SEPTEMBER 2013

SCOPE

THE PALOMAR AMATEUR RADIO CLUB NEWSLETTER

What To Do When...

Recently there have been intruders on our repeaters using foul language. In general, intruders are operators without licenses. However, a licensed operator can also be an intruder if they are using the repeater illegally.

Please remember, when an intruder comes onto our repeaters, treat them the same as jammers. Do not acknowledge them.

Note the time and any identifying call signs or IDs. Forward the information to the Board so it can be logged and checked out.

If they are unlicensed, we want to encourage them to get licensed by inviting them to join the Club and offer help to start them on their way to Amateur Radio.

If they are foul-mouthed, contact a Control Operator or Board Member to have the repeater controlled to prevent a problem with our license.

September 4th Meeting
Ham Radio Software and Digital Modes

A light hearted on-the-air demonstration of digital modes (including CW) and modern software for radio control, including Ham Radio Deluxe (HRD), and operation of multiple digital modes.

N1MM and HRD will be demonstrated. The basics of HRD Version 6.0 will be shown controlling a modern radio, the features of the HRD Logbook will be explored, and HRD-DM780 will be shown operating digital modes. PSK-31,PSK-63, PSK-125, Contestia, Olivia, JT-65 and JT-9 will be demonstrated.

Presented by NN3V Charlie at 7:30pm. Please join us at 7:00pm for socializing.

Fred Atchley AE6IC receives ARRL award of merit. Photo submitted by Paul WN6K.

Save the Date

Club Meeting	Board Meeting	Event
4 September 2013	**11 September 2013**	**21-22 September**
The 7:30pm program is about digital modes, presented by Charlie NN3V	Palomar Amateur Radio Club board meeting at 7:30pm at W6GNI QTH.	10GHz and Up Microwave Contest second and final weekend

"WOW" Fold & Staple Workers for August SCOPE. We had a super turnout of "Old Timer" Workers!

The "TEAM":Al W6GNI & Kathy, Roni W6EPM, Sonny WA5ACE Art KB6YHZ, Jo KB6NMK, Toby Ashley, Terri N6UZH, Tyler KJ6ZLT, Dave KI6LKP, Tatthew Brewer, Teresa KJ6QQD. WOW !! Thank you, all! One would hardly believe that this Guy (Al – W6GNI) is retiring – Last Fold & Staple for me will be the January 2014 issue of the SCOPE to the Post Office!! (Sooner, if someone comes forth!)

Advertisements are free for members

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

For Sale

1) New Butternut HF9V 9 band vertical antenna (80, 40 30, 20, 17, 15, 12, 10 and 6 meters) and Butternut CPK Counterpoise Kit. Both antenna and CPK kit are unopened in original boxes. I am selling as a package only - $475.00

2) New Diamond DPGH62 6 meter monoband base station antenna - 21 ft., 6 dB gain. Unopened in original box - $100.00

3) Icom IC-208H 2 meter + 70 cm mobile radio. Excellent condition in original box - $225.00.

4) Icom IC-7000 all mode HF/6 meter + 2 meter + 70 cm mobile radio. "Like new" condition with very little use. MB-62 mobile mounting bracket included. In original box - $850.00.

5) Astron RM-35-M rack mount 25 amp linear power supply with meters. Excellent condition, low use - $200.00

Contact Dean W6DBJ at 760-727-5954 or deanjacobsen@earthlink.net

For Sale

MFJ 269 HF/VHF/UHF antenna analyzer, new in box, never used, includes N to 259 adapter. MFJ price: $390. Yours for $300

MFJ 1275M Sound Card Interface, new in box, never used. Includes AC power supply, computer cable, audio cables. MFJ price $110, yours for $75

MFJ 949E Antenna tuner, 300 W, internal dummy load, balanced or unbalanced feedlines. Dual SWR/ Power meters, 2 switchable coax connectors. Used but in excellent condition with manual. MFJ price: $190. Yours for $90

