



RF



ORANGE COUNTY AMATEUR RADIO CLUB, INC.

VOL. XLVII NO. 02

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

February 2005

The Prez Sez:

The year is off to a nice start for OCARC. Good meetings and breakfasts. Nice chatter on the club nets. Not too much of the "boring business" at general meetings.

OCARC has started the planning for Field Day in June. Set aside the weekend of June 25 & 26 in your calendar for this fun event. We are considering four different possible locations at this time:

- Los Alamitos JTF Base
- Portola Park
- Eisenhower Park
- The old Tustin USMCAS(H) Base

Currently, the Los Alamitos base looks like a great choice. But, we don't have the paperwork locked down, yet. Portola Park is a strong backup plan right now. I am looking for someone who can drive the four 10-ft sections of tower to FD and return to Kenan-N6CCE's storage.

Bob - AF6C is trying to organize a club ground swell to start some 30M club activities. He will be talking up some neat transceiver rigs for 30M from

Small Wonder Labs at the next general meeting. Ideas discussed so far include having some "construction workshops" for these kits (although you can just start on 30M with you main home rig). Some club net activities on 30M. Some antenna articles on building a 30M antenna. Maybe a club 30M contest between club members?? They all sound like good ideas and a great use for this WARC band.

I hope to see you all at the meeting....

...de Ken W6HHC

MEET AND GREET

Since February is the month of love and friendship, we want to invite you to bring a friend to our next meeting on February 18th for a great presentation. We will have coffee, brownies, and don't forget the raffle prizes! So bring a fellow ham or someone that you think might be interested in our hobby. Our meetings are fun, and the more people that attend, the more fun it will be!

The next general meeting will be:

Friday, Feb. 18th
@ 7:00 PM

We will be meeting in Room 208 in the east Red Cross Building

REMINDER! It is time to pay your dues for 2005! The deadline for dues is March 31st to remain as a member and stay on the private roster. Dues remain at the low price of just \$20! Please see Cheryl, KC6KTT at a meeting, breakfast or mail your dues to our P.O. box.

In This Issue:	Page
The PREZ SEZ	1
Meet and Greet	.....1
Club Information	.....2
Tech Talk #38	3
Members Corner	4
L.A. Marathon	.....5
Sunspots in 2005	5
OCARC Meeting Minutes	6
Unique QSL Cards	7
OCARC Board Minutes	.... 8
Ham's Puzzle	.....9
Thanks	.....9
February Presentation	.....9
Icom IC-7800 Review	.....12
Ham Criss-Cross Puzzle	.....16
Pictures from January Meeting	..17
2005 ARRL Convention	.....18

**THE ORANGE COUNTY
AMATEUR RADIO CLUB,
INC.**

P.O. Box 3454, Tustin, CA 92781



2005 Board of Directors:

President:

Ken Konechy, W6HHC
(714) 744-0217
kkonechy@pacbell.net

Vice President:

Willie Peloquin, N8WP
(714) 318-4047
n8wp@arrl.net

Secretary:

Rich Helmick, KE6WWK
(714) 343-4522
R2535@sbcglobal.net

Treasurer:

Cheryl Peloquin, KC6KTT
(714) 318-4047
Chercool@escapees.com

Membership:

Cindy Hughes, KC6OPI
(714) 971-3448
cr_hughes@juno.com

Activities:

Kristin Dankert, K6PEQ
(714) 544-9846
kdankert@comcast.net

Publicity:

Bob Eckweiler, AF6C
(714) 639-5074
af6c@arrl.net

Technical:

Kenan Reilly, N6CCE
(714) 543-5073
n6cce@yahoo.com

Members At Large:

Dan Dankert, N6PEQ
(714) 544-9846
n6peq@dxer.com

Steve Brody, KB1GZ
(714) 974-0338

stevebrody@sbcglobal.net

2005 Club Appointments:

W6ZE Club License Trustee:

Bob Eckweiler, AF6C
(714) 639-5074
af6c@arrl.net

Club Historian:

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

RF Editor (acting):

Kristin Dankert, K6PEQ
(714) 544-9846
kdankert@comcast.net

WEB Master:

Ken Konechy, W6HHC
(714) 744-0217
kkonechy@pacbell.net

ARRL Assistant Director:

Ken Konechy, W6HHC
(714) 744-0217
kkonechy@pacbell.net

ARRL Awards Appointee:

Larry Beilin, K6VDP
(714) 557-7217
k6vdp@aol.com

OCCARO Delegate:

Kristin Dankert, K6PEQ
(714) 544-9846
kdankert@comcast.net

Monthly Events:

General Meeting:

Third Friday of the month
at 7:00 PM
American Red Cross
601 N. Golden Circle Dr.
(Near Tustin Ave. & 4th St.)
Santa Ana, CA

Club Breakfast:

First Saturday of the month
at 8:00 AM
CowGirl's Cafe, Too
2610 S. Harbor Blvd
(just south of Warner)
Santa Ana, CA

Club Nets (Listen for W6ZE):

7.086 ± MHz CW **OCWN**
Sun- 9:00 AM – 10 AM
Rick KF6UEB, Net Control

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

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 January 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 charge if you'd like to have your badge mailed to you.

