

VOL. LII NO. 2 P.O. Box 3454, Tustin, CA 92781-3454 February 2011

The PREZ Says:



Howdy, fellow OCARC'ers and welcome to February. So far, per and since the January Board Meeting, ideas have been put forward to expand upon the "Portables in the Park" activity and a kit-building class that might be developed. We've started gathering our resources to ensure that we'll have a great Field Day, though we're still looking for a Field Day Czar and Band Captains. George, N6VNI, is doing a great job assembling an exciting line of speakers for upcoming meetings. I hope you all find these developments as uplifting as I do. Happy February, All!

Paul – W6GMU

TABLE OF CONTENTS

Prez Says 1	Spotlight (Cont.) 9	Submit an article 19
Club Contacts & Info. . . . 2	Spotlight (Cont.) 10	A Brief History of Radio . . 20
General Meeting Minutes. . . 3	Spotlight (Cont.) 11	History (Cont.) 21
Meeting Minutes Cont. . . . 4	Announcements 12	History (Cont.) 22
February Speaker Bio. . . . 4	Renew Membership 13	History (Cont.) . . . 23
Speaker Bio Cont. . . . 5	Ham Cuisine 14	History (Cont.) 24
Visalia DX Convention 6	Heathkit of Month #26 . . 15	Valentine Word Search . . . 25
100 th Birthday 6	Heathkit (Cont.) 16	
Chinese HT's 7	Heathkit (Cont.) 17	
Member Spotlight . . . 8	Heathkit (Cont.) 18	



**THE ORANGE
COUNTY
AMATEUR RADIO**



Club Dues:

Regular Members...\$20
Family Members*...\$10
Teenage Members...\$10
Club Badge**...\$3

Dues run from Jan. through Dec. & Are prorated for new members.

* Additional members in a family of a regular member pay family rate up to \$30 per family

** There is a \$1 charge for the badge being mailed to you.

ORANGE COUNTY AMATEUR RADIO CLUB – W6ZE

2011 Board of Directors:

President:

Paul Gussow, W6GMU
(714)624-1717
w6gmu@w6ze.org

Vice President:

George Jacob, N6VNI
(562) 544-7373
n6vni@w6ze.org

Secretary:

Doug Britton, W6FKX
(714) 969-0301
w6fkx@w6ze.org

Treasurer:

Ken Konechy, W6HHC
(714) 744-0217
w6hhc@w6ze.org

Membership:

Jeff Hall, W6UX
(949) 697-9279
W6ux@w6ze.org

Activities:

Kristin Dankert, K6PEQ
(714) 544-9846
k6peq@w6ze.org

Publicity:

Steve Brody, N1AB
(714) 974-0338
n1ab@w6ze.org

Technical:

Bob Eckweiler, AF6C
(714) 639-5074
af6c@w6ze.org

Members @ Large:

Dan Dankert, N6PEQ
(714) 544-9846
n6peq@w6ze.org

Larry Mallek, K6YUI
(714) 533-0887
k6yui@w6ze.org

2011 Club Appointments:

W6ZE club license trustee:

Bob Eckweiler, AF6C
af6c@w6ze.org

Club Historian:

Bob Evans, WB6IXN
(714) 543-9111
bobev1@netzero.net

RF Editor for February:

Kristin Dankert, K6PEQ
k6peq@w6ze.org

WEB Master:

Ken Konechy, W6HHC
w6hhc@w6ze.org

Assistant WEB Master:

Bob Eckweiler, AF6C
af6c@w6ze.org

ARRL Awards Appointee:

Arnie Shatz, N6HC
n6hc@aol.com

Larry Beilin, K6VDP
k6vdp@aol.com

OCCARO Delegate:

Kristine Jacob, KC6TOD
kc6tod@w6ze.org

MONTHLY EVENTS:

General Meeting:

Third Friday of the month
at 7:00 P.M.

AMERICAN RED CROSS
601 N. Golden Circle Dr.
(Near Tustin Ave. & 4th St.)
Santa Ana, CA

Club Breakfast:

Second Saturday of the month
at 8:00 am

Jaugerhaus
2525 E. Ball Road
(Ball exit off 57 freeway)
Anaheim, CA

Club Nets (W6ZE):

7.086 ± MHz CW OCWN
Sunday 9-10 a.m.

John WA6RND, Net Control

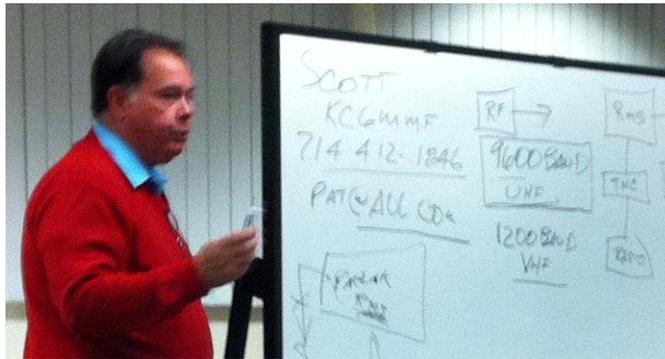
28.375 ± MHz USB
Wednesday 7:30-8:30 p.m.
Bob AF6C, Net Control

146.55 MHz Simplex FM
Wednesday 8:30-9:30 p.m.
Bob, WB6IXN, Net Control

OCARC General Meeting Minutes January 21, 2011

The OCARC January General Meeting was held at the Red Cross complex in Santa Ana at 7:03 pm on Friday evening, January 21st, 2011. There were a total of 45 members and visitors present. Seven club officers were present for a quorum.

Paul W6GMU opened the meeting with the Pledge of Allegiance. George N6VNI introduced our speaker for the evening, Scott Byington KC6MMF the Orange County Radio Amateur Civil Emergency Service (OCRACES) Radio Officer, who spoke on the OCRACES Winlink system.



Scott KC6MMF explains workings of WinLink

The Winlink system is a tool that supports OCRACES's emergency communications by providing Email transmission via amateur radio in the event of a loss of internet service. Scott diagramed the process of interfacing an amateur radio with popular Email programs through the use of a personal computer running the software Paclink. There are 3 main sites in Orange County for handling the emergency traffic if needed. Should these site become inactive over 20 client sites can be activated to receive incoming emergency messages. Not only can emergency messages be transferred via VHF or UHF, four HF sites are active, although data transmission is much slower (300 baud). Thanks Scott for your presentation and for your efforts in supporting Orange County's emergency preparation. As Scott wrapped up his presentation he noted that any amateur operator interested in supporting the program by volunteering would be welcome! He can be contacted at KC6MMF@ocraces.org.

