our FD equipment, and to update the technologies we have available throughout our repeaters. Some of these projects are the result of your response to questionnaires, or suggestions you forwarded to the board for consideration. All these potential projects will be evaluated and announced to you so you can give us feedback about the project's desirability. To carry the projects to completion will require that club member volunteers get hands-on experience in the project. This too will be an opportunity to follow the requests expressed by members, and also an opportunity to elmer recent licensees in all aspects of ham radio.

You asked that the Club be revitalized in this manner, and here are the beginnings of the effort. So please remember, when you shop on Amazon, donate to your club! But they will all involve material purchases for which the Club will be using funds that are donated for the project accomplishment.

We hope you will be generous in donating to PARC through Amazon purchases since the donation has zero impact on what you buy.



Want to help PARC earn more awards?

Contact board@palomamarc.org about using the club call sign in upcoming contests or operations!

We aren't that far from getting several more shiny stickers!

At right is the overall picture of our club call sign's Logbook of the World WAS record.

Notice that 20m Phone and 20m CW are pretty close to having all 50 states.

Which states are missing? See the image at the bottom of this page. We need Hawaii for 20m Phone and Nevada for 20m CW.

Think you can bag these states to give us two more awards?

The cost of the award will be covered by a donor. Want to help?

- 1) arrange for permission to use W6NWX by writing the board about your plans.
- 2) submit a log of the contacts to the board. Uploading to LoTW and application for awards will then occur.
- 3) get accolades from the club!

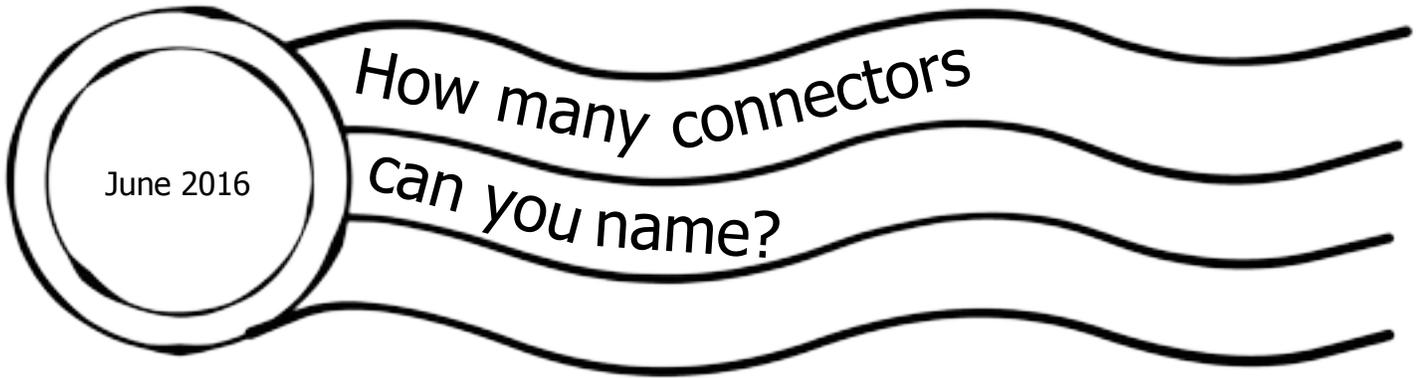
Your Logbook WAS Account (W6NWX WAS)

Account Status

WAS Award	New LoTW QSLs	LoTW QSLs in Process	WAS Credits Awarded	Total
Mixed *	0	0	50	50
80M	22	0	0	22
40M	39	0	0	39
20M *	0	0	50	50
15M	40	0	0	40
10M	6	0	0	6
CW *	0	0	50	50
Phone *	0	0	50	50
80M Phone	15	0	0	15
80M CW	13	0	0	13
40M Phone	19	0	0	19
40M CW	38	0	0	38
20M Phone	49	0	0	49
20M CW	49	0	0	49
15M Phone	23	0	0	23
15M CW	37	0	0	37
10M Phone	5	0	0	5
10M CW	1	0	0	1
Triple Play	100	0	0	100
5-Band	157	0	0	157

* = Award has been issued

20M Phone	49	<input type="checkbox"/>	The 20M endorsement sticker to be affixed to your Phone WAS certificate. Missing: HI
20M CW	49	<input type="checkbox"/>	The 20M endorsement sticker to be affixed to your CW WAS certificate. Missing: NV



Play this video then send in your guesses to:
scope@palomararc.org!

