



RF



ORANGE COUNTY AMATEUR RADIO CLUB, INC.

VOL. LVIII NO. 09

P.O. BOX 3454, TUSTIN, CA 92781-3454

September 2017

The Prez Sez.....

by Tim N6GP



There is a lot to talk about this month. First and foremost, our thoughts and prayers are with the victims of the hurricane and flooding in Texas. I am proud that our club is sending \$150 to the Red Cross for the excellent relief work that they are doing. I encourage you to do whatever you can do to help them with a donation at their website at www.redcross.org or call 800-RED-CROSS.

The hams in Texas did a wonderful job in the early days of this disaster. With 94% of the cell sites in operational condition, this was not a "when all else fails" type event like Katrina was for us hams. The Zello walkie talkie PTT smartphone app proved to be quite useful this time around for rescuers to use. As hams, we cannot

count on that communications infrastructure to always be there, so we always need to be prepared for the worst case scenario.

Our members Corey KE6YHX and Greg W6ATB each ventured north to see the eclipse in totality. Their reports on their amazing trips are here in this RF. What an experience of a lifetime! The Solar Eclipse QSO Party folks at Hamsci are still collecting logs and data from the event. It will be interesting to see what discoveries that they find from this data. Believe it or not, sunspot activity has been increasing lately, with the Solar Flux at 120 as I write this. 10 meters has been opening daily to South America. A few days ago a new version of WSJT-x was released (Release Candidate 2), and the FT8 users are making lots of QSOs on 10, 15 and 17 meters. The Ad-musen-Scott station (KC4AAA) at the South Pole has even been on FT8.

This month we look forward to hearing Michael Rickey, AF6FB talk about both the PAPA repeater system and D-Star.

Tim Goeppinger N6GP
President OCARC

Next General Meeting

Michael Rickey, AF6FB will speak on both the PAPA repeater system and D-Star equipment and technology. Michael is very active on the PAPA repeaters using DMR, D-Star, as well as analog modes. He also hosts an amateur radio blog at: <http://www.af6fb.net>

The next General Meeting will be on:

Friday, September 15, 2017
@ 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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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 (Board Mtg):

Normally First Saturday of month at 8am
Marie Callender's Restaurant
1821 North Grand Ave
Santa Ana, CA
(Between 17th & Santa Clara)

Club Nets (Listen for W6ZE):

28.375 ± MHz SSB
Wed- 7:30 PM - 8:30 PM
Bob AF6C, Net Control
Alt: Corey, KE6YHX, Net Control

146.55 MHz Simplex FM
Wed- 8:30 PM - 9:30 PM
Corey, KE6YHX, Net Control

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



Club Dues for 2017:

Regular/New Members* - - - - - \$30
Family renewal/Join** - - - - - \$45
New Member Join Jul-Sept*** - - \$15
Replacement Badge**** - - - - - \$ 3

* New members Jan-March, w/badge.

** Two members or more, w/badge.

*** New members July-Sept, w/badge.

**** There is a \$1.50 charge if you'd like to have your badge mailed to you.

A Tribute to the Ham Career of Robert S. Hill, K6COE

By Tim Goeppinger N6GP

Last month, a half dozen of our members volunteered to help transport the estate of K6COE-sk. We met his daughter Cherie and grandson at Robert's former QTH in Santa Ana. His daughter and grandson were very nice, and they were generous in donating many radios and related items to our club. Our club again thanks Tom W6ETC for working with the family, and for providing a trailer for transportation.

This article will focus on the ham career of Robert "Bob" Hill, as was gleaned from his logbooks that were also donated to the club. Other information that we know about him is that Bob was born in 1919 right here in Orange Calif, and was the owner of an auto repair garage in Santa Ana. Sadly, Bob became a Silent Key in 2003.

The FCC began issuing Novice licenses in 1951, and the license was only good for 1 year and not renewable. Novices could only operate CW, with crystal controlled rigs, at a max of 75 watts. Bob became licensed as KN6COE in mid September of 1953. Amazing to note that the FCC ran out of WN6 calls in that short time, so they had to start using KN6. From the log, it appears that Jim Blackburn W6NUQ of Orange was Bob's 'elmer'. Bob's first QSO was on Sept 21, 1953 on the brand new (for U.S.) 40 meter band. The QSO was with WN5ATE in Texas. Many QSOs were logged with other novices, mainly in the western half of the country. The log pages are fairly sparse with QSOs, though, because each CQ had to be logged, whether it was replied to or not! His bands of choice were 40 and 80 meters, and in early 1954 he added 15 meters to the mix. His first DX contact was with New Zealand ZL1GW on 15m, and followed later in the year with a ZS6 in South Africa, Hawaii and Mexico. Many South American stations were also worked on 15.

There is a gap of many months in the log between September 12, 1954 and April 12, 1955. It is pretty clear that Bob's Novice license expired that September, and he was unlicensed for that time. Can you imagine how depressing that must have been? It probably took him a while to study for his Technician license. Suddenly in his logbook appears "April 12, 1955 – 6 Meter Band". Evidently, he was issued the call K6COE at that time, leaving behind the KN6. Remember – he no longer had the HF privileges he held as a Novice. Technician license was strictly 50 MHz and above. He was on 6 meter AM, and worked a lot of locals. In May of 1955 he worked W7PRW up in Seattle Wash for his first Sporadic E QSO. Later in the month brought W0 and W8 contacts. From his home QTH, Bob made some contacts in the ARRL June VHF Contest. There was a lot of activity in VHF contests back then. A lot of stations signing /6 for portable (/6 required by FCC back then for portable). Later that month logged about 4 pages from home for Field Day. Some familiar ones like W6TOI Downey Radio Club. July brought QSOs in from New Mexico and Pennsylvania. Not bad on a Gonset Communicator! He had many QSOs with local friends during the Fall months. Finally a little bit of Winter Sporadic E came in around Thanksgiving for contacts up north to Washington. A few more right after Christmas. A few W0's and W5s in January of 1956. Uh oh! Log shows a Test for TVI in March. Very uneventful with only locals logged in the Spring, until April 2. Trans Equatorial Propagation (TEP) opens up and Bob works LU2DED in Argentina! Then a week later he gets LU9MA, and 2 more later in the month. The usual Sporadic E contacts are made in May and June., and local friends all the time. K6IBY must have been a good friend. In November he worked TI2AFC, and many Hawaiians for that TEP season.

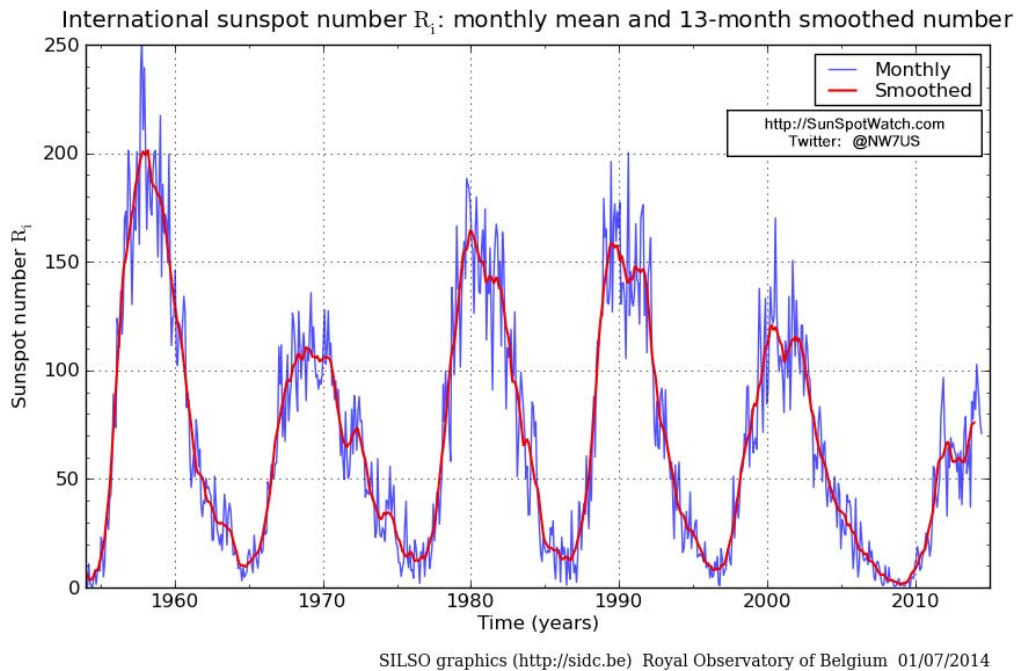


Figure 1 - Sunspot Cycles Since 1950

Bob didn't know it at the time, but he was about ready to experience the best sunspot cycle for generations to come. Sunspot Cycle 19 (Fig 1) was huge, compared to what we have experienced during the last few cycles. It had a historic peak around 1958, and old timers say they could work 10 meters QRP with a wet noodle antenna. Bob got to catch some fun in December 1954 on it. He worked into W1 land on 6 meters, probably using F2 layer propagation. That was just a taste of the future for him. A year later in November he was working W1 land regularly on 6, and even VE1's. Even on the down side of the cycle in Nov. 1959, Bob filled about 3 log pages with W1's W2's and W3's. The TEP seasons around the Spring and Fall equinoxes got better and better. In the next 3 years he would work Guatemala, Chile, and Uruguay.