And thanks Ken W6HHC for providing the photo!

SHOW & TELL – None presented. Remember if you have something for the Show and Tell bring it to the next meeting!

Field Day 2011 – George N6VNI reported that the Walter Knott School has confirmed that we will be able to use the site for the clubs ARRL Field Day, thanks George. A field chairman or co-chair is/are needed to get the field day organized.

**OCARC General Meeting Minutes
January 21, 2011 Continued...**

GOOD of THE CLUB – Kristin K6PEQ graciously set up a Facebook page for the club, just search for “W6ZE” and follow the updates!

Just a reminder that the OCARC Board Meetings will now be held on the second Saturday of each month at 8:15 AM at the Jagerhaus Restaurant, 2525 East Ball Road Anaheim. Visitors are welcome.

Motion to adjourn at 8:20 pm, seconded by all (sorry members, the secretary will record the “who” better next time, no he must be flogged). Followed by the raffle.

Submitted by:
Doug Britton W6FKX
OCARC Secretary



**February Meeting Speaker
Janet Margelli, KL7MF**

Janet will be our speaker at our February meeting on the 18th. She will be talking about the history of HRO. I hope you will be able to all come out and here about Ham Radio Outlet and how it all began! Below is a short bio on Janet and you can see the love she has for our great hobby.

Janet Margelli, KL7MF, has been licensed since 1973, and an Extra Class licensee since 1997. Janet and her husband Chip, K7JA live in Garden Grove, California. Janet is the Manager of Ham Radio Outlet in Anaheim, California, and is a Life Member of ARRL.

Originally licensed as WN7WMB in Tacoma, Washington, Janet received a technical degree from Bates Vocational/Technical Institute, and received the First Class (Commercial) Radiotelephone License, with Radar Endorsement, upon graduation. From 1970 until 1977, she was Operations Manager and Studio Engineer at KLAY-FM in Tacoma, moving to KCTS-TV in Seattle in 1977-1978 as a Master Control Switcher.

In 1978, Janet married Chip, swung through Micronesia on her honeymoon, then settled in Tokyo, Japan until 1980. In Tokyo, she worked for Yaesu Musen Co., Ltd, a manufacturer of amateur radio equipment, and continued her employment with Yaesu at their Southern California subsidiary until 1984. Since 1984, Janet has been employed by Ham Radio Outlet, becoming Manager in 1993.

Travel has been a huge part of Janet's life, often in conjunction with amateur radio activities. In 1984, Janet and Chip were invited by the Chinese Radio Sport Association to travel to Beijing for operation from BY1PK helping to train the new Chinese operators during the early phases of the rebirth of Amateur Radio in China. Janet has also traveled to Hong Kong, Saipan and many islands in Micronesia, Dominica, Antigua, the U.S. Virgin Islands, Puerto Rico,, Aruba, Bonaire, Curaçao, Martinique, Jamaica, The Bahamas, Barbados, and Ireland, plus many visits to Alaska, Hawaii, and the U.K.



In 1994, Janet accepted commissions by two magazines to visit the Havana area to document the participation by members of the *Federación de Radioaficionados de Cuba* in the ARRL June VHF QSO Party, which included operation as COØFRC and CO2/WA7WMB. Theirs was the first group of American radio amateurs to be so honored. A feature article by Janet appeared in *QST* in late 1994. In 2003, Janet and five other members of the Piña Colada Contest Club (KP2AA) joined forces with the FRC in the first-ever joint Cuba-U.S. Field Day operation as COØUS. This operation marks the first occasion where a Treasury Department Specific License was granted for a public Amateur Radio demonstration involving U.S. Amateurs.



Outside of amateur radio, Janet enjoys photography, art, and reading. And, yes, she's an addicted farmer on Facebook.



Photo: Janet and Chip in Dayton

ATTN: All DX & Contest Enthusiasts

**From: Northern California DX Club
Steve Jones N6SJ, Publicity Chair**



Subject: Visalia DX Convention!

===== **PRESS RELEASE** =====

DXers! Contesters! Don't miss our 62nd annual International DX Convention April 15-16-17, 2011 in Visalia, California. Enjoy DXpedition presentations - Technical sessions - Vendor exhibits - Contest Academy - Ladies Tour - Golf Tournament - Saturday Banquet - Over \$25,000 in raffle prizes - and meet DXers who travel from around the world to this premier DX event. Early registration closes on March 19th, so register today at <http://www.dxconvention.org/>

=====

100th Birthday!

Hi Everybody, ☐

☐ On Feb 24th QCWA Chapter 154 in West Palm Springs is celebrating Leo's 100th birthday. For those that don't remember **Leo owned and operated World Radio Laboratories (WRL) in Council Bluffs, IA** for many years. ☐ ☐ So here's the plan, take a QSL card, write 'Happy 100th Birthday Leo' on it and send it to: ☐ ☐
Leo Meyerson, W0GFQ ☐
19 Park Lane ☐
Rancho Mirage, CA 92270 ☐ ☐

Gene Pentecost, President of Chapter 154 will make sure they get to the party so everyone that attends can enjoy them. ☐ ☐ One last thing, tell every ham you know to do the same thing, QCWA member or not. Spread the word, at every radio club meeting you attend, at every net you check into. ☐ ☐ I want Leo to get hundreds, maybe even thousands of cards. ☐ ☐

tnx es 73, ☐
Bob Roske, NØUF
☐ QCWA President



Using Chinese HTs Legally

by Capt. Ken Bourne W6HK, OC RACES Chief Radio Officer

(from "NetControl"...the Newsletter of the County of Orange Radio Amateur Civil Emergency Service)

The new inexpensive Chinese HTs (hand-talkies), such as the Wouxun model KG-UV3D dual-band (2 meters/440 MHz or 2 meters/220 MHz) and model KG-833 UHF-only, when purchased, are normally limited to transmit only on amateur frequencies. However, unlocking software is readily available for download, to allow the HTs to operate on Part 90 "commercial" frequencies, for which they are FCC certified. For example, the model KGUV3D, when unlocked, will transmit from 136 to 174 MHz and (in the 2-meter/440-MHz version) from 420 to 470 MHz. It features a two-band display that toggles between alphanumeric, actual frequency, or channel number per band. The KG-833 has no display, and covers 16 channels from 400 to 470 MHz. Both models provide voice annunciation when switching channels.