I PRESENT U

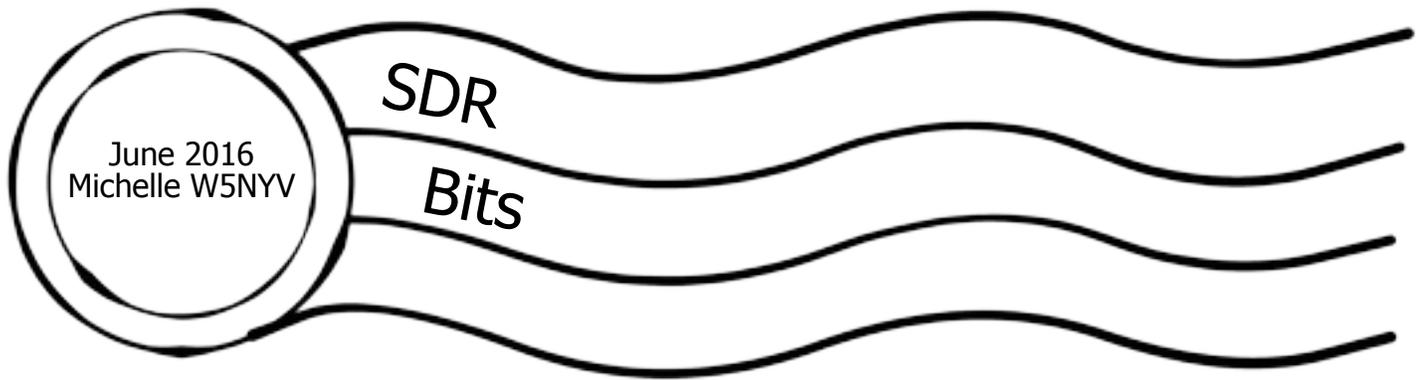


THE WURST- CASE-SCENARIO

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 Hot Spring
 Hybrid vehicle
 Hydrogen
 Hydropower
 Hydrothermal
 Industry
 Insulation
 Investment
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 Methanol
 Natural Gas
 Nuclear Fission
 Oil Price
 Photovoltaic
 Plutonium
 Power Station
 Propane
 Rail
 Renewable Energy
 Solar Cell

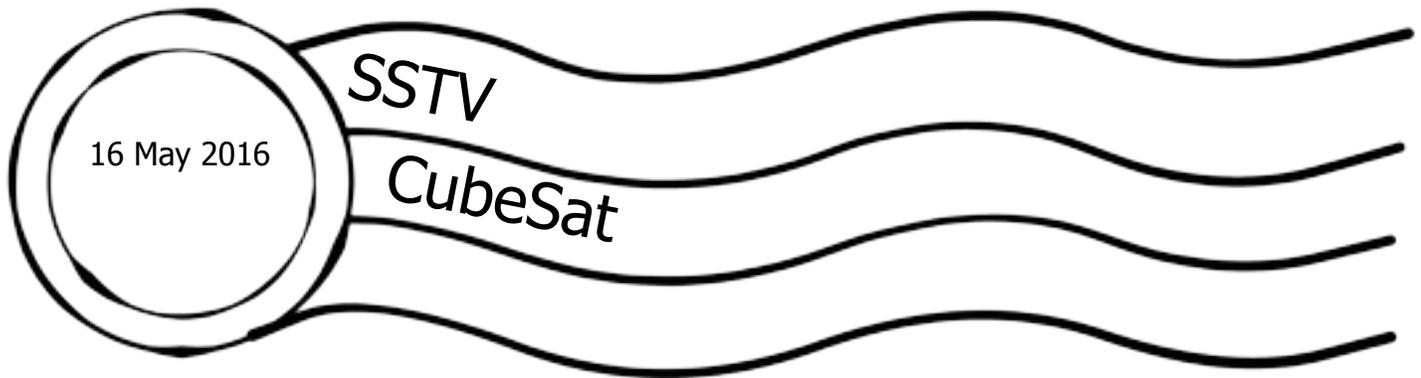
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Above is a fragment from the 27 May Phase 4 Ground weekly engineering report showing a BladeRF SDR transmitting a GNU radio flowgraph for DVB-T2. The transmission is from a file. The receiving station is a laptop with a white DVB-T/T2 dongle, **available for less than \$40**.

