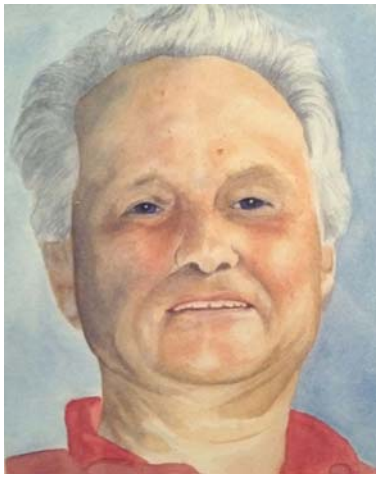
RF

ORANGE COUNTY AMATEUR RADIO CLUB, INC.

VOL. LIV NO. 5 P.O. BOX 3454, TUSTIN, CA 92781-3454 May 2013

The Prez Sez.....

by Nicholas AF6CF



Hello!

May is the month where we start finalizing the plans for Field Day, and we believe that all is almost ready. Several of our Club members are now well trained in the FD operations thanks to Professor Jeff W6UX. This month speaker will talk about Part 97 paragraph 215 operations, and that should be really interesting and exciting. As mentioned, Field Day preparations are well under way, with only a couple of meetings to go and with great ideas and input from everyone. The Generator is funded and now is the food donations turn. We still have a few positions still open, so hurry up to volunteer. The two co-chairs Dino and Bob are doing an excellent work organizing the event.

The Baker to Vegas race communications support was a big success and the Visalia DX Convention was visited by several of our members. I hope to get a first hand report at the next General Meeting. Again, don't forget the special September anniversary celebration, either. We will be really busy this year with all this and more activities. I look forward to an eyeball contact with you all at the next General Meeting.

73 DE AF6CF

General Meeting Friday May 17th

A Technical Look at Radio Control Car Racing

Program speaker Nick Sava – N6OMG (ex KD8IPE) will be talking on the subject. Nick is quite accomplished in the RC Racing circuit, and has won many championships.

The next general meeting will be on:

Friday, May 17th
@ 7:00 PM

As usual, we will be meeting in the east Red Cross Building, Room 208. See you there!

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ORANGE COUNTY AMATEUR RADIO CLUB
www.W6ZE.org

2013 Board of Directors:

President:
Nicholas Haban, AF6CF
(714) 693-9778
AF6CF@w6ze.org

Vice President:
Tim Goeppinger, N6GP
(714) 730-0395
N6GP@w6ze.org

Secretary:
Tim Millard, KJ6NGF
(714) 744-8909
KJ6NGF@w6ze.org

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

Membership:
Jay Hitchcock, KI6WZU
(714) 244-7171
ki6wzu@w6ze.org

Activities:
Doug Britton, W6FKX
(714) 742-2459
W6FKX@w6ze.org

Publicity:
Kristine Jacobs, KC6TOD
(562) 619-8870
KC6TOD@w6ze.org

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

Directors-At-Large:
Paul Gussow, W6GMU
(714) 624-1717
w6gmu@w6ze.org

Robbie Robinson, KB6CJZ
(714) 478-9713
kb6cjz@w6ze.org

2013 Club Appointments:

W6ZE Club License Trustee:
Bob Eckweiler, AF6C
(714) 639-5074
AF6C@w6ze.org

Club Historian:
Bob Evans, WB6IXN
(714) 543-9111
WB6IXN@w6ze.org

RF Editor (rotating):
Jay Hitchcock, KI6WZU
(714) 244-7171
ki6wzu@w6ze.org

WEB Master:
Ken Konechy, W6HHC
(714) 744-0217
W6HHC@w6ze.org

Assistant WEB Master:
Bob Eckweiler, AF6C
(714) 639-5074
AF6C@w6ze.org

ARRL Awards Appointee:
Arnie Shatz, N6HC
(714) 573-2965
N6HC@aol.com

John Schroeder, N6QQ
(West Orange Co.)
(562) 404-1112
N6QQ@msn.com

OCCARO Delegate:
Paul Gussow, W6GMU
(714) 624-1717
W6GMU@W6ZE.org

Contact the Newsletter:
Feedback & Corrections:
rf_feedback@w6ze.org

Submit Articles:
editors@W6ZE.org

Monthly Events:

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

Club Breakfast:
Second Saturday of every
month at 8:00 AM
Jagerhaus Restaurant
2525 E. Ball Road
(Ball exit off 57-Freeway)
Anaheim, CA

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

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

7.086 ± MHz CW **OCWN**
Sun- 9:00 AM – 10 AM
John WA6RND, Net Control

VISIT OUR WEB SITE

http://www.w6ze.org

for up-to-the-minute club information, the latest membership rosters, special activities, back issues of RF, links to ham-related sites, vendors and manufacturers, pictures of club events and much much more.

Club Dues:

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

Dues run from Jan thru Dec and are prorated for new members.

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

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

City of Orange PD Communications during the Baker-to-Vegas Race 2013

by Ken W6HHC

Since 1985, law-enforcement running teams (from around the world) have entered in a competitive foot-relay-race through the desert. This race, known as "Baker-to-Vegas" (and aka B2V), is a 120 mile long race, that starts outside Baker (CA), runs through the desert to Shoshone, then runs through Pahrump, NV and finishes at the LVH Hotel (previously known as Hilton) in Las Vegas. (see **Fig 1**) The B2V race is broken into 20 "legs" or stages. This year, about 280 different law enforcement teams participated. The runners of the Orange Police Department have been supported for many years with communications by hams belonging to COAR (City of Orange Amateur Radio) RACES, the OCARC members, and communications volunteers from Cypress. This year, thirteen OCARC members helped the OPD running team by providing planning, equipment testing, and communications over the entire race course.

The COAR RACES activities for the 2013 races began at least five months before this years race began. The COAR B2V communications project required the following five phases:

- **Planning Sessions**
- **Equipment Testing Workshops**
- **Equipment Set-up for the Race**
- **Staffing and Operating the B2V event**
- **Post B2V Review Sessions**

The City of Orange RACES plan was to set up five communications centers along the B2V race course in order to provide a "communications backbone" to support the mobile units used during the race.

- **Ibex Pass, California**
- **Shoshone, California**
- **Pahrump, Nevada**
- **Sandy Valley Road (near Rt 160), Nevada**
- **Las Vegas, Nevada**

The race started on Saturday April 13 and finished Sunday morning. This year, the Orange PD running team finished very well and placed 48 out of more than 275 teams. The running time broke the 16-hour barrier for OPD for the first time ever; but a 10 minute penalty (for replacing a runner who developed a bad ankle) pushed the official time to 16 hrs 07 minutes. The race through the desert had reasonable temperatures this year, about 99 degrees when the OPD runners started at 4 PM in the afternoon (better than 110 degrees in 2012).

Fig 1 – Map of 120-mile-long B2V Race that starts about 18 miles outside of Baker on Route 127. Red DOTS are COAR Communication Centers.

Fig 2 – Several B2V planning meetings were held by COAR RACES at the Orange Police Dept EOC room to work out details and personnel assignments. Chief Radio Officer Dave Friese KG6WRU is shown here conducting one of the planning meetings.