At less than \$120 for the dual-band model and less than \$100 for the UHF-only model, the HTs are competing with the more expensive amateur-only HTs from Japan (and the expensive commercial HTs from US and Japanese manufacturers), but are causing concern that untrained and unauthorized individuals might use them inappropriately on public-safety frequencies.

A few years ago, OCRACES officers were issued Motorola HT1250 VHF highband HTs, programmed for public-safety frequencies (such as County Admin, CLEMARS, NALEMARS, state and federal fire channels, etc.), in addition to 2-meter repeater and simplex frequencies. The new Chinese dual-band radios can be programmed for these same frequencies, as well as public-safety UHF channels such as Blue, Amber, Maroon, CLEMARS, and MED-10. Orange County Red Cross members are programming their HTs for the Red Cross OPS-1 channel.

The Chinese HTs will comply with the Part 90 narrowband regulations that go into effect on January 1, 2013. Therefore, any HTs currently used by OCSD Search & Rescue on Blue channel, for example, that are not "narrowbandable," may be replaced inexpensively. Several OCSD Reserve Deputies and PSRs have already purchased these HTs for use on Blue and other OCSD channels, and, if they are radio amateurs, also for use on the ham bands.

Another concern is that non-amateurs who purchase these Chinese HTs might be tempted to "bootleg" on amateur frequencies, since they are easily programmed for amateur use. Therefore, we in RACES must be diligent in preventing illegal operations, either by non-amateurs invading our RACES repeaters, or by amateurs transmitting on public-safety frequencies without authorization and training.

The new Chinese Part 90 HTs must never be programmed to transmit on GMRS, FRS, and MURS frequencies. Such operation is illegal, since those services fall under FCC Part 95, for which the HTs are not certified. Some amateur-only HTs can be modified to transmit on Part 90 frequencies, but that is illegal. Non-certified HTs can cause spurious emissions that could interfere with adjacent-channel communications.



Member Spotlight: Jeff Hall, W6UX



Jeff (W6UX) and wife Jennifer (K6JTX) at W6ZE Field Day 2010

Jeff first became interested in radio shortly after getting his driver's license in 1989. He and friend Rich put CB radios in their cars so they could "talk to strangers and meet cute girls". They never met any cute girls but one night while cruising around Huntington Beach they made contact with a local ham that was monitoring the CB channel they had been yakking on. He invited them over to see his station so they checked it out and were blown away by his setup (1kW of power, an antenna that could rotate, and way too many knobs and buttons on his HF radio). He even had a Commodore 128 computer running packet. The amateur radio seed was planted in the back Jeff and Rich's head that night. But college life was about to begin so fun on the radio would have to wait.

A few years later in 1996 Jeff took up the sport of Paragliding. The best local spot for hang gliding and paragliding is Marshal Peak, just above Cal State San Bernardino. Pilots and instructors there like to use hand held 2m radios for communications so a Tech license was needed and obtained (licensed as KF6DFJ). Have you ever operated simplex while circling in a thermal with Red Tail Hawks thousands of feet over the ground? The birds tolerate your presence, but they don't QSL! Jeff doesn't fly anymore but he still has the Yaesu FT-11R he carried aloft.

In 2002 he and wife Jennifer were recruited by local off-road rally organizers to help with radio communications. It's quite a thrill to stand on the side of the course with cars racing by (often at night) going 100 MPH just feet from where you stand! Ham radio operators are an essential part of rally races because the courses are often in remote areas. Usually an NCS is put on top of a hill that has line of site with most parts of the course. 2m simplex operation between course marshals and the NCS is used to track the progress of each car as it passes the various check points along a rally stage. The excitement of these races renewed Jeff and Jennifer's interest in ham radio so they obtained their General class

Member Spotlight Continued...

licenses at Field Day 2002 (licensed as W6EZY and K6JTX). But, life has many distractions (snow boarding, mountain biking, road bicycle racing, salt water aquariums, family obligations, etc) and so they never got around to using their new HF privileges.

In the fall of 2009 Jeff got interested in radio again after learning about all the digital modes, contesting, and awards offered to HF operators. High school friend Rich just happened to have an ICOM 725 gathering dust in his garage and it made a fine rig to test conditions at Jeff's QTH. At the advice of a local Elmer, a 20m ham stick with a few radials was mounted on the roof to test receiving noise levels and the ability to see what 100 watts might be good for. Only a few contacts were made, given the limited antenna setup, but there was no local interference detected and after hearing Japan for the first time he decided it was time to make a serious investment in the hobby. A multi-band doublet was erected in the backyard and the HF QSOs began rolling in. As a reward for passing the Extra exam in March 2010, Jeff purchased and built an Elecraft K3 radio and changed his call to W6UX.



W6UX's shack: ladder line feed is routed inside the wall to the attic, then out to the antenna

Since then, Jeff has made nearly 1000 QSOs including contacts to all 50 states and dozens of DX entities. Jeff enjoys working SSB and digital modes (specifically PSK-31 and RTTY). He has experimented with operating a WSPR beacon and continues to make small modifications and improvements around his shack. When taking long road trips Jeff uses a Yaesu FT-857D for HF/VHF/UHF mobile and portable operating. Jeff participates in all the major contests, and especially enjoys the RTTY contests. All of this from a small lot in Irvine, CA using a dipole antenna. You don't need a tower to enjoy this hobby!

Jeff discovered W6ZE while searching online for local clubs. After attending the January 2010 meeting he signed up and participated in Field Day, volunteered at the OC Fairgrounds Ham booth, and helped organize a portable operating event held last November. This year he is serving as Membership Chairman and has volunteered to be band captain for Field Day 2011. He is also planning more portable operating events for club members to enjoy. Jeff regularly checks into the

Member Spotlight Continued...

Club's 10m and 2m nets, and also participates in the 3905 Century Club nets on 40m. Jeff's favorite local repeaters are the Avalon 2m repeater (147.090 MHz) and the WIN System 70cm repeater (448.060 MHz).

Jeff's long-term Ham radio goals include learning CW, becoming a more efficient contester, and working satellites. Eventually he would like to participate in a DXpedition (preferably somewhere sunny and no chance of political revolution). One day he and Jennifer plan to relocate to Arizona or Texas where a tower and beam can be erected antenna to do some serious contesting and DX award chasing.