Tech Talk #38

Ham Radio Station Protection-Part 2 **Article Courtesy of the PolyPhaser Corp.**

In Part 1 of last month's RF newsletter, we learned that proper lightning protection for a ham radio station can involve more variables than any other type of radio site. We learned the basic, number one rule for surviving a lightning strike: all equipment elements must be connected to a single, low impedance ground system. In addition we took a look at the three techniques used to increase the effectiveness of a single point ground system: conductor surface area, soil doping, and adding ground radials.

In this issue we will look at tower considerations: guyed vs. free standing; the different (i.e., dissimilar) metals available for the construction of effective grounding and how these can negatively interact. We will also consider the implications of antenna location and grounding your coax both at the top of a tower close to the antenna and at the base before the coax enters the shack.

Tower Considerations

Only conductive towers or metal poles should be used for mounting antennas. If the tower or pole has sliding contacts (crank-up or push-up), the joints should be bonded using short sections of copper strap attached with PolyPhaser TK clamps.

Guyed towers are better from a lightning protection perspective if the guy anchors are grounded properly. Because the anchors are located away from the tower base, at least some of the strike energy will traverse the inductive guy wire to the ground. The more the strike energy is divided, the less there is to go to your equipment.

Dissimilar Metals

Copper should never touch galvanized material directly without proper joint protection. Water shedding from the copper contains ions that will wash away the galvanized (zinc) tower covering. Stainless steel can be used as a buffer material.

However, be aware that stainless steel is not a very good conductor. If it is used as a buffer between copper and galvanized metals, the surface area of the contact should be large and the stainless steel should be thin. Joint compound should also be used to cover the connection so water cannot bridge between the dissimilar metals.

Magnetic Energy

Lightning has a large magnetic field associated with its typical high current pulse. The magnetic field will couple to all nearby conductive materials. There are two ways to minimize the amount of magnetic energy coupling, shield your equipment or place some distance between the equipment and the likely strike location. A galvanized steel sheet may be used as a shield to attenuate the magnetic field pulse by 10dB. The steel should be at least 30 gauge (0.016 inch) [0.41 mm] and should be connected to the ground system.

Distance is the other means to limit magnetic field coupling. The strength of a magnetic field diminishes at the rate of one over the distance squared. Since a moderately high tower is much more likely to be struck than any other nearby structure, the placement of the tower with respect to your equipment deserves significant consideration. Factors that should be considered are not only the magnetic energy which will radiate from the tower, but also the benefit of the distance in terms of the inductive loss provided by the length of the orthogonally run coax. This added inductance of the coax line will buffer the energy entering your equipment area. In addition, the extra distance will provide a little more time for the tower ground system to dissipate the strike energy and thus have less to share with your equipment.

Continued on Page 11

Members Corner

How well do you know all of the members of O.C.A.R.C.? This is an article that I hope will continue with new members spotlighted monthly so that we can get to know our fellow members better.

Member: Alfred Dodds, W0KJV
Interviewer: Kristin Dankert, K6PEQ

Q: How long have you been a ham?

A: I was first licensed in 1951 as W0KJV in Fargo, North Dakota which would make a total of 54 years as a licensed radio amateur keeping the same call sign. Even though I upgraded to an Amateur Extra Class when they were first offered, I decided to keep my original call rather than opt for a two-letter type. I guess that I like being the original user of this call by the FCC. Those were the fun days when you had to appear in front of the non-smiling FCC examiners, so you went through a real "Trial by Fire" to obtain your license.

Q: How did you get involved in the hobby?

A: I became interested in the hobby as a young boy when one of my radio amateur neighbors invited me over to his house to watch him construct a new "transmitter" which he had designed. This experience consisted of my watching of the mechanical construction of the chassis with the various component mountings, the wiring of the chassis, and then the spectacular event of seeing tube

filaments light up as power was applied. Maybe this is one of the reasons why I am still fascinated with tube-type equipment! The final event was to hear a voice coming out of his radio receiver calling him back with his "call letters" after he completed his transmission. I was hooked! Then I asked the magic question: "What do you have to do so as to be able to make and use equipment like this?" The hardest part was being able to learn and send the Morse code.

Q: What is your favorite band and do you prefer CW or phone?

A: My favorite band is 20-meters operating both phone and some CW.

Q: Are there any contests that you participate in? If so, which ones?

A: I do not operate contests because I enjoy spending my time in technical rag crew conversations because my main interest is the design, modifications, and the construction of equipment.

Q: How long have you been a member of the club?