(Photo by Rich KE6WWK)

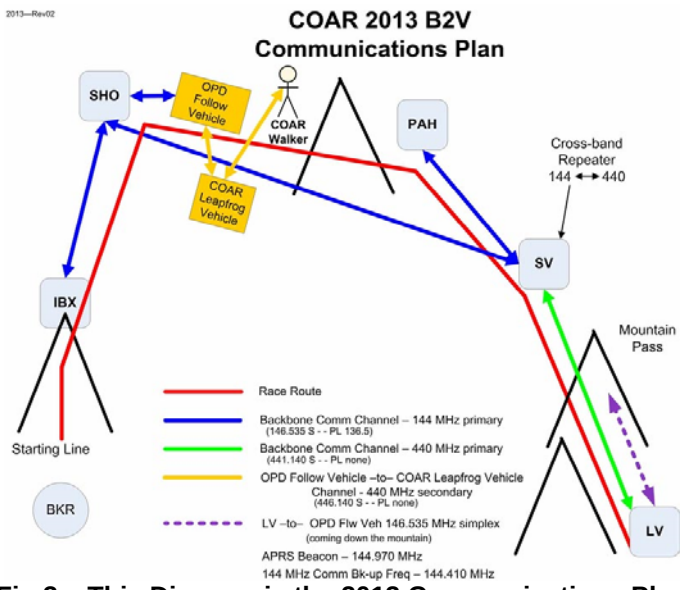


Fig 3 – This Diagram is the 2013 Communications Plan for COAR RACES. The Orange PD runner's Follow-Vehicle was always in contact with one of the five COAR Communications Centers.
(Diagram by Ken W6HHC)

Fig 4 – Ken W6HHC (seated at far left) set up a test bench (before the race) for voice radios and APRS to be used at the Pahrump Comm Center at his QTH
(Photo by Ken W6HHC)

Fig 5 – Before the race, "Follow Vehicle" is equipped with 4 radios and four sets of antennas for 144 & 440 voice communications and two 2M APRS beacons.
(Photo by W6VKO)

Fig 6 – The "Leapfrog" vehicles provided communication to the runner's gate via a "walker" with a handheld near each starting point and also to the "follow-vehicle" that was approaching to that check-point. Car markings by the Guice family (KG6MIF, KG6MIG, and KG6MIH) were awarded by the COAR Photographers Association as having best "team spirit of OPD" and declared "best-in-event".
(Photo by Quent W6RI)

Fig 7 – The ham-radio-equipped OPD "Follow-Vehicle" travels right behind the OPD runner to provide water, energy-food, and communications to any of the COAR communications base stations as well as the "leapfrog" car.
(Photo by Bobbie KG6MIF)

Fig 8 – Ibex Pass sits on top of a range that blocks radio communications between the B2V starting point and Shoshone. KF6WRM's car on the right operated as comm center to relay messages in this critical spot. Left jeep is Rover-1
(Photo by Bill W6VKO)

Fig 9 – The first OPD runner, Lee Valdez, finishes his leg and comes into the "runners chute" to tap his electronic baton. Lee beat his estimated time by two minutes! Note the vehicle traffic is sort of one-way!!
(Photo by Bobbie KG6MIF)

Fig 10 – Team 42 runner Dave Nichols keeps up a good pace during Leg #3.
(Photo by Bobbie KG6MIF)

Fig 11 – This photo taken in 2006 provides a great "feel" and terrific view of the open desert with the OPD runner (then Team #57) leading what seems to be an endless line of runners and support vehicles from competing teams.
(Photo by Byron KC6YNG)

Fig 12 – Visiting the Comm Center located at Shoshone that was headed by Rich KR6BA (R) are Mike KI6QJC (L) and Alfredo K6EGA (C).
(Photo by Steve KB6ROL)

Fig 13 – This is the antenna system that was used at the Shoshone Communications Center. The left mast with the hitch-mount-support holds the 144 and 440 MHz voice antenna. The right antenna is for 144 MHz APRS,
(Photo by Steve KB6ROL)

Fig 14 – On Friday night, the Pahrump team continues with equipment set-up. Nicholas AF6CF sets-up APRS on the notebook, while Bob AF6C is delighted to find good Wi-Fi access in hotel for FindU APRS. Ken W6HHC just acts as a supervisor.
(Photo by Vern KG6OXD)

Fig 15 – Nicholas AF6CF tries out a 20M QRP set-up on Friday night before the race. A total of 4 QSO's were made.
(Photo by Ken W6HHC)

Fig 16 – The Pahrump COAR team came out to cheer on OPD runner Damon Allen as he raced through the streets of Pahrump.
(Photo by Ken W6HHC)

Fig 17 – This photo of the Follow-Vehicle on the streets of Pahrump shows the alternate runner in the back seat with radio op, Alfredo K6EGA
(Photo by Ken W6HHC)

Fig 18 – I think of the Sandy Valley comm center as being in the "middle of nowhere". The X-band repeater sent signals down both sides of the mountain.
(Photo by Dick N6ISY)

Fig 19 – The LV-Annex was a motorhome located in the parking of the Hilton Garden Inn. Here COAR is trying to find the best direction for the 440 antenna to the Sandy Valley Road repeater.
(Photo by Bev KI6APH)

Fig 20 – The LV comm center was located inside the Hilton Garden Inn and used a simple rig to talk to LV-Annex repeater.
(Photo by Robbie KB6CJZ)

Fig 21 – At the Las Vegas finish line, runner Adam Jevec winds down after an outstanding OPD team effort.
(Photo by Bobbie KG6MIF)

Fig 22 – This group photo shows most of the 30 ham volunteers who helped COAR RACES provide communications for Orange PD running team. OPD volunteer coordinator for COAR RACES is Carmen Cardenas, in the middle of photo with grey shirt.
(Photo by Ken W6HHC)

OCARC Field Day Planning Corner

Greetings Field Day Fanatics!

We are just a little over a month away from OCARC's biggest and most exciting Field Day EVER!

Just when I think our Field Day couldn't get any bigger, something new pops up on the planning table! We are hashing out the details now, but GOTA might get a new antenna! We'll discuss it on the 24th.

We'll also need to iron out some of the equipment logistics like; How are the club's 50' tower and generator getting to the site? Who is bringing coax and what lengths? We need lots-o-coax please! Make sure you identify all your equipment!

We also need equipment picked up from a few places. This is a perfect opportunity for someone with a truck or trailer to help contribute to this year's success! Every little bit helps!

As a personal request, I need at least one person who will volunteer to take charge of the generator and power distribution. I/we will pick up the generator, cables, and distribution boxes Saturday morning with my truck. You and your team's job will be to set it up on the field, maintain it during the event, and get it ready to load back into my truck on Sunday. No experience necessary! I will assist as necessary but could sure use the help!

I'm going to say it again, there is something for EVERYONE at Field Day! Some will operate, some will set up, some will transport, others will help Kris with feeding everyone! Come out and be a part of OCARC HISTORY! WE WANT (NEED) YOU!

