RF
NEWSLETTER
Orange County Amateur Radio Club, Inc.
VOL. LVII NO. 02 P.O. BOX 3454, TUSTIN, CA 92781-3454 February 2016

The Prez Sez.....

By Nicholas AF6CF

Greetings to all! We started 2016 with great expectations and hopes that this year will be another great year for the Club. With a bit of hard work and careful planning we hope you will enjoy the rest of the year with even greater plans, events and activities.

Field Day of course has always been front and center and we already started conversations about it, selecting the prospective Chairpersons and Band Captains to give it an early start. The Board of Directors is looking for the most qualified individuals to make a successful team. I can promise that I will delegate most if not all activities to others, so we will have the best people doing the job at hand. Contact me or anyone on the OCARC BOD for more information.
We also plan to participate in many other activities like the 'Baker to Vegas Race,' Antennas at the park (or beach), OPEN Houses, parties, picnics etc., etc. I would also be remiss if I didn't recognize the efforts and hard work of Doug K6PGH and Ron W6FPS with 'Winter Field Day' held earlier this year. Their report and images are included within.

We know that your clubs Board or Directors are attempting to do a tremendous job to get new and exciting events and activities scheduled. January's Membership Meeting turnout was outstanding with an excellent presentation by Arnie, N6HC regarding the 'Chesterfield Island DXpedition, 2015. A brief overview of this event is included. February's Membership Meeting includes a technical presentation regarding Digital Amateur TV by our own long time member/contributor Ken, W6HHC.

I know our VP is working tirelessly at getting more speakers and activities. We will not be disappointed. This year we are trying something new by having a regularly scheduled 'Show and Tell' theme.

We've included a 'Show & Tell' Monthly Calendar of topics and events.

January's Show and Tell was a big success and a lot of fun. The upcoming February Show & Tell theme will be "Battery Boxes". If you've built your own 'Battery (Power) Box' why not bring it to the meeting and show it off and tell us about it! Your experience, whether good or bad… provides each participant the opportunity to present their treasures (or trash) within 5 minutes or less! You can be an inspiration to your OCARC family.
So mark your calendars for February 19th at 7:00 PM and do NOT miss it.
I'll see you all at the Meeting.
73 DE AF6CF

The next General Meeting will be on:

Friday, Feb 19, 2016
@ 7:00 PM
ENTER from the WEST SIDE entrance of the Red Cross Building, Room 208
Take elevator to the 2nd Floor. *See you there!*

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Submit Articles:
EDITORS@W6ZE.org

Monthly Events:

General Meeting:
Third Friday of the month
at 7:00 PM held at:
American Red Cross
600 Parkcenter Drive
Santa Ana, CA
(Near Tustin Ave. & 4th St.)

Club Breakfast:
First Saturday – March 05 at 8:00am
Marie Callender's Restaurant
1821 North Grand Ave
Santa Ana, CA
(North of 17th Street)

Club Nets (Listen for W6ZE):
28.375 ± MHz SSB
Wed- 7:30 PM - 8:30 PM
Bob AF6C, Net Control

146.55 MHz Simplex FM
Wed- 8:30 PM - 9:30 PM
Bob, WB6IXN, Net Control

7.086 ± MHz CW **OCWN**
Sun- 9:00 AM – 10 AM
Ann K6OIO, Net Control

Club Dues for 2016:
Regular/New Members* - - - - - - $30
Family renewal/Join**- - - - - - - - $45
New Member Join Jul-Dec***- - -$15
Replacement Badge**** - - - - - - $3

* New members Jan-Jun, w/badge.
** Two members or more, w/badge.
*** New members Jul-Dec, w/badge.
**** There is a $1.50 charge if you'd like to have your badge mailed to you.

2016 OCARC
SHOW & TELL
SCHEDULE

This is a list of suggested Show and Tell activities for the 2016 calendar year. Bring your item to show and tell!!*

February:	**Batteries and Battery Boxes**
March:	Antennas
April:	**Antenna Analyzers**
May:	VHF/UHF radios
June:	**HF Radios**
July:	Station accessories
August:	**Morse Code**
September:	Digital Modes
October:	**Auction – no "S-n-T"**
November:	Linear Amplifiers
December:	**X-MAS Party - no "S-n-T"**

*If you wish to participate in the "Show & Tell", please contact the Activities Chairman Tim, N6TMT N6TMT@w6ze.org, or just bring your "treasured stuff" to OCARC meetings to share with the other members. Note: Topics are subject to change without notice.

February's Membership Meeting presentation will be on Digital Amateur TV (DATV)

Article by… Doug K6PGH & Ron W6FPS


Ron W6FPS and Jim KI6WJ

Winter Field Day 2016 has come and gone and W6ZE was on the air thanks to the efforts of present and past W6ZE members.

While the turnout was lighter than expected, the effort and comradery was strong. Ron (W6FPS), Tim (N6GP) and Doug (K6PGH) **operated from Prado Region Park Campground** using Doug's pop-up tent and trailer for the stations operating positions.

A big thank you goes out to former member Jim Brown (KI6WJ) who was on his way from Quartzsite, AZ to Reno, NV and stopped by to get us some CW contacts.

Ron and Doug set up the HF stations and Ron's hex beam was the star of the show. Tim operated VHF and was also participating as a rover in the ARRL VHF Contest. While not as popular as ARRL Field Day, Winter Field Day was a good test of operating skills as contacts were far and few between.

Operations were on 40m, 20m, 15m, 6m, 2m, 70cm, and 1.2 GHz. Modes used were SSB, CW, FM, and PSK 31.

We had a total of 122 Contacts with 9 multipliers plus bonus points for a total of 3098 points but cut our operation short when we called CQ for 2 hours without one reply and rain was forecasted for the morning. The most interesting contact was a 40M contact with US1I in Ukraine on Ron's 40M wire di-pole running 100 watts.

While the event wasn't as busy as ARRL Field Day, those that participated had a great time.

Winter Field Day Future Dates

1700Z, Jan 28 to 1700Z, Jan 29, 2017
1700Z, Jan 27 to 1700Z, Jan 28, 2018
1700Z, Jan 26 to 1700Z, Jan 27, 2019
1700Z, Jan 25 to 1700Z, Jan 26, 2020
1700Z, Jan 30 to 1700Z, Jan 31, 2021

Source: [www.hornucopia.com link]

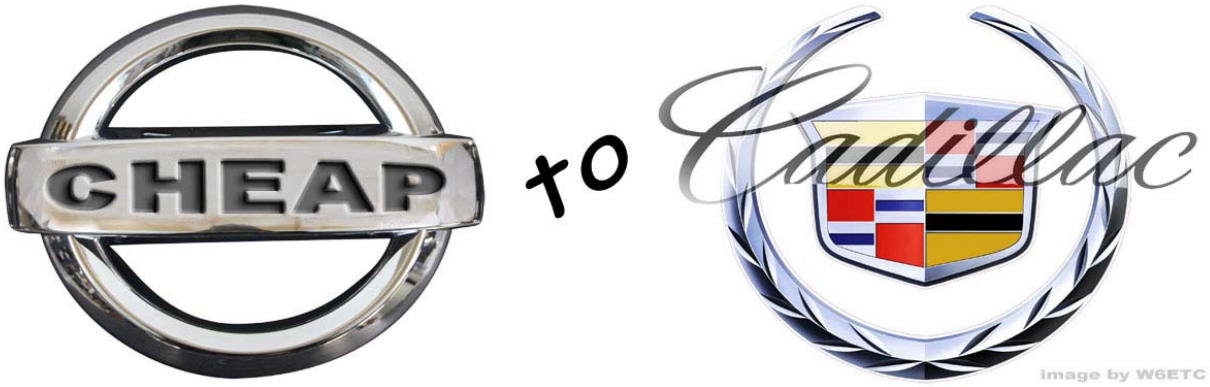
Doug K6PGH working 40M

Doug K6PGH

Ron W6FPS

Tim N6GP

Doug K6PGH & Ron W6FPS



CERT and Emergency Communication (EmComm)

Basic Battery Box Build and Demonstration

Cheap to Cadillac

By Tony Gawel W6TNY

This Project is intended to provide CERT, EmComm teams and amateur radio clubs (like OCARC) with a basic **low cost Emergency Battery Box project** that is simple to build and requires minimal tools. The article is designed to inspire a few ideas on what is possible by providing a Club/ Group activity that all members can participate in. The building process provides the builder with both comradery and pride of ownership in building their own (emergency) equipment (the fundamentals of Amateur Radio).

The battery Box is a quick, fun and inexpensive project for individuals and groups. If you have the components, the build can be completed in just a few hours or an afternoon. You start with the basic box and add your accessories and ideas as you go. The ultimate project you decide to build is determined by the skills of the group and your own imagination.

