At the March 4th meeting Howard White KY6LA will present Modern Radios SDR-101. The talk will begin with a history of radio and the six major architectures used in radios. Modern radios (software defined radios) will be explained to show how they work and how they differ from legacy radios that most hams currently use. The benefits of modern radios will be demonstrated with practical examples of how modern radios perform substantially better than legacy radios. Finally, time and internet permitting, we will have a real-world demonstration of remote HF operation using a modern radio located in La Jolla.

Save the Date

Club Meeting
4 March 2015

Howard KY6LA presents on Modern vs. Legacy Radios, with special emphasis on SDR.

Board Meeting
11 March 2015

Palomar Amateur Radio Club board meeting at 7:00pm at W6GNI QTH.

Club Events
April 2015

Support Boy Scout Radio Merit Badge at Scout Fair! Write scope@palomararc.org for info

Advertisements are free for members

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

Wanted: BC348 / BC224 WWII aircraft parts radio. Need crystal filter I.F. transformer, switches, knobs and some missing internal parts to restore current chassis. Must be cheap / free. WB6IQS@att.net, 760-727-3876. John. Vista, CA.

The Ham Radio Lunch Bunch meets Fridays for lunch and socializing at any one of a number of restaurants on a rotating schedule.

The Lunch Bunch signup is

http://w0ni.com

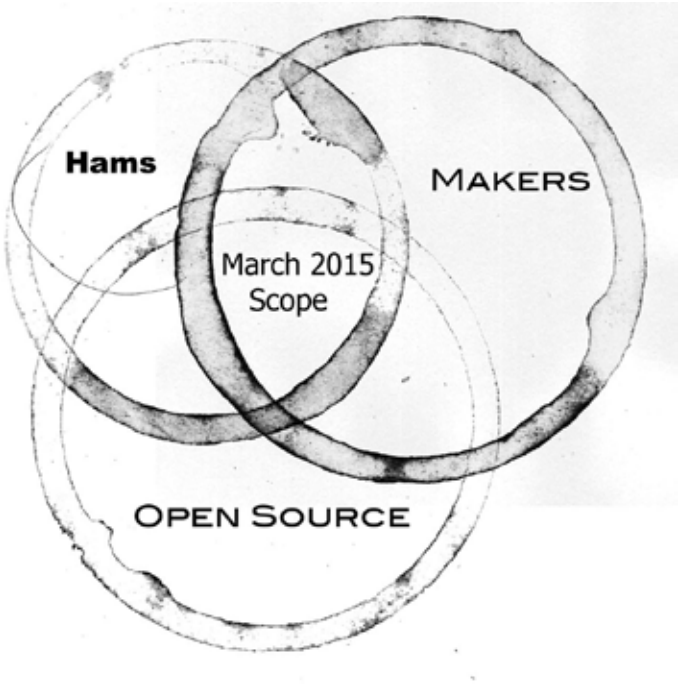
Reminders are sent out on Wednesdays.

All are welcome for food and fun!

Some of the restaurants on the schedule are Fuddruckers, UTC Food Court, Spices Thai, Savory Buffet, Denny's, Callahan's Pub and Grill, and Phil's BBQ.

What a difference a month makes! Here is the repeater site on a sunny late February Day. All the snow has melted.

Photos by Paul KB5MU.



This issue of the Scope focuses on the intersection between three communities, the amateur radio service, the maker movement, and the open source community.

Each of these communities is composed of large numbers of extremely diverse people engaging in a multitude of projects. These three communities, over the past few years, have increasingly interacted with one another to produce innovative and high-quality hardware and software.

Amateur Radio

The amateur radio and amateur-satellite services are for qualified persons of any age who are interested in radio technique solely with a personal aim and without pecuniary interest. These services present an opportunity for self-training, intercommunication, and technical investigations.[1]

The amateur service, established as early as 1909 in the United States, is regulated by the International Telecommunication Union (ITU) through the International Telecommunication Regulations. National governments execute the regulations and issue individual station licenses. Each license is identified with a call sign.