In January of 1956, K6COE tried something new. The entry for January 5 is "Contest Portable Panorama Heights Contest". He entered the ARRL January Sweepstakes, and made about 80 contacts with locals on 6 meters. Panorama Heights in Orange is still being used by VHF Contesters like the author, and also by Wayne Overbeck, N6NB, where he has his VHF Contesting QTH. K6COE's daughter remembers going with her father up there as a child when he was doing these contests. He operated portable for the January, June and Sept contests up there through 1959. After that, he did the contests from his home QTH. Interesting fact – Orange County was in the ARRL San Diego section back then.

A very happy day happened for K6COE when he was able to put "General Ticket 4-16-57" at the top of one of his log pages. He was back on the HF bands! He had a lot of fun working some DX, mainly in South America and the Pacific on 20m. The only DX in Europe he got was Sweden. 20m and the other HF bands held his interest for a while, but he gravitated back to 6 meters after several months. Unfortunately, he only made 1 QSO on 10 (and 11) meters. TVI was a big problem on 10m, so maybe that is why he shied away from it. After that he vacillated back and forth between 6 meters and HF. When the sunspots went way down in the early 60's, it made sense that he stayed on 20m most of the time. In general, his activity on the bands dwindled in 1962 to October of 1966, when it appears that he made his last QSO.

Before Bob's family contacted our Club, no one knew if he was ever involved with our Club. A Google search revealed that he was an editor for our RF Newsletter for the March 1957

issue (Fig 2.). Additionally, K6COE made a 2 meter contact with the W6ZE Field Day in 1960.

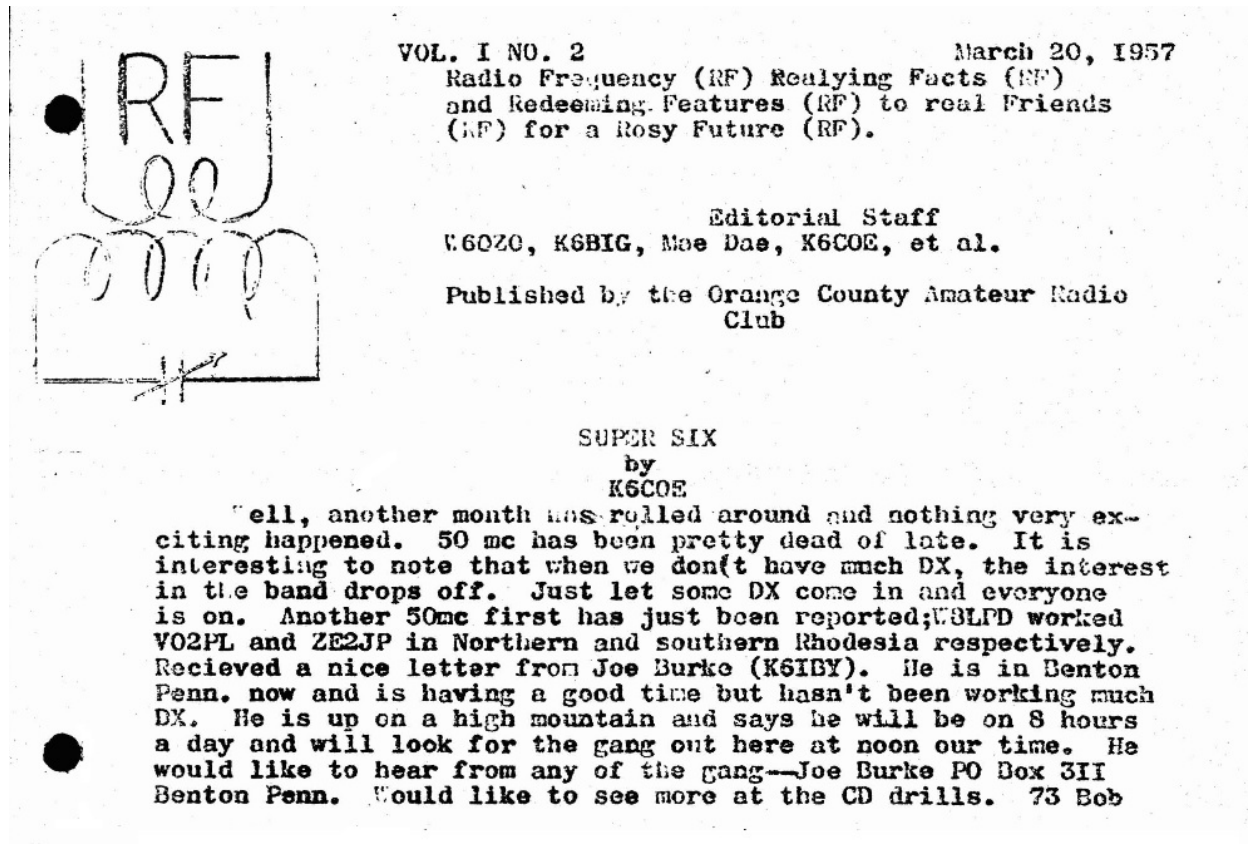


Figure 2 Excerpts from the March 1957 RF Newsletter

It is incredible that these logs are 60 years old, and yet the author recognizes a couple of callsigns that are still on 6 meters! A regular on 50.125, Tom Cox K6RMJ of San Juan Capistrano (not to be confused with Pat N6RMJ) is in Bob's log, as is Marsh Hall K6MEF. Bob K6COE picked a perfect time to become a ham. He got in on the beginning of Cycle 19, and like a surfer, rode that wave until the end. He got to experience propagation on 6 meters that many of us dream about, and he got to participate in VHF Contests when they were in their heyday. We are glad that his logs were preserved for us to open as kind of a time capsule for us to open. 73 and RIP, Bob!

The Great Day of Darkness

by Corey Miller KE6YHX

My dad, Russ, and I have been planning on going to see the 2017 total solar eclipse for more than a year. I began research on the services in Oregon starting on July 4th, and reserved our location in Madras soon thereafter. I scaled-up our reservation for other family members, but they ended up not going, so I scaled it back down. My contact with Madras Eclipse Camping was kind enough to give me a refund for the downsizing, even though it was past the July 15th refund deadline.

After setting-out before noon on Tuesday, August 15th, while going through L.A. some road debris gashed my right-rear tire, and it shredded against the rim. Fortunately, I was prepared with a spare tire and all the needed tools. On my iPhone I found a Tire Pros, and we navigated to it using the same. They brought a new tire from Sylmar, and we were back on our way in less than three hours.

We continued north on the I-5 freeway, and around 1:00am, arrived at the Holiday Inn in Redding. I had booked it for Thursday, but changed it to Tuesday night on the way. In the morning, I checked the fluids in my truck, and we continued northwards. After stopping in Klamath Falls to get a few things; we passed through Chemult; then Bend, where I got some more ice; then Terrebonne. In the forested part of the highway, the fire warning signs were pointing to the red, "high risk" section, and as we passed by the smoke, the sunlight was noticeably dimmer.

When we got to Madras Wednesday afternoon, we drove down the streets south of the Jefferson County Fairgrounds, then went back to the highway, and saw the camp site just south of there, finding it to be rather empty. Seeing a Motel 6 across the street, we checked in for one night; the following days were booked up, "some, a year in advance," the attendant said.

That night, I sent a message to Berenice Antonsen, the Madras Eclipse Camping contact, requesting a stay extension and early check-in. She e-mailed back to say it would be fine to come early; my iPhone never received that e-mail, but we got the stay extension in the morning. A little later that night, I did a Google search for motels in Madras, and looking through the page from the bottom-up, I found the Inn at Cross Keys Station, a clean, lodge-type motel on the side of a hill in the north end of town; I reserved the double-queen room for \$106 total, with AAA membership. First thing in the morning, we went to the inn and found that they had a room available before our afternoon check-in time, so we took it. The room was front-and-center on the second floor, behind the natural stone chimney of the lobby fireplace.

After securing our room at the inn, we stopped at a market and a drive-thru, then drove my truck to a parking lot behind the inn, overlooking that part of town. We swapped the tires on my truck front-to-back due to tread wear, then found a parking space out front. Later that afternoon, we went to a Chinese restaurant, Ding Ho, and talked about the conservation of angular momentum while we ate.

First thing Friday morning, we went to reserve our spot at the camp site, and met the proprietor. We were the first ones there. Chet, a jocular fellow with a heavy build and scant white beard, had us reserve our 20'x20' spot with my smaller cooler, so we could go do other things. We got a few things at a store nearby, and went back to the site and set-up camp.

The weather earlier in the weekend was warm and sunny, but with a cool breeze, turning into a gusty wind, strong enough to blow my driver's-side door shut, and lift apart the proprietors' pop-up in the afternoon. I had my modified Yosemite Valley Gear self-supporting hammock in the back of my truck, and stayed cool with all the windows and gate open, while my dad read his book in his tent.



Russ and our Camp in Madras, Late Saturday Afternoon

The morning of the eclipse was a cold one. At about 7:00am people started moving to the ridge, so before it got too packed, I immediately unhooked my hammock to make room for my aluminum ladder, put on my Disneyland jacket, loaded the ladder, closed the gate and windows to keep the dust from getting in, and we drove up onto the ridge.

With the truck backed up southwards to level the shell, I set up my three tripods on top of my truck, and we ran bungee cords to hold them down in the wind. We had almost two hours until the beginning of the eclipse, so I prepared by setting up and aiming the three cameras, the Sony Handicam to the west, the Fuji FinePix S2000HD towards the sun, and the iPhone to the east horizon. Unfortunately, it didn't look like my iPhone viewing angle was large enough to get the sun and the horizon in the same image at the time of totality, so I turned the mount sideways to get a wider view of the horizon.