Ron K2RP K2RP@ARRL.NET or 760 436 8109

For Sale

Tektronix TM504, 4 slot compartment Powered main frame. $80.00
Collins 302C-3. Forward and Reflected Watt Meter. 2Kw and 200 watts. Complete and working. $80.00
Hewlett/Packard 403B. 1mv -300v RMS. No line cord. $40.00
Collins Station Control. 312B-5, with remote VFO watt meter. phone patch and manual.$200.00
Pete K6JQE, Pick up in Solana Beach. 1-858-755-4838

For Sale

Cushcraft MA5VA HF multi-band compact vertical. Covers 20-10 meters. $100

Gary, W3LFR
858-335-0546

For Sale

I have for sale an MFJ-1786 Super-Hi Q loop antenna for 10-30 mHz. In excellent condition and handles 150 watts. Can be mounted horiz or vert. $300 and pick-up in Vista.
Marsh 760-536-3220

For Sale

Four rolls of Mil-C-18/ UG218. The rolls are about 140 feet long with N connectors.
Insertion loss is .9 dBa per 100 feet at 150 mHz. $250.00 per roll or $800.00 for all of them.

Glenn
N6JAI
619 654 1402

For Sale

The Alinco DJ-580 illuminated keypad button does not work…..No Backlighting of keypad, Transmit coverage is: 130-173.995 and 400-519.0995 with Mars/Cap Mods completed, Radio has no worn pads and all LCD display functions work as new, case looks like new, this radio comes with (1) EBP-20X 7.2 volt 1650Mah battery used only a few time before put away, (1) EBP-20N 7.2v 700Mah pack (not sure how long it will last) (2) EDH-11 dry cell pack (1) Yaesu dual band antenna and (2) Alinco EDC-24 Slow chargers and (1) DJ-580. I have checked this radio on simplex and our local repeater and it sounds fine, you would be hard pressed to find a radio in better condition than this one. excellent condition, As with all electronics this radio is sold AS IS, It will not be DOA, asking $100 OBO, James 760-722-2797.

Important Notice

New Treasurer Sought

by Dennis KD6TUJ
PARC Members,

At the December 2012 meeting a new board was elected to lead PARC and protect its interests and promote Amateur Radio.

Over the past 3 months the Board of Directors has attempted to reach the Treasurer but has received no response.

At the August 14th board meeting it was approved to bring before the members of Palomar a motion to remove the current Treasurer.

This is not an action the board proposes lightly. We would prefer not to embark on these proceedings, however in order to ensure the continued operation of the Palomar Amateur Radio Club in accordance with its bylaws and sound business practice, we feel it is important to have a Treasurer that is reachable and able to report on the financial health of the organization.

At the September meeting a motion will be brought to the floor "To remove the Treasurer from office". Discussion, if any, will occur, and a vote taken. A "simple majority" is required for the motion to pass. If the Treasurer is removed from office, nominations from the floor will be taken for a replacement and voting will occur. Any person nominated must express a willingness to serve at the time of nomination. If no persons are nominated for the Treasurer position at the August meeting, an appointment will be made by the members of the the Board. Any Treasurer elected or appointed will serve the remaining term until the December elections.

Respectfully submitted,
Dennis Baca
President Palomar Amateur Radio Club.

CQWW 160m CW Contest Report

by Dennis N6KI

Dang - 2nd place CA in the Single Op Assisted Category. With all the noise at Nash QTH, this is surprising I even got that high up the list! How the heck did N6QQ come up with 22 countries worked ? (I had 9)

Wayta Go Rusty (AF6WF)

CALL	Score	QSOs	W/VE Mults	Countries Worked
N6QQ	65,664	326	54	22
N6KI	56,259	399	54	9
N2NS	45,424	232	51	17
W6SX	29,784	259	45	6
W6DR	27,189	168	45	12
N6JV	25,928	166	44	12
K6NV	15,365	212	33	2
WV6E	15,092	152	39	5
W8KA	14,706	137	38	5
K9YC	13,104	113	43	5
NI6T	3,720	32	14	10
K6JEY	2,525	39	19	6
AF6WF	1,200	37	14	1
K2RDX	550	12	7	4
WQ6X	66	11	3	0

PARC Booth at Mini Maker Faire

by Paul KB5MU

You've probably heard of Maker Faire. Did you know that a Mini Maker Faire is coming to San Diego? It's tentatively scheduled for December 7, 2013. I think our club ought to be there.