The amateur service in the United States, as regulated by the Federal Communications Commission (FCC), is intended to fulfill a number of specific purposes.[2]

a) Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.

(b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.

(c) Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.

(d) Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts.

(e) Continuation and extension of the amateur's unique ability to enhance international goodwill.

The Critique:
Amateur radio is stuck in the past. It lacks technological and social diversity, is hostile to innovation, and has failed (so far) to adjust to a world where the capability to communicate reliably with specified and unspecified people at close and distant locations is something literally anyone can do over the internet. Amateur radio needs a new killer app.

The Maker Movement

The maker movement is a culture consumed with extending the "do it yourself" (DIY) culture by incorporating contemporary technology. Makers enjoy engineering-oriented things such as electronics, robotics, 3-D printing, and the use of CNC tools. Metalworking, woodworking, and traditional arts and crafts are also heavily represented. There is a strong emphasis on developing and sharing reliable techniques, using and learning practical skills, and applying them to projects in a way that can serve as a reference to others.

The Critique:
Emphasizing the process and products of making over maintaining and caretaking costs the movement dearly in terms of relevance and sustainability. It's one thing to make yet another toy Arduino project, it's quite another to contribute to civilization and culture. If the maker movement will ever amount to anything, then it will need to find a more meaningful purpose than yet-another-quadcopter.

1 http://wireless.fcc.gov/services/index.htm?job=service_home&id=amateur

2 http://www.arrl.org/part-97-amateur-radio

The Open Source Community

Most often encountered in the software realm, open source communities write computer software with the source code made available. Usually this is done with a license in which the copyright holder provides the rights to study, change and distribute the software to anyone and for any purpose.

Open hardware communities publish circuits in the same way, with the schematic being provided for study, modification, and distribution.

Open source is a commitment that doesn't necessarily preclude making money from the hardware or software, but quite often the software or hardware is donated to the public domain without any compensation.

Almost always, the work product is the focus of some type of open source license. There is, however, a second component of the open source philosophy, and that is the process by which the work was created in the first place.