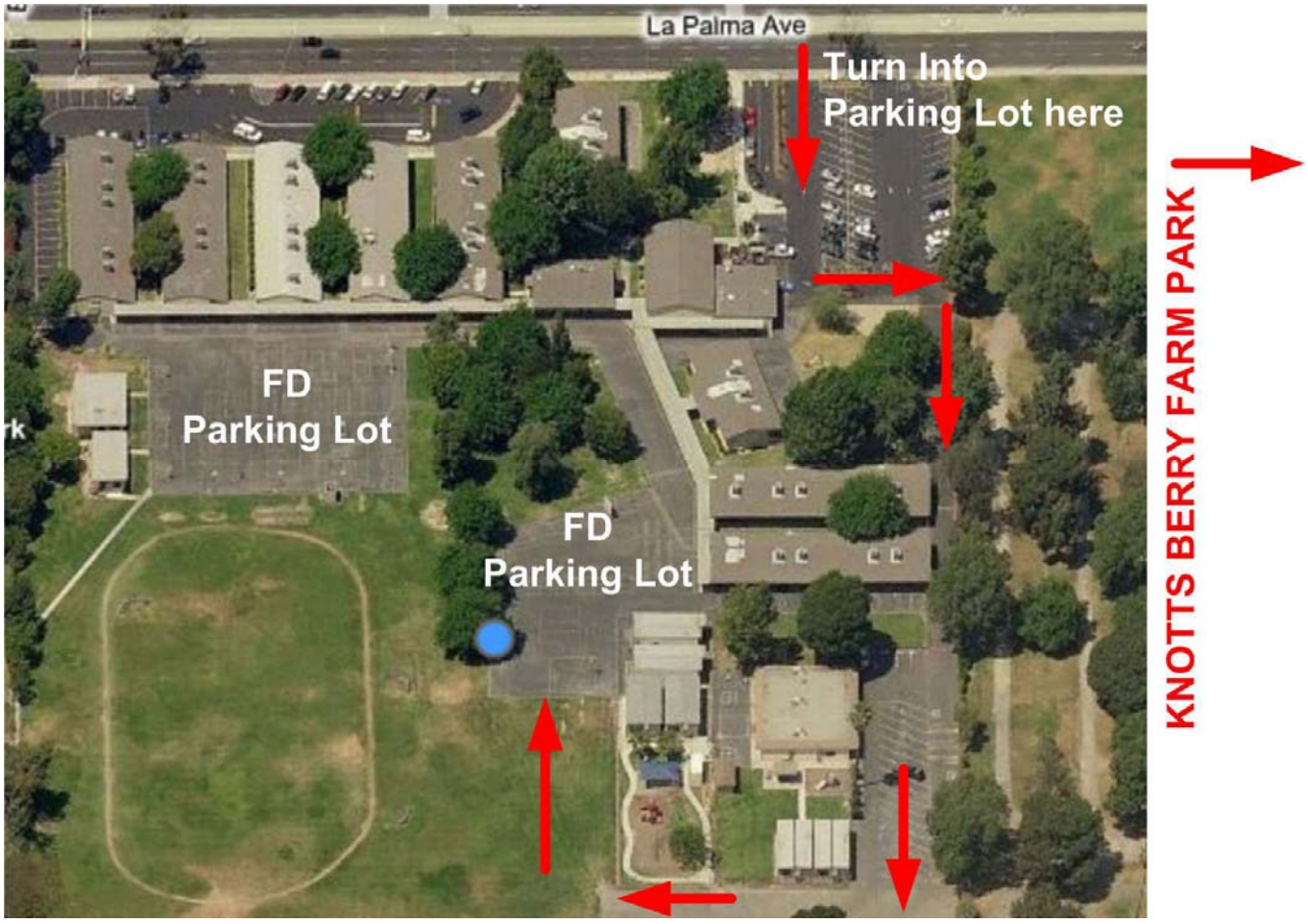
Dino - KX6D OCARC Field Day Chairman

OCARC Field Day Location Map

Field Day will be again at last year's site (Walter Knott Education Center); however this year the access to the field is slightly different than some past years. You may have to drive on a grassy area to reach the Field Day parking lot.

See aerial picture below for more details.

7300 La Palma Ave Buena Park, CA 90620



- **Head for Knott's Berry Farm**
- **Take the Beach Blvd (south) exit from the 91 or 5 FWY**
- **Turn right (west) on La Palma Ave, along the north edge of Knott's Berry Farm Park.**
- **Continue driving on La Palma, past the Knott's Berry Park to 7300 La Palma Ave.**
- **The school will be on your left on the south side of La Palma. Use the first entrance on the East side of the school buildings.**

Western Amateur Radio Association

NOW OFFERING
ARRL AMATEUR RADIO EXAMINATION SESSIONS
(All levels: Tech, General, Extra)

Sponsoring Club: Western Amateur Radio Association (WARA), Fullerton, CA

Exam Site Location
La Habra Community Center
101 W. La Habra Blvd.
La Habra, CA 90631

2013 Exam Session Schedule
Thurs, May 16
Thurs, Jun 20
Sat, June 22, From 1PM to 4PM @ the OCARC Field Day Site.
Walter Knott School
7200 La Palma Ave
Buena Park, CA.

Exam Sessions begin at 6:00 PM

Contact VE: George T. Jacob, Jr., N6VNI
Phone: Home 562-691-7898 Cell 562-544-7373
Email: N6VNI@ARRL.net

Pre-registration is requested and preferred – Walk-ins are welcome, but please arrive within 15 minutes of the published start time or call the contact VE if you are going to be late as the exam team will close the session if there are no candidates by that time.

On Exam Day Bring the Following Items

1. A legal photo ID (driver's license, passport) or Two forms of non-photo ID; e.g., birth certificate, social security card, library card, utility bill or other business correspondence with name of the examinee as it appears on the Form 605 and current mailing address.
2. Your Social Security Number (SSN) or FCC-issued Federal Registration Number (FRN).
3. If applicable, the original and a photocopy of your current Amateur Radio license and any Certificates of Successful Completion of Examination (CSCE) you may have from previous exam session. (Photocopies will not be returned.)
4. Two number two pencils with erasers, and a pen.
5. A calculator with memory erased and formulas cleared (no iPhones, iPads, etc.).
6. Test Fee: $15.00 (cash or check).

If you fail an element and wish to retake it, we are required to charge an additional test fee. If you pass an element, we typically offer and encourage you to take the next element. We do not charge an additional test fee for this and it gives you the opportunity to see what the next exam element is like!

Fox Hunt Announncement

Next on-foot transmitter hunt at Tri-City Park May 18

Every spring, ham clubs in Orange County organize an outdoor day in Placentia at Tri-City Park where they operate radios, find hidden transmitters and eat lots of good food. The annual "Antennas In The Park" (AITP) event is organized by the Fullerton Radio Club. This year it will Be Saturday, May 18 and FRC will be joined by the Catalina Amateur Repeater Association (CARA). CARA members are providing burgers, hot dogs, and soft drinks. A $5 donation per person is requested if you want to take part in the barbecue.

As usual, this year's AITP brings an opportunity to get involved in on-foot radio-orienteering, also called ARDF. It's in celebration of the sixteenth annual CQ Worldwide Foxhunting Weekend. All ages are welcome, so bring the family. AITP transmitter hunts will be simple, informal and intended primarily for beginners. There will be no charge for participation in the hunts, which will begin around 11 AM and continue until 2 PM. Be sure to bring your two-meter handi-talkie!

If you don't have the antenna/attenuator system for on-foot foxhunting on two meters with your ham radio handi-talkie or scanner, you can easily make one during this session. Beginning at 10 AM, Marvin Johnston KE6HTS will conduct a clinic for building his kits for measuring-tape yagis and for 90 dB offset-type attenuators. An assembled/tested attenuator in a special housing that goes inside the boom of the yagi is also available. If you want one or more kits, please register in advance by sending e-mail to marvin-at-west.net, so he will have the kits reserved in your name waiting for you.

It takes about an hour to put the antenna and attenuator kits together with tools and soldering irons that will be provided. If you're not an electronic technician, don't worry because there will be plenty of experts to help you. We want you to succeed! Then with your HT and the kit-built equipment, you will be all set to hunt.

Besides the transmitter hunts, AITP participants will probably have at least one HF station on the air and will do some radio-controlled sailboating. The traditional Worldwide Foxhunting Weekend cake will be served to participants in the transmitter hunts. A few canopies and tables will be set up, but for eating and sitting around, please bring your own lawn chair.