A: I have been a member of the club for three years.

Q: What is a favorite memory with the club?

A: I enjoy the technical presentations that the club provides.

I want to thank Al Dodds for sharing about his experiences with Amateur Radio and I hope to learn more about other members of our club too!

L.A. MARATHON

Happy New Year!

I am writing this letter to solicit your volunteer participation for the 2005 Los Angeles Marathon, held on Sunday, March 6th. We really appreciate your interest in helping make this years Los Angeles Marathon a success. I am once again the coordinator for the HAM Radio Operators. I will be in contact with all registered participants in the next couple weeks or so, to set up the date, time, and location for the HAM Radio Orientation. Thank you for your dedication and commitment to making the 2005 Los Angeles Marathon even better than 2004.

Registration can be completed online at:

http://www.doitsports.com/volunteer/jobs-by-date.tcl?event_id=221

Select "Radio Operator" under "Race Day Sunday March 6, 2005". Don't forget to register online as it help with t-shirt counts and other administrative chores. :-)

73,
Greg-KD6AIS

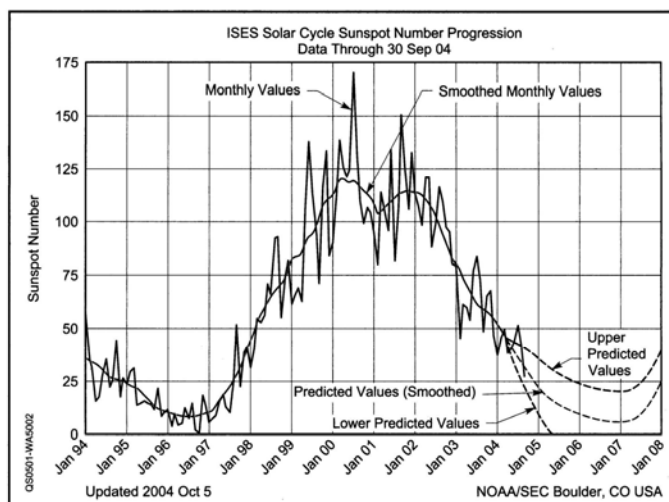


SUNSPOTS in 2005

Contributed By: Ken Konechy

There is a great article in the January issue of QST by Gene Zimmerman W3ZZ in "The World Above 50 MHz" column. It is a very informative article about the "art" of predicting sun spot cycles (...sort of like trying to predict next years weather). It not only shows the recorded history of sunspot measurements back to 1750, but also describes the unusually high sunspot activity from AD 1100 - 1250 that is captured in tree rings.

But the article also provided a really super graph of the current sunspot cycle, Cycle 23, shown below. This graph really visualizes the recent changes in sunspot activity. As you can see we are clearly almost at the bottom of the sunspot cycle, meaning the number of sunspots on the face of the sun is very small compared to the peak back in 2000. Since good propagation conditions are related to high number of sunspots, 2005 will probably not be a great year to remember for DX. But always the optimist, in October 2004 (even though we are near the bottom) there were really outstanding openings for DX on bands all the way up to 6M....so there is room for hope for a "spike of sunspots" here or there.



Cycle 23 Sunspot Number Progression through 2004-Sept. (Picture courtesy of ARRL QST magazine).

OCARC General Meeting Minutes

January 21, 2005

President Ken Konechy, W6HHC, called the meeting to order. There were 29 in attendance including 10 visitors. Board members not in attendance; Steve, N1AB.

PROGRAM: President Ken introduced Jay Thompson, W6JAY, who gave a very thorough and interesting program on "Fox" hunting - ARDF.

After the break, Ken, W6HHC gave an overview on how the meetings will be conducted during his presidency; minimized business meeting, treasures report and program information will be the focus.

TREASURES' REPORT: a full accounting was listed in the RF. Cheryl Peloquin, KC6KTT, treasurer, reports at this time there is \$2059.00 in the club accounts.

PROGRAMS REPORT: Vice President Willie Peloquin, N8WP, reports that February's program is still in the construction phase.

FIELD DAY: locations being scouted are Los Alamitos air base, old Tustin Marine air base, Eisenhower Park in Orange and the stand by location of Portola Park in Santa Ana.

GOOD OF THE CLUB: President Ken informed the group that the Michael Powell, Chair of the FCC, who has done a terrible job controlling the interference levels of BPL would be leaving his post in March 2005. The gathered group had a toast to this event.

CORRESPONDANCE: President Ken informed the group that the club had received a letter from ARRL thanking the members for their contribution of \$550.00 for the BPL defense fund.

RF EDITORS: Volunteer editors for the RF: Ken Reilly, N6CCE, did a fine job on Jan. 2005 edition, Kristin Dankert, K6PEQ, will add her touch for Feb. 2005, with President Ken filing in in March and Vice President Willie volunteering for April. Bob Eckweiler, AF6C is able to take a turn in May. All members were invited to volunteer to be the editor for a month.