At 9:06am, I turned on the Sony camcorder and the iPhone video recorder, and later took a couple video clips in 1280HD on my Fuji camera, which wore down the batteries enough to go dead in the recording just before totality. However, once again preparation made for a calm recovery; I had two AAs I changed earlier in the Sony remote in my shirt pocket, and knowing where I got them, I told my dad to hand the other two up to me. I got the camera

ready and clipped it back to the stand just in time.

Earlier that morning there was a bit of a haze in the sky, partly due to the fires that were burning to the southwest of us. It cleared up in time to get good images of totality at 10:19am.



The Moon and the Sun's Corona, Mid-Totality

Like a giant veil the darkness came, with people cheering, cars on the highway honking their horns, roosters crowing in confusion, a few street lights turning on, and almost directly above, Venus shined bright! If I speed-up in my iPhone video, you can see the shadow of the moon passing over the land and clouds. It was spectacular.



The Eastern Horizon, Early-Totality

Some people headed out just after totality, some stayed longer, and a few others stayed an extra night. But for us, it was bumper-to-bumper traffic for three hours, apparently from an accident seven miles down the road. After two hours of two-mile-an-hour traffic, a tow truck passed us on the right shoulder, then half an hour later an ambulance passed on the opposite lane to our left (probably a bit too late). With the heat of a finicky air conditioner at idle, we turned it off to keep the engine from overheating. After sweltering in the heat with the windows rolled down, and trying to keep from getting sunburned, we decided to take the old Culver Highway to the east, and when traffic stopped on that highway, we cut across a few

dirt roads back to Highway 97. By then the traffic eased up a bit and we passed an Oregon State Trooper car with two motorcyclists that got back on the road just as we got there (go figure).

Once we got to the city of Bend, we fueled up, I bought some sandwiches, checked the fluids in my truck, and had the serviceman clean some bee splatters from the windshield. When we got to the forested part of the highway, traffic packed up again, and to save us ten minutes, my iPhone directed us to NFD Road 40, a long, curving, and pleasantly scenic road winding through the mountains and forest to the west.

After rejoining the heavy traffic heading onto Highway 97, I slept with a blanket and travel pillow before Klamath Falls and Redding. When we got to Redding we found the Deluxe Inn that had one room left, a double-queen that was previously smoking accommodated. While my dad slept, I stayed up the rest of the night, partly contemplating the relationship between quantum and Newtonian physics, and partly thinking how I was going to organize the cab of my truck in the morning.

The next morning, we found a Starbucks across the way for my dad's tea, and then found a Chinese and American diner named Lim's Cafe. After eating there, we finished with a slice of orange, paid with a 15% tip and left, passing over a forest-lined river a couple of times while getting back onto the I-5.

After going by Sacramento, we passed through some smoke from a nearby brush fire. Then, when my dad was driving on the straight highway, I watched four Three Stooges videos on the DVD player in my PowerBook G4 mounted in my truck. After that, it was just daytime driving and pit stops; fortunately, we had air conditioning! We got back around 8:30pm on Tuesday, and had traveled a total of 1733 miles. The trip was heaven and hell, but I think it was worth it.

Happy Trails!
Corey Miller KE6YHX

The Great American Eclipse & EME

By Greg Bohning W6ATB

To observe the Great Eclipse I visited by brother Dave (K6RSJ) who lives in Redmond, Oregon. Dave is an OCARC member at large and operates EME primarily on 2 meters. Dave's house is located within the total eclipse path and we had about 12 seconds of totality. If Dave's house had been more dead center on the eclipse path, totality would have been a minute or more.

This eclipse was my first observation of a total eclipse and it was awesome! During the 12 seconds of totality the skies darken and I was able to see Venus clearing directly overhead. However, it never got dark enough for me to see the stars as the 12 seconds wasn't long enough for my eye to adjust and also the sun's corona was too bright. The other unique observation was during the lead up to a total eclipse the sun would shine through spaces between tree leaves and produce small moon shape patterns of the partial eclipse phase, see the following picture.



Lastly, I did not notice any appreciable change in air temperature or any unusual animal or bird activity. Actually, the only animal around was Dave's cat that could care less.

Forward to the EME test. So Dave and I decided to test for effect of Sun generated RF noise on the signal-to-noise of a received EME signal on 2-meter band. The eclipse allowed the opportunity for the Sun and Moon to be very close together, side by side, and we started the reception test about 30 minutes before the moon started its transition across the sun. Essentially the Moon and Sun are in the same position to the RF pattern of the 13-element 2-meter yagi used in the test.

Dave's EME 2 meter setup is not a Big Gun station. His station operates with a 350-Watt VHF TE amplifier and a one 13-element 2-meter yagi. Dave has made close to 100 EME contacts with his 2 meter EME station. Many EME hams want to work him because he is in a rare grid (CN94jf) for EME operation.

Within 10 minutes of listening for EME signals, antenna looking into the Sun, we were able to decode successfully VE2FON who is located in Quebec, Canada. We tried to transmit to VE2FON but with no success, but a completing QSO was not a requirement.

Conclusion, the Sun does raise the background noise level, around 2dB for us, but we able to decode the Canadian ham a few times, Call letters & Grid. We did not see any other stations on the waterfall display just the Canadian station. We verified that we were receiving the Canadian ham via Moon bounce because the measured signal delay was greater than 2 seconds (delay measurement built into the WSJT-X software for the JT65B mode).

Dave has lived in Redmond Oregon for over 40 years. Raised his family and worked for the U.S. Forest Service in Redmond. He is retired and got his ham license a few years ago. He upgraded his ham license to Extra Class and changed his call to K6RSJ. This call means something to Dave, K6 is the first letters of the Forestry radio communications in his area and RSJ stands for Redmond Smoke Jumpers. Dave was a Smoke jumper in the 1970's & 80's.

73,

Greg W6ATB

Dave K6RSJ, EME station. Dave operates EME mostly on 2 meters. He is also setup for EME operation on 6 meters and 432 MHz.

All the QSL cards on the wall are EME contacts.



Heathkit of the Month #78:
by Bob Eckweiler, AF6C



ELECTRONIC TEST EQUIPMENT

HEATHKIT IM-17
Utility Solid-State Voltmeter

Introduction:

Over its history Heathkit sold many voltmeters. Probably most famous among them was the V7-A VTVM (vacuum tube voltmeters) which seems to appear frequently at swap meets over sixty years after it was introduced. After the V-7A was retired, Heathkit continued to make many newer VTVMs using the same circuit, but with different styles and model numbers, right up until 1989. The main changes after the V7-A seems to be the test leads and the connectors that joined them to the meter. Heathkit also produced a line of bench-style VTVMs utilizing the same V7-A circuit.

But technical progress moves on, and in the late sixties Heathkit announced an inexpensive portable solid-state voltmeter with the model number of IM-17, an "FETVM".

The IM-17 has a high-impedance input of 11-megohms for the DC voltmeter input similar to their VTVM line; but with no vacuum tubes one couldn't call this meter a VTVM so Heathkit called it a Utility Solid-State Voltmeter. The IM-17 (Figure 1) uses a small metal chassis that mounts in a polypropylene case. It was introduced late in 1967, for \$25.95 and appeared in the 1968 catalog 810/68R for \$19.95 (Figure 2). The IM-17 was produced for over ten years through most of 1977, finally selling for \$32.95.

IM-17 Specifications and Features:

The IM-17 is battery powered using a 1.5V standard 'C' cell for the ohms circuit and one 8.4V NEDA #1611 M mercury cell for the main power. Batteries were not included.



Figure 1: Later style IM-17 Solid State Utility Voltmeter

The IM-17 measures DC voltage from 1 to 1000 volts full-scale with 11 megohm input resistance in four decade ranges. The DC voltage is read on one 0-10 scale. The AC ranges are similar, except the first range is extended to 1.2 VAC full scale. The AC voltages are read on one of three meter scales, with a one-megohm input resistance shunted by ~ 100pF (38 pF on the 1000 volt range). The 0 - 1.2 and 0 - 10 volt ranges each have their own individual red scale and the 100 and 1000 volt ranges are read on the same scale as the DC voltages. The need for separate scales for the lower two AC ranges is due to the nonlinearity introduced by the AC rectifier diode. The meter also has four ohm-meter scales: R x 1, R x 100, R x 10K and R x 1M.

The IM-17 has three test leads that are permanently attached to the meter, and the case has a convenient storage area for the leads. One lead is for AC-OHM measurement and is a red cable with a red probe. The second lead is for DC measurements and is a gray shielded cable with a black test probe. At inside the tip of the probe is a 1 megohm resistor that isolates the circuit under measurement from the cable capacitance. The third lead is the common lead for the other two leads and is black with an alligator clip on the end. No rubber insulation boot is provided for the clip.

**Every Man's Meter! New Portable Solid-State VOM . . .
A Thousand And One Uses . . . Lowest Cost**

• Solid-state circuit—FET input, 4 silicon transistor, 1 diode • 4 AC voltage ranges • 4 DC voltage ranges • 4 ohm ranges • 11 megohm input on DC • 1 megohm input on AC • 4 1/2", 200 uA meter • Battery powered • Rugged polypropylene case with self cover & handle includes storage space for test leads • Easy-to-build circuit board construction

JUST RIGHT FOR HOMEOWNERS, hobbyists, boaters, model builders, CBer's, hams . . . even sophisticated enough for radio & TV servicing.