The main entrance to Tri-City Park is at the corner of North Kraemer Boulevard and East Golden Avenue in Placentia. From the 57 freeway, take the Imperial Highway exit, go east to Kraemer Boulevard, turn right (south), continue to Golden Avenue and turn right into the park. This event will be in the northeast corner (to the right as you enter the park). Look for the FRC banner. Entry and parking are free, but empty spaces near the event site may be difficult to find if the park is crowded, so consider carpooling. A map for navigation to the park is in www.homingin.com

Call KØOV on K6QEH/R, 146.97(-) PL 136.5 for two-meter talk-in.

Questions about the transmitter hunts? Send e-mail to k0ov@homingin.com before May 15.

THE MOJAVE DEATH RACE ISN'T DEAD!!!

Like a zombie rising from the grave, the Mojave Death Race returns with a vengeance June 1st and 2nd, 2013. Last run in 2005 the time has come for the Mojave Death race to return. Amateur Radio volunteers were there from the start and everyone was disappointed when the organizers decided to curtail it after the 2005 race.

The Mojave Death Race is not your average relay race. Teams of 12 traverse more than 250 miles and climb over 16,000 feet of inhospitable desert by foot, mountain bike and road bike to cover the 24 individual legs.

This is also not your average Public Service communications event. First, the location of the event in the Mojave Desert dictates that many of us will have to travel long distances to get to the course. Secondly, the length of the course; 275+ miles and the number of exchange points (24) requires a lot of volunteers to support the safety and welfare communications network. To put it in perspective, it's more than twice the length of the Baker to Vegas Law Enforcement Challenge.

THE COURSE

The Mojave Death Race begins and ends at Nipton California, goes through the Mojave National Preserve through Kelso then west to Baker looping around on the Mojave Road then back to Kelso, south to Highway 66, East through Essex to Goffs, north through the valleys and mountains of the Mojave National Preserve to the finish line.

COMMUNICATION CHALLENGES

The topography is a challenge to reliable radio communications between Net Control, each Exchange Point and a medical team traveling along the course. Several mountains over 7,000 feet high lie between the southern extremes of the course and much of the course is in the Lanfair Valley which is between a 4,000 to 5,000 foot mountain range.

To make it even more challenging, it starts before zero-dark-thirty and runs all night. It is a crazy almost 24 hours of watching other crazy people do what hams would never think of doing, because we are too smart!!!

THE HAM NETWORK

Ham operators will be positioned at each exchange point and at several elevated relay points with repeaters set-up for the event. Shadows will be assigned to the two medical doctors roving the course. The communications setup at the exchange points should be a mobile radio, 25 watts or more, a good antenna with reasonable gain and a power source. HT's will not work. Each operator will be assigned a position in the first half of the race and another at the second 12 legs for a total duty cycle of 8 hours with a long rest in between. Most bicycle exchange points are accessible by standard automobiles but many of the mountain bike and running leg exchange points are accessible only by high clearance vehicles. A few will require 4 wheel drive vehicles.

VOLUNTEER INFORMATION

The Race Organizers have a website with all of the details and a page to register as a volunteer. To register, go to http://mojavedeathrace.com, then click on the [volunteer] button and fill out the form. Be sure to list any equipment you may have, such as high gain antennas, telescoping poles or mounting hardware that will give you increased antenna height. If you have radios capable of cross band operation please list them also.

TechTalk109

Looking at the DATV-Express Digital-ATV XMTR Project

by Ken Konechy W6HHC

Most people involved with Amateur TV (ATV), now recognize the advantages of digital-ATV technology over analog-ATV. The digital modulation and Forward-Error-Correction of D-ATV provides superior video quality and robustness against ghosting.

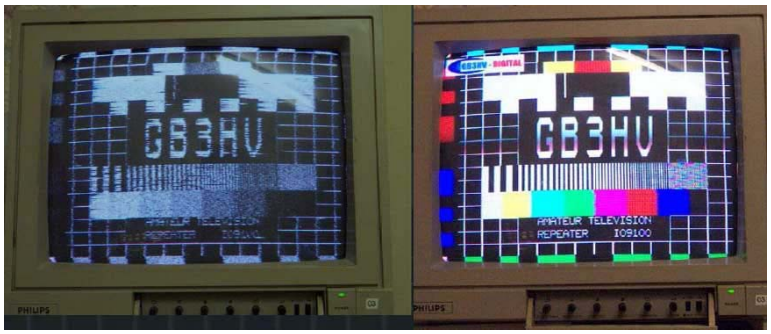


Fig 01 - Comparison of analog-ATV video and D-ATV video using the same antennas with weak sigs (courtesy of G7LWT & GB3HV)

For several years, hams have also recognized that the cost to buy ham-grade MPEG2 encoders boards and Digital-ATV exciter boards is too expensive. A ham-grade set of MPEG-2-and-DVB-S boards from SR-Sys in Germany cost about US$875. The cost of commercial-grade digital-TV boards is even higher. This high cost is known to prevent many hams from "trying Digital-ATV". A group of hams in US and England got together at the end of 2010 to start a project that will lower the cost of DATV considerably.

The open-source project is known as DATV-Express. The team members are:

- Art Towslee WA8RMC – electronics design
- Charles Brain G4GUO – software design
- Tom Gould WB6P – PCB layout design
- Ken Konechy W6HHC – project mgmt & pubs

System Block Diagram for DATV-Express

The most important concept about the DATV-Express board is that it is software-based SDR radio. While the system block diagram for a typical Digital-ATV DVB-S transmitter using the DATV-Express board is shown in **Figure 2**, the modulator and the software can also produce several other types of modulation and protocols, such as DVB-T and DVB-S2. The analog output of a video camera is sent to an MPEG2 encoder unit (made by Hauppauge) to compress the video stream. The video file is stored on a PC and a Windows-based or Linux-based PC does much of the "heavy lifting" to provide real time processing of the Program Stream from the MPEG2 Encoder into a Transport Stream to be used with the DVB-S protocol.

The PC processes most of the protocol streams down to the IQ symbol bit-stream that is output via USB2 to the DATV-Express board. Then an FPGA manipulates the data and sends an I-stream and a Q-stream to a modulator. The operating frequency for the DATV transmitter is determined by the PLL within the IQ modulator chip and can be selected by the PC GUI for 70 cm, 23 cm, or 13 cm bands.

The RF output level from the DATV-Express board is fairly low, usually around 0-to10 dBm. So the typical DATV station will probably follow the DATV-Express RF output with about two stages of RF amplifiers to get up to a normal transmitter power level. The