DX INFO: Dan Dankert, N6PEQ and Jim, from So. Cal. DX Club, report that the DX expedition to Antarctica has been postponed. Additionally conditions for DXing are bad. Kenan, N6CCE, reported that there will be a VHF contest this weekend and all are invited to join in.

INFORMATION:

Lowell Burnett, KQ6JD, announced that the annual Baker to Vegas Run is fast approaching. A coalition of Hams from throughout the County is getting together to support the Orange, Cypress and Garden Grove teams. This group of volunteers will meet at the Orange Police Dept Tuesday Feb. 1, 2005 at 1900 in the EOC. Anyone interested in finding out more about this effort can attend the meeting and/or contact Lowell, Rich Helmick, KE6WWK, or call 714 744 7328 and talk to Debbie Klein.

Cindy Hughes, KC6OPI, reports the room at the Red Cross building has been reserved for the club meetings through November 2006. President Ken extended the clubs thanks to Cindy for arranging this and the Red Cross for allowing the club to meet in their building. Cindy also reports that club member and Cindy and Don's, KC6ONZ, daughter April, KG6CJI, who is in the Army, left for Iraq last Sunday.

-Frank, WA6VKZ, asked that the Board discuss obtaining a sound system for club meetings.

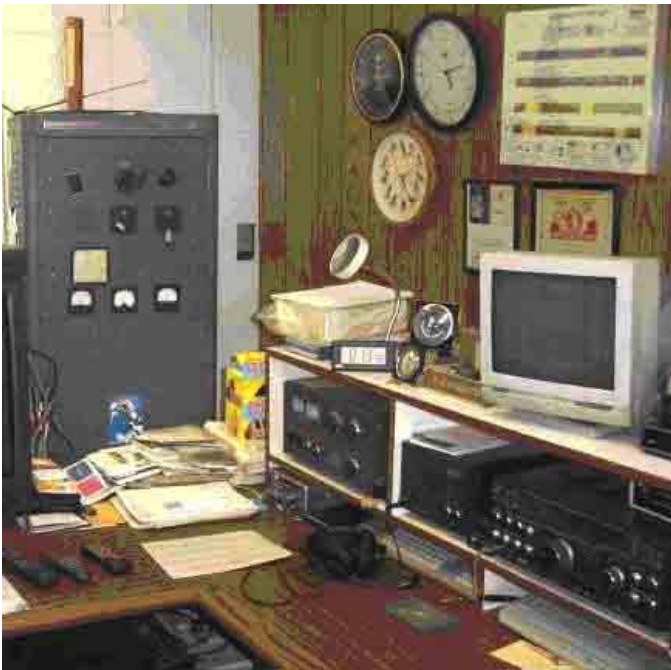
-April Moell, WA6OPS, reports that the Hospital Disaster Group is celebrating 25 years of service.

-Lowell, KQ6JD, made a motion for the meeting to be adjourned and that motion passed at 9:00 PM.

Respectfully Submitted
Rich Helmick KE6WWK
Secretary

Unique QSL Cards from a DX Legend

Most DXers in the Southern California area knew Art Enockson, W6EA (SK). If you never got a chance to meet him you missed a really fine gentleman. Art's shack in Buena Park had a wall of QSL cards. The cards covered almost the entire wall and contained some very rare and unusual countries. The first thing you noticed as you entered his shack is the "standby" amplifier. Standing about 6ft tall, the homebrew amp with a single 4-1000 was driven by a Kenwood TL-922 if required to get that "new one". Now with that said one must remember there were no "new ones" for Art and for that matter there were only four old ones. Art had all 335 current DXCC entities confirmed and of a possible 393 he had 389 confirmed.



Thanks to Art's wife Virginia and son Brad, W6EA I have been allowed to borrow the cards. I have been scanning them in to the computer and will be creating a permanent record of them in the future on the Southern California DX Club web site (www.scdxc.org).

Art's call at the time of many of these contacts was W6MUB, he also held the call W6QC for a period of time.



The first card is from WK6TZB who was at MCAS Ewa on the island of Oahu. The contact was on March 5, 1946 (14years and 2 days before I was born) at 1850 HST on 28mc CW. Ewa began life in the early 1930's as a 700 acre Navy dirigible base. In 1939 the base was turned in to a Marine Corp. Air Station. In 1940 the Navy increased the size with the purchase of an additional 3500 acres. On December 7, 1941 the base was hit before Pearl Harbor and all 48 Marine Corp. aircraft were destroyed.

Ewa was used throughout W.W.II as a staging base and training facility. Ewa saw service until the Korean War at which time the runways were determined to be too short for the new jet aircraft that were being used by the Marines.

Continued on Page 10...