This project is not the high-end Mega EmComm box that many amateur radio operators often build! It is not designed to replace critical pieces of equipment either, but to supplement them. This project is designed for most people who want to be better prepared, and may not have the resources to build one of these so called Mega EmComm boxes.

Some of the advantages of the Battery Box project are;

1. The box is easily transported in the back of your car
2. It can be installed in your home/office
3. It can easily be taken in the field for EmComm or QRP operations.

A single box can provide limited emergency power during critical times but if the boxes are connected together the user can effectively add more battery capacity and air time when needed.

The unit is capable of supplying emergency 12 volt DC power in the field to charge most phones, HT radios, small HT repeaters, mobile radios operating on low power (QRP), and assorted led lighting. A well-constructed EmComm box can provide temporary power for those running HamNet Wi-Fi Mesh.

What type of box you decide to build is based on your resources, skills and creative imagination. This article primarily focuses on building on the Cheap, building more Basic boxes, and for those that can afford to build the Cadillac box!

Key advantages of this battery box design is that it can be customized, expanded, added on to as you need which makes it affordable and easy on your resources. The recommended procedures for building the different types of boxes are the same, but the addition of optional accessories can increase the unit's functionality and overall cost of the project.

An important consideration is that this design also lends itself to incorporating different battery sizes and types based on budget and availability. The build also attempts to incorporate a simple design to allow for quick battery replacement and for future upgrades potentially to the new LiPo4 light high capacity batteries (see Cadillac EmComm boxes).

Mark your calendar: On March 17th, 2016 at 7:00PM Tony W6TNY will present to the OCARC membership meeting a onsite, hands-on demonstration on how to build one for yourself. For more information see the image below:

A full step-by-step article on how to build your own power Battery Box is attached to the RF Newsletter and is also available by going to the following link www.w6ze.org/?????. Make sure you attend the March 18th OCARC Membership meeting to see first hand how it's put together.

W6ZE visits W6TRW as VE Observers

Article by Tom W6ETC

A few years ago (won't tell you how many) I remember lining up for a amateur radio exam, a little anxious and excited standing alongside a bunch of other exam candidates and VEC's - just inside a room ready to take my first Amateur Radio exam and begin the adventure as an OP. Reflecting back the whole process took just a little effort (some more or less than others) on my part and the discipline to study the content and operational guidelines required. In the end for most it's well worth the effort. Amateur Radio is an interesting hobby, with a little something for everyone. All it takes is a little drive and determination to educate oneself, and it doesn't hurt to have the encouragement of fellow hams pushing you along. VE's (Volunteer Examiners) are a fine group of fellow Hams who give of their time to administer the test sessions that follow ARRL's VEC guidelines. To those that do this without asking for a pat on the back or much fanfare. **For their efforts I'd like to say Thank You**!

I never gave it much thought as to who or what was behind giving these exams. Frankly all I really cared about was doing well on it and to 'get er done' so to speak. The process is meant to be a means to an end… but it really more a means to a beginning … if you know what I mean!

As I matured as an OP I begin to realize and recognize that the VE system provides guidelines for exam operations that are consist wherever you go. I think most of us have heard of the acronym 'VE' but frankly many if not all of us paid attention to the men, the training and the efforts behind the VE badge of honor. That is until a fellow OCARC member, Doug N6XBP happened to mention at a recent membership meeting that he just became a VEC! Hmm… my interests perked and so did my curiously when I heard this so I congratulated him on his achievement and following up following the meeting to look closer into the functions and training VEC's receives. I loved the idea of bringing new Hams into the Ham radio community and assisting others in upgrading their license privileges.

I admit it… in the past I took for granted the ARRL VEC exam process. In reviewing the information on the ARRL website I soon discovered that their mission, purpose and functions provide the means to advance or finalize the build process for a growing, healthy Ham community. I've always been interested in helping others who take an interest in or who may be interested in participating in the Amateur Radio hobby. This seemed to me a good way to help others begin their own adventure!

Once I decided to train as a VE I called and enlisted a fellow ham OP Paul W6GMU to work together on the Volunteer Examiner Online Manual. Paul and I could encourage one another during the process. Each one of us sat at our computers and completed each chapter. At the end of each chapter we'd call each other to review and discuss the material content. Frankly it only took one afternoon to review the material and passing the exam as for the most part was straight forward (common sense). We succeeded in our first attempt. If we can do it so can you. It just a matter of putting a little effort into the process.

So we could better understand the VEC exam process Don N6XBP, Nicholas AF6CF and I went to visit a well established VEC event that is held monthly by the W6TRW Amateur Radio Club Swap Meet located at the TRW facility in Redondo Beach, CA. This club currently holds a monthly amateur radio and electronics swap meet on the LAST Saturday of the month as a fund raiser to support its activities. Amateur radio exams are given by VE's (Volunteer Examiners) from 10Am to Noon each month. The management, operations, traffic control and security is performed by volunteer club members. Our objective was to observe and learn their VE Operations.

VEC Organization in a few boxes

VEC Process observed

We all were blown away with their warmth and accepting attitude for three strangers from another club coming to observe their operations. They show real expertise and was willing to share it. We came away with an impression that they had refined the VEC process and had methods and systems in place that could help our own club begin the process. We want to thank the members of W6TRW for their kind consideration and for taking the time with us by showing us how and answering our questions regarding administering the Ham exam process.

The following is taken from the FCC (Federal Communication Commission) website:
"VECs coordinate the efforts of Volunteer Examiners (VEs) in preparing and administering amateur service operator license examinations. The coordinating VEC screens collected information, resolves all discrepancies, and forwards all required data to the FCC electronically. All VECs are authorized to coordinate examination sessions at any location an examination can be administered. A VEC, however, may choose to limit its area of operation to a particular geographical area.

The FCC has divided the nation into thirteen (1-13) regions. Because of its population California has been assigned its own region and this is indicated as Region 6. If you want to locate a Volunteer Examiner (VE) to administer an operator license examination to you or to file other applications for you, such as an application for renewing your license, change of address, or change of name, or if you are an amateur radio operator and would like to be accredited as a VE, Contact any of the VECs below

The following is taken from ARRL's website:

ARRL Volunteer Examiners Serve the Community

If you are interested in becoming an ARRL Volunteer Examiner (VE) and serving the Amateur Radio community, it's easy and free!

Follow these three steps to become an ARRL Volunteer Examiner:

1. Review the **Volunteer Examiner Manual**, paying special attention to Chapter 2: Becoming a Volunteer Examiner.
2. Complete and sign the **VE Application form and open-book review** * (40 question review).
3. Please fax, mail or email forms (Adobe PDF file or scanned JPEG image showing your real signature) to the address below: * *
   ARRL VEC
   225 Main St
   Newington, CT 06111 USA
   Fax: 860-594-0339

   Email: **vec@arrl.org**

Once accredited, you will receive in the mail a colorful, laminated VE badge, and badge clip to wear at exam sessions and a certificate suitable for framing. Please allow 3-4 weeks for the ARRL VE badge and certificate to arrive.

Heathkit of the Month #70:
by Bob Eckweiler, AF6C

[AMATEUR RADIO - SWL
Heathkit HW-12 / HW-22 / HW-32
"*Single-Bander*" SSB Transceivers - PART I

Author's Note:
I have received many requests to cover the Heathkit *Single-Bander* SSB Transceivers, many more than any other kit. Unfortunately, little was available on the net in the way of manuals and schematics for these six kits. I looked into purchasing the manuals, but the cost was approaching $200 and these articles are written and distributed without charge as a hobby. Thus, the idea was kept on the back burner, and anytime some information was found, it was squirreled away for later use. One difficulty was that, in the first few partial manuals obtained, no crystal frequency information was given, only their part numbers.

Recently, I felt I had gathered enough information to begin the article. At first, the plan was to cover all six units, while focusing on the HW-22. After working on the article awhile, it quickly became evident it would be very long - much too long for our monthly newsletter. The decision was made to split the article into two, covering the HW-12, HW-22 and HW-32 in the first article and the later HW-12A, HW-22A and HW-32A in a second, shorter article, where only the changes from the earlier models would be covered.

As I continued to write, it was evident the article would still be too long. So the plan now is to cover the HW-12, HW-22 and HW-32 in a multipart series of articles. This might take two or even three parts. Here's part I:

[1] Notes appear at the end of the article.