What is Maker Faire? The company that runs it (Maker Media, publisher of Make Magazine) calls it "the Greatest Show (and Tell) on Earth -- a family-friendly festival of invention, creativity and resourcefulness, and a celebration of the Maker movement. Part science fair, part county fair, and part something entirely new, Maker Faire is an all-ages gathering of tech enthusiasts, crafters, educators, tinkerers, hobbyists, engineers, science clubs, authors, artists, students, and commercial exhibitors. All of these "makers" come to Maker Faire to show what they have made and to share what they have learned."

The big Maker Faire events happen in San Mateo and New York each year, but a network of Mini events is springing up in cities all over the world. The Orange County Mini Maker Faire at U. C. Irvine has been held twice already. San Diego is just starting this year. The local events are run by local groups and loosely affiliated with Maker Media.

These are gatherings of exactly the kind of people who would be interested in amateur radio if they knew more about it. We could hardly ask for a more fertile recruiting ground, or a place where we have a better chance of showing amateur radio in the best possible light. It should be a lot of fun to show off for such a sympathetic audience.

The big San Mateo Maker Faire has had a strong amateur radio presence. This year, three groups were exclusively amateur radio. Indoors, a local amateur radio club had a small booth, where they were showing a wide variety of amateur radio gear, demonstrations, and displays. Right next door, a group of microwave enthusiasts drawn from both the northern and southern California microwave groups had a jam-packed booth of microwave displays and demonstrations, themed "Not Your Grandfather's Amateur Radio". Outdoors, another amateur radio group was operating an HF station and showing an emergency communications van. Besides these three, several other booths had mentions of APRS, amateur radio satellites, and so on. It was the best public showing of amateur radio I've ever seen. A subset of the microwave display also appeared at the Orange County event, and those same volunteers intend to bring it to the San Diego event as well.

An outdoor demonstration display at the Mini Maker Faire could be a lot like our club's recent Operating Day events. We know how to do that! We even have a network of other local clubs that have helped in the past. One of PARC's typical Operating Day setups would be better than what I've seen for outdoor demonstrations, even at the big Maker Faire in San Mateo. We might need to make it more compact to fit into the space we could be allocated at a Mini Maker Faire. That would have to be negotiated with the event managers.

As for an indoor display to supplement the microwave display, we'd have to come up with something new. We might want to consider involving other clubs in a collaboration. We would want to come up with some unique demonstrations and displays, so that the folks who stroll past the booth will learn something and be interested. Ideally, we'd have at least a few activities that people would want to stop and interact with. We have three months to come with some great ideas and make them happen.

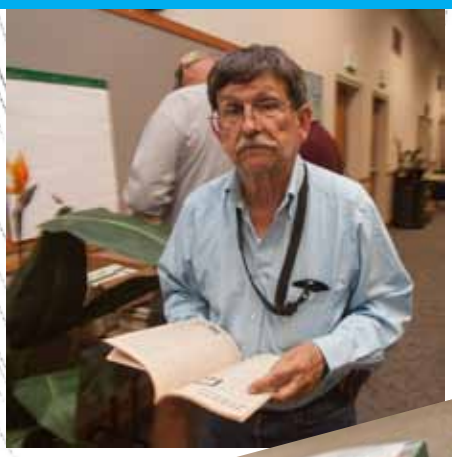
Please give it some thought and send your ideas to your Board of Directors, board@palomararc.org. If you're interested in getting involved and helping to do some of the work, that's even better! I'll probably speak briefly about this at the September PARC meeting, and I hope the Board will adopt this as an official club activity. Watch the web site for updates.

Picnic Photos from Don WD6FWE

The transmitter hunt was successful. Here's the moment of discovery. The transmitter was hidden within the bricks behind the "stairs".

Activity points earned throughout the year translate to tickets in the prize drawing at the annual picnic. Here are three happy winners, with the Ham Radio Outlet gift certificates they won.