OCARC Board Meeting Minutes

February 05, 2005

President Ken, W6HHC, called the meeting to order at 8:35 AM. There were a total of 12 members and visitors at the meeting. Board Members Willie Peloquin, Cheryl Peloquin, Cindy Hughes and Steve Brody were not present. There was a quorum present.

Director Reports

- *Program Chairman* - it was reported that the February program is still under construction.
- *Treasurers report* had a balance of \$2,302 in the bank as of 2005-02-04.
- *Activities chairperson*, Kristin Dankert states that club raffles are going well and the amount of prizes will be increased to \$75 at the next meeting.
- *Technical chairperson* Ken Reilly reports that he is going to obtain a beam antenna to check possible field day sites for noise.
- *Publicity chairperson* Bob Eckweiler, reports that a club brochure is being formatted for HRO and OC Fair.
- *Director at Large* Steve Brody will be accessing the names of new hams through ARRL.
- *Director at Large* Dan Dankert reports that a letter is available to be sent to new hams. He just needs the call sign.

OLD BUSINESS:

Field day location has not yet been firmed. A report on four sites was provided.

Field day chairperson and cook positions are still open.

NEW BUSINESS:

- A list of club equipment and location was reviewed. Bob Buss will be giving field day equipment to Ken Reilly and Bud Barkhurst for storage. Ken-N6CCE will get the towers and guy stakes and Bud will get the guy storage can and wires.

- The subject of using a PA system at club meetings was discussed. No decision was made.
- A request to reinstate the club as a Special Service club with ARRL will be submitted to ARRL by the club secretary. A request for assistance from the Big Blue Adventure Series was discussed. The Board (due to the apparent commercial air about this organization) did not approve the request for assistance.
- After discussion, the Board approved a motion to lower the number of Board members present for a quorum to five (5).

GOOD of the CLUB:

- Bob Eckweiler reported that "Small Wonders Lab" is selling a 30M QRP CW rig that would be something the club members could make as a club project. Bob will present this project to the club soon.
- Bob Buss reminded the Board that the OC Fair is coming. Bob will request the first Wednesday of the Fair for OCARC to cover the ham booth.

Meeting was adjourned at 9:35 AM

Submitted by
Rich Helmick KE6WWK Secretary

Thanks!

A Ham's Puzzle

We extend a big thank you to Jay, W6JAY, on an informative and entertaining meeting on ARDF. We appreciate that you took time out of your schedule to share your experiences and knowledge about ARDF. Maybe some of our members will start getting involved this fascinating facet of our hobby.

We wish to thank Jim Shryne-N6DHz, President of the Southern California DX Club, for donating three prizes for our monthly drawings. Jim is also our newest member of the club. Welcome aboard!

We also would like to thank Dale Piedfort, KB7UB, for contributing a prize for our monthly raffle.

February's Presentation

Clipperton - The Forgotten Island of the Pacific

This is the official story of the March 2000 DXpedition to one of the world's most remote and mysterious islands - Clipperton! One of the most complete historical records ever made on video, this film documents the island's legendary and sometimes brutal curse.

From the famous DXpeditions over the last 50 years, to its chilling history of shipwreck, murder, and piracy, join the FOØAAA team as they reactivate one of Amateur Radio's most infamous destinations.

You are at a radio club meeting and have the chance to participate in a contest. How will you play it?

In this contest you are shown three closed boxes. One box contains an Icom 7800 transceiver (with a Heil Microphone, of course). The other two boxes contain gassy vacuum tubes. Your goal is to win the Icom radio. Without examining or touching them, you get to select one of the three boxes. That box is put aside for the moment. Now for the interesting part: The person conducting the contest opens one of the two remaining boxes; one that he knows contains a gassy vacuum tube. There are now just two unopened boxes left; the one you selected earlier and the one remaining box. Next, the person conducting the contest gives you another chance. He gives you the choice of sticking with the box you selected earlier or changing to the remaining box. What should you do to give yourself the best chance of winning the Icom radio (and Heil Microphone)?

- A. Stick with your first choice.
- B. Swap your first choice for the remaining box.
- C. Either. It doesn't matter because the odds are the same.

The answer will appear in next month's RF!

de AF6C

Unique QSL Cards from a DX Legend

--Continued from Page 7--

The Marines were relocated to MCAS Kaneohe Bay and Ewa was disestablished in 1952. The property was absorbed by NAS Barbers Point and became the Barbers Point NAS Golf Course. NAS Barbers Point was the last NAS in the Hawaiian Islands and was disestablished in 1999.