Base Station Equipment

- DX Engineering 10-40m "inverted-v" doublet @ 43 feet (uses 3 fiberglass masts)
- Diamond X50 2m/70cm Vertical @ 20 feet (roof mounted on vent post)
- Elecraft K3/100 (serial # 3972) [Auto tuner, DVR, 1.8 kHz & 400 Hz filters, 1 ppm TXCO]
- Yaesu FD-857D (2m/70cm bands)
- Yaesu FT-11R 5w 2m HT
- microHAM MicroKeyer II digital interface (for digital mode ops)
- MFJ-260C 300w dummy load (for K3 calibration)
- Astron RS-35M power supply
- RigRunner 4008 DC power distribution panel
- K8RA paddle
- Yamaha CM-500 headset w/boom mic
- Elecraft MH-2 mic
- Dell Dimension C521 1.8GHz PC w/4 GB RAM
- N3FJP Amateur Contact Log (main logging program)
- N1MM Contest Logger (digital and SSB contesting)
- Airlink Express (casual PSK-31 operating)
- microHam Router (interface software for Micro Keyer)



VHF/UHF vertical and HF "inverted-v" dipole as seen from the front yard

Member Spotlight Continued...



A view of the HF dipole from the backyard; fiberglass masts made by Max Gain Systems

Jeff offers this advice to new Hams and those that want to setup their first HF base station: Before you spend a dime, determine what type of antenna you can setup at your QTH that will offer the most bandwidth. In a restricted neighborhood you have to get creative to avoid violating your CC&Rs. A telescoping mast is one way to hide a vertical wire antenna or inverted v dipole during the day, but you'll need an antenna that works on night-time bands like 40 and 80 meters. A stealth wire antenna thrown up in a tree and tuned with an auto-tuner such as an SGC-239 also gives you a lot of options. I like multi-band dipoles and doublets because they are relatively inexpensive and give you a lot of operating bandwidth. Once you have your antenna installed, borrow an HF radio and test the antenna. After a few months of operating you'll have a better idea of what features you prefer in a radio (and you'll also know if you have a neighbor that doesn't like the site of your antenna!).

For more pictures and details on Jeff's station check out his profile page at QRZ.com.

W6ZE wants to know more about you! If you'd like to be featured in an upcoming issue of RF Newsletter, please contact Jeff, W6UX: w6ux@w6ze.org



ANNOUNCEMENTS

GET READY FOR PORTABLES IN THE PARK 2011!

W6ZE is excited to announce a series of portable operating events for 2011. Our November 2010 event was a lot of fun and a great way to experience how to get a radio up and running on solar and battery power. This year we plan to hold events in April, August, and October. Our first event is scheduled for **Saturday, April 23rd, 2011** (on the weekend following the International DX Convention and Baker To Vegas events). This is the perfect opportunity to try out that new antenna you've been working on for Field Day or to dust off your old portable equipment to make sure it's still in good working order. There is no substitute for getting on the air and these events aim to educate those new to portable operating. See how it's done, ask questions, do some operating, then build your own portable station and bring it out to a future event! Members will be able to operate their mode of choice including SSB, CW, and perhaps Digital in a relaxing, NO PRESSURE atmosphere (don't be mic shy!). The location will be determined in the coming weeks so stay tuned for further information. So start working on your portable station and bring it out this Spring! **BE SURE TO MARK SATURDAY APRIL 23, 2011 ON YOUR CALENDAR!**



W6ZE IS ON FACEBOOK!

W6ZE is excited to announce we are on Facebook. Look us up under
W6ZE – Orange County Amateur Radio Club.

Come post a country heard on the air, look for advice on an antenna issue or just see what is coming up or new in our club! If there is something you would like added to the page, let Kristin know at k6peq@w6ze.org or friend her on Facebook! We look forward to seeing you on the air and online!



Renew Your OCARC Membership

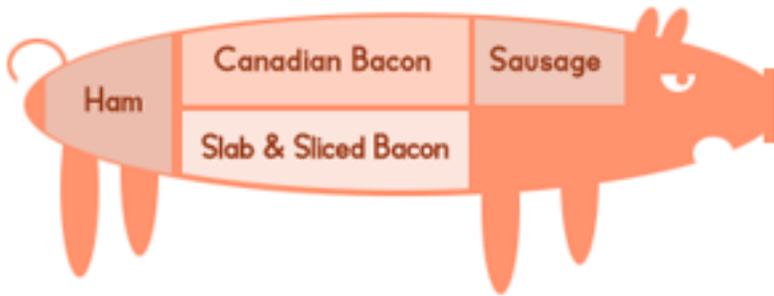
It's that time of the year again. Time to renew your OCARC membership for 2011, if you have not already done so.

Help continue to support your growing club. There are many entertaining monthly meetings, speakers and events planned for this year. But it can't happen without your support for OCARC.

Dues can be paid at the monthly club meetings, club breakfasts or via snail mail. Regular dues are only \$20. Additional family members are \$10 (Total). Membership for teenagers under the age of 20 is only \$10 as well. What a deal!



OCARC
P.O. Box 3454
Tustin, CA 92781



Ham Cuisine

by Kristin, K6PEQ

Ham and Cherry Stuffed Chicken A Valentine's Dinner Delight!

INGREDIENTS:

4 (6 ounce) boneless skinless chicken breast halves, pounded flat
8 slices lean ham
1/4 cup dried cherries
1 teaspoon fresh rosemary, chopped, or 1/2 teaspoon crumbled dried
Nonstick cooking spray

Sauce Ingredients:

1/4 cup white wine
1/4 cup dried cherries
Sprig fresh rosemary
Pinch of salt

DIRECTIONS:

On each chicken breast half, position 2 ham slices, 1 tablespoon cherries and 1/4 teaspoon rosemary. Roll tightly and secure with wooden picks or skewers. Spray a large skillet with nonstick cooking spray and lightly brown the chicken. Transfer to a 9-inch square baking dish and bake at 350 degrees F for 30 minutes or until chicken juices run clear. Remove wooden picks or skewers from chicken and slice. Pour pan juices into a skillet; add wine, cherries and rosemary; cook to reduce volume of sauce in half. Add salt and spoon sauce over each serving.

Serve with rice and a nice white wine followed by something chocolate and decadent for dessert!



Heathkit of the Month #26:
by Bob Eckweiler, AF6C



**Heathkit HP-23A/B/C/E (and more)
AC Power Supply Family.**

Introduction:

Many of the Heathkit HF and six-meter transceivers and twin radios were designed to run either mobile or in a fixed location. Since these are tube radios they require high voltage power, and Heath decided to make the power supply for these radios separate from the radio. The savings in size and weight benefits its use in mobile service. Two types of power supplies were manufactured to support the Heath radio line. The first type runs off household standard AC power for home stations, and the second runs off the car electric system, or other 13.8 volt DC auxiliary power system.