Fig. 1 - HW-22 40-meter Transceiver

Introduction:
In late 1963, while I was away at my first year of college, Heathkit introduced three single-band, SSB only, HF ham transceivers. They were the HW-12, the HW-22 and the HW-32 which operate on the SSB portion of the 75, 40 and 20 meter bands, respectively. They each operate in a single mode, LSB for 75 and 40 meters and USB for 20 meters, at 200 watts PEP input. They are powered by an external power supply, such as the HP-23, and can be used in the home or mobile. Over their life they sold for $119.95 each, and they immediately became big sellers. Orders quickly exceeded Heathkit's production rates, creating a backlog. Heathkit had a hit on their hands, and I was off the air! Besides appropriate power supplies, Heathkit sold three accessories that work with the HW "*Single-Bander*" series, a push-to-talk microphone - the GH-12 ($6.95); a mobile speaker - the HS-24 ($7.00); and a plug-in 100 kc[1] crystal calibrator - the HRA-10-1 ($8.95).

The original *"Single Bander"*s remained in production for three years, until 1966, when they were replaced by the HW-12A / HW-22A / HW32A, which were updated and refined versions of the originals. In this series, the focus will be on the earlier transceivers, with the later ones possibly being covered in a future article.

The Heathkit "*Single-Bander*":
We will focus on the HW-22 - 40-meter Single-Bander (Figure 1), but will discuss differences between the HW-22 and the HW-12 and HW-32 as they are encountered. The specifications for the radios are exceptional for the selling price (See

Table I). Due to the size of the schematic, it is not included in this article. However snippets of the schematic will be used as needed. A copy of the full HW-22 schematic, found on the web, is posted on the club website at:

http://www.w6ze.org/Heathkit/Sch/hw22.pdf.

Heathkit recommended the HP-23[2] fixed or HP-13[3] mobile power supplies for the *"Single-Bander"* transceivers; these power supplies may be used without modification; just be sure the octal power plug to the HW-12 / 22 / 32 is wired correctly. These radios may also be used with the earlier HP-20 (AC) and HP-10 (DC) power supplies after a simple modification to the radio (and also to the HP-10, if used). Instructions for these modifications are given in the *"Single-Bander"* manuals.

HW-22 Controls and Connectors:

Except for the frequency dial, the front panel of all three units are identical. On it are nine controls and a meter, arranged in two rows. The top row (L to R) consists of the **FINAL TUNE** capacitor, the large VFO tuning knob with arched tuning window and frequency dial - featuring a seven to one vernier drive - and a meter that operates as an S-meter on receive and a relative output meter on transmit. Below the meter is a slide switch marked **BIAS SET** to the left and **OPERATE TUNE** to the right. The switch is normally in the right position, and is moved to the left to set the bias on the final tubes. In the left position the meter reads the cathode current of the finals. The proper bias setting is marked as a small white triangle above the S-3 mark on the meter scale.

The second row (L to R) consists of a four-position rotary **FUNCTION** switch (**OFF**, **PTT**, **VOX**, **TUNE**), a screwdriver adjustable **S-METER ADJ.** pot, an **RF GAIN** pot, an **AF GAIN** pot, a screwdriver adjustable **VOX DELAY** pot, and a **VOX** sensitivity pot.

Along the rear apron of the HW-22 (L to R, viewed from the rear) are: a two-pin Amphenol **MIC** connector, three screwdriver adjustable pots (**MIC GAIN**, **TUNE LEVEL**, **FINAL BIAS**), four RCA phono connectors (**SPKR 8Ω**, **EXT. RELAY**, **ANT.**, **RCVR**), and a male octal **POWER** connector).The EXT. RELAY connection switches to ground on transmit and is open on receive; it is used to key an amplifier or external antenna relay. RCVR is a separate antenna lead that goes directly to the receiver input, and is useful with an amplifier that requires an external antenna relay.

General

Frequency Coverage (Mode) -	
HW-12	3.8 - 4.0 mc. (LSB)
HW-22	7.2 - 7.3 mc. (LSB)
HW-32	14.2 - 14.35 mc. (USB)
Stability:	200 cps / hr.
# of Tubes (Total Sections):	14 (20)
Cabinet Size:	6-1/4" H x12-1/4" W x 10" D
Assembled Weight:	12 lbs.
Shipping Weight:	15 lbs.
Power Requirements -	
High Voltage:	800 VDC @ 250 mA peak
B+ Voltage:	250 VDC @ 100 mA
Bias Voltage	–130 VDC @ 5 mA
Filament Voltage:	12 VAC/DC 3.75 A

Transmit

Power Input:	200 Watts PEP
Finals:	2 x 6GE5
RF Output Z (Loading):	50Ω (Fixed)
Transmit IF:	2,305.0 kc
Carrier Suppression:	45 dB
Unwanted Sideband Suppression:	45 dB
Mic Input:	Hi-Z

Receive

Sensitivity:	1μV for 15 dB (S + N)/N
Receive IF:	2,305.0 kc
Selectivity:	2.7 kc @ 6dB. 6 kc @ 50 dB
Image Rejection (HW-32):	100 dB (60 dB)
IF Rejection (HW-32):	50 dB (65 dB)
Audio Output:	1 Watt @ 8Ω

Table I: HW-12 / 22 /32 Specifications

Each model has a different frequency dial behind the arched window. The HW-12 dial tunes up in frequency from 3.8 to 4.0 mc as the tuning knob is turned clockwise. However, the HW-22 and HW-32 actually tune down in frequency as their tuning knob is turned clockwise. The HW-22 tunes 7.3 to 7.2 mc, and the HW-32 tunes 14.35 to 14.2 mc. The frequency dial also shows the model number, which is not printed anywhere else on the front panel.

Heathkit *"Single-Bander"* Construction:

For each kit, most of the components mount on a single circuit board that holds about 90% of the components, including tubes. Parts not located on the circuit board are controls and other items on the front and rear panels, as well as the audio output transformer, T/R relay and the VFO frequency components that need mechanical stability. Figure 2 shows the top view of an HW-22 removed from its cabinet.

All fourteen tubes, including the final amplifier tubes and the octal socket for the optional 100 kc crystal calibrator accessory, mount on the circuit board. The board itself mounts over a large cutout in the chassis, and takes up most of the top chassis space. A prefabricated and color-coded wiring harness makes almost a full circuit around the edges of the chassis, making connections between the components off the circuit board, as well as connections to the circuit board itself, easier and less prone to wiring errors.

The "*Single-Bander*" transceivers were designed keeping mobile operation in mind. The cabinet includes a gimbal mount that allows mounting the radio under the dash or on the transmission hump in a typical automobile of the sixties. The manual contains a lot of information on using the "*Single-Bander*" mobile, including discussions on reducing engine noise and choosing and mounting an appropriate antenna.

Heathkit states that the kit can be assembled in just 15 hours, due mainly to the large circuit board construction. Comments in the reviews

Figure 2: Top view of the HW-22 out of its cabinet. Final tubes are to the left behind vertically mounted pi-network coil. In the back left is the octal socket for the optional crystal calibrator.

agree that the 15-hour claim is easily achieved by a builder with average kit-building competence. Figure 3 is from the March 1965 Heathkit catalog supplement (800/53) offering the "Single-Bander: SSB Transceivers and two of their accessories.

The "*Single-Bander*" Frequency Scheme:

It is always interesting to study the scheme of how the transmitted and received frequencies are created or recovered; this is especially true in a SSB transceiver since filtering of the desired sideband must occur to generate and receive the signal. The "Single-Bander" transceivers only cover one band, simplifying things. These radios also do not incorporate RIT, which allows the operator to adjust the received signal without changing the transmit frequency. The three models all have an IF of 2,305 kc and use a crystal lattice bandpass filter that is shared on transmit and receive. This filter is not a sealed unit like in the SB series, but consists of two pairs of matched crystals, and their associated components, assembled on the circuit board. The filter has a center frequency of 2,305.0 kc with a 6 dB bandwidth between 2,303.7 and 2,306.4 kc, and a 50 dB bandwidth between 2,302.0 and 2,308.0 kcs. (See Figures 4A & 4B)

Figure 3: Heathkit ad for the HW-12, HW-22 and HW-23 in the March 1965 Catalog supplement.

Each model's VFO operates on a different range of frequencies, but all are within 1,400 to 1,800 kc. Using such a low frequency aids in designing a stable VFO; a temperature compensating capacitor further increases the stability. Each VFO's fully clockwise and counterclockwise frequencies are shown in Table II. The transmit frequencies shown are the frequency where the carrier would be if it were not suppressed.

The stage following the VFO varies between models. For the 75-meter HW-12, the stage acts as a buffer, isolating the load from the VFO; however, on the HW-22 and HW-32 this stage is a heterodyne crystal oscillator and mixer. The oscillator runs at 11,190.0 and 18,275.0 kc respectively. The mixer output is the difference between the heterodyne oscillator and VFO, as shown in Table II. Since this is a difference mixer the VFO tuning direction is reversed.