June Meeting Photos from Paul KB5MU



Palomar Amateur Radio Club Field Day Scoring Sheet

Class:	5 A	Web Submission:	50

Band / Mode QSO Breakdown:

	CW	DIGITAL	PHONE	TOTAL QSO's	TOTAL PTS
160M	0	0	0	0	0
80M	98	0	117	215	313
40M	361	0	54	415	776
20M	932	0	831	1763	2695
15M	245	0	31	276	521
10M	2	0	15	17	19
6M	0	0	0	0	0
2M	0	0	0	0	0
1.5M	0	0	0	0	0
Other	0	0	0	0	0
Satellite	0	0	11	11	11
TOTAL:	1638	0	1059	2697	4335

Power Multiplier:	2	Total Band QSO Score:	8670

Bonus Points:

Category:	PTS
100% Emergency Power	100
Media Publicity	100
Set-Up In Public Place	100
Information Booth	100
NTS To ARRL SM/SEC	100
W1AW Field Day Message	100
NTS Messages Handled	10
Natural Power QSOs	100
Site Visit Elected Official	100
Site Visit Served Agency	100
Youth Participation	20
Educational Activity	100
Satellite QSO	100
	TOTAL BUNU

Station Scores

STATION	Total QSO's	Total Score
20/80 CW	1030	4120
20/80 SSB	948	1896
15/40 CW	606	2424
5/40 SSB	85	170
10M	17	38
6M	0	0
GOTA	54	148
Total QSO Score W/ GOTA:		8796

TOTAL FIELD DAY SCORE: 1036

GOTA STATION:

Name	Call	Total QSO's	20 QSO?	T W/ COACH
Roger Hort	KK6CTI	6	0	12
Danny Smith	KK6AOZ	5	0	10
Ashley Gruff	N/A	1	0	2
Paul Varesio	KJ6VXM	7	0	14
Paul Babb	K6OT	1	0	2
Amy Edey	N/A	1	0	2
Eric Tanori	KK6DDZ	1	0	2
Joseph Peterson	K6JPE	21	20	82
Andy Hunt	N/A	2	0	4
Greg Gibbs	KI6RXX	1	0	2
Luke	N/A	4	0	8
Dayna	N/A	1	0	2
Jimmy	N/A	3	0	6
		TOTAL GOTA POINTS:		148

LY
Difference
QSO's

Multiplier	Total PTS
5	500
1	100
1	100
1	100
0	0
1	100
0	0
1	100
1	100
1	100
5	100
1	100
1	100
US POINTS:	1500

68

12082
-1714
-657

Field Day Setup Photos by Paul KB5MU

Friday Lunch Bunch - Join Us!

Topics at the Friday Lunch Bunch range far and wide. At the most recent lunch bunch meeting, members shared video and photographs from a trip to Alaska, updates on projects, vivid descriptions of a recent DXpedition, and opinions about upcoming club events.

Sign up at www.w0ni.com

The group is casual and diverse, and meets at a variety of area restaurants on a rotating basis.

Picnic Report

by Dennis KD6TUJ

Palomar Amateur Radio Club, having completed another year of activity, had a picnic for Club Members. The picnic was held at San Dieguito County Park, area 4, starting at 9:00 AM. The trailer was brought out for HF operating. The band was open on 20m. Indiana State Fair W9ISF was the first contact. Solid copy!

The raffle Kenwood TM 281A mobile radio was the local 2m repeater radio. Good comments on its sound were received through the day. Tom KG6RCW did the cooking for the bunch with hamburgers and hot dogs for all. A generous spread was brought and filled the table. Greg KI6RXX and Conrad KG6JEI set out a t-hunt radio to find. Greg even made info cards on what to listen for and suggestions for new hunters on how to search.