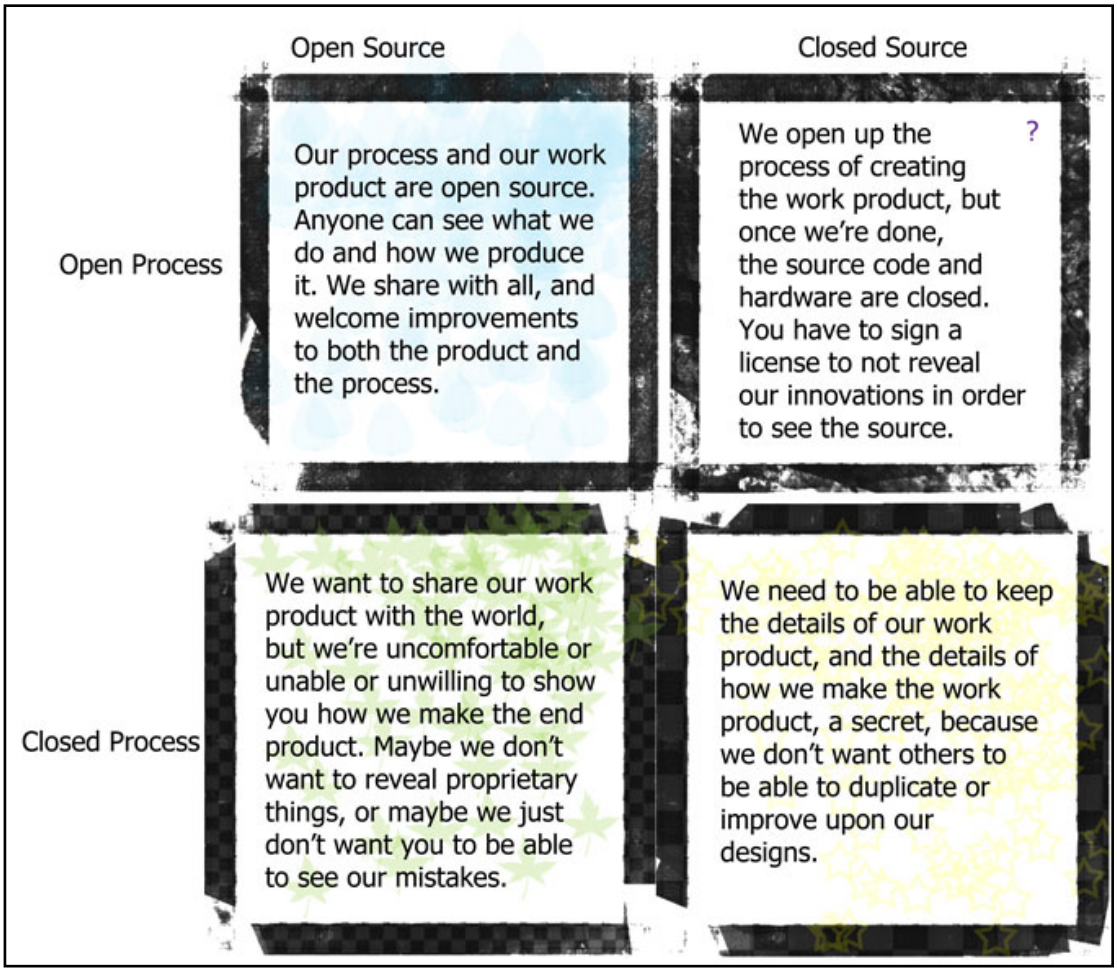
There are at least four different ways to approach a project. The work product, which is the thing produced by the project, can be published as an open source product, or these documents can be kept private or closed source, with only a black box or executable code produced. Regardless of which method is chosen for the product itself, the work process can be done openly, where people can observe or participate in making something, or the process can be closed, where only a limited list of people have access to the design, build, and test process. At right is a 2x2 grid that summarizes these possibilities and gives a description of each.

The Critique:
The first thing one notices about the open source philosophy is that it is almost entirely dedicated to criticizing the closed source mind set. As a way of thinking, the open source mind set is fundamentally reactionary. Plus, open source projects often bog down due to too many voices interrupting the process. There is value to closing the process, or closing the source, for a variety of reasons. Indiscriminate open source can be counterproductive.

The Interface Improvement

The three communities strengthen each other's weaknesses. Amateur radio brings meaning and purpose to the open source mind set and provides a compelling framework for makers. Makers improve their craft by opening themselves up to critique through openness and documentation and producing works that have useful application in the amateur service. Amateur radio is improved by the challenge of incorporating contemporary technology, such as software-defined radio and 3D printing. Challenging closed-source innovation in the amateur radio service has enormous potential to improve and engage amateur operators in ways that mitigate the risk of amateur gear becoming stagnant and dominated solely by corporate interests.

-Michelle W5NYV



Adventures in the Open Source Trade

by Frank Brickle, AB2KT/VE7

I'm writing here as the co-author (with Bob McGwier, N4HY) of the DSP software engine at the heart of quite a few Software Defined Radios. That software we called DttSP. It is the core SDR component for PowerSDR used with the Flex Radio Systems SDR-1000, 1500, 3000, and 5000 models. It also animates directly and indirectly a significant number of other SDR projects including HPSDR.

From the beginning, DttSP was an Open Source project, issued under the General Public License (GPL), at first Version 2, later Version 3. It is written entirely in C and was meant to be as portable as possible: it runs on Linux, BSD, OS X and Windows. For a number of years it was hosted at the CGRAN archive at CMU. It now lives on github. The source code is Free both as in Speech and as in Beer.

Where it started was with the development of the original set of 3 SDR-1000 boards by Gerald Youngblood, K5SDR. Gerald's accompanying software suite for the boards was written in Visual Basic running on Windows XP. I was the third purchaser of the original board set and saw no reason that the boards shouldn't be usable with Linux. There were some inherent design problems with Gerald's software, problems which would be difficult to address within the limitations of Visual Basic.