Figure 1 - Heathkit HP-23

This month we'll look at the AC power supplies that Heath manufactured for home use of its various transceivers and twins. The early AC power supplies run only on 120 VAC but later they were updated with dual primary windings on the power transformer so they can be used on either 120 or 240 VAC. Prior to this Heath made a separate 240 VAC 50 Hz supply for use in Europe.

OCARC RF Newsletter – 2011 February

The UT-1 Power Supply:

Manufactured for only one year - 1960, this power supply was introduced to power the Heathkit Cheyenne MT-1 90 watt mobile AM transmitter and Comanche MR-1 mobile receiver. It provides 300 volts for the receiver and transmitter stages and 600 volts for the final. By a simple change in wiring either 6.3 VAC at 8 amps or 12.6 VAC at 4 amps filament power can be chosen. No negative bias voltage is provided nor needed. The 600 volt output can supply up to 200 ma and the 300 volt output can supply up to 100 ma provided the total continuous power drawn from those two outputs is 120 watts or less. The high voltage supply utilizes a voltage doubler circuit with the half voltage tap providing the low voltage output. Power output is provided by a six blade Jones plug. The AC line is well filtered for RF with a pi filter in each lead. The only controls on the unit are a power switch and a pilot light. The UT-1 was replaced by the HP-20 in 1961.

The HP-20 Power Supply:

Heath manufactured the HP-20 from 1961 through 1963. Circuit-wise it is very similar to the UT-1 with the addition of -130V 30 ma bias power. This is provided by an additional winding on the power transformer. The filament, LV and HV power specifications are the same as the UT-1. The only other change is the Jones plug on the UT-1 is now an octal tube socket type connector. This was most likely done for cost savings. The bias power requirement was driven by the release of the HX-20 mobile SSB Transmitter and the HR-20 mobile SSB receiver. The HP-20 could be used in place of the UT-1 for the MT-1 and MR-1 twins.

The HP-23 Power Supply:

In 1963 Heathkit introduced three single-band 200 watt PEP SSB transceivers. The HW-12, HW-22 and HW-32 'Singlebanders' covering 80M, 40M and 20M respectively. With the added power required by these rigs, a new AC power supply was needed. Heath's answer was the HP-23. This power supply has the same 9" x 4-3/4" footprint as the HP-20 but is 3/4"

taller. It supplies a high voltage of 820 volts at no load dropping to 700 volts at 250 ma. Up to 150 ma may be drawn continuously or up to 300 ma at a 50% duty cycle. The low voltage section supplies either 350 volts or 275 volts at no load dropping to 300 volts or 250 volts at 150 ma (with a 100 ma load concurrently on the HV section). A choke is used in the supply to minimize AC ripple. Maximum continuous current from the LV supply is 175 ma. The two voltage ranges are selected by an internal wiring change. The fixed bias supplies -130 volts no load dropping to -100V at up to 20 ma. is capable of continuously supplying up to 30 ma. An adjustable bias of -80 to -40 volts at 1 ma is also available. This voltage is set by a screwdriver adjustable pot on the rear apron of the power supply. Filament voltage is 12VAC at 5.5A with a center-tap to allow up to 11 A at 6.3V. Controls on the front panel are a power switch and a neon pilot light. On the rear is the power cord with a two prong fused wall plug, adjustable bias potentiometer and an eleven-pin tube socket connector for power output. This power connector includes two wires to allow the use of a remote ON-OFF switch on the transceiver itself which, if used, is in series with the power switch on the front of the power supply. The HP23 remained in production until 1968 when it was upgraded to the HP-23A.

The HP-23E Power Supply:

Heath manufactured an European version of the HP-23 with the model number HP-23E that was designed for 240VAC 50 Hz AC power.

The HP-23A Power Supply:

By 1968 Heathkit had more transceivers in production that could use the HP-23 power supply. This included the SB-100 and HW-100. In 1968 Heath refined the HP-23 power supply by adding dual primaries to the power transformer so the unit could run off of either 120 or 240 VAC, obsoleting the HP-23E. At the same time the fuses were removed from the AC plug and a circuit breaker was added to the chassis. Small modifications were done to the low voltage section; the bleeder resistor was increased

from 50K to 100K and the power switch was replaced with a three position toggle switch that allows selection of either of the two low voltages without the necessity to rewire the unit. The pilot light was also removed. The HP23A stayed in production until 1973 when it received some new changes and was renamed the HP-23B.

The HP-23B Power Supply:

The HP-23B is more takeaway than addition. Gone are the adjustable bias supply and the center tap lead of the filament transformer; now only 12.6 VAC filament voltage (at 5.5A) is available. The addition is a three wire grounding AC plug and cord that replaces the two-wire AC cord on the earlier units. The HP-23B remained in production from 1973 to 1978 when the new HP-23C was introduced.

Radio	Introduced	Last Sold	Power Supplies
MT-1 / MR-1	1959	1962	UT-1, HP-20
HX-1 / HR-1	1962	1964	HP-20, HP-23 - 23A
HW-12/22/32	1963	1966	HP-23 - 23C, PS-23
SB-100	1965	1967	HP-23 - 23C, PS-23
HW-12A/ 22A/32A	1966	1974	HP-23 - 23C, PS-23
SB-101	1967	1970	HP-23 - 23C, PS-23
HW-100	1968	1971	HP-23 - 23C, PS-23
SB-102	1970	1975	HP-23 - 23C, PS-23
HW-101	1970	1975	HP-23 - 23C, PS-23
SB-110	1965	1969	HP-23 - 23C, PS-23
SB-110A	1969	1971	HP-23 - 23C, PS-23

Table 1: Radio Power - Supply Matrix

The HP-23C Power Supply:

The HP-23C continued the takeaway changes. It no longer had the three-position toggle power switch. Instead the power is only controlled by the remote switch on the transceiver. The selection of the two levels of low voltage is again selected by a wiring change. In 1979 the HP-23 became the PS-23(C).