DVB stands for digital video broadcast. DVB-T is the protocol being adopted by the Amateur Television Network (ATN) for digital upgrades to their linked network. DVB-T2 will be used by Phase 4 Radios. W6NWX used to be part of ATN, and if all goes well, it will be again in the near future. Current plans are to install a BladeRF or equivalent and any necessary equipment at the repeater site. We would then transmit digital ATV signals on our coordination. This will require both an update to the coordination as well as significant effort to test and streamline the necessary equipment. An amplifier has been recommended, technical assistance from ATN procured, and this demonstration shows that DVB-T/2 reception is achievable with minimal investment. Transmission protocol for the uplink is under active discussion. Have an opinion? Tell board@palomararc.org!



SB SPACE @ ARL \$ARLS004
ARLS004 Elementary School's SSTV CubeSat Now Set to Deploy from ISS on May 16

ZCZC AS04
QST de W1AW
Space Bulletin 004 ARLS004
From ARRL Headquarters
Newington, CT May 12, 2016
To all radio amateurs

SB SPACE ARL ARLS004
ARLS004 Elementary School's SSTV CubeSat Now Set to Deploy from ISS on May 16

After postponements earlier this year, the STMSat-1 CubeSat constructed by pupils at St Thomas More (STM) Cathedral School in Arlington, Virginia, now is set to deploy from the International Space Station on Monday, May 16, between 1400 and 1500 UTC. The spacecraft is equipped with a slow-scan TV (SSTV) payload that will transmit on the 70 centimeter Amateur Radio band (437.800 MHz).

The school won a NASA competition for the launch. The satellite is the first to be designed and built by grade schoolers, who have been supported by NASA technical advisors and local radio amateurs. Transported to the ISS in December by an Orbital ATK Cygnus spacecraft, the kit-built satellite first had been scheduled for release in mid-February, but that event was postponed until early March, before being put on hold again.

"The STM Sat-1 mission is to perform Earth observation and engage grade-school students around the world as remote Mission Operation Centers," the STMSat-1 website explains. The satellite project is part of the school's STEM (Science, Technology, Engineering, Mathematics) education initiatives. St Thomas More includes students from pre-kindergarten through grade 8. The project aims to engage other schools around the world as "Remote Mission Operation Centers" (<http://www.stmsat-1.org/rmoc/>).

NASA's Technology Demonstration Office provided the school with a mobile "clean room" to ensure that the construction phase met with strict guidelines and standards for launch and deployment from the ISS. The space agency also provided the school with an antenna, so the school can receive the SSTV images and temperature readings the satellite sends back. The students already have tested their CubeSat by sending it aloft on a tethered balloon.

The SSTV camera onboard STMSat-1 will transmit a Martin-2 image every 30 seconds. It will not transmit a beacon signal, however. The youngsters are hoping it will send back images of Earth as seen from space. The transmitter runs 3 W, and there is no onboard data storage capability.

STMSat-1 has an estimated lifetime of at least 9 months.