Thus the creation of a new SDR engine for the boards would require a completely new design and implementation. Correspondingly, a new wrapper and user interface would be needed to house the redesigned SDR core. Part of the idea was to completely decouple the DSP and UI components, which would yield all sorts of anticipated and as-yet-unforeseen application possibilities.

There were also some software design issues that needed to be solved once and for all, such as finding a provably correct concurrent design that would allow for fast T/R switching on hardware that could assume only half-duplex access to the digital I/O hardware, or would provide safe asynchronous parameter updating.

This is what we -- the DttSP developers -- succeeded in doing. Along the way we provided a host of other value-added features, such as highly effective speech compression, a viable CW keyer, multiple simultaneous receivers, transmit predistortion, multiband parametric EQ, and more.

We did this work as volunteers, on the understanding that we were providing a service to the entire amateur radio community, building an infrastructure on which to build even more interesting things. It was very important to create a robust, easily accessible platform for future amateur SDR work, in particular in such a way that other developers and programmers could concentrate on their own applications and not have to concern themselves with core functioning.

We did this work in close cooperation with Flex Radio Systems, who understood fully the implications of adopting GPL software at the heart of their PowerSDR application. Specifically, this meant that all of the PowerSDR software would need to be made available in source form to anybody who received a working binary of the program. No exceptions. This was the common understanding of the acceptance of the GPL, an understanding which has been reinforced and reiterated more than once in court.

It is our belief that, unfortunately, Flex Radio Systems went back on their part of the bargain. A number of important enhancements to the code were made at Flex which they have kept to themselves. We should be clear on this point: they are quite entitled to keep their code to themselves. However, in so doing, they lose their right to distribute our code. The GPL is, after all, merely a license. We still own our code. They have violated the license and are violating our copyright. This point has been shown time and time again in court. They should not be distributing a PowerSDR which contains any code or derivative of DttSP.

At this point in time it is unclear what our next step will be. The architecture of DttSP is somewhat obsolete at this point for many reasons. We have also been informed that DttSP code is being used in more than one commercial product without acknowledgement. Perhaps the whole episode in the end serves as little more than a warning to people who want to contribute freely.

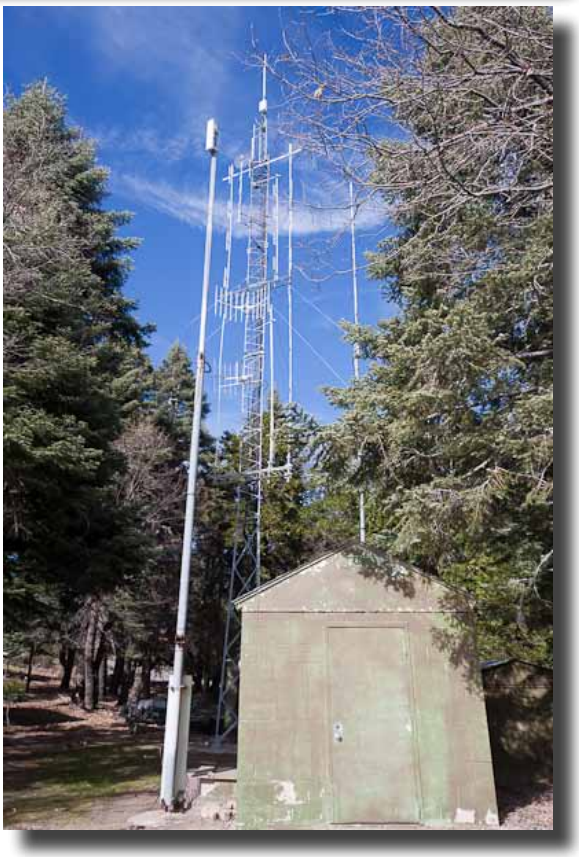
Below, a sunny late February day at repeater site. Paint crew might be needed this summer!