The PS-23(C) Power Supply:

Sometime in early 1980 Heathkit renamed the HP23C to the PS-23. Other than the name

Model	Low Voltage	LV Filter & Circuit	High Voltage	HV Filter & Circuit	Max DC Watts	Filament	Bias	AC Power
UT-1	300 VDC @ 100 ma	C - R - C	600 VDC @ 200 ma	Doubler C - R - C	120 W. Total	6.3V @ 8A or 12.6V @ 4A	None	120 VAC 60 Hz
HP-20	300 VDC @ 100 ma	C - R - C	600 VDC @ 200 ma	Doubler C - R - C	120 W. Total	6.3V @ 8A or 12.6V @ 4A	-130 VDC @ 20 ma.	120 VAC 60 Hz
HP-23	300 VDC @ 100 ma	Doubler C - L - C	700 VDC @ 250 ma	Doubler - C	130 W. 100% 235 W. 50% duty cycle	6.3V @ 11A or 12.6V @ 5.5A	-100 VDC @ 20 ma. -40/-80 adj. @ 1 ma	120 VAC 50/60 Hz
HP-23E (Europe)	300 VDC @ 100 ma	Doubler C - L - C	700 VDC @ 250 ma	Doubler - C	130 W. 100% 235 W. 50% duty cycle	6.3V @ 11A or 12.6V @ 5.5A	-100 VDC @ 20 ma. -40/-80 adj. @ 1 ma	240 VAC 50/60 Hz
HP-23A	300 VDC @ 100 ma	Doubler C - L - C	700 VDC @ 250 ma	Doubler - C	130 W. 100% 235 W. 50% duty cycle	6.3V @ 11A or 12.6V @ 5.5A	-100 VDC @ 20 ma. -40/-80 adj. @ 1 ma	120/240 VAC 50/60 Hz
HP-23B	300 VDC @ 100 ma	Doubler C - L - C	700 VDC @ 250 ma	Doubler - C	130 W. 100% 235 W. 50% duty cycle	12.6V @ 5.5A	-100 VDC @ 20 ma.	120/240 VAC 50/60 Hz
HP-23C	300 VDC @ 100 ma	Doubler C - L - C	700 VDC @ 250 ma	Doubler - C	130 W. 100% 235 W. 50% duty cycle	12.6V @ 5.5A	-100 VDC @ 20 ma.	120/240 VAC 50/60 Hz
PS-23	300 VDC @ 100 ma	Doubler C - L - C	700 VDC @ 250 ma	Doubler - C	130 W. 100% 235 W. 50% duty cycle	12.6V @ 5.5A	-100 VDC @ 20 ma.	120/240 VAC 50/60 Hz
Table 2 - Heathkit Amateur Power Supplies (1960 - 1983)								

change, the kit appears to be identical electrically and physically. Sometimes this power supply is given the nomenclature of PS-23C. The PS-23 was discontinued in 1983 as demand for power supplies for vacuum tube radios diminished, and as Heath itself was then offering solid-state transceivers and had discontinued their line of vacuum tube ham transceivers.

Table 1 gives the power supplies that are usable with the various Heath radios. Table 2 gives the specifications for the various power supplies. Generally the newer power supply will work with the older radios, with the exception the two twins.

For home use the HP-23 series provides all the needed voltages and is compact enough to fit inside the SB-600 communications speaker, making its visible footprint negligible. Heath designed the HP-23 to be flexible enough to work with non-Heath radios too. The Heathkit HP-23 power supply could also be used to power some Collins and Drake equipment.

Miscellaneous:

Many HP-23 - HP-23C power supplies were sold over the span of twenty years. Many are OCARC RF Newsletter – 2011 February

still in use today some 27 to 47 years later. The power supplies proved to be quite rugged, but time has taken its toll on the electrolytic capacitors in many units. New exact replacement capacitors are not available, but capacitors of the same values are available in a different mounting style. They are also much smaller than the originals. Numerous kits are available on today's market for rebuilding the HP-23 to put it in a like new condition. A Google search should give you numerous sources. If you can't find them feel free to drop me an email.

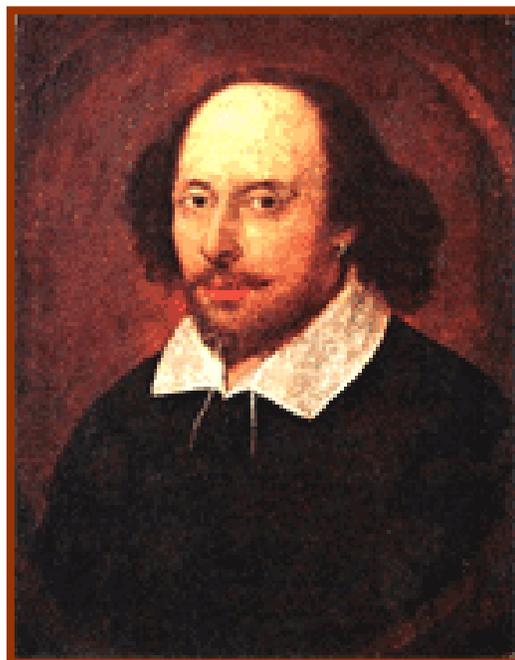
73, from AF6C



Remember if you come across any old Heathkit Manuals or Catalogs that you do not need, please pass them along to me.

Thanks - AF6C

SUBMIT AN ARTICLE



You don't need to write like William "Bill" Shakespeare in order to write an article for the RF Newsletter. In fact, we prefer articles without the words "Thy", "Whilst", "'Tis" and "Oft".

Do you have an idea for a newsletter article? Maybe you have acquired a new piece of equipment, designed or constructed a new antenna, took a trip focused around ham radio, want to share an amateur radio related experience or discuss a technical topic. Why not write an article for the monthly RF newsletter? The article can be short or long, simple or elaborate, and can even include pictures!

The RF newsletter relies on articles from our members. So why not give it try? Write an article and send it to the newsletter editor. It's fun, and at the same time, your contribution helps support our club and hobby!

If you want you can also try your hand as the newsletter editor. We have a rotating editor monthly and would love to have someone new give it a try. There is a template and it is easy and fun!!



A BRIEF HISTORY OF RADIO

by

Jim Tripp WA6DIJ

(Reprinted from “**Scuttlebutt**” the newsletter of the
Naval Postgraduate School ARC)

[Introduction – Jim WA6DIJ was a member of OCARC during the late 1960's....and he now lives near Monterey, CA. Jim is an avid collector of old radios (commercial and ham) and has built up quite a private museum (see www.antiqueradiomuseum.org)]

Radio played an important role in the 20th century by providing the first really “mass communication” medium. Looking back on the events, it seemed radio got a slow start, but, boy, once it got started it really took off. This article will be mainly about the impact of AM broadcast radio on the world.