Up-to-date information at: <http://www.stmsat-1.org/>

Video at <https://www.youtube.com/embed/cHed9shjFIg>

Update 05/23/2016 from ARRL.org

It's been a week since the St Thomas More Cathedral School's STMSat-1 CubeSat was deployed from the International Space Station, and the spacecraft has yet to phone home. Students and faculty and the Washington, DC-area grade school now are pinning their hopes on a reboot signal that will be sent to the satellite at around 0400 UTC on May 24.

"As with any satellite, you have to be able to communicate to kill it due to security reasons," explained STMSat-1 STM Education Manager Emily Stocker in response to an ARRL inquiry. "We built in a way to communicate to reboot, but will not receive any information regarding the satellite's health or why we have not heard from it. This was part of our mission plan — if not heard from in 7 days, we would reboot. Cross your fingers!"

A Twitter post on behalf of STMSat-1 put it more succinctly: "System reboot today — bring me to life!"

Pupils at the school built STMSat-1 during a 4-year-long project, and the satellite was launched to the ISS last December. After being placed in orbit (it is object 41476), the CubeSat initially continued roughly in the same orbit as the ISS and of other satellites that also were deployed on May 16, but it's been moving away a little bit each day. Stocker said last week that STMSat-1 was supposed to turn itself on once its batteries were fully charged and its mechanized antennas deployed.

The satellite is designed to transmit slow-scan television (SSTV) images of Earth on 437.800 MHz FM, although at one point, Stocker said, the school's NASA contact indicated they should try listening on 437.000 MHz. "Many people were wondering why it was 'changed' to 437.000, and that was because NASA thought we may be able to hear it there instead," Stocker told ARRL. She said NASA later advised STMSat-1 watchers to go back to monitoring the CubeSat's IARU-coordinated frequency of 437.800 MHz and to follow the STMSat-1 Twitter feed, @STMSat11, to stay up to date.

The satellite is the first to be designed and built by grade schoolers, who were supported by NASA technical advisors and local radio amateurs. The kit-built satellite initially had been set for release into space in mid-February. That deployment was postponed until early March, however, before being put on hold again. The satellite project is part of the school's STEM (science, technology, engineering, mathematics) education initiatives.

NASA's Technology Demonstration Office provided the school with a mobile "clean room" for the construction period and has been advising the school on tracking the satellite. The space agency also provided the school with a ground station antenna to receive its 70 centimeter signals, once the satellite comes to life. NASA engineers programmed the operating frequencies for the transmitter in early 2014 and have been working with the school post-deployment.



At left, a nanoracks CubeSat launch. Courtesy of Wikipedia.

Flexible Shelving System

1 June 2016
Howard KY6LA



My ham shack is in a constant state of flux as I continually add and remove equipment that I use as my interests and desires evolve. So a conventional fixed-in-place equipment desk just does not work for me. One of the issues I run into is that different equipment has different sizes and shapes so replacing one for another requires the ability to change the heights of the different shelves.

Further, since everything has power and antenna cables it is best to leave the frame open so that cables can easily be routed where they need to go. At the same time, it is important to be able to pass the XYL neatness test so I found that routing cables down the support posts was ideal.

The Stacks

The construction of the stacks is incredibly simple. All materials came from Home Depot. All metal parts are 1/2" stainless steel. A bit more expensive but they continue to look good for years.

A stack consists of four 1/2" threaded stainless steel rods. I used 2' and 3' rods depending on the stack. The shelves are 12" wide shelving. You choose the color. You can also buy colored iron-on strips to hide saw cuts.

I cut the shelves into 12"x12" pieces. (Home Depot will cut them for you). I then clamped 6 pieces (6 Stack) together and drilled a 9/16" hole in each of the 4 corners. Clamping is necessary to make sure all the holes line up.

I used 1/2" stainless steel nuts and washers to set the different heights. Frankly the hardest part of the construction is the spinning of the nuts to right heights. I got one of my grandkids to do it.