DOES HUNDREDS OF EVERYDAY MEASUREMENTS AT LOWEST COST. Features four ranges on AC and DC volts that measure from 1 to 1000 volts full scale . . . four resistance ranges (10 ohms center scale x1, x100, x10K, x1M) that measure from 0.1 ohm to 1000 megohms. All ranges are multi-colored. And there's an extra jack to connect accessory probes to extend its basic capabilities.

BATTERY POWERED TO WORK ANYWHERE . . . runs on a "C" cell and 8.4 v. mercury cell (same as used in transistor radios). Housed in a rugged, black, textured, polypropylene case with molded-in cover and handle with plenty of space for the three built-in test leads. Also features zero-adjust and ohms-adjust controls, a DC polarity reversing switch to eliminate switching leads, plus a continuous rotation 12-position function switch. Build in 3-4 hours.

Kit IM-17, 4 lbs. . . . \$19.95

IM-17 SPECIFICATIONS—DC VOLTMETER: Four Ranges: 0-1, 10, 100, 1000 volts full scale. Input resistance: 11 meg. on all ranges. Accuracy: $\pm 3\%$ of full scale. **AC VOLTMETER:** Four Ranges: 0-1, 10, 100, 1000 volts full scale. Input resistance: 1 meg. on all ranges. Accuracy: $\pm 5\%$ of full scale. Frequency response: ± 1 db, 10 Hz to 1 MHz. **OHM-METER:** Four Ranges: Rx1, x100, x10K, x1 meg. **POWER SUPPLIES:** Ohms circuit: 1.5V "E" Cell. Amplifier circuit: 8.4V, mercury cell (NEDA $\pm 10\%$). **GENERAL:** Meter: 4 1/2", 200 uA, 100° movement. Dimensions: 8 1/2" W x 4 1/4" H x 7 1/4" D.

IM-17
\$19.95

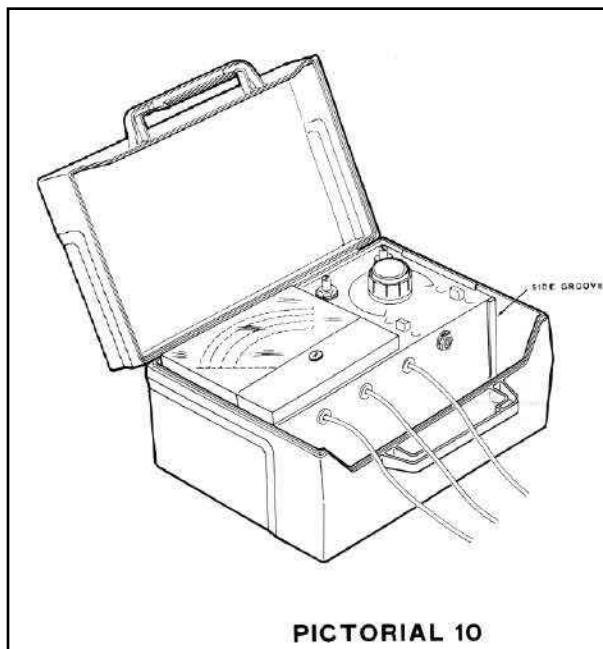


Self-Contained Portable Case . . . ready to go where you go. Holds everything in place, even the three 3 1/2' test leads . . . black lead with clip for ground, two leads with probes for DC volts, AC and ohms.

Figure 2: IM-17 Ad from 1968 Catalog showing early style

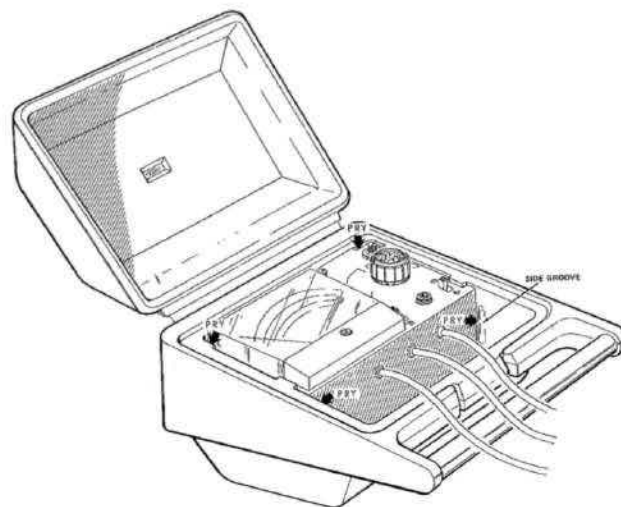
A 1/4" phone jack is also located on the panel where the test leads exit through grommets. The jack is for use with some of the accessory probes Heathkit offers for their meters. - particularly the RF Probe for measuring RF voltage and the HV probe for measuring voltages up to 30,000 volts. One must be careful that the attached probes are not shorted when using the accessory probe jack.

The accessory jack is rumored to have not been included in the early kits. However, looking at three different IM-17 manuals, the jack is shown on all schematics including the one in the November 1967 manual. The origin of the rumor might be that on early units the jack is mounted on the vertical panel; the same panel from which the test leads exit. On later units, after mid-1970, this jack was relocated to the



PICTORIAL 10

Fig. 3A: From the Nov. 1967 Manual



PICTORIAL 10

Fig. 3B: From a later. (1972?) Manual

top panel between the power and DC polarity slide switches.

The original IM-17 meters came with a boxy shaped black polypropylene case. Sometime around the middle of 1970 the case was changed to a more streamlined case. Evidently the new case was originally black but Heathkit switched to beige by the time the 1971 main 810/71 catalog was printed.

Figure 3A is pictorial 10 from the 11/10/1967 kit manual and figure 3B is the same pictorial from a later (possibly 1972) manual. Not only do they show the different style of cases but also the different locations for the accessory jack.

IM-17 Controls:

Table I shows the controls and connections of the IM-17 Utility Voltmeter. All the external controls and the meter mount on the horizontal panel. The front vertical panel is used for input connections.

IM-17 Construction:

Most of the components except the meter and major controls mount on a single circuit board, including the two battery holders and the large four-deck rotary switch. The board, in turn, mounts to the 'L' shaped chassis by the two large meter terminal studs and the rotary switch bushing.

Assembly involves first wiring the rotary switch. Many of these wires are open at the other end and will be attached later to the circuit board. The diode and one resistor mount to the switch. The rear switch layer has PC terminals that will attach to the circuit board. The switch is then put aside and the circuit board is assembled next. Five transistors, three PC-mount potentiometers, two battery holders, three capacitors, eight standard resistors, including one 2-watt resistor, and seven precision resistors are soldered to the board. One of the capacitors stands up vertically from the board and its other lead will be attached to the rotary switch. The switch is then attached to

Top panel from Left to Right:

Meter - 4-1/2" 200 μ A. Four scales - top to bottom:

OHMS (0 to INfinity. 10 Ω center scale, non-linear, **Green color**)

DC (0 - 10 linear, **Black color**)

AC (0 - 10 semi-linear, **Red color**)

AC (0 - 1.2 semi-linear, **Red color**)

Remaining panel from top to bottom (Three rows):

Top Row (L to R):

ZERO adjust (potentiometer)

OHMS adjust (potentiometer)

Middle Row (centered):

Mode Range Sw. (rotary switch 12 position)

1 DC VOLTS Black text (8:30 o'clock position)

10 DC VOLTS Black text (9:30 o'clock)

100 DC VOLTS Black text (10:30 o'clock)

1000 DC VOLTS Black text (11:30 o'clock)

1.2 AC VOLTS Red text (12:30 o'clock)

10 AC VOLTS Red text (1:30 o'clock)

100 AC VOLTS Black text (2:30 o'clock)

1000 AC VOLTS Black text (3:30 o'clock)

R x 1M Green text (4:30 o'clock)

R x 10K Green text (5:30 o'clock)

R x 100 Green text (6:30 o'clock)

R x 1 Green text (7:30 o'clock)

Bottom Row (L to R):

Power **OFF - ON** (slide-switch - 3pdt)

Accessory jack (1/4" phone jack)¹

DC polarity **DC+ DC-** (slide-switch - dpdt)

Front panel from Left to Right:

Red AC - OHMS test lead with red probe²

Black COM test lead with alligator clip²

Gray DC test lead with black probe²

Accessory jack (1/4" phone jack)³

Internal Controls:

BIAS ADJust (dual ganged potentiometer)⁴

DC CALibration (potentiometer)⁴

AC CALibration (potentiometer)⁴

¹ Only on units built after mid August 1970

² Permanent test lead that exits through a grommet

³ Only on units built before mid August 1970

⁴ Mounted on the circuit board

Table I: IM-17 Controls and Connections

the board using the switch's PC mount terminals and the switch's leads are soldered to the board, as is the free end of the vertically mounted capacitor, and the circuit board is put aside.

The Chassis/Panel is assembled next. Plastic grommets are mounted where the leads exit, the accessory phone jack is installed, as are the two slide switches and two potentiometer controls. Then the meter is installed and the face is protected with cardboard. The three test leads are assembled, and run through their respective grommets. The circuit board is then placed next to the 'L' shaped chassis and they are wired together.

Finally the circuit board and chassis are attached, two final wires are soldered to the **OHMS** pot, the knob is aligned, assembled and installed, and the 'blue and white' model/serial # label is attached. The unit is then calibrated prior to being fitted into the polypropylene case.