We have to go back to 1896 to find the first “successful” radio transmission made by Marconi. These early transmissions were limited to raspy Morse Code signals sent from “spark gap” transmitters. It took a while before “voice” could be transmitted over the air waves. BTW, early radio, was referred to as “wireless” because the Morse Code had existed for a considerable period of time on cross country telegraph wires, long before radio came on the scene. Thus it was natural to consider radio as a “wireless” form of the telegraph system already in place.

By 1904 “wireless” was being used between ships at sea and land based stations. These were still static sounding spark gap transmissions and by today’s standards they probably splashed all across the band. There was no FCC in those days, and as a result people did pretty much as they pleased.

The general public started getting interested in these radio transmissions and when someone came up with a simple diode detector (cat whisker), people started home brewing crystal radio sets so they could listen in. The beauty of the crystal set is that you did not need any battery power for the set. All you needed was a tunable coil, a long wire antenna and a set of headphones, coupled with a lot of patience as they tuned the coil and wiggled the cat wisher on the galena crystal looking for that all elusive signal.

The world changed drastically thanks to the Audion vacuum tube invented by Dr. Lee De Forest. This was the first tube with a “control” grid as the 3rd element. Until that time, tubes were used as simple two element diode detectors. But the inclusion of the 3rd element brought about the capability to “modulate” the basic carrier signal with some



A BRIEF HISTORY OF RADIO Continued...

amplitude variations...little did Dr. De Forest know how his Audion would change the world in the future.

The first (some disagree) "audio" transmission occurred on Christmas Eve in 1906 when Reginald Fessenden made the first successful audio transmission from Brant Rock, Mass. For this event he played "Oh Holy Night" on his violin and read passages from his Bible. I sure wish there had been the technology in place to record that transmission!

Now that voice transmissions were possible, the radio receiver needed to be improved to handle the wider frequency range of the audio signal. TRF (tuned radio frequency) became the standard receiver for most of the 1920's. Most of these included three RF stages and a detector stage with some audio amplification at the end of the chain. To tune the radio you would successively tune each of the three RF stages, then you would repeat the process, peaking the signal until you got the clearest, loudest signal possible. The RF knobs had numbers on them, many going from zero to one hundred. People would make up a table showing what number each knob should be on for that particular station...that is for people lucky enough to pick up more than one station. Some of these radios from the 20's also had a control that actually controlled the filament voltage as part of the fine tuning. These early sets were all operated on battery power because electrification of the US had not been very wide spread.

The first set to operate off of AC power was the Radiola-17 produced by RCA in 1927. Even that set had selectable voltages because different parts of the country had different electrical supply voltage in their area. Battery powered radios, called "Farm Radios" continued to be manufactured well into the 40's for rural locations where AC power was not available. Many of these farm radio batteries were charged from "Wind Generators" installed on the farm. I assume wind was in plentiful supply out on the prairies!

Just a side note, while we are on radios of the 20's. If you have ever seen one of these radios, you probably noticed that the cabinets were typically rectangular wooden boxes, and the cabinet had a hinged lid. The reason for the hinged lid is to allow easy access to the tubes. In the 20's RCA owned the patents on most of the radio tubes and levied a very high premium on radios shipped with tubes. However, that premium did not apply if a person just bought the tubes. So that is how most radios were purchased in those days....buy the radio from one store and buy the tubes from another store and then install them yourself. In most of these sets the tubes were all the same type so the customer did not have to worry about putting tubes in the wrong socket. Just imagine a place such as Sears or Wards....you buy the radio at one counter then buy the tubes at another counter....hahaha.



A BRIEF HISTORY OF RADIO Continued...

So let's get back to radio development. In 1914 Edwin Armstrong patents the "Regenerative" receiver, and in 1922 he patented the "Super Regenerative" receiver. These regen receivers were very popular in the 20's, but they had a problem that made them not so acceptable in a built up area where neighbors were close by. The way a regen receiver works is that a portions of the output signal is fed back to the input in a positive polarity so as to improve the sensitivity and selectivity. However, this is "positive" feedback. If you go too far, the circuit oscillates at that frequency suddenly becomes a radio transmitter instead of a receiver. You will find many home brew regen receivers built in boxes where the entire inside of the box is lined with metal so as to form a shielded container so when the set oscillates you do not interfere with your neighbors. Tuning the regenerative receiver was pretty simple. First, you would find the station with the main tuning knob, and then you would tune the regen control to the point where the set breaks into oscillation. Then you would back off of that point just ever so slightly. Doing so, you would have an outstanding signal. Armstrong would also go on to invent the Super Heterodyne receiver and the FM receiver later on in his career.

Various groups of investors then started to realize that radio was an untapped source of advertising revenue, and in 1921 AT&T developed a plan to create the first "Radio Network". The plan was accepted on 2/11/1922. This first network was linked by telephone lines across New York City to the radio station WEAF. The network lines were marked in RED on a chart, and it became known as the "Red Network".

A "Radio Group" was formed by GE, Westinghouse and RCA, and also in NYC. In 1926 AT&T sold WEAF to "The Radio Group" and created what we now know as NBC. This was known as the NBC Red Network. Another network was formed in NYC around station WJZ. It was known as the NBC Blue Network. Some of you may be old enough to remember the NBC station break chime. It was actually used to synchronize the networks across the country. It was a "physical chime" that someone tapped on in front of a microphone. For you musical people, the notes of the NBC chime are G-E-C, hmmm...could that be for G. E. Corporation? From that point on, radio stations and networks blossomed at unprecedented rates.

So let's back up a little and discuss the "Super-Het" radio designed by Armstrong in 1918. This radio did not catch on until many years later. That is the reason why the 20's were dominated with TRF designed radios. The beauty of the Super-Het was that it used an intermediate frequency oscillator, which greatly reduced interference from other strong signals. Surprisingly enough, there have not been any new circuits designed for AM radio since that time. Current sets in the 21st century are STILL using the same basic Super-Het circuit!



A BRIEF HISTORY OF RADIO Continued...

One simple change occurred to the Super-Het design by the manufacture of AC/DC radios that could run from either power. The input power transformer was removed in these radios, and the vacuum tube lineup was such that the filaments would drop the entire line voltage. A typical line up would be three 12-volt tubes forming the RF and IF stages, one 50-volt power output tube and one 35-volt regulator tube...whose filaments drop a total of 121-volts! However, since the US AC outlets in the homes were non-polarized in those days, the chassis could become hot if someone plugged in a set in the reverse direction. Servicemen knew this, but the typical consumer did not know that. For that reason the metal chassis was well hidden from the public with a back on the radio to prevent accidental shock. The reason this design was so popular is that by removing the power transformer they greatly reduced the cost of manufacturing the radio and made it cheaper to purchase by masses of consumers.

