



THE

December 2016

PROPAGATOR

The Monthly Newsletter of the South Orange Amateur Radio Association

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No Meeting This Month (December)

Season's Greetings From SOARA!



Lori, KK6ORR, accepts the 2016 WW7D SOARA Ham of the Year award from club president, Ray, AE6H. Congratulations, Lori and thank you for all you do for the club!





No December General Meeting

Quartzfest
Jan 22-28

SOARA Meeting
Jan 23

SOARA Saturday
Jan 28

Palm Springs Hamfest
Feb 4

VEC License Exams

6pm—before the **January** General Meeting

Please see our [website](#) for more info.

Walk-ins ok.

Extra | General | Technician

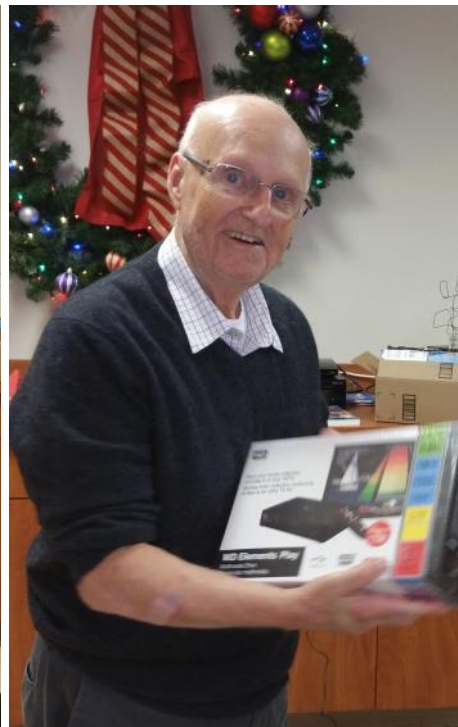
SOARA Holiday Party Pictures

The SOARA Holiday Party was at the Murray Center this year and was catered by a friend of Jon, KJ7ON, and his wife Tina. Thanks for your hard work Jon & Tina! We had plenty of room to move around as well!





Jon, KJ7ON & Tina, accepting an award for their efforts in coordinating the Holiday Party. We will miss





The K7RA Solar Update 12/23/16

Over the past reporting week (December 15-21) solar activity was little changed from the previous seven days, although on two days (December 16-17) there were no sunspots. Average daily sunspot numbers declined two points from 13 to 11, and average daily solar flux bumped up one point to 73.2...

The outlook for the next month shows daily solar flux in a big downward adjustment for the next week, compared to the forecast in yesterday's ARRL Letter. The average predicted solar flux Wednesday on December 23-28 was 84.2, but in Thursday's forecast it dropped suddenly to 62.

Predicted solar flux is 73 on December 23-24, 72 on December 25-29, 77 on December 30-31, 79 on January 1-3, 77 on January 4-5, 75 on January 6-10, 77 on January 11-12, 75 on January 13-14, 73 on January 15-17, 75 on January 18-23, 77 on January 24-



27, 79 on January 28-30 and 77 on January 31 and February 1.

[WM7D's Solar resource Page](#)

[DX Operations: www.nj3k.com](#)

[ARRL HF Propagation Charts](#)

T-Hunt News

After checking with the hider for next month's t-hunt, the January hunt is postponed until January 8th, 2017. Richard, K6RBS, will be hiding.

Everybody have a safe Holiday Season!

Gray, WA6BJY

SOARA Saturday News

I wanted to send this information way before the January Propagator so you could (in interest-ed) have time study and prepare for the next January 28 SOARA Saturday at Murray Center, 9am to noon, coffee and donuts will be provided.

First, if you have one, bring your assembled Pixie radio "soldering" kit. Be warned the kit crystal is 7.023 MHZ which is in the Extra part of the 40 meter band. I will try to have some crystals available for General ticket.

Second, you need a 9-12V power source (9v battery with power connector), speaker or headphones, antenna, and key. Make sure you have connectors, etc. I will bring my stuff along with an oscilloscope to possibly help debug boards.

Third, I found these Pixie links useful. Please look them over before SOARA Saturday.