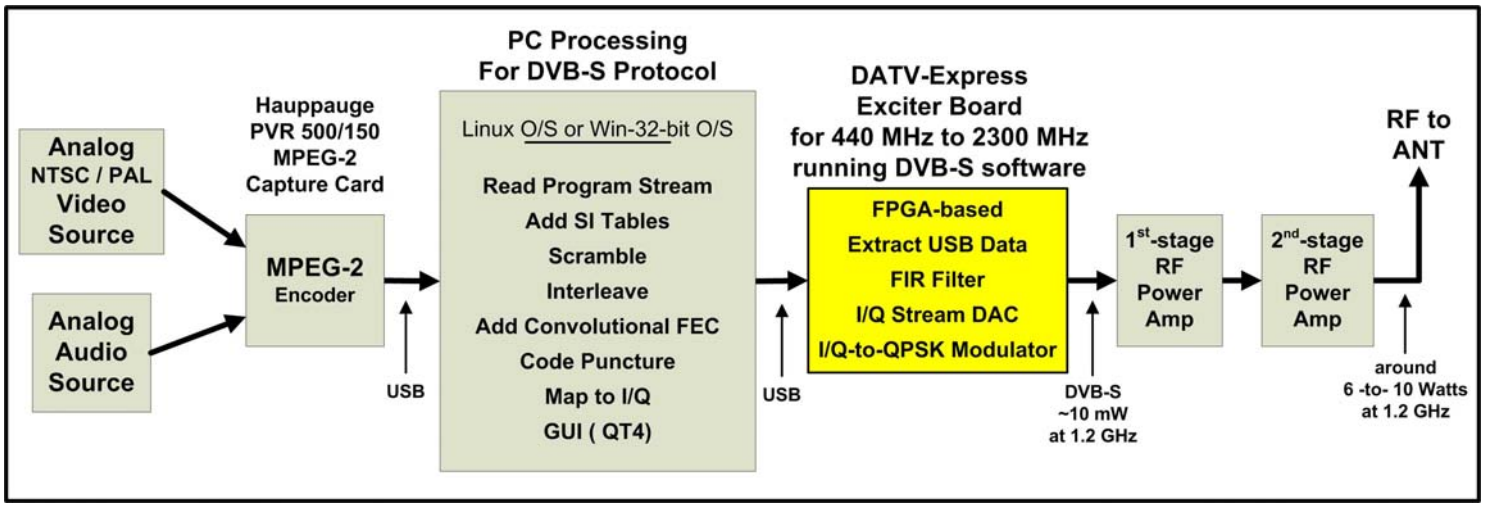


Fig 02 – System Block Diagram of Typical DATV-Express Project DVB-S Digital-ATV Transmitter PC can also run software for DVB-T and DVB-S2 DATV protocols

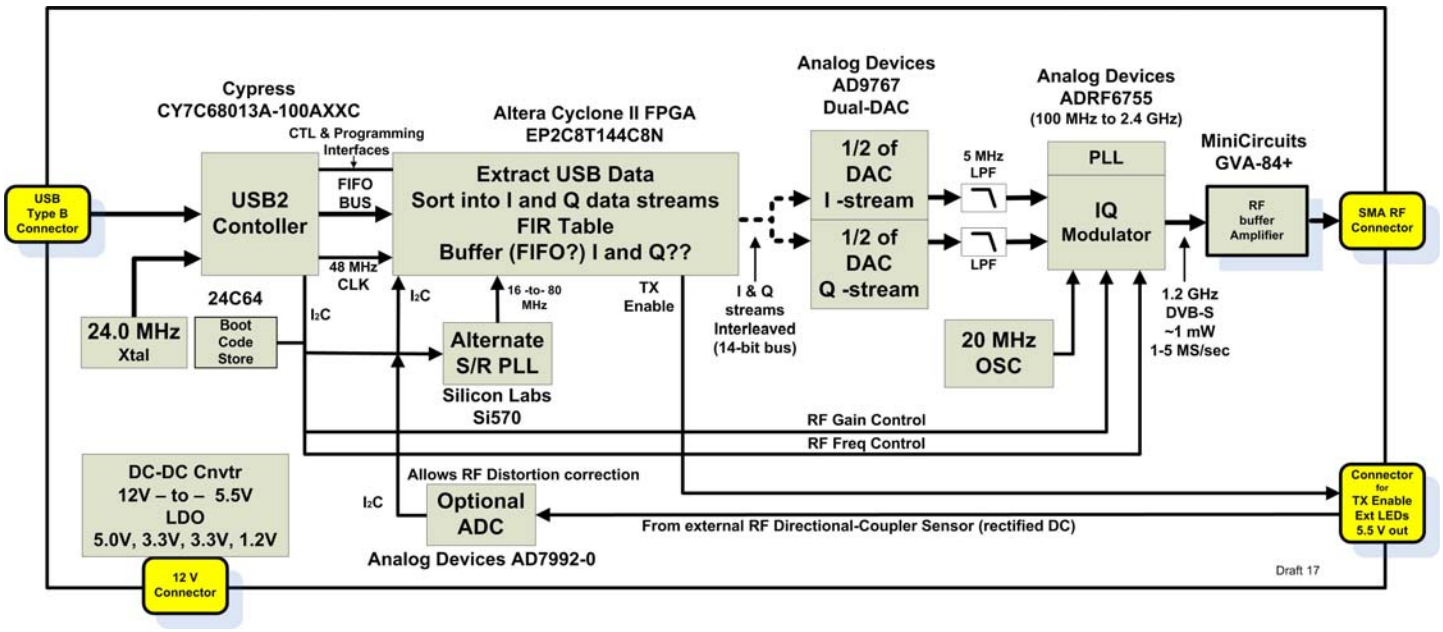


Fig 03 – Block Diagram of DATV-Express Project Digital-ATV Exciter Board

DATV-Express project team also recommends using an external band-pass filter to get rid of harmonics.

The DATV-Express Board

The DATV-Express exciter is a single printed circuit board shown in **Figure 4**. Art WA8RMC has the skills to hand-solder the fine-pitch SMT components. The 4-layer board dimensions are 5.3 x 3.18 inches. Tom WB6P used a schematic-capture tool called DX-Designer and layout tool called PADS to create the PCB.

Fig 04 – the DATV-Express exciter board is a single printed circuit board.

The connector for USB2 is on the left side. The RF SMA connector is on the right side of the board. **Fig 3** shows a more detailed block diagram for the DATV-Express board design. The PLL on the Analog Devices ADRF6755 IQ modulator allows defining an RF frequency between 72.5 MHz and 2480 MHz. The board contains a total of five DC regulators providing DC outputs between 5.5 VDC to 1.2 VDC for the various chips.

A small MiniCircuits GVA-84+ RF buffer amplifier follows the IQ-modulator chip. Initial bench tests on the first prototype board measured output of 18 dBm on 1.3 GHz. The initial RF etch layout was not done well and resulted in a noisy output and tended to self-oscillate. These RF problems were cleaned up in an etch-update called Version 2. **Figure 5** shows the

Fig 05 - On the left is the clean QPSK modulation Constellation from new second board etch layout. On the right is the noisy QPSK Constellation from the original board etch layout.

cleaned up RF modulation (QPSK constellation) output, compared to the original etch layout. **Figure 6** shows the a fairly clean 1.3 GHz RF spectrum.

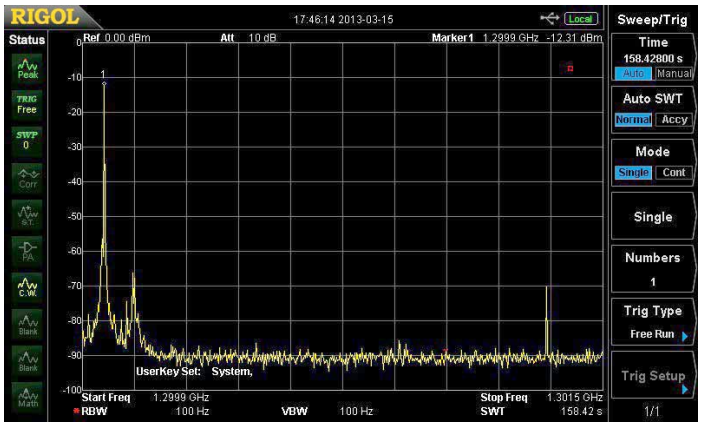


Fig 06 - Spectrum of new board with 1.299 GHz unmodulated carrier signal

The spurs are down about 55 dB from the CW carrier.