On Transmit (See block diagram - Fig 5):
Each "Single-Bander" carrier oscillator uses either a 2,303.3 kc crystal for USB generation or a 2,306.7 kc crystal for LSB generation. This signal is mixed with the transmit audio in a balanced modulator, producing a double sideband signal. This DSB signal is passed through the crystal lattice bandpass filter, and one of the two sidebands is removed. Since the carrier frequency is also outside the 6 dB filter bandpass, any residual carrier from the balanced modulator is also further attenuated. The HW-12 and HW-32 both use a 2,306.7 kc crystal and create an LSB signal, and the HW-22 uses a 2,303.3 kc crystal and creates a USB signal. It would appear the HW-22 and HW-32 sideband are both incorrect, but they will be inverted in a later stage. Figures 4A and 4B show the filter response in black, the already suppressed carrier in red, the low audio (400 cps) in orange and

RADIO		VFO CCW	VFO CW
HW-12	VFO Freq:	1,493.3	1,693.3
	Buffer Out:	1,493.3	1,693.3
	Carrier (LSB):	2,306.7	2,306.7
	Mixer (sum):	3,800.0	4,000.0
	Final Sideband:	LSB	
HW-22	VFO Freq:	1,586.7	1,686.7
	Het. Xtal Osc:	11,190.0	11,190.0
	Het. Mixer Out:	9,603.3	9,503.3
	Carrier (USB):	2,303.3	2,303.3
	Mixer (Diff.):	7,300.0	7,200.0
	Final Sideband:	LSB	
HW-32	VFO Freq:	1,618.3	1,768.3
	Het. Xtal Osc:	18,275.0	18,275.0
	Het. Mixer Out:	16,656.7	16,506.7
	Carrier (LSB):	2,306.7	2,306.7
	Mixer (Diff.):	14,350.0	14,200.0
	Final Sideband:	USB	
	All frequencies are in kilocycles per second		
	Table II: Transmitter Frequencies		

the high audio (3,100 cps) in green for the desired sideband.

After filtering, the 2,305.0 SSB signal is converted to the desired transmit frequency. In the

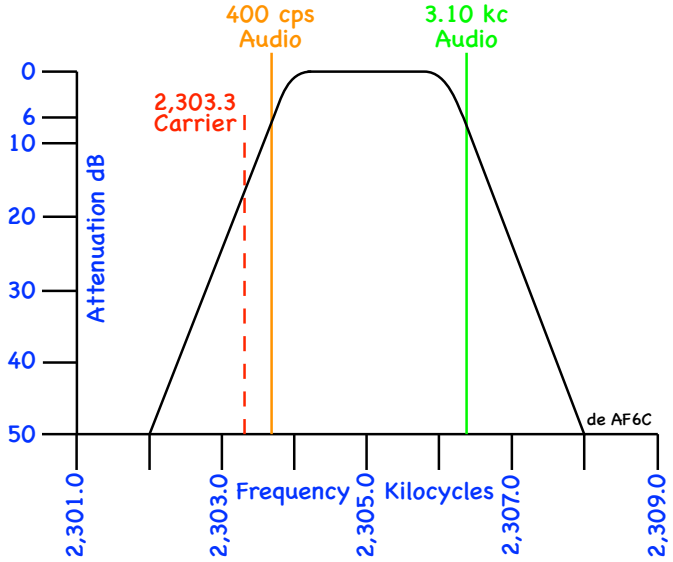


Fig. 4A: Upper sideband creation in the crystal filter. The lower sideband is to the left outside the filter's response.

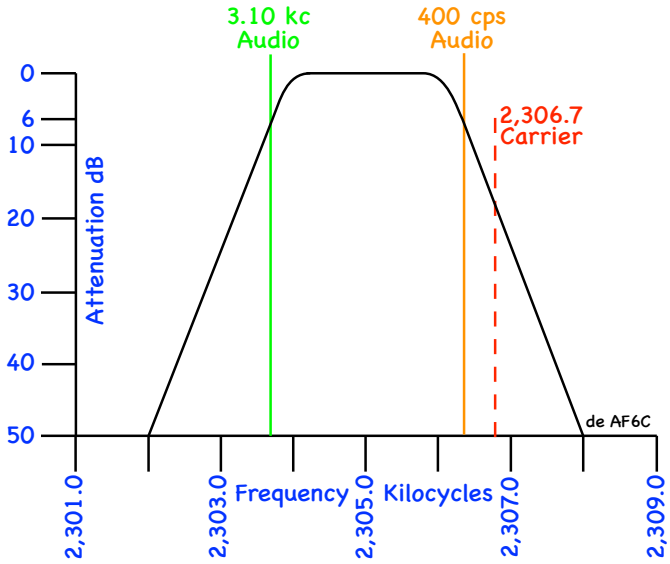


Fig. 4B: Lower sideband creation in the crystal filter. The upper sideband is to the right, outside the filter's response.

HW-12 it is added to the the buffered VFO frequency in the transmitter mixer stage, producing an LSB output between 3.8 and 4.0 mc. In the HW-22 and HW-32 the SSB signal is subtracted from the heterodyne mixer output in the transmitter mixer stage; the sideband is inverted during this mixing process. This results is an LSB output between 7.3 and 7.2 for the HW-22,

Radio		VFO CCW	VFO CW
HW-12	Rcvd Freq (LSB):	3,800.0	4,000.0
	VFO Buffer Out:	1,493.3	1,693.3
	Rcvr Mixer Out (LSB):	2,306.7	2,306.7
	Carrier (LSB)	2,306.7	2,306.7
HW-22	Rcvd Freq (LSB):	7,300.0	7,200.0
	Het. Mixer Out:	9,603.3	9,503.3
	Rcvr Mixer Out: (USB):	2,303.3	2,303.3
	Carrier (USB)	2,303.3	2,303.3
HW-32	Rcvd Freq (USB):	14,350.0	14,200.0
	Het. Mixer Out:	16,656.7	16,506.7
	Rcvr Mixer Out: (LSB):	2,306.7	2,306.7
	Carrier (LSB):	2,306.7	2,306.7
	Table III: Receiver Frequencies		

and a USB output between 14.35 and 14.20 for the HW-32.

A good way to examine what is going on more closely is to track two tones as they are transmitted and later received. We'll use the HW-22 for this example with its VFO set for 7,250 kc. A good choice of tones are 400 cps and 3.1 kc as they represent the 6 dB points in the filter. These tones are fed into the microphone input, are amplified and mixed with the carrier in the balance modulator. The four outputs of the balanced modulator are the 2,303.3 kc carrier oscillator plus and minus teach of the tones or: 2,300.2, 2,302.9, 2,303.7 and 2,306.8 kc. The 2,303.3 carrier has been balanced out does not appear in the output. These four tones are fed into the crystal filter and only two remain - 2,303.7 and 2,306.4 kc. (see figure 4A).

Meanwhile, if we are transmitting with the VFO set to 7,250.0 kc, the VFO is tuned to actually produce a frequency of 1,636.7 kc. which is mixed with the 11,190.0 kc crystal heterodyne oscillator producing outputs of 9,553.3 and 12,826.7 kc as well as the two original frequencies. L5 is tuned so it passes only the 9,553.3 kc difference signal. This is true during receive also.

In the transmitter mixer, the 9,553.3 kc frequency is mixed with the two signals from the crystal filter, after they are amplified. L2 passes only signals within the 40 meter band. These are the two difference frequencies 9,553.3 – 2,303.7 and 9,553.3 -– 2,306.4, or 7,249.6 and 7,246.9 kc. Note that these two frequencies are 0.4 and 3.1 kc below the tuned frequency showing that they are LSB components of a 7,250.0 transmitted signal. These two frequencies are further amplified and sent to the antenna.

On Receive (See block diagram - Fig 6):

During receive, the incoming RF signal is first amplified and then mixed in the receiver mixer stage with the same heterodyne signal used by the transmitter mixer. As a result, the received signal is converted to the 2,305.0 kc IF frequency, and the sideband is inverted on the HW-22 and HW-32. The IF signal then passes through the crystal filter where only the desired sideband is passed. From here it is amplified and finally mixes with the same carrier oscillator used for transmit. The result is audio in the 400 cps to 3.1 kc range. The resulting frequencies are shown in Table III.