Pixie 2 Theory of Operation:

<http://www.kenneke.com/jon/pixie/>

History of Pixie designs:

<http://www.gqrp.com/>

http://www.gqrp.com/The_Sprat_Pixie_File.pdf

I'm still debugging my Pixie 2 QRP radio kit. Right now, it is making strange sounds connected to a dummy load with the key up. Don't yet know why... It might be noise from the 12v wall wart. I'm going to try a battery next. I hope to have it working well before next meeting.

Feel free to bring your QRP radios, antennas, power, and accessories. This is a time to share / demo your knowledge and help others less experienced.

If you want to help on the January SOARA Saturday, please let me know. I expect it to be a very busy three hours.

73, Ed Barnes, WA6ED

Now Pay Dues Online
Just [Click Here](#) 



Tuesday Night Net

8pm every Tuesday. (147.645mhz- 110.9hz), 224.640mhz and 447.180mhz.

This is our normal weekly general membership net. The net will begin with announcements and followed by HAM radio news by Gordon West (WB6NOA.) After announcements, we take check ins in any order. You do not have to be a SOARA member to check into the net, we encourage you to stop by and say hello. After check ins, we will announce upcoming large HAM radio contests, get a propagation report and get an update on D-Star. We finish up the net by retransmitting the [Amateur Radio Newsline](#) bulletin. The net is usually over by about 9PM. Each week typically has a different net control operator to keep things fresh. You can also listen or participate on this net via 224.640mhz and 447.180mhz repeaters on Santiago Peak as we link these repeaters for this net only. (Members: Tones for these machines are listed in your member "Orange" book or on the last page of the monthly "The Propagator" newsletter.)

Other SOARA Participated Nets

- SOARA D-Star Net: 7:30pm every Wednesday. (146.115 mhz C module)
- SOARA 40 Meter HF Net: 8am every Sunday. (7.200 mhz +/-)
- Gordo Net (HF): 8:30am weekdays. (7.250 mhz +/-)
- 10 Meter Old Radio Guys Net (HF): 7:30pm every Wednesday. (28.495 mhz +/-)

In the news: [A Ham Radio Software Company Has Been Blacklisting Users For Leaving Negative Reviews](#)

Yuma Hamfest

The Yuma Hamfest is just a little over two months away on February 17-18, and we would like to ask that you, your club or group help us in spreading the word about our event. Yuma has become the site of one of the largest hamfests in the southwestern U.S. and will be the site of the ARRL Arizona Section Convention for 2017.

We feature commercial vendors, tailgating, grand prizes worth over \$25,000, on-site RV camping, free parking, seminars held in parallel tracks, \$8 amateur license testing, DXCC card checking, an antenna clinic & transmitter hunt, our famous "Buzzard BBQ" dinner, a near-space balloon launch, great hourly door prizes, a hospitality area, the "Country Store" consignment sales area, and much more.

Admission is only \$5, tailgating spots are \$10 for the weekend, and we offer a food concession run by a professional chef. Our "Buzzard BBQ" dinner is only \$10. We hope you and members of your club mark February 17-18 on your calendars and plan on attending the Arizona Section Convention in Yuma.

Please check our website at www.yumahamfest.org for more information.

If you have questions, contact us at info@yumahamfest.org or by phone at 928-305-1034. If you can, please announce information about the Yuma Hamfest via your club's newsletter, meetings or local nets. Thank you very much for your help.

Attached is a flyer for the 2017 Yuma Hamfest. Please note the change in the talk-in frequency.