IM-17 Calibration:

After a recommended final inspection of the wiring, the controls are preset, the meter is mechanically zeroed and the batteries are installed. The power is then turned on and the internal **BIAS ADJ** is adjusted so the meter reads zero. The **ZERO** control is then checked for proper response.

Next the DC calibration is performed. With the meter on the 10 volt range the DC probe is connected to the positive terminal of the internal 1.5 battery (I hope whoever bought the kit bought a fresh battery) and the internal **DC CAL** pot is adjusted for a meter reading of 1.5 on the black 10 V scale.

The AC calibration follows. With the meter on the 1000 volt AC scale, the meter is calibrated by carefully connecting the red and black test leads to a 120 volt household outlet and adjusting the **AC CAL** pot so the meter reads 1.2, on the black scale.

Generally meters are calibrated at points where the meter is close to full-scale. These calibrations are performed in the lower 20% of the meter movement.

The **OHM** ranges aren't calibrated but checked that they can be set at full scale with the test leads open and set at zero with the test leads shorted.

The final calibration involves resetting the **BAL ADJ** pot so that it will remain calibrated as the voltage on the mercury cell starts to decline.

Circuit Description:

The circuit can be divided into two sections; the input section with its resistance divider chain and the meter amplifier circuit. The dividing line for these two sections is the protection circuit prior to the gate of the FET transistor. A schematic for the IM-17 may be found at:

<http://www.w6ze.org/Heathkit/Sch/IM-17-Sch.jpg>

DC Input Circuit:

When measuring DC voltages the shielded probe with a built-in 1 megohm resistor is utilized. The lead is directly connected to the 10 megohm divider consisting of a 9M Ω , 900K Ω , 90K Ω , and 10K Ω (9K Ω , 990 Ω and 10 Ω in series). If the 1 megohm resistor in the probe is included the four DC voltage ranges get divided by 10/11, 1/11, 1/110 and 1/1100 for the 1V, 10V, 100V and 1000V ranges respectively, resulting in a voltage of 0.91 volts full-scale for each range being applied to the protection circuit.

AC Input Circuit:

When measuring AC voltages a direct probe is used. The AC voltage is isolated through a 1.6KV rated capacitor. The lower three ranges are then connected directly to the rectifier circuit while the 1000 volt range is first divided by 10 by a 1.8M Ω and 200K Ω divider. This divider protects the rectifier diode, which is rated at 750V PRV. The rectifier is a silicon diode (1N2071) which, along with a 0.05 μ F capacitor, changes the AC voltage to a DC voltage equivalent to the peak AC voltage. At lower voltages the diode adds some nonlinearity on

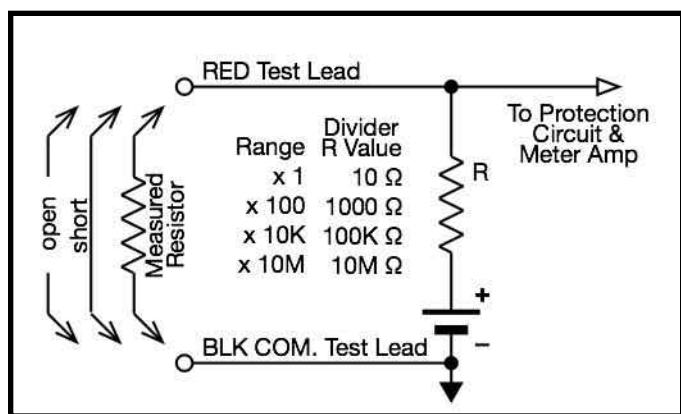


Figure 4: OHM Divider Circuit (Simplified)

the two lower ranges which are compensated for by using different meter scales for those ranges. The AC voltage is then applied through a resistor to the same voltage divider chain used for DC. The resistor provides rough conversion from peak to RMS voltage. The same divider range is used for both the 100 and 1000 volt AC ranges since the latter was already divided by 10. The result is a full-scale voltage of around 0.91 volts for each range being applied to the protection circuit. The bias circuit (discussed later) slightly forward-biases D1 to allow AC measurements near zero.

OHM Circuit:

Figure 4 shows a simplified schematic of the ohm circuit. The 1.5 volt battery in series with the 9.1Ω resistor is switched-in in place of the 10Ω at the low end of the divider chain. The

Measured Resistance	% Full Scale	Measured Resistance	% Full Scale
0	0.00	50	0.83
1	0.09	100	0.91
2	0.17	200	0.95
5	0.33	500	0.98
10	0.50	1000	0.99
20	0.67	OPEN	1.00

TABLE II: % Meter Full Scale for Different Measured Resistances

additional 0.8 ohms is made up by the internal resistance of the battery when supplying the needed current for the R x 1 measurement; at higher ranges the 0.8Ω is insignificant. The value of R in figure 4 depends on the ohms scale selected. It is 10Ω, 1KΩ, 100KΩ or 10 MΩ for the R x 1, R x 100, R x 10K and R x 1M ranges respectively. Notice that if the test leads are open (infinite resistance), the voltage to the protection circuit is 1.5 volts. The OHM adjust pot controls the gain of the meter amplifier (yet to be covered) when on an ohms range, and it is adjusted so the 1.5 volts causes the meter to read full scale. Now, if the test leads are shorted together (zero resistance) the voltage at the protection circuit is zero. On the R x 1 range R in figure 4 is 10 ohms. Now, if a 10Ω resistance is placed between the test leads then a voltage divider is created between R and the test resistance. Since the two resistors are identical the voltage to the protection circuit is 0.75 volts which will result in the meter moving to half scale. On the meter's ohms scale, half scale is 10. Values for resistances between 1 and 1000 are given in table II. This is valid for all scales by applying the proper scale multiplier.

Protection Circuit and Meter Amplifier:

The IM-17 uses four NPN silicon transistors and a junction FET (Field Effect Transistor). After the divider chain, the voltage goes through a simple protection circuit to the gate of the FET which controls a balanced bridge meter amplifier. The protection circuit consists

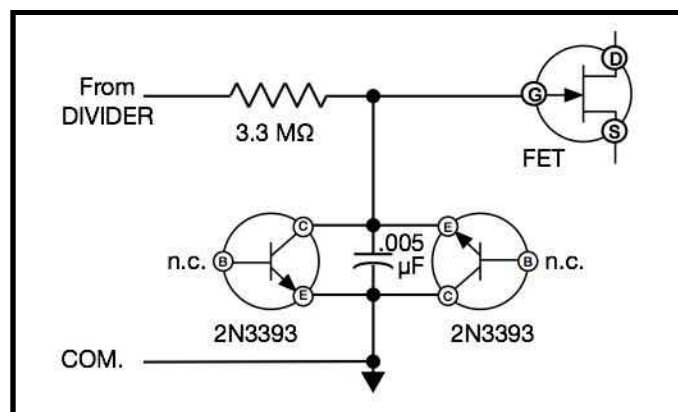


Figure 5: Protection Circuit

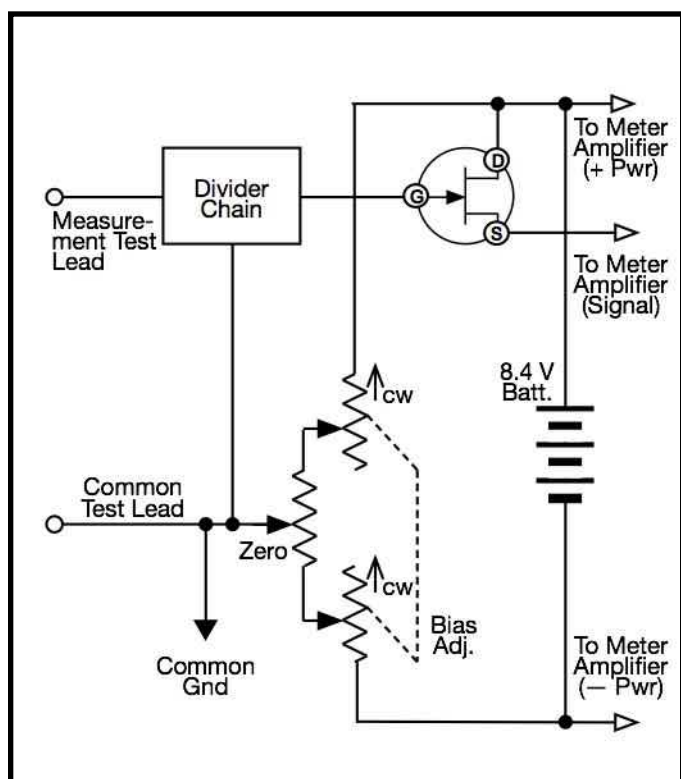


Fig. 6: FET Bias Adjustment Circuit

of a 3.3 megohm series resistor followed by back-to-back silicon transistors from the FET gate to common. See figure 5.

The 3.3 MΩ resistor, while a large value, is small compared to the high input resistance of the FET; and attenuation is corrected when the meter amp is calibrated. The transistors, with their base connection open, act as zener diodes with a rough breakdown voltage of 25 volts (V_{CEO}). Should excessive voltage reach the 3.3 MΩ resistor one of the transistors will clamp the voltage, depending on the voltage polarity. The capacitor slows any sharp voltage pulses until the transistors can conduct.