Continuing the exercise of tracking the 0.4 and 3.1 kc tones at the receiving end - if the receiver is tuned to 7,250 kc the two signals at 7,249.6 and 7,246.9 are amplified by the receiver RF amplifier and fed to the receiver mixer where they are mixed with the same 9,553.3 signal as during transmit. The difference frequencies are 2,303.7 and 2,306.4 kc, and the sideband is inverted back to USB. These two signals pass through the filter, while signals outside the bandpass are removed, or heavily attenuated. This includes any interference that might be in the other sideband's frequency range. The two signals are then amplified in the IF amplifiers and mixed in the product detector, with the crystal carrier oscillator oscillating at 2,303.3 kc. Only the audio frequencies are passed on to the audio stages, while RF frequencies are bypassed to ground. The results are 2,303.7 – 2,303.3 and 2306.4 – 2,303.3 kc or 0.4 and 3.1 kc. which are the original tones sent, and are now being heard in the receiver speaker.

Service Bulletins:

Heathkit put out several service bulletins on the HW-12/22/32. to increase stability and other improvements. Filament and other bypassing is improved, especially around the VFO. A small 0.001 capacitor is added between the mic amplifier and ground on the two higher frequency radios to curb RF getting into the audio. Bias voltages are tweaked by a resistor change and finally, on all three units, one of the bias resistors is replaced by a higher wattage resistor.

In another service bulletin, specific to the HW-32, coil cans L5 and T2 are connected together with heavy bare wire to prevent a ground-loop. T3, L2 and L3 are likewise connected. Here is a link to these mods:

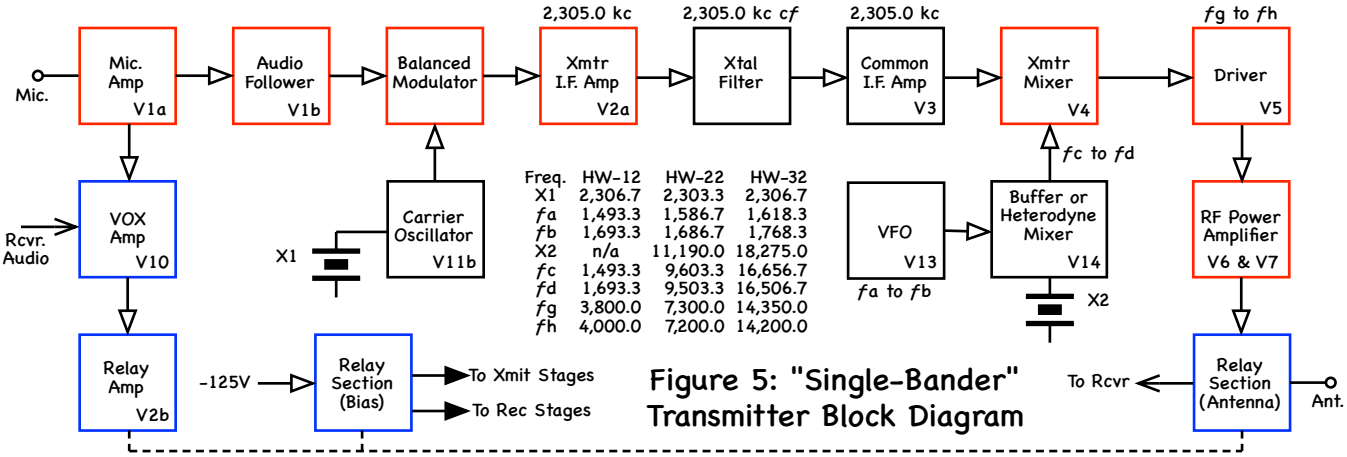


Figure 5: "Single-Bander" Transmitter Block Diagram

http://www.w6ze.org/Heathkit/TN/hw22.pdf.

Comments:

In the July 1964 Heathkit catalog there was a "Special value price" of $310 for the HW-42. This was a package deal for all three transceivers I don't know how long it lasted, but I never saw it offered in any later catalog that I have access to.

Next month we'll discuss the general tube line-up and delve into the transmitter circuitry, and, if space permits, cover the receiver circuitry as well.

73, from AF6C

Notes:

1. When this kit was released kc - kilocycle [per second] was the common term used. KHz - Kilohertz was still to be adopted. I try to use the terms that existed when the kits were introduced.
2. HP-23 Series, see HOM #26 - Mar. 2011
3. HP-13 Series, see HOM #40 - Jun. 2012

HOM(Heathkit of the Month) Articles are available at: http://www.w6ze.org/Heathkit/Heathkit_Index.html

Remember, if you are getting rid of any old Heathkit Manuals or Catalogs, please pass them along to me for my research.
Thanks - AF6C

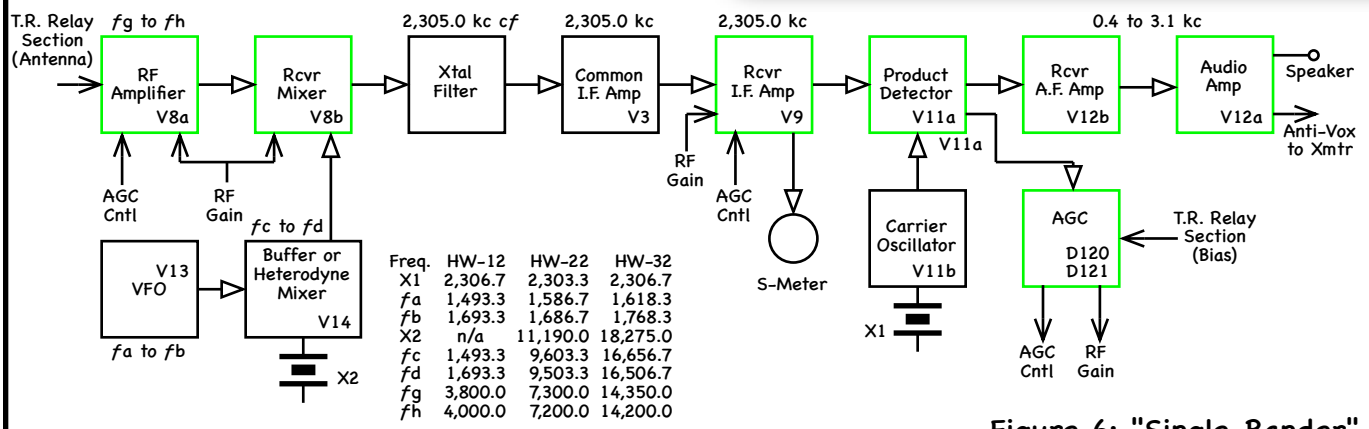


Figure 6: "Single-Bander" Receiver Block Diagram

ARRL National Parks On The Air (NPOTA) Event Is Off To Big Start

By Tim Goeppinger, N6GP

Amateur radio is helping the US National Park Service celebrate their centennial by putting as many National Park Units on the air during 2016. During the cold month of January, 283 of the 483 National Park Units have already been activated, with a total of over 72,000 QSOs. At this rate, it is possible that there will be 1 million QSOs at the end of the year.

According to ARRL NPOTA Rules, the goals of this program are:

a) Promote the capabilities of Amateur Radio to the general public through operations at eligible NPS Administrative Units.

b) Promote the NPS Centennial and the heritage of the National Park System through Amateur Radio.

c) Encourage portable Amateur Radio operation from as many of the officially-listed National Park Service administrative units and recognized Affiliated Areas as possible.

A friendly competition is encouraged by awarding certificates. One is for the "Chasers", who are trying to work as many parks as possible. The other award is for the "Activators" who go out and put the parks on the air. All QSOs must be confirmed via ARRL's Logbook Of The World (LOTW) system.

For more details on NPOTA, see the ARRL page at http://www.arrl.org/npota

Friend of OCARC, Dino Darling, KX6D was an early activator during the first weekend of January. He drove out to Joshua Tree National Park with his impressive 100 tower trailer, and made hundreds of QSOs.

There is a leaderboard available to track the number of activations and the number worked by the chasers. https://npota.arrl.org/ is a great source to see a list of upcoming park activations too.

Locally, Rick N6PE of Yorba Linda is leading the chasers with 112 parks worked as of Feb 4. OCARC member, Arnie N6HC has a fine showing at 52. Doug K6PGH has about 35 worked, and N6GP trails far behind at 8.

It is not too late to get started on working the NPOTAs. There will be hundreds and hundreds of activations, and the fierce pileups will lessen as the year goes on. Warm weather will certainly yield a lot of portable operations. Don't be surprised if a lot of Field Days are from National Parks this year too.

There are plenty of opportunities locally to activate a National Park or National Historic Trail. This is your chance to "be the DX" and work the other side of a pileup. There are many places to go to nearby, such as Joshua Tree, The Santa Monica Mountains, or the Channel Islands. The San Juan Bautista de Anza National Historic Trail offers some easy locations in Montclair, Riverside and San Gabriel. Get out there and operate!