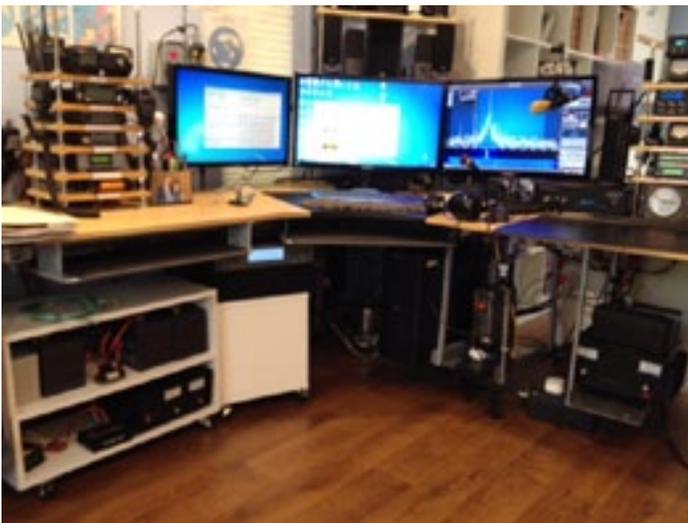
The advantage of the design is that it is very easy to adjust heights of the shelves. It is very easy to adjust the height to level each shelf. For feet I used stick on felt pads onto washers which in turn I crazy glued to a nut. For tops I used plastic caps. Also from Home Depot! On top of being flexible, It turns out to be a very strong and stable design.



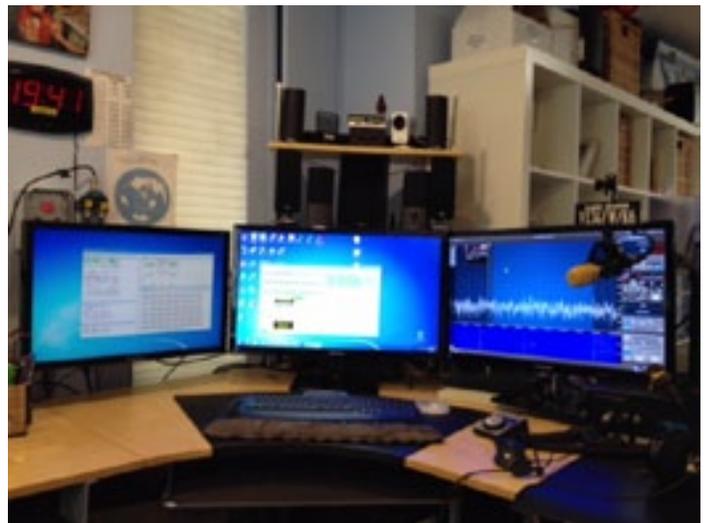
Here is a 2' -6 shelf VHF/UHF Stack
Photos by Howard KY6LA



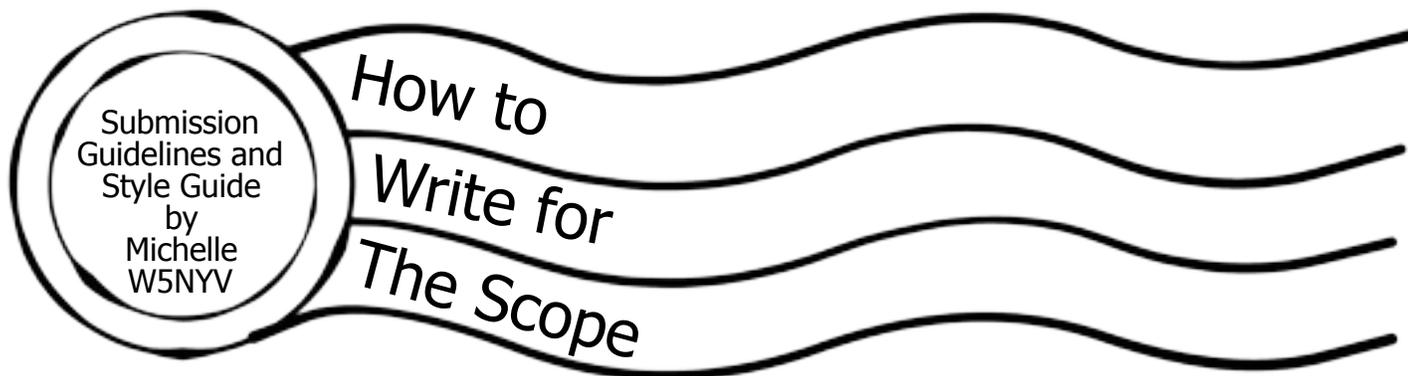
This is a 2' -4shelf X 1' stack for rotor:controls, SteppIR controls and 4 wattmeters.