The FET acts as a follower with very high input resistance and low output resistance effectively isolating the divider from the meter amp. Zero is established by applying the proper

bias to the FET's gate. To do this the ZERO pot and the internal BIAS ADJ pot set the ground reference for the divider chain, which in turn sets the bias voltage on the FET relative to the source lead. The front panel ZERO pot provides a fine adjustment and the internal BIAS ADJ. dual ganged pot provides a coarse adjustment. Figure 6 shows a simplified schematic of the circuit excluding the protection circuit.

The meter amplifier consists of two 2N3393 silicon transistors in a bridge circuit (See Figure 7 for a simplified circuit diagram). Q3 is biased to have about 4.5 volts on its emitter. With the BIAS ADJ. and ZERO controls set properly and no input, the FET is conducting about 0.25 mA resulting in about 4.5 volts on the emitter of Q2. The meter will then have the same voltage on both terminals and read zero. The ZERO control may be adjusted a bit to compensate for any component tolerances to make the meter read zero. Now, when an additional positive voltage appears on the gate of the FET, it conducts more and Q2 draws more current making the meter read positive as the

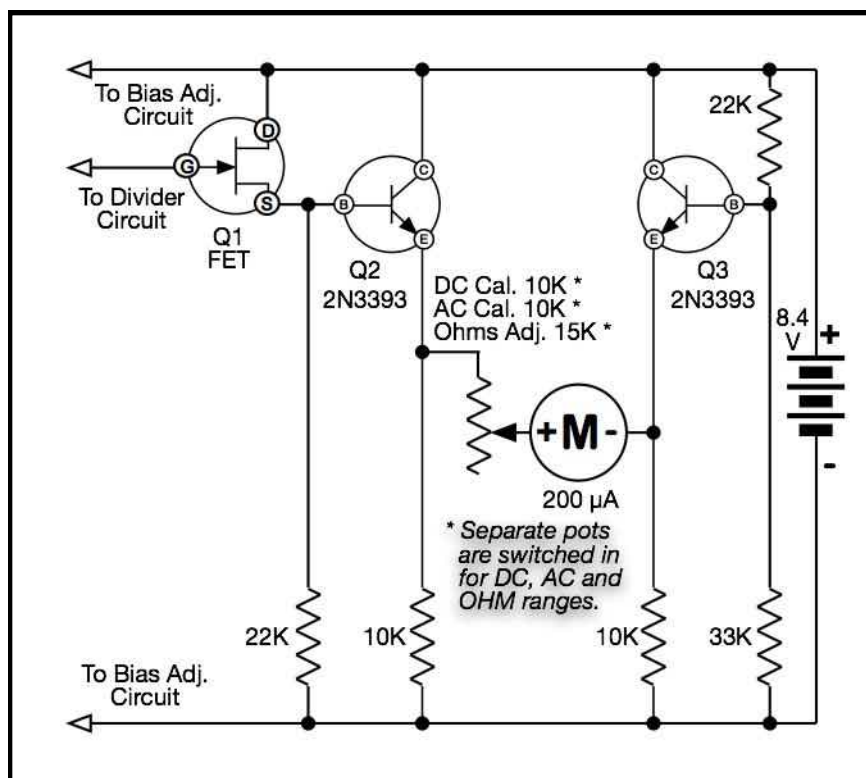


Fig. 7: Meter Amplifier Circuit

emitter goes more positive. In the case of negative DC voltage the meter will move downscale. Not shown in Figure 7 is a polarity switch that functions only on DC ranges. The switch reverses the meter terminals for measuring negative DC voltages without the need to swap leads and possibly make the chassis hot. This switch, and separate calibration pots, are switched in by the range switch for the AC and DC ranges, and the external OHM control is switched in for the OHM ranges.

Power comes from the two batteries. A three pole switch controls the power. In the ON position the two batteries are connected to the circuit. In the OFF position the batteries are disconnected and a short is placed across the meter to protect it. (See Meter Protection sidebar.)

The IM-5217 Solid-State Portable VOM:

The IM-17 stopped production in late 1977. It was over a year before Heathkit introduced a replacement, the IM-5217 selling for \$44.95. This meter has many improvements over the older meter. Table III lists the differences I've discovered so far. Of significance is the new DC and AC ranges (1.5 DC/1.7 AC, 15, 150 and 500 V), the replacement of the mercury cell with two 9-volt batteries, and use of a more sensitive meter. Also the meter uses a single, switchable, test probe for DC and AC - Ohms. The IM-5217 remained in production until 1987. At the end it was selling for \$49.95.

IM-17 vs. IM-5217 Calibration:

The older IM-17 with its 1 (1.2 on AC), 10, 100, 1000 volt ranges make simple yet accurate calibration a problem. The calibration procedure offered by Heathkit uses the 1.5 volt battery for DC calibration and the 120 VAC line voltage for AC calibrations. These calibrations are done on the 10 VDC and 1000 VAC ranges, and the calibration point is in the lower 1/5 of the meter scale. Thus any slight error in calibration is magnified about five-fold near meter full-scale. The IM-5217 uses a 1.5 VDC and 150 VAC range for calibration, both in the upper fifth of the meter scale, resulting in more accurate calibration.

IM-17 vs. IM-5217

Item	IM-17	IM5217
Accessory Jack:	YES	NO
Meter Power:	8.4V Hg Cell	Two 9V batts.
Ohms Power	C-cell	[same]
DC Ranges:	1, 10, 100, 1000 VDC	1.5, 15, 150, 500 VDC
AC Ranges:	1.2, 10, 100, 1000 VAC	1.7, 15, 150, 500 VAC
Ohm Ranges:	Rx1, Rx100, Rx10K, Rx1M	[same]
Freq. Response:	± 1dB 10Hz to 1 MHz	[same]
Meter:	4-1/2" 200 µA	4-1/2" 100 µA
Test Leads:	2 + Common	1 + Common

Table III

When calibrating the IM-17, you may want to borrow a calibrated meter and a voltage source and calibrate the meter near the top of one of the ranges.

Summary:

The IM-17 is a handy meter to use for simple tasks around the ham shack, house or car. While it lacks some of the bells and whistles of more expensive meters, it is portable and reasonably rugged. Unfortunately, the SoCal ozone seems to do quick work of the brown polypropylene case the later IM-17 came with, causing it to disintegrate. Perhaps this is not common in other parts of the world, but my ID-29, which uses the same style case, fell apart. The later blue-style cases seem to stand up better.

Coming Up"

It's time write about another amateur radio product. There has been a lot of discussion on the HG-10, and HG-10B External VFOs on a Heathkit user group. External VFOs were used by many hams in years past after they moved up from the novice license and no longer needed to be crystal controlled. The Heathkit VF-1

was the first VFO and so it should be included too.

It might take an extra month to get this article out due to my current workload. We shall see.

I'd also like to do a book review of Chuck Pen-son WA7ZZE's first book **HEATHKIT A Guide to the Amateur Radio Products**. The is a very informative book packed with information on the numerous ham products offered over the years. If you find a copy, latch onto it. They are hard to find, even after a second printing. Chuck's later book **Heathkit Test Equipment Products** was reviewed in the July 2013 issue of RF.

73, from AF6C



Meter Movement Protection:

Meter movements are delicate, yet are often treated to rough handling during shipping, and use - especially in portable equipment. Sensitive meters are normally shipped with their meter terminals shorted with a wire clip. The reason is that, should the meter be jarred and the movement swing, the meter coil moves in the permanent magnetic field that is part of the meter movement. Without the short a small voltage is produced on the terminals. However, if the meter is shorted, current flows in the meter which in-turn produces an opposing magnetic field damping the meter so it moves significantly less for a given jarring. This helps protect the meter movement from damage. In the IM-17 one of the sections of the power switch shorts the meter terminals together when in the off position to help protect the meter movement.

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

Thanks - AF6C

The NEDA #1611 M 8.4 V Mercury Cell:

Mercury cells have some traits that made them very good for use in watches, hearing aids and portable instruments like the IM-17. They have a long shelf life of more than ten years, they are less likely to leak than zinc carbon batteries and they maintain a more steady voltage as they are discharged due to use.

Unfortunately mercury is a toxic metal and a lot of it was ending up in the landfill due not only to mercury cells, but also because mercury was added to other types of batteries too. In 1996 Congress passed the **Mercury-Containing and Rechargeable Battery Management Act (the Battery Act; Public law 104-142)** and almost overnight mercury batteries became unobtainable. The NEDA #1611 (without the 'M') was also available as a zinc carbon battery. Evidently purchasers of the IM-17 were having trouble finding the mercury cells, so shortly after introduction, Heathkit included a sheet informing people where to purchase these batteries. The sheet also stated: ***In an emergency a 9 volt zinc carbon battery (also NEDA #1611) can be used, but the result will be shortened battery life, excessive "zero" drift and possible battery contact problems.*** Today the battery is still available as an alkaline NEDA #1611 A (Exell 206A) Unfortunately, the battery sells for between \$20 and \$25 which is right around the price of the kits when they were first introduced.

6 Months of Contesting

September

- 9-10 EME – 23 GHz & Up
- 9-11 September VHF
- 16-17 10 GHz & Up – Round 2

October

- 7-8 California QSO Party

November

- 4-5 EME – 50 to 1296 MHz
- 4-6 November Sweepstakes – CW
- 18-20 November Sweepstakes - Phone

December

- 1-31 Spend time with friends and family on and off the radio

January

- 1 Straight key night
- 6 Kid's Day
- 6-7 RTTY Round Up
- 20-22 January VHF Contest

For sale to a club member, for a reasonable donation to the OCARC club coffers:

Hallicrafters HP-120-12 12DC Mobile Power Supply for the SR-120 Transceiver.
Includes the MR-120 Mobile Mounting rack. A donation from WA6POD.