The Desert RATS club is pleased to announce our annual HAMFEST

Walk-in Admission Fee

Admission to the 2016 Palm Springs Hamfest is $5.00 payable at the admissions windows at the Pavilion. Children 12 and under are admitted free. Parking is FREE.

Tailgating Fees

There is no fee for the tailgaters to sell there wares. Tailgaters will have to pay the $5 per person entry fee if they wish to enter the Pavilion to see the other vendors. If Tailgaters wish to spend the night before or after they will have to register for the overnight camping with a fee of $25 per night. Tailgaters need to check out the Palm Springs Hamfest website for all the details and registration form which you can do the day of the event. http://palmspringshamfest.com/home/flea-market/

Motor Homes/RV's/Overnight Camping

Overnight parking of motor homes is available at the cost of $25 per night. No motor home will be allowed into the overnight parking area prior to 3:00 PM on Friday, March 11, 2016 and all motor homes must vacate the premises no later that Sunday March 13, 2016 at 12:00 noon. Preregistration is required as space is limited to first come, first served. Registration is done via the Palm Springs Hamfest Website. http://palmspringshamfest.com/home/camping-rules/

VE Testing

Palm Springs Hamfest 2016 will again offer VE Testing. Upgrade your license at the event then get a deal on near gear from one of our fine Expo vendors — all in the same day! Testing this year will be from 9 a.m. to noon with the testing center closing at 1 p.m. See our VE Testing page for information. http://palmspringshamfest.com/ve-testing/

Speakers will be announced the beginning of February 2016

Check out the Palm Springs Hamfest Website at the beginning for February to see who our speakers will be. http://palmspringshamfest.com/home/hamfest-presentations/

OCARC General Meeting Minutes

Jan 15, 2016

The meeting was called to order at 19:03 PST (7:03 PM) by President Nicholas - AF6CF, with the pledge to the flag.

Members introduced themselves around the table. Present, were 30 members and 6 visitors (number includes some who arrived later.)

Chip - K7JA made an announcement that the President of the ARRL, Kay Craigie - K3KN is stepping down. Taking her place is Rick Roderick - K5UR. Also, Dave Sumner - K1ZZ is retiring this spring; as of the meeting his replacement has not been named. More information, and other ARRL board changes are available on the ARRL website at:

http://www.arrl.org/news/changing-of-the-guard-rick-roderick-k5ur-elected-as-arrl-s-16th-president

A roll call of officers was taken and all were present except for the Treasurer Ken - W6HHC, who had a scheduling conflict. Bob AF6C reported Ken had called, and Bob volunteered to take the minutes at the meeting.

President Nicholas AF6CF introduces the elected Officers for 2016

The Program followed:
Vice President - Tom - W6ETC gave a detailed introduction to our guest speaker Dr. Arnie Shatz MD FACS - N6HC.

Arnie gave an excellent presentation on the recent DXpedition to the French Chesterfield archipelago in the Coral Sea, about halfway between New Caledonia and Australia. We got to hear a pile-up as the DX station hears it, with the good and poor operators.

Arnie N6HC with the Chesterfield Isle sign

Challenged with high winds, thunderstorms and poor propagation, the DXpedition did not make as many contacts as they had hoped, but still eked out 50,000 contacts.

N6HC is always ready with the AED (automated defibrillator) unit if required

The 2015 TX3X Team in red & green team shirts

Break:
A break was called at 20:25 PST (8:25 PM). The club provided refreshments for the attendees and Kathleen - K6IBH brought bags of cheese popcorn to add to the feast.

The break ended at 20:45 PST (8:45 PM).

Elmer Session:
VP Tom - W6ETC introduced the Elmer session:

Nicholas - AF6CF showed and talked about a small 800 W generator and two solar panels (foldable 28W and 40W) as sources of emergency power.

Q & A Session followed:
Jeff - W6UX asked about LiPoFe and other batteries; he missed the November meeting. Tom, Nicholas and members from the floor discussed various power sources.

Tom - W6ETC asked the membership if they wanted the club to own or share a repeater. Opinions appeared mixed.

Tom - W6ETC then discussed emergency communications and whether the club is prepared or needs training. Ken W6HK, longtime Orange County RACES officer spoke. My understanding is that in a major emergency, RACES only will to communicate with their trained members. Emergency input from hams will be accepted when appropriate.

Bob - AF6C mentioned that one should be affiliated with only one emergency group; because, at a time of disaster, you can only support one group and the other group(s) will be short handed.

Good of the Club followed:
Doug - K6PGH brought up the Winter Field Day occurring on January 30th and 31st at SITE #46 at Prado Regional Park. The park entrance fee is $10 per CAR so it is best members carpool.

Nicholas - AF6CF told one of his memorable stories about the 1994 Northridge earthquake and how he drove up to just a few blocks away from the epicenter the next day to pick up his brother's family and drive them down to stay with his family in Orange County. His brother, another family member, his dog and pet iguana stayed behind to protect the house. This event got Nicholas seriously interested in ham radio. Of course, Nicholas took some emergency power and a portable TV to his brother, which provided lot's of information to his brother's power-starved neighbors, and helped bring people together as they learned more about their situation. (There was no conclusion on the whether Nicholas' brother's pet iguana became a food source and how he/she might have been prepared, despite speculation from the audience).

The meeting was adjourned at 21:47 (9:47 PM) [05:47 Zulu the next day].

Respectfully submitted,
Bob AF6C
Director at Large – and Acting Secretary

OCARC
BOARD MEETING MINUTES
2016-02-06

The OCARC Board meeting was held at the Marie Callender's Restaurant on Grand Ave in Santa Ana on February 6th, 2016. There were a total of 12 directors and members attending. There was a quorum with all Directors present except Bob AF6C.

Director Reports:

- **Membership** – Don N6XBP reported that he has updated the membership form handed out to prospective new members at the club meetings.
- **Publicity** – Vern KG6OXD reported that he will deliver more of the existing OCARC tri-fold Flyers to HRO this coming week.
- **At-Large** – Tony N2VAJ said he is looking into the availability of surplus repeaters (from an East-coast friend who can also provide technical support for Yaesu Fusion mode repeaters).

OLD BIZ:

- **Newsletter Editors**

  Feb - Tom W6ETC
  Mar - Greg W6ATB
  Apr - Tim N6TMT
  May - Bob AF6C
  June - Tony N2VAJ
  Jul - Clem WØMEC
  Aug - Greg W6ATB
  Sept - (TBD)
  Oct - Nicholas AF6CF
  Nov - Paul W6GMU
  Dec - Don N6XBP

- **Program Speakers for Club Meetings**

  Feb - Ken W6HHC on recent Digital-ATV efforts
  Mar - Tony Gawel KJ6UFG on EmComm Battery Box Basics

- **Financial Audit Committee Report**

  The Audit Committee (consisting of Ken W6HHC Tim N6TMT and Bob AF6C) approved the club's 2015 finances (see full report on Page 25) and explained the club was slightly better than "break even" last year. Tom W6ETC reported that Treasurer Greg W6ATB was well-prepared for the audit and made the review effort very easy for the auditors.

- **Field Day Site Selection Committee**

  Paul W6GMU reported that there was still NO OFFICIAL RESPONSE from the management of Los Alamitos JFTB for use for Field Day.

  A group consisting of Nicholas AF6CF, Tim N6TMT, and Paul W6GMU will visit Walter Knott school officials to discuss using the field at the WKEC.

  A "Plan C" possibility is using Prado Dam Park for FD or using some open land owned by "Second Harvest" in Irvine.

- **Field Day Chairman** – Three FD co-chairmen have volunteered. This year's FD leaders, to be called **Task Force On Field Da y,** consists of Don N6XBP, Ron W6FPS, and Ken W6HHC.

- **Membership Growth Proposals**

  The club Membership Chair, Don N6XBP, has discussed a number of ways that the club can actively drive to obtain brand new members (see January Board minutes). However, the current focus is to harvest e-mail addresses (etc.) of 20,000 hams in OC from QRZ web site and harvest ARRL members from ARRL.

  The board agreed that setting up an OCARC information table at that next HRO "Ham Jam" event will be done.

- **Membership PayPal button** - The PayPal committee will continue work on (a) creating a new account and (b) adding PayPal buttons for renewing membership and new members as time permits.

- **Need for another Assistant WebMaster** – Don N6XBP volunteered to become a second Asst WebMaster for OCARC. The WebMaster Ken W6HHC proposed web training will begin in March.