At 2:00 PM, after being stuffed with food, fun, and good conversation, the drawing was held. The drawing tickets are awarded for member participation in club events. These include meetings, Field Days, work parties, and any other club sponsored event. A maximum of 20 tickets are permitted per member. Several individuals achieved this amount. Even a first time event participant starting at the picnic gets a ticket as a member. Winning the drawings for gift certificates to Ham Radio Outlet were: $100 - Tim N6CUX, $50 - Don WD6FWE, $50 - Ron KG6HSQ, $25 - Harry W6YOO, $25 - Rich NI6H, $25 - Kim KA6KIW, $25 - Conrad KG6JEI. Winning the raffle to the Kenwood TM 281A mobile radio preprogrammed for the San Diego County Open repeaters is Eddie Richins (below with Dennis KD6TUJ). This shows anyone can win. Eddie joined our club at the picnic.

Dennis KD6TUJ

Info for SEPTEMBER SCOPE

While we certainly appreciate Reinstated members, we believe many "Reinstatements" are due to members not aware that their membership was due.
Since many members now get the News Letter (SCOPE) on the web, they don't receive the paper copy that we mark blue when membership is almost over, and red when the time for renewal has passed.
The Board has recommended that we publish member's calls that are getting close to renewal time. The following members are due for renewal in a month or so. Hopefully, if your call is in this list, you will find time to send a check, or tell PayPal to renew your membership.
KJ6DBT, KC6YSO, W6HDG, N6TO, WB6CO, N6JO, W6DBJ, K6SML,
KI6SRB, W6TRB, KD6PTZ, NU6L, KG6TUL, KE6ZLX, KJ6LLO, W6UDO, NE6O,
WA6L. - more next month! Please check – did your membership expire in July or August 2013??

Thank you,
Al W6GNI
Membership

ARRL 2013 HANDBOOK RAFFLE

The ARRL is commemorating its 100 years by issuing a special ARRL Centennial Edition of The Handbook.

Features:

- Gold foil/embossed hardcover
- Personalized with your NAME and CALL SIGN
- Serial numbered commemorative edition
- Major new edition: components, new projects, latest technology
- CD-ROM included—a fully searchable digital edition

The Palomar Club will raffle a Handbook in October 2013 at the PARC monthly meeting. The raffle winner's Name and Call Sign will be embossed in gold letters on the Handbook's cover. Raffle tickets are $1.00.

Raffle tickets are on sale now!

Don't miss an opportunity to own one of the standards of ham radio. Get your ticket immediately!

A Box of Frequency

by Paul KB5MU

Operating on the microwave bands, it can be a challenge to be on the right frequency. For example, consider an ordinary crystal oscillator with an accuracy of 10 parts per million (ppm), typical of a 1960 vintage HF rig, if it's properly calibrated. On 20 meters, that accuracy would get you within 140 Hz of the indicated frequency, which is close enough for most purposes. On the popular 10 GHz microwave band you could be off by 100,000 Hz, about forty times the width of your SSB voice signal! This is the difference between just being on frequency and having to tune around blindly searching for the signal. Since most microwave contacts are arranged on a separate liaison channel, it's convenient to be able to name and hit a specific frequency with good accuracy.

It isn't too hard to make an oscillator better than that. Many modern transceivers can be equipped with a temperature compensated crystal oscillator (TCXO) module, which can reduce the error to around 1 ppm by sensing variations in temperature (the main source of frequency drift) and tuning the oscillator to compensate. The next step beyond that is to add a heater, so as to operate the crystal oscillator at a known temperature, chosen to be a relatively stable temperature for the particular type of crystal being used. A carefully implemented oven-controlled crystal oscillator (OCXO) can be a laboratory reference standard for frequency measurements.

Beyond the OCXO there are atomic frequency standards. The most affordable is a rubidium oscillator (1 part per billion). The most accurate oscillator you can buy (if you're rich) is a cesium frequency standard. The official international definition of time is currently based on the same mechanism as the cesium clock, and the official measurement of time is made by averaging a number of specific cesium clocks. Researchers are experimenting with new technologies that are even more accurate. Luckily, in amateur radio we don't usually need this kind of frequency accuracy.

One place where that kind of precision does matter is in the GPS navigation system. It depends on all the satellites being precisely synchronized. As a useful side effect, a fairly ordinary GPS receiver can be designed to extract highly accurate measurements of time and frequency from the satellite signals. The resulting values are far more accurate than the inexpensive oscillator built into the GPS receiver could achieve on its own.