Contact Bob Eckweiler af6c@w6ze.org





October 20th 7:00PM

**American Red Cross
600 Parkcenter Drive
Santa, Ana, CA
Room #208 - Second Floor**

**FOR MORE INFORMATION GO TO
WWW.W6ZE.ORG**

Mark Your Calendar



OCARC 2017

ANNUAL AUCTION



Friday, October 20th, 2017 @ 7:00 PM
Room opens 6 PM for Registration and Inspection

Held at...
American Red Cross
600 Parkcenter Drive, Santa Ana, CA
Second Floor Rm #208

by Tom W6ETC

Auction Rules

The room will *open at 6:00 PM* to allow registration, set-up and viewing. All buyers and sellers are welcome.

The following rules for the 2017 OCARC auction will be in effect:

1. Only Ham radio or electronic equipment / items will be allowed,
2. You must register prior to or at the auction site the day of the auction when doors open. Registration is Free*.
3. Sellers should number each item in their lot. A tag should indicate the minimum bid they expect.
4. Only 3 items from a Sellers lot will be auctioned during each turn and then the auctioneer will move on to the next lot.
 Once the other lots have been offered the auctioneer will start the second round of auctioning with the next 3 items in Lot #1.
5. Auction bidding will take place as follows:
 - (a) \$0.00-to-\$5.00 bidding will take place in \$0.50 increments.
 - (b) Over-\$5.00-to-\$50.00 bidding will take place in \$1.00 increments.
 - (c) Over-\$50.00-to-\$100.00 bidding will take place in \$5.00 increments.
 - (d) Over-\$100.00 bidding will be in \$10.00 increments.
6. Rules 4 and 5 may be changed at the auctioneer's discretion to expedite the auction.
7. Payments for purchased items are due at the end of the auction and shall be by cash or check with the appropriate ID. No two-party checks or credit cards are allowed. Disbursements to the Sellers will be by OCARC check, only.
8. *Sellers will be charged **10% of the selling price** for items sold by OCARC. A special table will be set up for items donated to the OCARC. Proceeds from the sale of donated items will go into OCARC operational funds.

For more information go to www.w6ze.org



UP COMING EVENTS

SEPTEMBER 15, 2017 MEETING

Michael Rickey, AF6FB will speak on both the PAPA repeater system and D-Star equipment and technology. Michael is very active on the PAPA repeaters using DMR, D-Star, as well as analog modes. He also hosts an amateur radio blog at <http://www.af6fb.net>

OCTOBER 20, 2017 MEETING

This will be the annual OCARC auction night with Chip Margelli, K7RA returning as auctioneer. Members are invited to empty garages and offer those treasured boat anchors for sale. Even valuable working equipment is welcomed for sale. This is your chance to buy a bargain addition for your shack.

NOVEMBER 17, 2017 MEETING

Doug Millar, K6JEY, will speak on "Test Equipment & Measurements for Amateur Radio". Doug will bring an accurate voltage source. He asks that members bring a personal meter to the meeting and he volunteers to calibrate member's voltmeters at the meeting.

DECEMBER 09, 2017 CHRISTMAS DINNER

Plans are to return to Mimi's for our dinner. Details to be announced when firm.

JANUARY 12, 2018 MEETING

Lito de los Reyes, WI6Y will make a presentation on the All Star network. Lito previously presented a very interesting show and tell on the All Star system and will expand upon its growth and advantages.

FEBRUARY 16, 2018 MEETING

To be announced.

MARCH 16, MEETING

Tim Duffy, K3LR, from DX Engineering will present via Skype. The topic will be an introduction to the amazing Multi Multi K3LR contest station.

For the most current Upcoming event information go to: <http://www.w6ze.org/Events.html>

Tom W6ETC

OCARC GENERAL MEETING MINUTES 2017-08-18

The OCARC General meeting was held at the Red Cross Complex in Santa Ana on August 18, 2017.

Club Officers: There was a quorum with all officers present with the exception of Greg W6ATB and Dan N6PEQ.

Attendance: We had 19 members, six guests and two guest speakers sign the attendance log.

Meeting was called to order at 7:10 pm and was followed by the Pledge of Allegiance to the Flag and introductions of the members and guests.

Announcements:

- Tim N6TMT gave a description of the items to be raffled off at the end of the meeting.
- Nicholas AF6CF brought recently donated items to be disposed by means of a “mini auction” after the break.

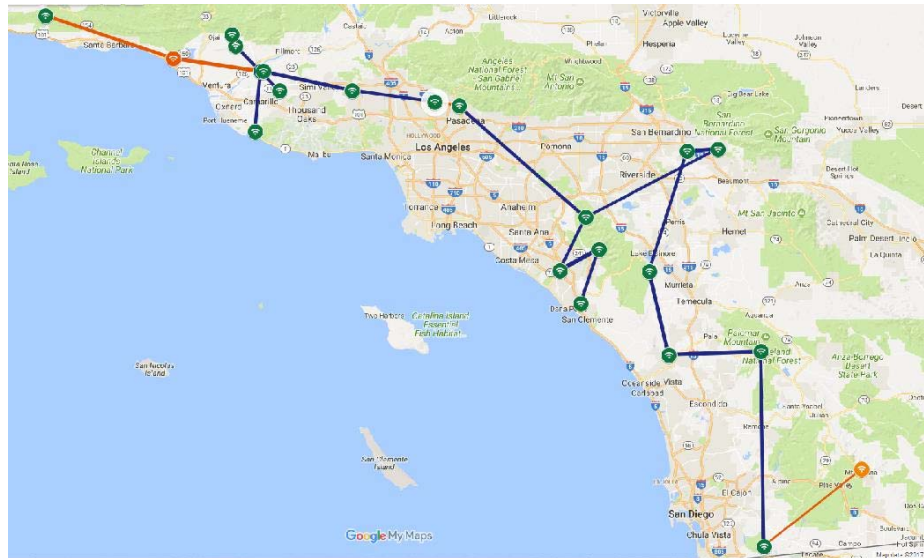
August Program:

An update on the AREDN Broadband Mesh Net was the program subject for the August General Meeting. The co-presenters were Don Hill KE6BXT and Joe Ayers AE6XE. Both Don and Joe are long time spokesmen for AREDN, the Amateur Radio Emergency Data Network, and have over the past few years given OCARC members periodic updates on the status and capabilities of AREDN.



Joe AE6XE talks about AREDN and MESH

The presentation consisted of a brief history of MESH Networks, changes made during the last year and descriptions of antennas and equipment now in use.



Hamnet-Backbone status as of 2017-08
(Green lines are microwave – red lines are internet “tunnels”)



“Special Edition” version of MESH microwave dish.

The website for the Orange County Mesh Organization is www.ocmesh.org.

Intermission was taken from 8:24 pm to 8:41 pm

Announcements by the President:

- Tim N6GP thanked Tom W6ETC for the use of his trailer to transport the donated items from SK Robert Hill K6COE. Tim also thanked Nicholas AF6CF, Ken W6HHC, Bob AF6C, Arnie N6HC, Frank KK6AWB and Wayne W6IRD for their help.



OCARC Crew Load up Equipment from estate of K6COE

- The club is in need of an auctioneer for the annual October auction. Chip K7JA will be away on business and his services will not be available.
- The club picnic is scheduled for October 7 at the Jeffery Open Space Park in Irvine. The picnic will coincide with the California QSO Party so a station will be setup for OCARC participation and possibly a foxhunt.

Show and Tell:

- Nicholas AF6CF brought an frequency meter and his new pneumatic antenna launcher to share with the members.

Ask the Elmer:

- Wardy N6SKE asked about how sloping angles of a dipole will affect its performance. Arnie N6HC made suggestion on his installation.

GOOD of the CLUB:

- The Mini Auction produced \$38.00 for the club treasury and several happy "High Bidders".

Bioenno Power Battery:

- Tony W6TNY held the winning ticket for the 12 V 12 amphour LiFePO4 (Lithium Iron Phosphate) Battery.

Meeting Adjourned at 9:16 pm

Submitted by *Ron Mudry W6FPS*

- OCARC Secretary

OCARC BOARD MEETING MINUTES 2017-09-02

The April OCARC Board meeting was held at the Marie Callender's Restaurant at 1821 N. Grand Ave in Santa Ana on September 2, 2017.