- **New WebSite Membership Database** – Don N6XBP reported that there was no progress to report on this effort – due to his priority to prepare mailings to e-mail to prospective new members

- **Website Changes Proposed** – Don N6XBP has explained that changes to the web site could improve the growth of the club membership, but there was no progress last month.
  - GOOGLE code can be used to improve the club web site "ranking" when prospective visitors perform a "Google search".
  - PHP web coding software (instead of HTML web code) could be used to always show the front page "topic links" on every page that a viewer visits.
  - Webmaster Ken W6HHC had pointed out that he can NOT allow the technology of the OCARC web site to change until all people who maintain the club web site have the same web tools and have the training to work "interchangeably" on web site.

- **OCARC VE Testing**

  Nicholas AF6CF, Don N6XBP & Tom W6ETC reported they had visited the VE Team at TRW Swap Meet to observe their VEC operations. Next task is for Don N6XBP to call a meeting with all who volunteered to be VE examiners for OCARC.

Feb Board Minutes – cont'd

(OCARC VE Testing continued)
Don also wants to obtain an EXTRA license to more efficiently handle exam materials. First club VE session is planned for March.

- **Update of Club Brochure**
The OCARC club brochure (a tri-fold pamphlet) contains outdated photos as needs to be updated. Bob AF6C has taken the marked up tri-fold and agreed to update it. There was no report of progress at the board meeting.
- **Disposal of OCARC Old Generator**
Bob AF6C has agreed to update the club website to **advertise that the generator is FOR SALE for $100** OBO
- **Winter Field Day**
Ron W6FPS reported that Doug K6PGH and he had fun at Winter FD at Prado Dam Park although few showed up. A full report *with photos is included in this RF Newsletter edition*.
- **FD BandPass Filters** – Nicholas AF6CF reported that past-president Ron Cage W6ZQ has offered a set of BandPass filters to OCARC. If the club can NOT pick up the filters at the Yuma HamFest…then Nicholas will ask Ron to mail them.
- **More Equipment Storage** – Ken will organize a pick-up work-team at his house for club equipment in March.

NEW BIZ:

- **W6ZE License Trustee** – Nicholas AF6CF will confirm Tim N6GP offer/acceptance to become the next W6ZE license Trustee.
- **Upcoming Activities** – The board members discussed a number of possible activities that could be supported by the club. Such as "Antenna-in-the-Park" events and proving coffee and donuts at the General Meetings.
- **Opportunity Drawing Plans** – The board agreed to reinstate door-prizes at OCARC General Meetings and hopes ticket sales will offset budgeted costs.
- **March General Meeting Date** – OCARC President Nicholas AF6CF noted that the date of the general meeting for March 18th conflicts with the efforts of the Baker-2-Vegas race. In order to have a good attendance for the March guest speaker, the board agreed to propose moving the March General Mtg., to **Thursday, March 17**, if the speaker and the American Red Cross can accommodate us.
- **Club Assistant Historian** – The board is asking for your help for a volunteer to assist the OCARC Historian Bob Evans WB6IXN with his efforts. This position doesn't take a lot of time.

GOOD OF CLUB:

- **Help Needed for Baker-2-Vegas Race** –
Ken W6HHC reported that The OrangePD COAR RACES group is short several people this year for the Baker-2-Vegas race (B2V) because of schedule conflicts. COAR RACES provides communications for the OPD runners during the 120-mile foot-relay-race through the California and Nevada desert. We certainly can use your help!!!!

  >The Baker-2-Vegas race is scheduled for Sat Mar 19 and Sunday Mar 20 with set-up (optional) on Friday Mar 18.

  >The next planning and logistics meeting is scheduled for Tuesday Feb 23 at 7 PM at the OPD building. If club members can help this year then please email W6HHC & Will KJ6IA willstoddard@pacbell.net. Will KJ6IA will then e-mail the police FORMS for B2V that are needed to be e-mailed back by Feb 19.
- **QUARTIZITE Ham Fest** – Both Nicholas AF6CF and Vern KG6OXD reported that they were able to the attend the QUARTIZITE event in last January. Report to follow.

Respectfully submitted by:
Ken W6HHC – secretary

OCARC
Board of Directors
meeting Feb 6th, 2016
at Marie Callendar's
in Santa Ana

OCARC Financial Report for 2015

12/31/2015

INCOME

ARRL Membership Income	$	78.00
Auction In	$	1,588.00
Badge Income	$	22.50
Christmas Dinner 2015	$	841.00
Donation	$	16.85
Dues, Family	$	130.00
Dues, Membership	$	1,030.00
Dues, Membership 2016	$	135.00
Dues, New Member	$	198.00
Field Day Food Advance	$	505.00
Opportunity Drawing IN - Christmas	$	269.00
TOTAL INCOME	**$**	**4,813.35**

OUTFLOWS

ARRL Membership Expense	$	61.00
Auction Payout	$	903.15
Bank Svc Chg	$	60.00
Christmas Dinner - Ladies Gifts	$	77.22
Christmas Dinner 2015 Food Exspense	$	840.73
Christmas Dinner 2015, Plaque Award	$	56.16
Door Prize	$	300.00
FD bathroom cleaning	$	50.00
Field Day - Flowers	$	49.04
Field Day - Gas	$	64.71
Field Day Food	$	780.00
Field Day Other	$	151.49
LIABILITY INSURANCE	$	300.00
Opportunity Drwg OUT - Christmas	$	470.45
PO Box Rental	$	56.00
Storage Locker	$	338.48
Web Site Hosting	$	179.88
TOTAL OUTFLOWS	**$**	**4,738.31**

NET CHANGE **$75.04**

Assets - Beginning Balance: 2014-12-31

Checking Statement	$	5,439.64
Savings Statement	$	0.09
Cash Box	$	-
Outstanding checks		-$223.35
Total Beginning Net Balance:		**$5,216.38**

Assets - Ending Balance: 2015-12-31

Checking Statement	$	6,102.66
Savings Statement		$0.09
Cash Box	$	5.50
Outstanding checks	$	(816.83)
Total Ending Net Balance:	**$**	**5,291.42**

Total Beginning Balance:	**$5,216.38**
Total Ending Net Balance:	**$5,291.42**
Net Change for the Year	**$75.04**

Audit Acceptance:

Tom Cowart

Tom Cowart **W6ETC**

Bob Eckweiler

Bob Eckweiler **AF6C**

Ken Konechy

Ken Konechy **W6HHC**

Greg Bohning

Greg Bohning **W6ATB,** incoming Treasurer

Date signed: **2016/January/26**

An ARRL Special Service Club

OCARC 2016 Club & Special Event Calendar

Feb 13-16, 2016 CQ WPX RTTY Contest http://www.cqwpxrtty.com/
Feb. 06, 2016 OCARC Board of Directors Meeting http://www.w6ze.org/MeetingInfo.html
Feb. 19, 2016 OCARC General Meeting @ the ARC Santa Ana http://www.w6ze.org/MeetingInfo.html
Feb. 19-20, 2016 Yuma Hamfest (Southwest Division Convention) http://www.yumahamfest.org/
Feb. 20-21 ARRL DX-CW http://www.arrl.org/arrl-dx

March 5, 2016 OCARC Board of Directors Meeting http://www.w6ze.org/MeetingInfo.html
March 5-6, 2016 ARRL DX-SSB http://www.soara.org/activities/
March 12, 2016 Palm Springs Hamfest http://palmspringshamfest.com/
*March 17, 2016 **OCARC General Meeting @ the ARC Santa Ana** http://www.w6ze.org/MeetingInfo.html **(DATE CHANGE)**
March 19, 2016 Baker to Vegas (Baker2Vegas) W7RBV Site http://www.radiobaker2vegas.org/ ???
March 26-27, 2016 CQWPX-SSB World-Wide WPX SSB Contest http://www.cqwpx.com/

April 02, 2016 OCARC Board of Directors Meeting http://www.w6ze.org/MeetingInfo.html
April 15, 2016 **OCARC General Meeting @ the ARC Santa** Ana http://www.w6ze.org/MeetingInfo.html
April 15-17, 2016 International DX Convention, Visalia CA http://www.dxconvention.org/

May 07, 2016 OCARC Board of Directors Meeting http://www.w6ze.org/MeetingInfo.html
May 20, 2016 **OCARC General Meeting @ the ARC Santa Ana** http://www.w6ze.org/MeetingInfo.html
May 20-22, 2016 Hamvention 2016 Dayton http://hamvention.org/
May 28-29, 2016 CQWPX-CW World-Wide WPX CW Contest http://www.cqwpx.com/

June 04, 2016 OCARC Board of Directors Meeting http://www.w6ze.org/MeetingInfo.html
June 17, 2017 **OCARC General Meeting @ the ARC Santa Ana** http://www.w6ze.org/MeetingInfo.html
June 24-26, 2016 ARRL Field Day, OCARC Major Event (Link?)