Roger Hunt, K7MEX, Volunteer, Yuma Hamfest

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
General Meeting 7:00 PM	23	27	20	17	15	19	17	21	18	16	20	-
Program	TBD	TBD	TBD	TBD	Spring Auction	Field Day Prep	TBD	SOARA Fair	TBD	TBD	Fall Auction	-
VE Testing	23	27	20	17	15	At Field Day 24	17	21	18	16	20	--
Educational Classes	21	25	18	15	13	17	15	19	16	14	18	-
SOARA Saturdays (9am)	28	Mar 4	25	22	20	-	-	-	-	21	25	-
SOARA T-Hunt	8	5	5	2	7	4	2	6	3	1	5	3
Board Meeting	30	Mar 6	27	24	22	26	24	28	25	23	27	-
Special Events	Quartzfest 22-28	Yuma Hamfest 17-18	Palm Springs Hamfest Feb 4	Visalia Intl DX 21-23	Dayton Hamvention 19-21	ARRL Field Day 23-25	HRO Ham Jam	SOARA Picnic 6		JOTA		SOARA Holiday Party TBD
Ham-Related Swap Meets	TRW 28 C.A.R.S. 21	25 18	25 18	29 15	27 20	24 17	29 15	26 19	30 16	21 28	25 18	30 16
Major HF Contests		ARRL DX-CW 18-19 CQWPX RTTY	ARRL DX-SSB 4-5 CQWPX SSB 25-26		CQWPX CW 27-28	ARRL Field Day 24-25			CQWW RTTY	CQWW SSB	CQWW CW	
Volunteer Events	OC Chili Run 21	Paws Fur Pink 26 OC Chili Run 25	OC Chili Run 25 Baker to Vegas 25-26	Desert Storm Rally	HD Trails OC Marathon 7 Memorial Day 1/2 Marathon 29	ARRL Field Day/ Setup/ Ops/ Clean 23-25	4th of July Fire-works 4			Vision Quest		Run for a Claus

*Dates subject to change. Check the [SOARA website](#) to verify locations and times.

[K4KIO Hexbeam](#)

(A compact 20m beam antenna)



SOARA meets at the [Norman P. Murray Center](#), 24932 Veterans Way, Mission Viejo, CA on the third Monday of every month at 7:00 PM. For the months of January and February the third Monday is a holiday and the meeting is held on the fourth Monday.



License Exams: Amateur License Exams are given prior to SOARA meetings, except June. **Exams are at 6pm.** Prior registration is not required and walk-in applicants are welcome. For June, exams are held at Field Day. For further information, email Sean Reigle, AJ6B, at aj6b@soara.org.

SOARA Library: SOARA has many amateur radio related books such as hand books, books about electrical theory, etc. available to lend out to club members. Contact Heiko Peschel ad6oi@soara.org for more info.

Web Site: SOARA maintains a web site with current club information. The URL is: <http://www.soara.org/>

Repeaters: The Laguna Beach, San Clemente, and Trabuco repeaters are open. The Santiago Peak repeaters are closed. For details or questions on the repeaters contact the repeater director, or repeater@soara.org.

	2m — 147.645 — (110.9)	Laguna Beach
	2m — 146.025 + (110.9)	San Clemente
	2m — 145.240 — (110.9)	Trabuco
D-STAR	2m — 146.115 + (K6SOA C)	Laguna Beach
	220 — 224.100 — (110.9)	Laguna Beach
	220 — 224.640 — (123.0)	Santiago Peak. (C)
	440 — 445.660 — (110.9)	Laguna Beach
D-STAR	440 — 445.705 — (K6SOA B)	Laguna Beach
	440 — 447.180 — (131.8)	Santiago Peak. (C)
D-STAR	1.2G 1282.600 — (K6SOA A)	Laguna Beach

Nets:

UHF/VHF (447.180, 147.645 & 224.640): Tuesdays 8:00 PM

D-STAR (146.115 C module):
Wednesdays 7:30pm

40 meter HF (7.200 MHz +/- for QRM), Sundays 8:00 AM.

Gordo Net (HF 7.250 MHz +/- for QRM), Weekdays 8:30AM



SOARA OFFICERS

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ad6oi@soara.org

SOARA APPOINTMENTS

Past President: Tom Hobbs, AE6SH 949-830-8131
ae6sh@soara.org

Activities: *[Open]*—*Please contact us (board@soara.org) if you are interested.*

S. Saturdays: Ed Barnes, WA6ED 949-468-7706
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wb6wxo@soara.org

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aj6b@soara.org

Ambassador: Spencer Ammermon, NG6K *[In England]*
ng6k@soara.org
Blog

Ham Radio 101
Restoration
Heathkit Back from the Dead~ Well Almost
Receiver
By Hal Silverman WB6WXO

In the past articles, I have written about where to get parts and equipment. I have shared pictures of my workbenches. I decided to put these past articles into practice.