Battery power, power supplies and linear amplifiers



The stack behind the monitor is a 3' high 2 shelf stack X 24" that holds all the different speakers for the various radios.



Submission Guidelines

Article submissions in most modern file formats are accepted. Plain text in the body of an email, with attached full resolution photographs, is most preferred. Dropbox and several other file transfer services are supported.

Sending a fully-formatted PDF, so that the author can control formatting and exact wording, is also accepted. We use Tahoma font for body text, but will accept PDFs with other fonts. If any editing is necessary, then it will be negotiated with the author, and will then be the responsibility of the author.

For 2016, the Scope theme is postal marks and radio-related stamps. Postal theme artwork is welcome! Scans of amateur radio stamps, stories about stamps in general, interesting or quirky postal marks, fun things to do with the mail, puzzles about stamps, interesting stamp-related narratives, stories about current mail technology, QSL cards, QSL bureaus, and QSL collections are all very highly desired throughout 2016.

We want to publish articles about amateur radio and amateur radio related events and interests. Amateur radio covers a very broad swath of subjects. Contesting, technical experiments, narratives about the hobby, stories about how you became a ham, suggestions for an interview, ideas for more puzzles and games, experiences in community service, emergency communications, tours and travelogues of places of interest to amateur radio operators, mobile installation articles, ham shack articles, good operational practices, ideas for what PARC should be doing in 2016, and many other subjects are what we want to print in the Scope every month.

Articles that misrepresent a person, subject, or event will not be printed. Articles that are attack pieces, demean groups or individuals, or ridicule others will not be printed. The editorial staff

of the Scope, in coordination with the Palomar Amateur Radio Club Board of Directors, has the final say on what is published in the club newsletter. Being a member of the club does not guarantee that a submitted article will be published. No payment is given in exchange for any article. Copyright remains entirely with the original author.

Style Guide

Time: Use 24-hour time in the following format.

"We started the event at 9:00 and began tear down at 16:00."

Name and Call Sign: Name is followed by call sign with no commas.

"Michelle Thompson W5NYV began writing the article."

After the first name and call sign is listed in an article, the style is to shorten it to first name and call sign with no commas.

"Michelle W5NYV was writing all day."

Do not use ellipses unless you know exactly how to use ellipses.

Ellipses... are not... the same thing... as a comma... or a pause...

Capitalization should be used for proper nouns. Proper nouns are the names used for an individual person, place, or organization. They are spelled with initial capital letters. For example, Michelle, New Mexico, and Boston Red Sox.

"And... that's it! That's All there is To It!"

What's the next step? Write an article, or propose one. If you need help, just ask! Mail to: scope@palomararc.org

SCOPE
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PERIODICALS

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You can join or renew your membership, find a repeater listing, find contact information for the board all on the club's web site <http://www.palomararc.org>

Editor: Michelle Thompson W5NYV

Submissions: scope@palomararc.org

Questions? Ideas? Comments? W6NWG@amsat.org

Featured Program:

At 7:30pm on 1 June 2016, Palomar Amateur Radio Club will have a program about Field Day followed immediately by a workshop on Programming Your Radio. Bring your HT and your questions!

Come at 7pm to socialize. We look forward to seeing you at the Carlsbad Safety Center, 2560 Orion Way, Carlsbad, CA.



Join PARC! It's awesome!

Sign up for the PARC Email Lists:

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