July 04, 2016 OCARC Board of Directors Meeting http://www.w6ze.org/MeetingInfo.html
July 15, 2016 **OCARC General Meeting @ the ARC Santa Ana** http://www.w6ze.org/MeetingInfo.html
July 16-17, 2016 North American QSO Party (RTTY) http://ncjweb.com/NAQP-Rules.pdf

Aug. 06, 2016 OCARC Board of Directors Meeting http://www.w6ze.org/MeetingInfo.html
Aug. 06-07, 2016 North American QSO Party (CW) http://ncjweb.com/NAQP-Rules.pdf
Aug. 19, 2016 **OCARC General Meeting @ the ARC Santa Ana** http://www.w6ze.org/MeetingInfo.html
Aug. 20-21, 2016 North American QSO Party (SSB) http://ncjweb.com/NAQP-Rules.pdf

Sept. 03, 2016 OCARC Board of Directors Meeting http://www.w6ze.org/MeetingInfo.html
Sept. 16, 2016 **OCARC General Meeting @ the ARC Santa Ana** http://www.w6ze.org/MeetingInfo.html
Sept. 24-25, 2016 CQWWDX-RTTY CQ WW RTTY DX Contest http://www.cqwwrtty.com/

Oct. 01, 2016 OCARC Board of Directors Meeting http://www.w6ze.org/MeetingInfo.html
Oct. 01-02, 2016 California QSO Party http://www.cqp.org/ rules: http://www.cqp.org/Rules.html
Oct. 21, 2016 **OCARC Auction** (Link Pending)
Oct. 09-11, 2016 The 34th Annual ARRL & TAPR Digital Comm. Conference https://www.tapr.org/dcc.html
Oct. 14-16, 2016 ARRL Pacific Division Convention (PACIFICON) http://www.pacificon.org/
Oct. 22-23, 2016 JOTA (Jamboree-on-the-Air) http://www.scouting.org/JOTA.aspx
Oct. 26-27, 2016 CQ Worldwide DX Contest, SSB http://www.cqww.com/

Nov. 05, 2016 OCARC Board of Directors Meeting http://www.w6ze.org/MeetingInfo.html
Nov. 05-07, 2016 ARRL CW November Sweepstakes http://www.arrl.org/sweepstakes
Nov. 19-21, 2016 ARRL November Sweepstakes Contest, SSB http://www.arrl.org/sweepstakes
Nov. 20, 2016 **OCARC General Meeting @ the ARC Santa Ana** http://www.w6ze.org/MeetingInfo.html
Nov. 26-27, 2016 CQ Worldwide DX Contest, CQ http://www.cqww.com/

Dec. 02-04, 2016 ARRL 160-Meter Contest http://www.arrl.org/160-meter
Dec. 10-11, 2016 ARRL 10-Meter Contest http://www.arrl.org/10-meter
Dec. TBD, 2016 OCARC **OCARC Holiday Party** (Marie Callender's Yorba Linda / date & booking pending)

Quick-View OCARC 2016 Calendar and Topic Schedule

	OCARC Membership**	Board of Directors Meeting [B]
1	1/15	1/09*
2	2/19	2/06
3	3/17*	3/05
4	4/15	4/02
5	5/20	5/07
6	6/17	6/04
7	7/15	7/09*
8	8/19	8/06
9	9/16	9/03
10	10/21	10/01
11	11/20	11/05
12	Club Christmas Party TBD	TBD

*Indicates Change to normal schedule. OCARC Board of Directors normally schedules breakfast meetings on the 1st Saturday of each month *unless otherwise indicated.* [B] Indicates Breakfast available at extra cost, meeting held offsite at a location TBD
**OCARC membership meetings are typically held the 3rd Friday each Month

MARCH MEETING ONE TIME DAY/DATE CHANGE

SPECIAL NOTICE!

The Orange County Amateur Radio Club regular meeting for March 18th, 2016 will be changed to Thursday, March 17th, 2016.
Location (the American Red Cross, Santa Ana) and times (7-9PM) remains the same.

The Orange County Amateur Radio Club has the following Generator For Sale

Groban 4,000 Watt Generator with Towable Trailer
Rated 4KW 120/240 VAC 60 Hz @ 3,600 RPM

$$$ Make us an Offer $$$

Details/Condition: • Originally purchased March 24, 1986 from Santa Fe Tooline Supply
- Briggs & Stratton (8 or 10 hp) engine? Electric start, meter panel & circuit breakers. Eng. overhauled 1994+-.
- Generator is mounted on a Harbor Freight trailer for towing with lights & spare tire.
- Trailer had been licensed for the road but registration has recently expired.
- Unit was used each Field Day only from 1986 through 1999 without any serious problems.
- It was know to be running in June of 2006.
- Unit has been stored ourside under a tarp at one of OCARC members home since that time.
- It has not been running since then and may need some minor to extensive work?
- Total running hours on the meeting is estimated at 350 hours.
- Engine was overhauled approximately 1994.
- A new battery is required for electric start & Carburetor needs rebuilding (leaks fuel).
- Condition of tires is not known but more than likely may need to be replaced due to its age.
- The equipment is located in the City of Fountain Valley, CA

For more information email ocarc_info.org or check update details on the **OCARC website** www.w6ze.org website for the most up to date information on the generator for sale. Equipment offered subject to prior sale without notice.

Radio 101

The Emergency Radio Communications group will be having a Radio 101 class on Thursday, February 25, 2016 from 6:30 pm to 9:00 pm. The class will be at the Church of Jesus Christ building. 210 W. Livingston Ave., Placentia, CA 92870.

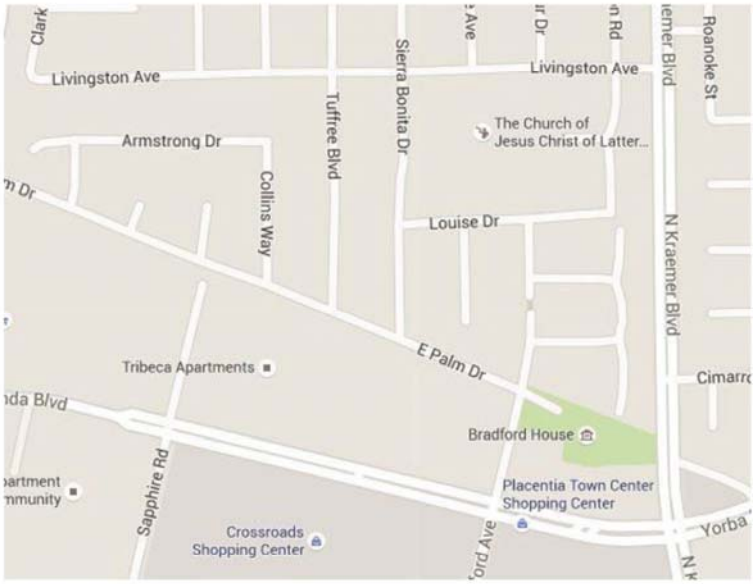
YOU MUST REGISTER IN ORDER TO ATTEND!

To register, contact Mark Garrett at
Mark_L_Garrett@yahoo.com

Or Bill Burbridge at bcburbridge@sbcglobal.net

We will cover the following:

1. General Radio Operations
2. Radio Range
3. Transmitter Power Options
4. Personal Use of Radio
5. Local Frequencies
6. Public Service and Ham Radio
7. Basic Emergency Operations
8. Long Distance Communication
9. Local Amateur Radio Groups
10. Types of Nets
11. Equipment
12. Community Activity
13. Radio Programming



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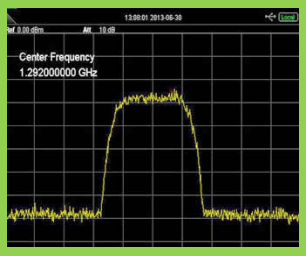
***Placentia RACES** in coordination with*

*The Church of **JESUS CHRIST** of Latter-day Saints*

Digital Amateur TeleVision Exciter/Transmitter



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DATV-Express

- A more affordable DATV exciter can now be ordered
- Fully assembled and tested PCBA
- DVB-S protocol for DATV (using QPSK modulation)
- Can operate all ham bands from 70 MHz-to-2450 MHz
- RF output level up to 10 dBm (min) all bands (DVB-S)
- Software Defined Radio (SDR) architecture allows many variations of IQ modulations
- “Software-Defined” allows new features to be added over the next few years, without changing the hardware board
- As extra bonus, the team has been able to get the board to transmit DVB-T 2K mode, however we cannot guarantee the performance of that protocol. Caveat Emptor!
- Requires PC or ODROID running Ubuntu Linux (see User Guide)
- Price is US$300 + shipping – order using PayPal

For more details and ordering
www.DATV-Express.com

Register on the web site to be able to see the PURCHASE page