If you combine an OCXO with a GPS receiver, and use the GPS frequency measurements to phase-lock the oscillator to the GPS system, you have what's called a GPS Disciplined Oscillator (GPS-DO). A GPS-DO can be accurate to one part per trillion. That's more accurate than rubidium, and not that much worse than cesium. Pretty impressive!

Another place where this kind of accuracy matters is in modern digital cellular telephone systems. Not in the phones, fortunately, but in the base stations. Early base stations used either a rubidium standard or a GPS-DO, and many of these base stations have since been upgraded to newer technology. That means a whole bunch of these frequency standard devices have appeared on the surplus market. One such is the Trimble Thunderbolt GPS-DO. A group buy was arranged through TAPR, and I ended up with one. Thunderbolts are still available on eBay, at a somewhat higher price (about $225).

When first turned on, a GPS-DO is just a crystal oscillator. A lot has to happen before the frequency is as accurate as possible. The oven has to warm up to the nominal temperature. The GPS receiver has to acquire the signal, do a high precision position fix, and then phase lock the oscillator to the GPS system. All this takes time. For a fixed operation (such as a cell site) this doesn't matter. For portable operation during a microwave contest, it might be a limiting factor. A workaround for most of the delays is to keep the GPS-DO powered on all the time, even when driving between portable locations. So, I am packaging up the Thunderbolt with a battery operated power supply and integrated antenna.

The Thunderbolt (in this configuration) uses a total of about 10 watts, and needs +5, +12, and -12 volts DC. The easiest way to come up with a clean low-noise source of all three voltages is to use a laptop power brick. Conveniently, the TAPR group buy units came with such a power brick included. Not so conveniently, the power brick (of course) expects to be plugged into an AC wall outlet. A battery and a small inverter will do, and conveniently I happened to have an integrated battery+inverter unit on hand. The battery/inverter and the power brick take up most of the room inside the toolbox.

Since the Thunderbolt is designed to be integrated into a larger system, it doesn't have

any kind of status displays at all. Not even a power LED. It does have an RS-232 port that streams lots of status information. Trimble provides a Windows program to interpret the data stream, but that means hauling along a laptop just to monitor the GPS-DO. I'm not the first to run into this problem. James Patterson M1DST, among others, designed a solution, and provides a kit to make it easy to implement. His little circuit board interfaces a Netduino Plus 2 controller to the Thunderbolt and to a four-line LCD. He provides open source software for the Netduino to interpret the data stream and display status. I've integrated the LCD into the top of the toolbox. The controller and interface board are still unmounted.

I'd like to be able to hook up the GPS-DO to several different pieces of equipment simultaneously. This could be multiple microwave transverters, or a transverter and an IF rig, or some combination. I still need to rig up some kind of splitter and/or distribution amp and install multiple output connectors on the toolbox.

This rig hasn't seen any actual on-the-air service yet, but we did measure its frequency during the San Diego Microwave Group meeting at N6IZW's house. Even without being fully locked, it was very close to exactly on frequency: 9,999,999.99+ Hz for a nominal 10 MHz. As it adjusted itself, we caught it reading exactly 10 MHz to 12 significant figures. Not bad.

Frequency counter measurement of the Box of Frequency at Kerry N6IZW's microwave lab. Photo by W5NYV.

San Diego Microwave Group members inspect the Box of Frequency. Kerry N6IZW center, Paul KB5MU right.

Box Closed

Box of Frequency

Thunderbolt

Studio Photos by Paul KB5MU

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Featured Program:

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N1MM and HRD will be demonstrated. The basics of HRD Version 6.0 will be shown controlling a modern radio, the features of the HRD Logbook will be explored, and HRD-DM780 will be shown operating digital modes. PSK-31,PSK-63, PSK-125, Contestia, Olivia, JT-65 and JT-9 will be demonstrated.

Presented by Charlie NN3V.
Please join us at 7:00pm for socializing before the program.

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