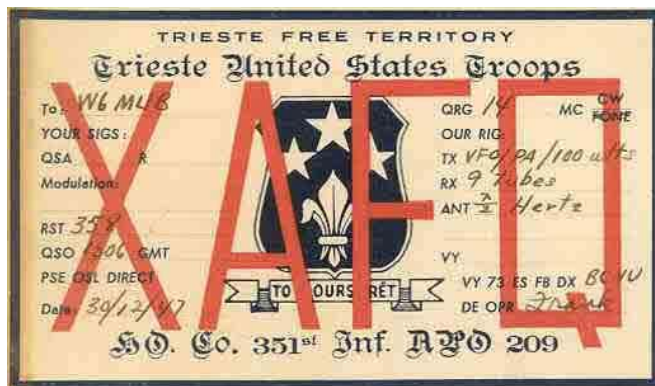
The golf course still exists today and several of the runways can still be seen in aerial photographs, many of the concrete revetments can still be found although all of it is very overgrown and hard to see. One other thing that is interesting on the card is that it states Oahu T.H. In 1946 Hawaii was still a territory and was admitted as the 50th state on August 21, 1959



The next card is from XAFQ Trieste Free Territory. The contact was on December 30, 1947 at 1506 GMT on 14mc CW. Trieste was annexed by Italy in 1921 as part of the territory they won in W.W.I. Trieste was then occupied by Germany during W.W.II. Trieste was liberated in 1945 and the Trieste Free Territory was created in 1947. The Trieste Free Territory was divided into Zone A Made up of the north end, which included the city

itself and several surrounding villages. Zone A, was administered by an Allied Military Government (AMG). Zone B, in the south was administered by Yugoslavian communists.

Zone A was had two separate Allied forces made up of 5,000 Americans in TRUST (Trieste United States Troops) and 5,000 British in BETFOR (British Element Trieste FORCE). The Trieste Free Territory disbanded in 1954, with Zone A being going to Italy and Zone B was incorporated into Yugoslavia.



The "XA" cards were issued by the AMG to various British and US forces. You can see a large collection of these cards and get additional information on them at <http://www.qsl.at/common/xa.html>.

73 DE Jim, N6DHz

Tech Talk #38

Continued from page 3

Both of these factors indicate there should be a reasonable >20 feet [>6 meters] separation between the tower and the operating equipment.. For towers already located closer than this, it may be necessary to utilize some shielding to minimize the magnetically induced energy.

Antenna Location

A ground mounted vertical antenna is very similar to a ground mounted tower. Both have a low impedance connection to the ground system. However, if the antenna or tower is mounted on a roof, the inductance inherent in the conductors to the ground system will be very significant. So significant, that voltages in the order of several hundred thousands volts could be present during a strike. To reduce the inductance in the ground conductors, increase the surface area / circumference of the conductor (wider copper strap) as well as the number of conductors.

For roof mounted antennas and towers, multiple down conductors can be spread over the roof and brought down to ground in multiple locations. This will require a ground system run completely around the building (a perimeter ground). As an added benefit, this multiple down conductor approach will reduce the mutual coupling between down conductors and provide a low, unsaturated perimeter ground to absorb the conducted surge. The magnetic fields will also be divided and could, in theory, cancel in the middle of the building. This will help minimize magnetic energy coupling into the wiring inside the building.

Coax Grounding

Since the tower is a conductor and is well grounded, all of the coax lines should be grounded (using a grounding kit) at the top of the tower close to the antenna and at the base of the tower before they come toward your equipment.

During the strike event, the tower and the coax lines will mutually share the strike energy. If the coax lines are not grounded as they leave the tower or they are completely isolated from the tower, more energy could traverse the coax toward your equipment than is conducted to the ground system by the tower. Such a large inductive voltage drop may cause arcing between the coax lines and the tower that could cause deterioration (pin holes in the coax) or destruction of the coax lines.

Since all towers have some inductance, leaving the tower at a point above ground will allow some of the strike current to continue on the coax line (both the center conductor and shield) toward your equipment. Once at the equipment, the current will follow the chassis to the safety ground. This could elevate the equipment cabinets to deadly voltages, deadly for both people and components.

Even though the inductive properties of the coax cable appear to be beneficial, and extra inductance can be created by adding a few turns to the coax; don't do it. The added turns can also act like an air wound transformer coupling more energy into the line. Make sure coax lines leaving the tower remain at right angles to the magnetic field surrounding the tower.

In part 3 we will continue our discussion of how to survive a lightning strike by examining in greater detail what we mean by a single point ground system; protecting your coax as well as your rotator control lines; and what to do if your ham shack is located in a high-rise building.

de Kenan, N6CCE

***** Product Review *****

Icom IC-7800 HF/50 MHz Transceiver

**By: Dan Dankert N6PEQ
n6peq@dxer.com**

After having owned several top of the line HF transceivers over the years, I have been waiting for that one "special" rig to arrive on the market that takes HF amateur radio to the next echelon. For the past couple of years, I've stayed loyal to my trusty Kenwood TS-950SDX. In 2003 Icom announced that they were developing a new top of the line rig that would replace their discontinued IC-781 transceiver. This radio was named the IC-7800, and Icom alluded that the performance of the radio would be far beyond anything previously offered in the amateur market. In fact, Icom expressed so much confidence in the IC-7800, that their literature states, "*No one else comes close!*". This is quite a strong statement. Does the IC-7800 live up to the hype? The price sure does, as most hams were surprised to see the list price of ~\$13,500 announced. Yes, we have now stepped into the world of 5-digit priced amateur transceivers.