Yuma Hamfest Report

By Ellen N6UWW

After waking up way too early Saturday morning to leave Oceanside well before dawn, we arrived at the Yuma Fairgrounds as the starting bell of the 2015 Yuma Hamfest sounded. We raced in to find where Andre K6AH was giving his Broadband Hamnet presentation. The $5 admission to the Yuma Hamfest was well worth it as when we entered the Theater Building to find a Who's Who of friends & acquaintances we don't get a chance to see nearly often enough. In addition to the various seminars held throughout the day, there was plenty of stuff to occupy one's time. While some headed off to the nearby swapmeet, others stayed in the thick of things at the Hamfest and enjoyed a full day of spur of the minute antenna projects, t-hunting, vendor booths, tailgating, etc. Sources tell me there was even an impromptu ukulele concert complete with appetizers! Here's hoping those of you who attended all had a great time.

photos by Paul KB5MU



Lunch Bunch at Phil's BBQ


Coca-Cola
Coca-Cola

Club HF Remote Station? Let's Install One!

There are at least three reasons for the club to get involved in the HF remote movement. The first one is technical. The challenge of making a quality remote installation is fun and rewarding. The project involves backhaul establishment, HF equipment selection, remote access protocol development, command channel identification and establishment, testing and tuning, documentation, and training, among other things.

Secondly, autopatch and casual repeater usage has declined due to the increase of cellular coverage. Exploring new services that can be offered from club equipment on the Palomar Mountain property is an important responsibility. A new broadband repeater has been installed, and fresh hardware for the voice repeaters is under active investigation. Adding an HF remote station would expand the services provided by the club. This is an exciting time to get involved with renovating equipment on the site.

Third, many members are negatively affected by CC&Rs and other limitations on putting up HF antennas on their San Diego properties. We live in an urbanized area where antennas may or may not be allowed. Plenty of us live in valleys or in places that are not good for radio. Having a remote station that members can reserve and use would go a long way towards making the hobby possible for people that live in places where radio is limited.

If you would be interested in helping explore a club remote HF station on Palomar Mountain, then please join up by writing me at scope@palomararc.org.

Mailing list archive located at http://palomararc.org/pipermail/hfremote/

This special interest group for HF remote will write a proposal for the Palomar Amateur Radio Club board of directors to vote on. If the vote is successful, then fundraising will begin immediately.

HF Remote on Palomar Update

by Michelle W5NYV

We continue our investigation into a remote HF station for Palomar Amateur Radio Club use with comments from those that have responded to the call for membership in the special interest group (HF-SIG). A big thank you and welcome to Howard KY6LA, Rob WA3IHV, Mace KG6VMF, Paul KB5MU, Roger AD5T, Ken Easton, Lou KW6Q, and Steve KB6VME.