Software for DATV-Express

The DATV-Express project uses three sets of software:

- Software that runs on the external PC or Raspberry-Pi, etc.
- Software that runs on the 8051 (inside FX2 USB controller)
- Verilog code that defines the FPGA functions

The main focus of the project currently is getting to release the PC software using 32-bit Linux (Ubuntu

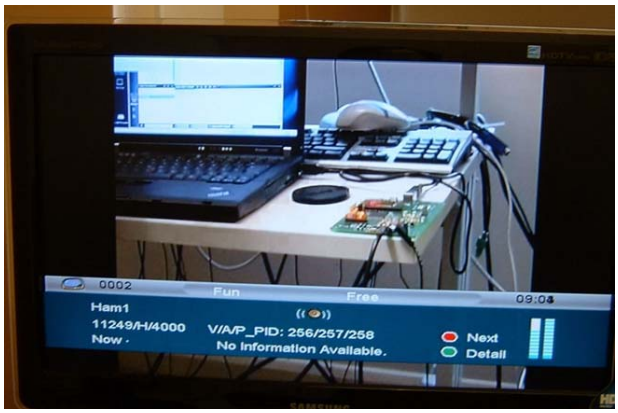


Fig 07 – The first DVB-S video ever transmitted by the DATV-Express board

Ver12.04.02 distribution). Currently the PC software does most of the protocol processing. An important function of the PC is to keep symbol rate constant, no overruns or under runs by adding Null transport packets as needed. The PC software also can download the firmware for the 8051 microcontroller. There is an on-board boot-ROM chip for storing firmware, but the project has not utilized it, yet. Finally, the PC downloads the code that goes into the FPGA.

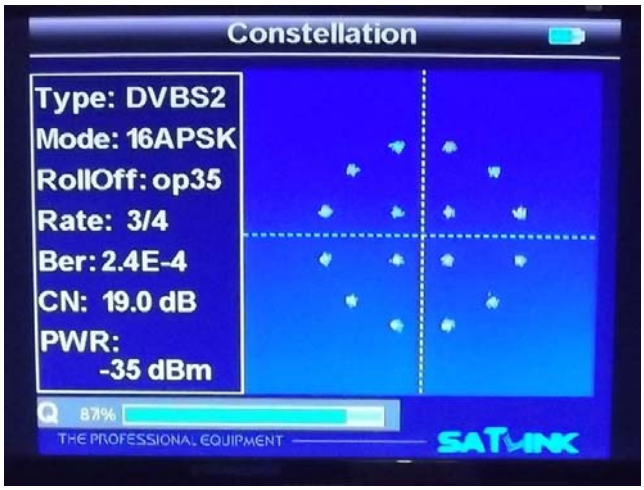


Fig 08 – This constellation of 16APSK digital modulation is being used on a DVB-S2 protocol transmission

The USB controller delivers the IQ symbol stream to the FPGA using a 16-bit FIFO on the EP1 bus. The FPGA firmware does a number of shaping functions of the IQ streams as well as calibrating for any IQ modulator offset mismatches in gain.

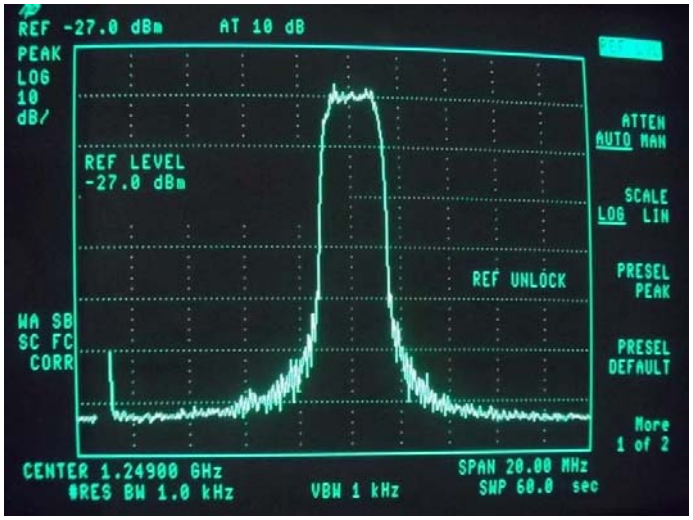


Fig 09 – 2 MSymbols/sec symbol-rate spectrum achieved using DVB-S2 protocol on 1.249 GHz

Figure 9 shows a DVB-S2 signal using 32APSK modulation being filtered by a 95 tap x8 interpolating filter with a rolloff of 0.35 and a compensated root raised cosine response. The filter takes the DVB-S2 symbols and interpolates them by a factor of 8 to put the aliases outside the LC Nyquist filter response. It is difficult to believe that 6 Mbits/s of video is crammed into that piece of spectrum approximately 2.5 MHz wide. The blip on the left hand side at 1.24 GHz is probably a multiple of 20 MHz reference clock signal on the board. The blip remains stationary when the operating frequency changes.

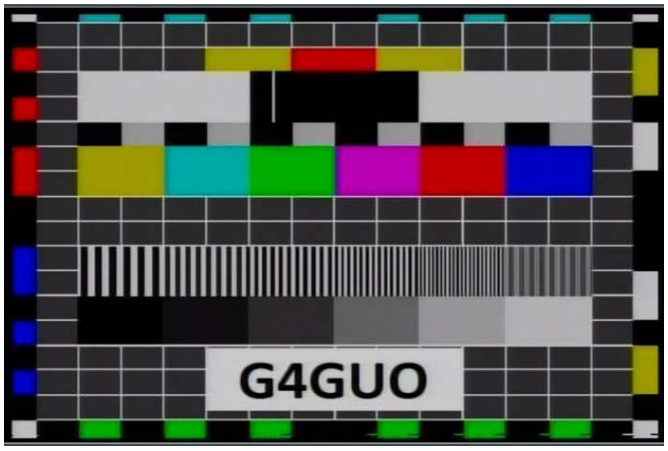


Fig 10 – Test pattern received using DVB-T protocol with 7 MHz bandwidth on 1.3 GHz

The QT4-based GUI on the PC (see **Fig 11**) controls which protocol to download, the PLL frequency,

Symbol-Rate, the FEC configuration settings, and the RF power output level.

Fig 11 – The simple GUI being used by the DATV-Express software

Project Plans

The primary goal right now is to get the board and software ready to distribute into the hands of hams. The team is working towards a "final" etch-update for pre-production to resolve some inner-layers etch clearance issues and make some silk screen changes like adding the CE Mark symbol. The pre-production run will also confirm the correctness of the solder-paste stencil file and the pick-and-place file. The first release of software will run on the 32-bit Linux. A little later, further releases of software will run on 32-bit Windows OS. Right now the team hopes to have a few boards ready towards the end of this year, probably in October.

Another plan is to make the design files of this opensource project available to anyone. This includes hardware design (like schematic capture and gerber files) as well as software source code for PC and Verilog. In this way, other hams can experiment and extend SDR and even manufacture the boards if that is their commercial goal.

Finally. Charles G4GUO has also been looking at what might be done using the Raspberry-Pi (ARM based) single-board-computer and/or the MK808 media player (also ARM based) to interface with the DATV-Express board as an alternative to using a normal PC. With the help of Rob MØDTS, Charles has played with a modularised version of his DATV host software. It turns out that the Reed-Solomon FEC encoder software consumes a large portion of the ARM resources. Charles has tried porting the Reed-Solomon code to run inside the FPGA. This seems to work well. Also, the project is lucky that Brian G4EWJ has written an optimised version of this module in ARM assembly language. Brian's module uses about 1/4 of the processing cycles that the G4GUO C module does. So we have managed to get the whole thing down from 60% to about 20% of cycles. Further improvements can be made.