Meeting Called to Order: 8:08 am

Roll Call:

Pres.: Tim N6GP, Present	Vice Pres. Jim AF6N, Present
Sec.: Ron W6FPS, Present	Membership: Bob AF6C, Present
Tech.: Clem W0MEC, Present	Treasurer: Ken W6HHC, Present
Activities: Tim N6TMT, Present	Publicity, Dan N6PEQ, Absent
Directors at Large: Greg W6ATB, Absent	Nicholas AF6CF, Present

Members Present: Corey KE6YHX, Greg KG6PTL

DIRECTOR REPORTS:

- ☐ **Vice President** – Jim AF6N reviewed the lineup of guest speakers for the upcoming month (see Entertainment below). Jim is also trying to recruit John Stanford KF6I as a guest speaker in 2018. John's expertise is in the repair of liner amplifiers.
- ☐ **Secretary** – Ron W6FPS said he would send a thank you letter to Cherie Ericson, who is the daughter of a Silent Key, Robert Hill K6COE, for the donation of his ham radio equipment to OCARC. The donated items will be auctioned off at the October General Meeting.
- ☐ **Membership** – Bob AF6C reported the current membership is now 86 members and that he will be publishing an updated roster at the end of the month.
- ☐ **Technical** – Clem W0MEC reported that he now has his Elecraft KXPA100 amplifier on the air and should be received better on the Wednesday Night Nets.
- ☐ **Treasurers Report** – Ken W6HHC handed out copies of OCARC Cash Flow – Year to Date report. Ken said the club good financial status was largely due to the sale of donated equipment.
- ☐ **Activities** – Tim N6TMT announced the ARRL Southwestern Division Convention will be held in Torrance, CA from September 15 thru 17.
- ☐ **Publicity** – No Report.
- ☐ **Directors at Large** – Nicholas AF6CF is working on a go box for his KX3. Time permitting Nicholas will be working on a "Show and Tell" page for the OCARC website. Nicholas said the "kilowatt" battery is available for the upcoming club picnic.

OLD BUSINESS:

- ☐ **Newsletter Editors**
September - Greg W6ATB, October - Corey KE6YHX, November - Tim N6GP, December - Jim AF6N.
- ☐ **Entertainment** – Guest speakers are as follows, September – Michael Rickey PAPA System/D-Star, October – Auction, November – Doug K6JEY Test Equipment, January – Lito WI6Y All Star Network, February - ?, March – DX Engineering SKYPE Presentation.

- **Club Historian** – Corey KE6YHX distributed his report on his progress with the Santa Ana Library and web site projects.
- **Field Day** – Reimbursements to Bob AF6C and Robbie KB6CIZ have been made.
- **Christmas Banquet** – With the Mimi's reservations finalized Tim N6TMT is in the process of verifying the menu. A budget of \$500.00 for door prizes and \$150.00 for women's gifts was approved by the Board. In addition the Board approved a prize pool of a hundred \$10 squares to be sold with the winner receiving an Icom IC-7300. In order to purchase squares the purchaser must have purchased a Christmas Banquet Ticket or have one in his/her possession. A maximum of 10 squares will be sold to any one member. The winner need not be present at the banquet.
- **OCARC Picnic and Foxhunt**– The date will be Saturday October 7 and the location will be the Jeffery Open Space Park. A page will be in the September RF giving details. Questions should be directed to our Activities Director Tim N6TMT.
- **Promotional Items** – Nicolas AF6CF passed around a sample of a club business card that could be handed out by our club members to those who might be interested in amateur radio and in OCARC. Bob AF6C also has a business card that is formatted as a QSL card with club information which he will email to the Board members for their consideration.

NEW BUSINESS:

- **Nomination Committee** – Tim N6GP, Tim N6TMT, Jim AF6N and Ron W6FPS will comprise the Nomination Committee for next year's club officers and directors.
- **Hurricane Harvey** – Jim AF6N suggested that the club make a donation to a relief fund for those affected by Hurricane Harvey. The Board approved a \$150.00 donation to the Red Cross. Jim was given a check that he will deliver to the Santa Ana Red Cross office.
- **Winter Field Day Site** – We are in the process of selecting a site for the OCARC 2018 Winter Field Day operation. Anyone with a suggestion for a site should contact the Activities Director. Ron W6FPS is looking into sites in the Huntington Beach area.
- **QST Collection** – Bob Dahlin (SK) had a bound collection of QST from 1925 to 1987 for sale or possible donation. Corey KE6YHX will contact the Santa Ana Library to see if they are interested and have shelf space available. Anyone interested should contact Bob.
- **Club Loaner Rig** – Bob AF6C wanted to remind the members that the club has a Kenwood TS-120S and power supply available as a loaner rig to those that might have recently upgraded to HF privileges.

GOOD of the CLUB:

- **RFI (Aircraft)** – Bob AF6C said aircraft landing at John Wayne Airport are experiencing radio interference on their final approach when over the Lemon Heights area. Finding the source of interference via a T-hunt would be a great public service that OCARC might be able to provide.
- **RFI (Water Heater)** – Tim N6GP has failures of his new water heater igniter electronics after he has been on the air. He suspects rfi is causing the failures.
- **SDR** – Ken W6HHC offered to write an RF article on a 6 meter to 6 GHz software defined radio the he recently purchased from Analog Devices for \$99.00.
- **Software Defined Radio** – Tim N6TMT asked the question, "Why does appear that Icom is the only manufacturer coming out with new SDR equipment and not Yaesu or Kenwood". It was pointed out that FlexRadio and Elecraft are heavily into SDR.

Meeting Adjourned 10:03 am

Submitted by *Ron Mudry W6FPS, Secretary*
OCARC Secretary



HAMCON 2017

ARRL Southwestern Division Convention

September 15-17, 2017

Torrance Marriott Redondo Beach Hotel
3635 Fashion Way
Torrance, CA 90503



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- Full range of talks by experts on radio equipment, operating techniques, public service, DXing, technical subjects, and much more
- 10,300 sq. ft. Vendor/Exhibit Hall with 63 booth spaces
- Distinguished speakers at Saturday lunch and dinner, and Sunday breakfast
- Extensive prize drawings
- W1AW/6 Special Event station
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- Sunday swap meet
- Discount hotel room rates (available through the Marriott link on our website)
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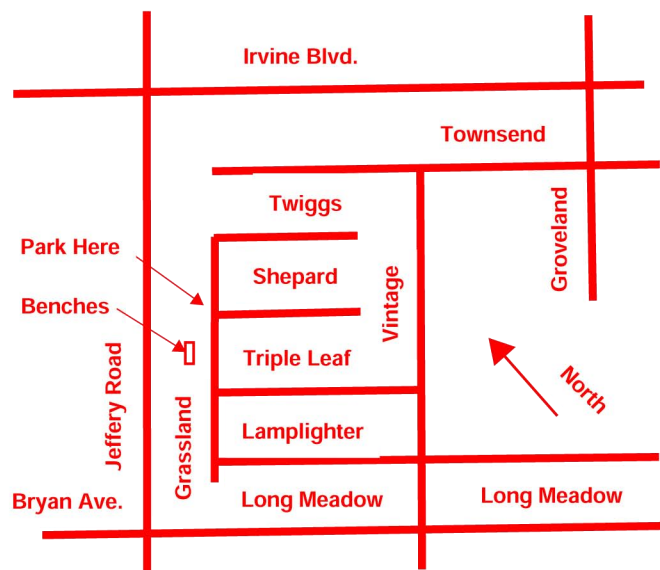
- Includes Catered Buffet Dinner in the Officer's Wardroom
- Tour the Radio Room (not open to the general public) and operate the ship's NI6BB amateur station
- Bus transportation to and from the Marriott Hotel included
- Limited to 80 guests, so register early

For complete convention details, registration and hotel bookings log onto:

WWW.HAMCONINC.ORG

Orange County Amateur Radio Club

2017 Radio Picnic – Oct 7



Where – Jeffery Open Space Park, Irvine, CA (Southeast corner of Irvine Blvd and Jeffery Road)

When- October 7, 2017, around 10:30. Board of Directors Meeting at 8:00 followed by station/picnic setup.

October 7 is the weekend of the California QSO Party. Come and join fellow OCARC members and guest at the Jeffery Open Space Park for a day radioactive friendship. We are planning to have a station on the air operating in the California QSO Party and possibly a Fox Hunt.

Participants should plan on bringing their own food and drinks. Additional picnic chairs would be a good idea.

Parking is available at the intersection of Shepard and Grassland which is very close to the picnic benches.

Antennas will most likely be a 20M vertical and a few dipoles. There are 40 foot trees at each end of the picnic area offering a chance to try out your antenna launchers. Rigs will be IC-7000 and Yaesu FT 857.

The facilities include four park benches and clean restrooms. Club popup tents will provide shading.

OCARC Cash Flow - Year To Date

1/1/2017 through 8/29/2017

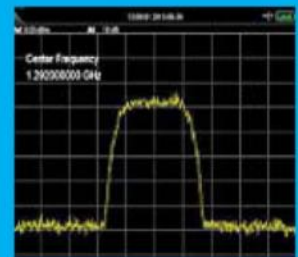
Category	1/1/2017- 8/29/2017
INFLOWS	
ARRL Membership Income	95.00
Badge Income	5.00
Dues, Family	90.00
Dues, Family (PayPal)	206.03
Dues, Future (PayPal)	57.66
Dues, Membership	742.50
Dues, Membership (PayPal)	778.13
Field Day Food Income	375.00
Opportunity Drawing -Monthly	195.00
Refreshments Income	54.00
Sale Of Equipment	1,008.00
TOTAL INFLOWS	3,606.32
OUTFLOWS	
ARRL Membership Expense	93.00
Bank Svc Chg	40.00
Field Day - Flowers	53.88
Field Day - Gas	39.59
Field Day Equipment	212.04
Field Day Food Reinbursement	525.00
Field Day Rental	51.72
OCARC Historian	27.45
Opportunity Drawing - Monthly	142.17
PO Box Rental	64.00
Promotional OCARC Pens	42.00
Refreshments Expense	118.85
Storage Locker	544.00
Supplies	46.62
Trifold Brochure Printing	231.12
Web Site Hosting	140.91
Web Site SSL Fee	69.99
TOTAL OUTFLOWS	2,442.34
OVERALL TOTAL	1,163.98

C.U. ACCOUNT BALANCE ≈ \$6,370



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