I chose a Heathkit HW22A. It looked like it was in decent condition.



Figure 1
HW22A Unit Under Test

I was surprised when I open the chassis and fired it up. The radio was dead. As they used to say, in the old TV industry, “no picture-no sound”.

There was nothing coming out of the radio. Fortunately, I also have a fully operational HW22A. I started to make some measurements with my DMM and oscilloscope.

There are four oscillators in the radio. This would be the two carrier oscillators for USB and LSB. They are about 2306.7 for USB and 2303.3 for LSB. After just probing the parts in the carrier oscillator, the USB oscillator came alive. It turns out that there were unsoldered components.

It has been my feeling not to re-solder existing components. Just replace them because they have a longer lead length and you get a better solder.



Figure 2
HW22A with cover removed



Figure 3
Re-soldered carrier oscillator components

I always have a good cache of parts to work on these radios. After replacing the components (both resistors and capacitors), the upper side band oscillator seemed stable. I just cycled it for several hours before going on to the challenge.

The lower side band (LSB) oscillator was also not working. I finally replaced the LSB crystal and we had lift-off. Now both carrier oscillators were running and stable.

There was still no noise out of the receiver. I measured the output of the heterodyne oscillator. It was dead. The frequency is 11.190 Mhz. Fortunately, I had a spare crystal and I replaced the original crystal. That got the heterodyne oscillator running. I cycled the oscillators for several hours to make sure they would be stable.



Figure 4
Heterodyne Oscillator Circuit

Not only did I replace the crystal but also replaced the components that bias the oscillator.

I have ordered crystals for other radios from International Crystal in Oklahoma. If you give them the Heathkit model number, they can take it from there. The cost for a single crystal of this frequency is \$22.00. I bought 4 from them and

they charged me \$20.00. There is a three-week backlog at this time of year. I always keep several in my workshop.

Some of the things I do not use are crystals from old radios. Remember, that the radios in some cases are 50 years old. Crystals also fail. Not very often but, they do fail.

Still, no noise coming out of the receiver. I checked the output from the VFO. This was also dead. As it turns out, there is a ground screw from the VFO variable capacitor. The nut for the ground screw was missing. When I added a nut to hold the screw in place, the VFO came alive and there was noise coming out of the receiver.

As a “just because”, I changed out the switch that switches from LSB to USB. That switch is also 50 years old and they do get corroded.

I also keep about a dozen switches like them in my workshop.



Figure 5
VFO Ground Strap

During the restoration, I developed a fixture to hold the radio. I do not have drawings. So, it was done on the fly. I have ideas for some improvements and a fixture for the HW100.



Figure 6
HW22A Fixture



Figure 7
HW22A Fixture ~ Reverse Side



Figure 8
Empty Fixture

As of this writing I have been listening to several stations. It has a clear signal. I do have one issue still remaining. The receiver runs just fine for a period of time and then it switches from receive to transmit.

I need to sort out this problem. Having a “gold standard” radio allows me to make measurements. I have a 100 MHz oscilloscope that has an LED display. This also has a frequency counter.

Next month will be an update for my HW32A hybrid. After that I will attack the transmitter on this HW22A.

Acknowledgements:

I would like to thank my son-in-law Terry Miller for taking my ideas and turning it into the fixture. We have enhancements for the next version. I would like to use the fixture for several months before making another version.

I would like to thank my XYL for editing the article. She helps me dot all of the “I’s and cross all the “T’s”.

Foot Notes:**1: QRP Classics**

Copyright May 1990
Doug DeMaw W1FB

2: W1FB's QRP Notebook

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American Radio Relay League
Doug DeMaw W1FB

3: Electronix Express

RSR Electronics
365 Blair Rd.
Avenel, NJ 07001
1-800-972-2225

4: Mouser Electronics

1000 N. Main St.
Mansfield, TX 76063
1-800-346-6873

5: FAR Circuits:

Fred KF9GX
18n1640 Field Ct
Dundee, IL 60118

6: International Crystal (ICM)

10 North Lee Avenue
Oklahoma City, OK 73102
1-800-725-1426