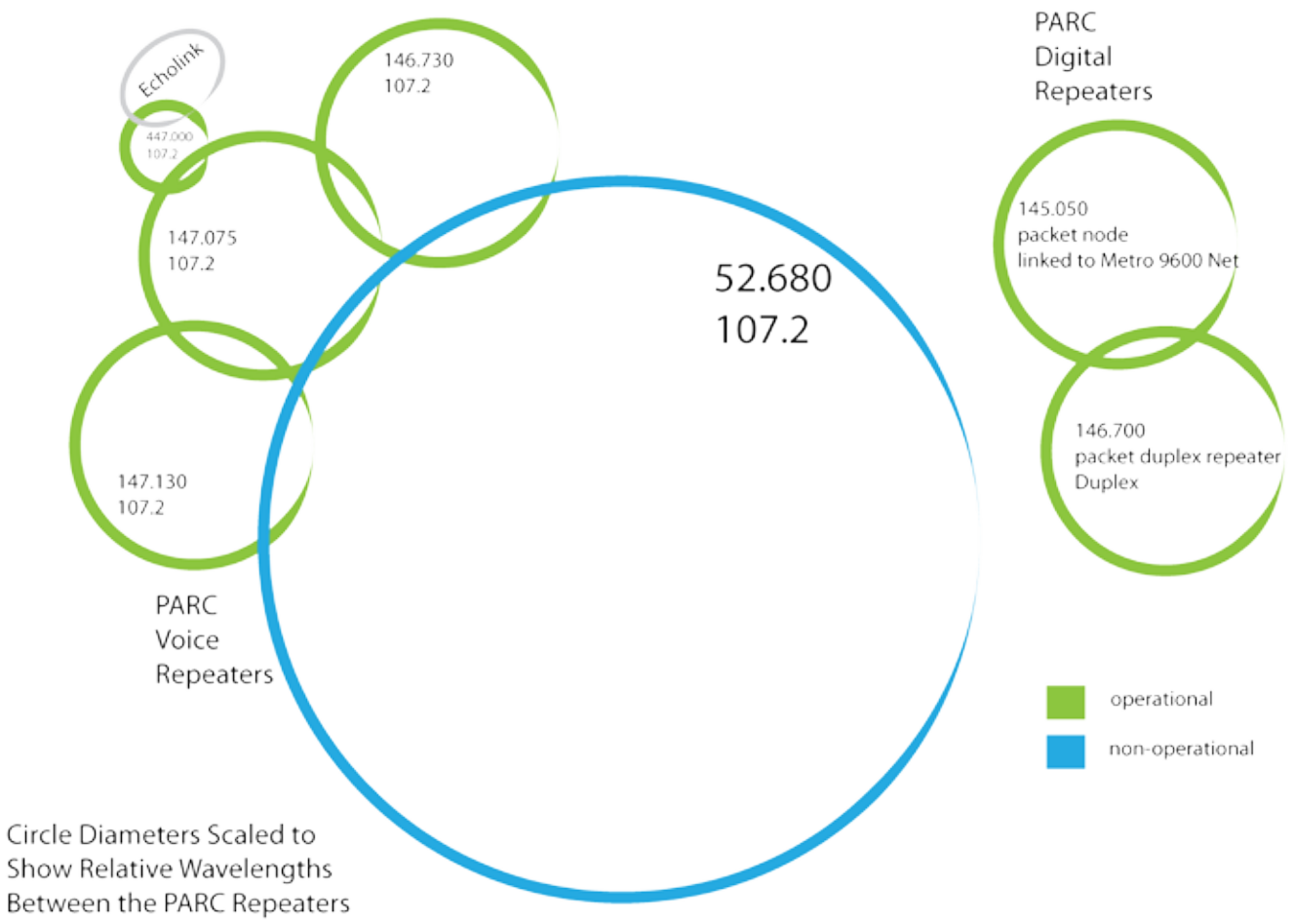
Mace, Howard, Michelle, Paul, Rob and several others had a productive working Lunch Bunch meeting on 6 February 2015.

Items discussed included design philosophy, feature set, quality of accessibility, and identification of the gating items (bandwidth off the mountiain featured primarily). Action items were recorded and further discussions held at the March club meeting and at upcoming lunch bunch and evening meetings. Consensus on a simple, easy-to-access, easy-to-reboot design was strong.

Steve contributed valuable questions via email concerning how to handle access in terms of authentication, as well as how to handle ongoing maintenance costs.

A prioritized list of frequencies was generated. This way, in case the system needs to be built in phases, the most desired bands are provided first.