In December 2004, Icom America offered me an IC-7800 to test drive for a few weeks. Of course I accepted the offer as I was anxious to try out the radio, but at the same time, I was skeptical as to whether it would really be that much better than other rigs that I have used. As soon as the radio arrived at my QTH, it was a marathon race to get it wired into the shack. My first impression was that this radio was large and heavy. It weighs in at a whopping 55 pounds, and is approximately 17" wide, 6" high and 17" deep! Personally I like big radios, so this definitely appealed to me. Looking at the back of the radio, I found no less than four antenna ports, a transverter port, USB port for a keyboard and a VGA monitor output. Plus there are the typical accessories ports, speaker outputs, RS-232C port, relay output, etc. After only a few minutes (which at the time seemed like an hour!), the 7800 was connected and ready to power up.

As the radio came to life, I could not help but be awe struck by the beautiful 7" wide color TFT LCD display. Wow! The vivid colors and multitude of information displayed is nothing short of impressive. You feel somewhat overwhelmed at first with all the knobs and features, but in fact the radio is easy to navigate and learn as I will explain later. Icom replaced the standard mechanical coil S-meters with "virtual" D'Arsonval meters. The movement of the digital S-meters is truly a treat to watch. The simulated rise and fall of the meters make you feel like you are looking at the real McCoy, but in fact it is just an image. Two other styles of S-meters are also able to be selected. There are a few different fonts and display styles that can be selected as well. The spectrum display is large, and you can change the colors to your preference. At the press of a button, you can view your power output, ALC, Compression, SWR, FET drain current, FET drain voltage and power amplifier temperature all at the same time! This was attractive to me, as I like to keep an eye on all the audio/XMIT parameters at once while transmitting. Does all this displayed information seem too much for the 7" wide display? Never fear! You can simply plug a VGA monitor into the VGA port located on the rear of the radio, and your monitor becomes a huge IC-7800 display. Nice touch!

One of my pet peeves with most of the radios (HF and VHF/UHF) on the market is the congestion of large quantities of tiny light weight knobs on a very small area of real estate. To my surprise, Icom did an excellent job of handling this challenge. The front panel buttons and knobs all have a very nice, rugged, tight and "heavy" feel to them.

To Icom's credit, they spent the extra money on a radio that lists out at ~\$13,500 to make it feel like a radio that should cost that much! The knobs and buttons are nicely spaced, intelligently laid out and clearly labeled. The controls are placed in logical locations. You find yourself spending more time working that rare DX station rather than searching for that elusive QRM fighting feature.

Tuning around the HF bands, I discovered how smooth the tuning dials felt. Yes "*tuning dials*". The 7800 has two duplicate and fully independent receivers which each have its own 32 bit floating DSP unit. The receivers are completely separate from the antenna inputs all the way to the speaker/headphone outputs. Each receiver has its own set of controls including: tuning knob, twin passband tuning, noise blanker, digital noise reduction, AGC, squelch, AF gain, RF gain, notch filter (auto & manual), audio peak filter, twin peak filter, 3 IF filters, tuning speed adjustment, digital RF selector, preamp, attenuator, voice synthesizer, dial lock, S-meters and auto tune feature. There are so many features, that I probably have overlooked a few as well!

The receive audio quality is exceptional, in fact an SSB signal with a moderately strong signal level actually sounds somewhat like AM broadcast. Very full and easy on the ears! The receiver itself is very sensitive and selective. Three custom selectable receive filters are available for each mode. They can be adjusted anywhere from 3.6 KHz down to a super narrow 50 Hz for the SSB, CW & PSK modes. In the AM mode, the filters are adjustable from 10 KHz to 200 Hz, and from 2.7 KHz to 50 Hz in the RTTY mode. In the SSB, CW, PSK, RTTY & AM modes, the roofing filter is selectable between two preset values, 6 KHz & 15 KHz. In addition, the DSP filter's cutoff shape can be selected between "sharp" and "soft". The ability to utilize extremely narrow filters is especially helpful on CW. It is easy to tune in and clearly receive a weak station when a very strong station is only 60 Hz (0.06 KHz) away! I had previously frowned upon DSP receive audio & DSP noise reduction, since I have never witnessed it implemented properly on amateur radio equipment. In other radios, I had noticed the DSP resulted in very mechanical and re-manufactured sounding receive audio, a quality I find unpleasant. I am pleased to report that the DSP receive audio and DSP noise reduction in the IC-7800 sounds excellent! The audio is very natural, and the DSP noise reduction effectively removes a vast majority of noise without significant harm to signal quality. The performance of DSP noise reduction is very apparent on noisier bands such as 80 & 160 meters, where it is common to dig out a signal which is barely noticeable into a signal which is Q5! This is the first time that I have witnessed DSP used effectively and advantageously on amateur radio equipment. Three AGC speeds (Fast, Mid & Slow) are available for each mode, with the exception for FM, which is fixed in the "Fast" position. In all modes except for FM, the AGC time constant for each speed setting is user adjustable in the AGC menu. Two preamplifiers are switchable in and out of the receiver circuit for increased signal to noise ratio and receiver sensitivity. I also found the receiver to be excellent for shortwave, longwave and AM broadcast band radio listening, making full use of the IC7800's excellent filter capabilities and audio quality!