- - Author may be contacted at W6HHC@ARRL.net - -

Interesting DATV URLs

- YouTube Video on DATV-Express board – see **http://youtu.be/OXh-anABYaU**
- British ATV Club - Digital Forum – see **www.BATC.org.UK/forum/**
- Yahoo Group for Digital ATV - see **groups.yahoo.com/group/DigitalATV/**
- Orange County ARC newsletter entire series of DATV articles – see **www.W6ZE.org/DATV/**
- DigiLite Project for DATV (derivative of the "Poor Man's DATV" design) see **www.G8AJN.tv/dlindex.html**
- SR-Systems D-ATV components (Boards and complete XMTR) – see **www.SR-systems.de**
- CQ-DATV online (free bi-monthly) e-magazine – see **www.CQ-DATV.mobi**

More Field Day News!

- Antenna construction begins at 5 PM on Thursday late afternoon June 20
- Tower set-up begins at 1 PM on Friday afternoon June 21
- Operating is from 11 AM Saturday June 22 thru- 11 AM Sunday June 23
- Tear-down is from 11AM Sunday and should be completed by 1PM

WHOis … the Club Membership?

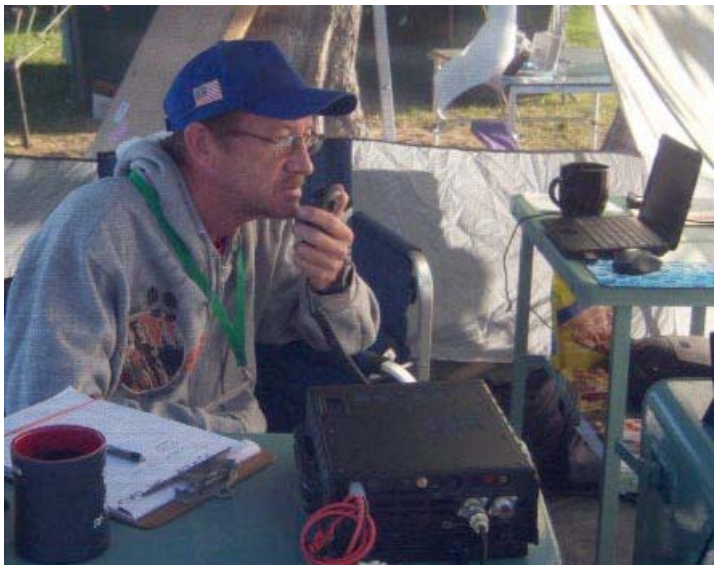
by

Ken – W6HHC

(This is the fifth in a series of articles to inform you about the background of the officers and leaders of the OCARC.)

The 2013 Membership Officer for the OCARC is Jay Hitchcock – KI6WZU. Jay's had long been interested in HAM radio, but took no action for many years. Finally an OCARC member and friend, Cam Burke WV6V (now a Silent Key), offered a class for ham radio in 2009 at the Covenant Presbyterian Church in Orange. Jay got his Technician license and quickly followed with the General class license.

Cam WV6V also made sure that Jay quickly joined the OCARC and attended OCARC Field Day. Jay is now hooked on Field Day and has supported OCARC FD for the last four years. This year, is Jay's first time serving on the OCARC Board of Directors.



Jay KI6WZU enjoys working the 6M station during 2012 Field Day

Jay has developed a lot of ham radio interests:

- 6 Meters
- UHF/VHF contests
- Emergency Communications preparation
- Radio support for UltraMarathon races
- Supporting COAR RACES during B2V
- Radio support for Mojave Death Race
- Covenant Amateur Radio Club
- Likes to use KD6DDM repeater – Sierra Pk
- ...and of course Field Day.

Jay assembles a 6M yagi beam for the 6M FD station during 2011

Jay was born in Phoenix, AZ , spent some time in Nevada, and then arrived in Orange County in 1968. He well remembers being a single-parent with teenage daughters. Jay's working career has a lot of experience as an electro-mechanical designer (lots of AutoCAD and SolidWorks).

His favorite non-HAM activities include:

- bass fishing,
- camping,
- shooting,
- archery,
- motorcycles
- leather-working
- wood-working

If you get a chance to talk to Jay at a meeting…ask him about where he learned to throw an AX !!!

OCARC

BOARD MEETING MINUTES

OCARC Board Meeting Minutes for: April 6, 2013

The OCARC Board meeting was held at the JagerHaus Restaurant, 2525 East Ball Road, Anaheim, and called to order to order by President Nicholas Haban AF6CF on Saturday, April 6, 2013. Called to order at 8:04 am and all directors except Doug – W6FKX, Robbie – KB6CJZ and Paul – W6GMU were present. Also present were visitors Jim Brackett – KE6FVN and his bother Dave Brackett – KE6OPK.

DIRECTOR REPORTS

Vice President –Tim – N6GP - General Meeting Entertainment -Apr. Walter Clark Ionization; May Nick Sava - KD8IPE on RC controls and working on July and August meetings.
Treas –Ken W6HHC dues are flowing in with about $1,100 coming in during 1st Quarter. Account balance is up about $1,400 during 1st Quarter. $260 collected in the Field Day generator fund.
Activities – Doug will not be at April meeting. Jeff Hall will run Opportunity drawing in his absence. Dinner meeting before General Meeting postponed during next 2 months because of the Field Day training sessions running at that same time.
Membership – latest Roster being emailed out and made available online. Roster shows 88 members not including honorary members.

Old Business:

4.) **June General Meeting –** Last month a "motion" was approved to move the June General Meeting to Friday June 14th subject to Red Cross approval for use of room. Vice President will check to see that Red Cross room use has been cleared.

5.) **OCARC equipment inventory** – Nicholas – AF6C agreed that if we need to pick up the towers early, for Field Day, from their storage location that he could provide a temporary, say 2 weeks, storage spot. Bob – AF6C is working with storage site owner to ensure access. Depending on when access is available that will determine if temporary storage is necessary. Jay – KI6WZU offered that he has access to several vehicles that could be used moving the towers.

6.) Newsletter Editors: Apr – AF6CF; May – KI6WZU; Jun – W6HHC; Jul – W6GMU; Aug – AF6C; Sept – N6GP; Oct – KC6TOD; Nov – W6FKX; Dec –?.

7.) General Meeting Entertainment – Apr – Walter Clark – Static Electricity. May – Nick Sava – RC Cars. July and August are in the works. Ken – W6HHC maybe doing a presentation at the August meeting?

8.) **Field Day** –

- FD Planning Meetings - Next Field Day planning meeting is April 25th at Bob Harrington's house. There are several volunteers photographers to capture the images of Field Day. Kris is looking to have El Pollo Loco cater Saturday night meal. Possibility of there being a trail run FD event two weeks prior during the VHF contest weekend, location to be determined. Anticipating that members will need to donate approximately $20 per person toward food cost. Motion was made by Kris – KC6TOD and seconded by Ken – W6HHC that

"up to $250 be spent towards a vinyl Field Day Banner that can be used year to year" Bob – AF6C has been shopping and anticipates that it should cost less than that but Board felt that we should give him some margin so that he can act sooner.

9.) **FD Public Relations Officer** –President has appointed Carolyn Jacob – (KE6BOH?) the clubs PRO for Field Day. Carolyn is an accomplished amateur having attained Amateur Extra class license while still defined as a rookie under ARRL guidelines. Carolyn also has her DXCC and has previous experience in Public Relations.

10.) **25KW Generator** –$260 has been donated by members to offset the generator rental and fuel cost. The Kei Yamachika – W6NGO trust fund will cover the remaining $340 to bring the generator fund up to the anticipated $600 amount that it will likely cost for rental and fuel. Since anticipated cost for the generator is now covered a "motion" by Ken – W6HHC and seconded by Kris – KC6TOD to "switch the generator donation can over to field day food cost donations" was approved. It was emphasized that members be encouraged to donate at least $20 towards the Saturday and Sunday food expenses. If a member is anticipating not being there for the full time then they should consider donating at least $5 per meal for the time they will be there. Also, the food donations do not cover the cost of Friday night's meal. That meal is be prepared and provided only to members taking part in the setup of the Field Day site that day.