A Visual Guide to PARC Repeaters



Nonoperational => Operational

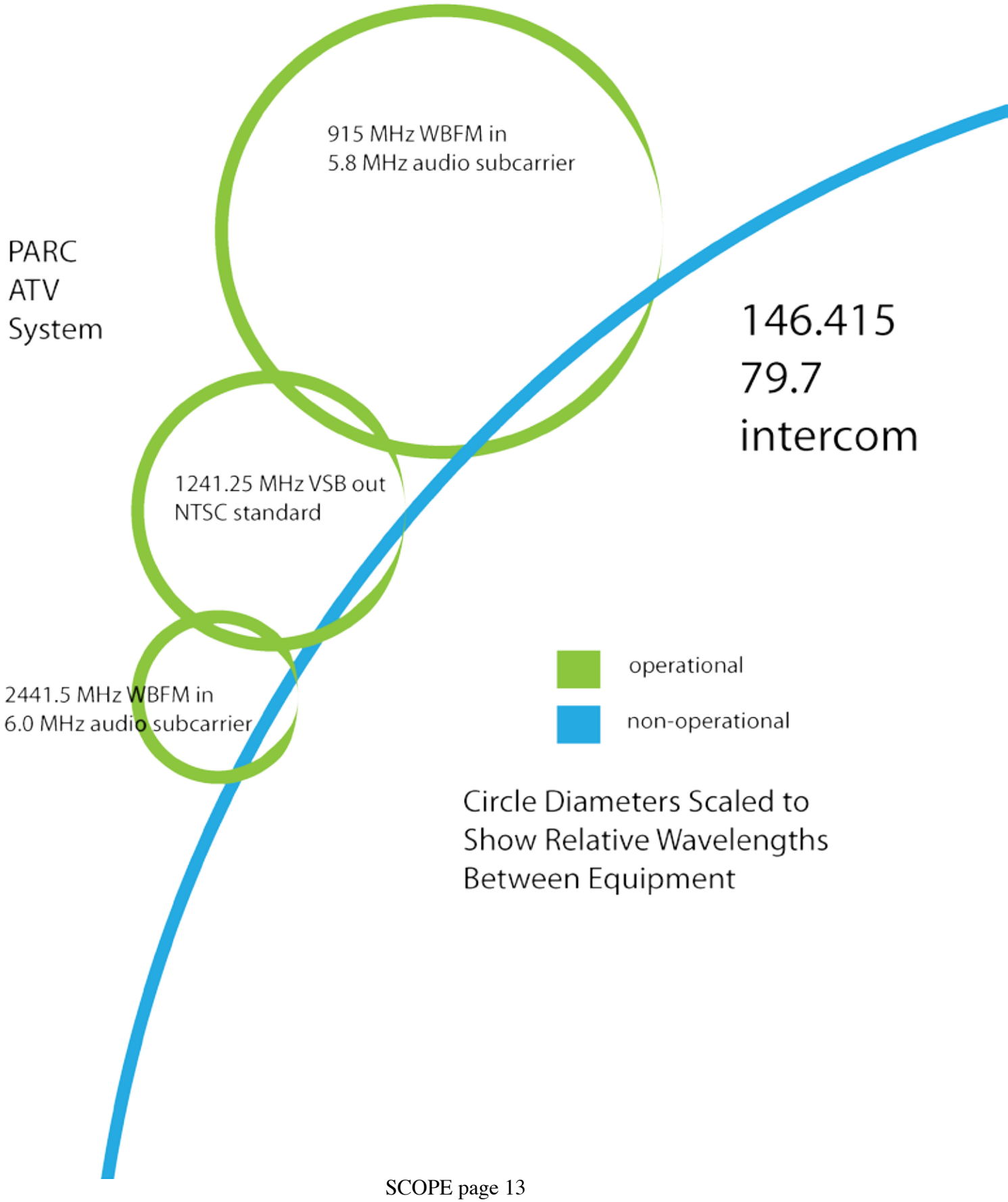
The 6m repeater has been nonoperational for 3 years as of February 2015. John W6JBR, Bill N6PIG, and Michelle W5NYV have picked up the project and made a lot of progress since beginning work on 1 February 2015. The team is approaching the repairs as an open source and open process project. The tracking document, which is a chronological record of the work done on the repeater, is located here:

https://docs.google.com/document/d/1vrlMv0jMd83iTxgk8H1ZgbULF-comYmVPwpy3Uqz2-c/edit?usp=sharing

A final report will be written and published once the repeater is re-installed at the repeater site on Palomar Mountain.