By the 1930's, even though the US was deeply into recession, radio was a common item in most homes with some sets selling for as much as a new car! It is during the 30's that home radios moved into console cabinets and became a piece of furniture in the home. The dials were still so tiny you had to bend over and squint to see what station you had tuned to but the cabinets, in some cases, were being designed by fine furniture makers. Some radios from that era are worth more these days because of the name on the cabinet it is in. In the 30's "wood" was the king for radio cabinets, but types of plastic started to show up more and more as the decade ended. I have a Kadette Jr. radio from 1933 in a plastic cabinet!

Radios in the 20's were just one AM band. But, by the 30's, "shortwave" bands appeared on the scene. By the late 30's it was not uncommon for the radio to have 4 or more bands to allow better tuning of the shortwave band segments.

And then FM radio came on the scene! Armstrong was granted his first experimental license for FM radio in 1936. The first regularly scheduled FM broadcast programming started on July 18, 1939. The FCC authorized the 42-48 Mhz band for FM broadcasts on May 20, 1940. However, this service was short lived because on Jan. 15, 1945 the FM band was moved to the current location at 88-108 Mhz. Remember that no new "home" radios were built during the war years from 1941 – 1945 because all manufactures were converted to making radios for the military. I have a transitional radio from 1946 that had both the old and the new FM bands on the dial. It seems that the stations were given some time to convert their broadcast facilities to the new FM band. As a result, there was a period of time when both bands were in use.

After WW2...and during the rise of the Strategic Air Command (SAC) in the 1950's, Collins Radio was asked by the Air Force to improve the robustness of radio communications for far-flung patrolling SAC B-52 bombers. The result was the introduction of military Single Side Band (SSB) radios for the



A BRIEF HISTORY OF RADIO Continued...

bombers and the base stations. The SSB modulation design technology was quickly moved over to ham radio equipment by Collins Radio (loaded with engineers who were hams) and resulted in the famous Collins S-Line radios of the 1960s. By 1970, SSB was available in essentially all new ham radio HF equipment...displacing AM modulation on the ham bands.

We mentioned that wood was the king for radio cabinets in the 30's. By the 50's various forms of plastic was the main material for radio cabinets. Wood cabinet radios were being built in each decade. But, by the 50's, most radio cabinets were plastic...Bakelite, Catalin, and many others. Since Catalin is such a brittle material, radios still in good shape made in Catalin cabinets fetch top dollars these days over all other types of material.

In the 30's and 40's, console radios, which included record players, were pretty common. Some of the record players had two arms, one for playback and one for recording. I guess that was an early form of the VCR for audio. By the 50's and 60's these consoles became more like home entertainment centers, with radio, TV, and record player included. Again,, this era was accented by horizontal consoles that were like fine pieces of furniture. I have even seen one of these sets with both a record player as well as a wire recorder so you could make recordings of radio programs to be able to listen to them at some other time...shades of DVR's to come....hahaha.

Once radios became transistorized, and took up less space, and consumed less power, it is then that the "audio output battle" occurred! If you had a stereo with only 10 watts per channel then you were in the dark ages. You needed at least 50 watts per channel, then 100 watts per channel, and I don't even know where they have gone with this power battle these days. Isn't it funny that 10 watts was more than enough output for your speaker for many, many years?

So that pretty much brings us up to the present time where the traditional AM and FM broadcasts are being replaced with satellite radio and internet radio. It must make one wonder if the radio, as we know it, will continue to exist for many more years. I think thoughts such as this, just further intensifies my interest in antique radio so as to preserve some of this history. Perhaps in the future I will have to download old time radio broadcasts to my ipod (or its futuristic replacement) and connect the ipod to a 100 microwatt AM transmitter to broadcast to my antique radios so I can still get that old time sound!



Valentine Word Search

D	X	I	G	N	E	L	M	E	S	R	M	E	E	T	I	N	G	S	F
X	E	M	M	A	H	E	V	M	B	T	C	A	D	G	H	E	A	U	N
I	A	C	F	Z	M	H	L	E	U	C	L	O	V	R	O	T	O	P	E
O	C	O	U	T	E	A	H	M	I	F	U	D	S	U	S	H	G	P	V
I	T	U	A	R	M	M	T	B	X	A	B	Y	U	O	R	A	N	G	E
D	I	N	H	H	V	S	M	E	C	F	H	E	A	R	G	N	T	G	L
A	V	T	E	L	F	F	A	R	U	D	H	S	U	P	P	K	J	D	B
R	I	L	L	W	U	B	D	H	E	R	R	O	P	P	U	S	A	C	T
Q	S	U	T	E	X	A	U	L	E	F	N	T	I	N	R	E	M	L	E
V	A	L	E	N	T	I	L	E	C	V	L	D	F	E	I	H	R	F	V
H	A	M	Q	U	E	D	C	O	U	N	T	Y	R	T	H	A	N	S	E
A	R	T	S	O	R	A	N	R	V	J	B	S	U	L	C	L	U	V	N
S	H	N	D	E	I	R	F	A	I	E	E	M	E	E	T	I	G	N	T
D	R	C	N	C	L	U	H	G	V	V	L	S	H	G	A	U	M	B	S
V	A	L	E	N	T	I	N	E	O	E	F	R	E	I	N	D	S	N	U
J	F	U	I	D	N	R	A	F	L	N	J	A	L	B	U	I	L	C	F
O	F	S	R	U	F	A	T	R	C	P	E	H	E	L	O	F	X	F	U
R	E	B	F	B	M	F	D	A	C	T	I	V	I	T	I	E	S	D	B
A	I	N	H	C	J	F	V	H	L	O	V	D	W	X	O	R	A	N	H
N	H	E	A	R	T	L	H	E	A	R	S	U	P	P	O	R	T	Y	M



LOVE
AMATEUR
EVENTS
RAFFLE
FUN

ORANGE
HEART
FRIENDS
SUPPORT
HEAR

DXING
CLUB
ACTIVITIES
HELP
MEET

COUNTY
MEMBER
THANKS
ELMER
ACT

RADIO
VALENTINE
HAMS
MEETINGS