11.) **Logo items for sale** AF6C forwarded the hi-res graphic Photoshop file to Paul – W6GMU for purposes of ordering some demonstration mugs as approved previously by the board.

12.) **September Reunion –** This item is tabled until after Field Day, however Ken – W6HHC is working on the idea of putting together an extended historical presentation about one of our SK members.

New Business:

1.) **Club has an inactive PayPal account –**. Several years ago the club established a PayPal account with the goal of offering it as a means for members to pay fees to the club for membership dues and club events. The account has languished since there was an inability to get it setup with a proper link on the club website. Nicholas believes that he has the web skills to get the account working properly on our site and rather than let the account expire with PayPal an effort is being taken to properly link the account online to our website and complete efforts with PayPal to reestablish the account. This will need to be done by May 1st to meet PayPal required timeframe. Bob – AF6C is also involved in this effort.

2.) **Discussed the idea of setting up an online payment account with USPS to pay annual PO fees.** – After members discussed it was thought that we would not move forward at this time since that is just one more online account to take care of and track and it is only needed once a year. Instead Ken – W6HHC will stop at the post office this month and pay this year's PO Box fees.

Good of the Club

- Baker to Vegas Challenge Cup Relay 2013 is being held April 13th – 14th with a number of our club members taking part in the communication and race support.

Adjourned at 9:18 am

Respectfully submitted by:
Tim Millard KJ6NGF, Secretary 2013.

OCARC
GENERAL MEETING MINUTES
2013-4-19

The OCARC General Meeting was held at the Red Cross Complex on April 19th 2013.
The meeting was called to order at 7:10 pm.
26 members and visitors were in attendance, including 8 board members.
Prior to the start of the meeting, Jeff Hall, W6UX, led another Field Day SSB operator training session.
Jeff covered the N3FJP Field Day logging software.
Jeff will do one more session in the hour before our meeting on June 14th.

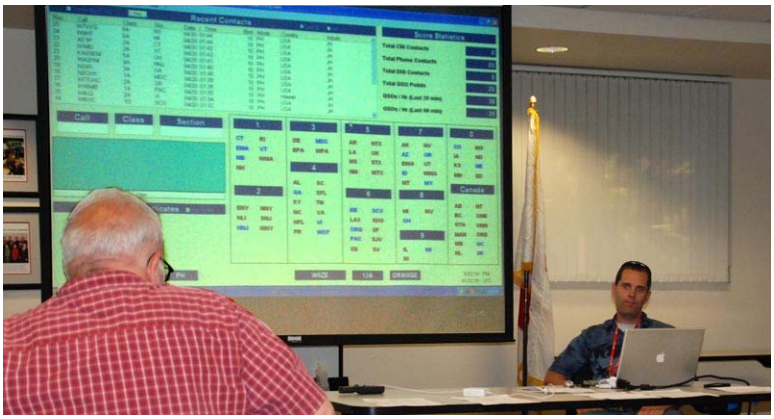


Figure 1 – Jeff, W6UX, conducted a Field Day class on the logging software before the meeting.

Nickolas, AF6CF, started off the meeting with a video from a ham who told about one of his first attempts at talking on the radio. He was kind of nervous about the whole talking thing and wanted to do things right, but unfortunately experienced some overbearing hams who were not too nice about his lack of experience. This episode nearly turned him away from amateur radio. Fortunately, he did not let that happen. The question that the video left us with is what action, if any, should we take with a rude ham? Certainly there is no one answer for every situation, but sometimes, if we hear rude behavior, we may need to call it out for what it is and gentle correct.

The featured speaker of the evening was Walter Clark. Mr. Clark is an active member of the San Bernardino Microwave Society. However, even with his many years of experience with aspects of ham radio, he has chosen not to be a licensed ham.

Walter is also a past president of the Fullerton Youth Science Center, the Southern California Optic Society, and the Orange County Astronomers. The title of his presentation was “Electrostatics – The First Science of Electricity”

Figure 2 - Walter Clark told us about the early history of electricity, which started with static electricity and static fields and ionization.

Much of what was presented were fast-paced open science experiments where Walt demonstrated aspects of static electricity and its properties. Walt regaled us with some of the history of early electric science experiments by utilizing a static generator, complete with Lynden jars.

The many instruments he brought along appeared to be something out of a “Mr. Wizard” presentation.

Figure 3 – There were plenty of experiments to help visualize or “hear” the concepts.

The experiments were designed to present what is happening with the flow of ions that are present even in a lowly spark of static electricity. While much of this does not have direct applications to current electricity and radio, it still can be measured and observed, and perhaps by better understanding the basics, further inroads can be made that will allow us to do more with the more complex things.

Reports:

Treasury – Our donation can for the Field Day generator fund has been successfully completed, thanks to club members and a generous donation by the W6NGO Kei Yamachika Trust Fund. So now we begin the circulation of a new donation can for Field Day meals. Members may either donate $20 for all meals on Saturday and Sunday, or if they will only be present for some meals, consider donating at the rate of $5 per meal.

Membership – we had one new member tonight – Terry Domae – NS6D.

Community Outreach
A number of members took part in the annual Challenge Cup / Baker to Vegas Relay by providing communications support to the City of Orange Police Department. The weather was a more manageable 95 compared to the previous year's 115 degree scorcher. This year included over 270 relay teams taking part in the 120 mile race. The communications team had fun and provided fast support when one of the runners had to stop due to an ankle injury. The City of Orange PD team had a great finish when they completed the course in less than 16 hours, which had been a long elusive goal. However, swapping-out the injured runner, incurred an official 10-min penalty adjustment. So the official time was 16 hr 7 min.

Meeting adjourned at 9:10pm.

Respectfully submitted by:
Tim Millard, KJ6NGF, Secretary 2013.

OCARC DX Awards!

1. The Southern Calif DX Club has awarded its DXer of the Year 2012 Award to Arnie Shatz N6HC.

2. The Southern Calif DX Club has awarded its Clipperton Award 2012 (Rookie of the Year) to Carolyn Jacob KE6BUH. She worked and confirmed 118 DXCC countries in 1 year. Daugter of George N6VNI and Kris KC6TOD.

3. Rick Soikkeli N6NH (ex AE6RS) has earned his 5 Band DXCC plaque from the ARRL.

QST QST QST W6ZE Field Day University for Phone Operators!

OCARC is commemorating its 80th year with a major Field Day operation! For our members who prefer to operate **Phone** there will be a 3-part training series offered for you to expand your CQ-ing and logging skills. Members of *all* Field Day experience levels are encouraged to attend!

These sessions will be held in our club's normal meeting room @ The Red Cross, 1 hour prior to the general meeting:

Class 1: Friday, March 15th @ 6:00 pm – **COMPLETED**
~~Fundamentals of holding a frequency, calling CQ, and exchanging Field Day reports~~

Class 2: Friday, April 19th @ 6:00 pm – **COMPLETED**
~~Logging with N3FJP software (while you hold the frequency!)~~

Class 3: Friday, June 14th @ 6:00 pm - "pileup" management and fixing mistakes (while you hold the frequency AND log!)

You will start with the basics and progressively add dimensions to your operating. Attend these classes and you'll prepare yourself for maximum fun on Field Day!

Please RSVP with Jeff, W6UX (W6UX@W6ZE.ORG). This will help ensure there are enough handouts and instructors for each class.

See you there!