Is there a piece of hardware or software that you would like to work on to benefit the club? The Scope is interested in your proposals! Send them in to scope@palomararc.org

A Visual Guide to PARC ATV System



San Diego Microwave Group and Microwave Update 2015

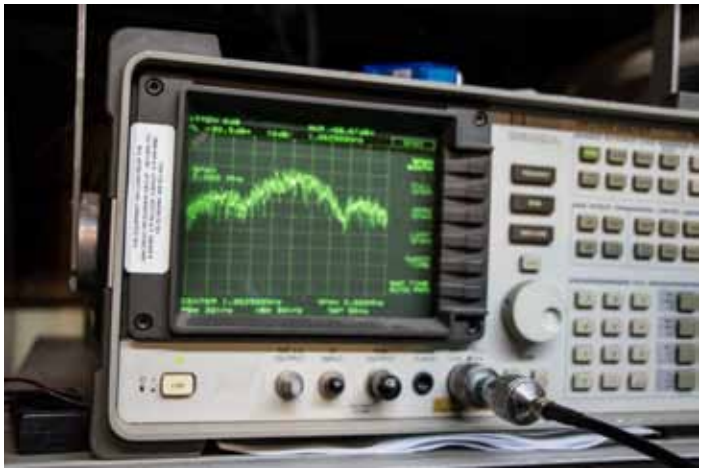
The February 2015 meeting of the San Diego Microwave Group (SDMG) was well-attended by Palomar Amateur Radio Club members. The group meets the third Monday of the month at the home of Kerry N6IZW. All amateurs interested in the microwave bands are welcome to join.

Members gather, show and tell, give reports, and have refreshments. The positive spirit, technical support, and good humor make this a highly enjoyable amateur microwave group. The amateur microwave community frequently deals with open and closed source issues due to the nature of the surplus market, which is where a lot of microwave enthusiasts get their parts and gear. Microwave gear documentation is often reverse-engineered, since the original documentation is either proprietery or just so obscure that it may as well have been closed. Besides reverse-engineered documentation, tribal lore is often used in the microwave community. For example, in the SDMG QUALCOMM sourced boards have been used to enable local hams to get on the air. Support often comes from former employees of QUALCOMM or those that have successfully used the boards in their projects.

SDMG is directly supporting this year's Microwave Update. Held 15-18 October 2015 here in sunny San Diego, Microwave Update is a conference devoted to amateur microwave activity. Tours, talks, socializing, and plenty of equipment to browse have been highlights in the past. SDMG is providing the antenna test range at the event. Participants bring their microwave gear to get output power and minimum discernible signal levels measured.

Visit the Microwave Update FaceBook page for more information about the event!
https://www.facebook.com/MicrowaveUpdate

SDMG Meeting Photos by Paul KB5MU



K6DLV/YB0ARA HAM ESTATE SALE
SATURDAY APRIL 11, 2015
8AM TO 12 NOON
ESTATE OF PHIL DAVID
1641 MOON ROCK RD
FALLBROOK, CA 92028

Mobile rigs, HT's, PS's, TNC's Winkeyer, Straight Keys,
Custom Paddle, Rig Blaster Pro, Alpha Delta Switches,
Speakers, 55' crank up tower (US Tower I believe),
SteppIR (not sure what model),
Yagi's for satellite work w/rotator,
Coax, Connectors, Project boxes,
Power Cables, Books and much more!

For more info please contact
Stephen KC6MIE at 760-419-0151
Information and directions will be posted
Fallbrookarc.org

Tear the back page out of the Scope and take it with you! If you find a friend that might be interested in the estate sale or our next meeting, pass this page along to them.

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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 4 March 2015, Palomar Amateur Radio Club will have a program. At the March meeting Howard White KY6LA will present Modern Radios SDR-101. Modern radios (software defined radios) will be explained to show how they work work and how they differ from legacy radios that most hams currently use. We look forward to seeing you at the Carlsbad Safety Center, 2560 Orion Way, Carlsbad, CA. Arrive at 7:00 for socializing, and for the HF Remote Special Interest Group meetup.

Sign up for the PARC Email Lists:

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