The transmitter puts out 200 watts on all bands, so the rig hardly gets a workout if driving an amplifier with 50 to 100 watts. The transmit audio quality (another pet peeve of mine) is outstanding! Using the new Heil PR780 microphone, which is specifically designed for use with the IC-7800, I have received rave audio reports on SSB, AM & FM modes. Several AM'ers had a difficult time believing that I was using a solid state radio due to the exceptional quality of my audio. The bass and treble of the SSB, AM & FM transmit audio can be adjusted in the setup menus. The SSB transmission passband width can also be tailored to your preference. CW operation is a piece of cake, and the full break-in feature works beautifully.

"Split" operation with some transceivers can be confusing, but not with the 7800. Split mode is signified by a large white LED located on the top center of the radio's front panel, and the two VFO's are clearly marked as to which is the transmit VFO and receive VFO. There is no guess work involved. Another nice feature for split operation is that the spectrum scope display scan width can be selected between $\pm 2.5, 5, 10, 25, 50, 100$ & 250 KHz. This makes it quick to find that "clear" frequency within the QSX window of a DX station working split. The scanning speed for each scanning width of the spectrum scope can also be selected between three setting (Slow, Mid & Fast).

Working RTTY & PSK is simple with the 7800. Simply press the 'RTTY/PSK' switch to select the proper mode, press the 'Decode' button and plug a USB type keyboard into the back of the radio. You can now decode RTTY or PSK right on the display of the 7800, and transmit using the keyboard! It has been a few years since I have used RTTY, and had never previously operated PSK. I found making contacts in either of these modes were a snap. The PSK decoder in the 7800 does a super job of copying very weak signals. The 7800 display has an indicator to assist in proper tuning, plus also includes a "waterfall" display for PSK. The tuning speed and frequency readout can be selected to 1 Hz increments in any mode, but is especially useful for tuning in PSK signals. The RIT is also adjustable in 1 Hz increments with this tuning speed setting.

The IC-7800 also includes a slot for a flash memory card. The flash card stores digital voice keyer memories, memory channel settings, operator settings, etc. This is a big plus for a multi-operator contest station. Each operator can store his preferences on a flash memory card, so that you do not waste time setting up the radio each time a new operator uses the radio. Each IC-7800 comes with a test report generated at the factory. The test report includes data for each band such as power output, receiver sensitivity, and 2nd & 3rd harmonics. Carrier suppression, receiver dynamic range, and 3rd order intercept test data are also included.

I only have three complaints about the 7800. The first is that the front feet do not extend far enough to bring the radio up to a good viewing angle for me. The second is that Icom did not incorporate an automatic repeat function for the voice keyer. This is an excellent feature found in the Kenwood TS-950SDX and TS-2000(X) transceivers. During lulls in a SSB contest, it is nice to place a rig in "auto pilot", which eliminates the need to keep pressing the voice keyer button over and over. For some reason other manufacturers have not found this feature to be of interest. The last complaint is that the roofing filters have only two settings, 6 KHz & 15 KHz. Roofing filters assist in reducing third order intermodulation distortion. It would be nice to see tighter roofing filters available, such as 1 KHz and 3 KHz.. The Ten Tec Orion has selectable roofing filters down to 250 Hz, while the soon to be released Yaesu FT-DX9000 will offer 3, 6 & 15 KHz roofing filters. Other than these three items, I simply cannot come up with any other beefs with the 7800. The 7800 is well designed and manufactured!

Did the 7800 impress me enough to consider purchasing one? Well, the morning after I received the demo IC-7800, my wife Kristin 'K6PEQ' walked into the radio room. She caught me with a tape measure as I was measuring the size of the IC-7800 to see if it would fit where my Kenwood TS-950SDX resided. As soon as she saw this, she knew that I was hooked! I unexpectedly fell for the rig, hook, line and sinker. The following day I purchased an IC-7800.

Continued on Page 15.....

Earlier I had mentioned that I would explain how easy the radio is to learn and navigate. Well, thanks to the intelligent layout of the 7800, plus the easy to navigate menu system, I didn't open the manual for the radio until almost a month after I owned the radio, and that was only to get some terminology for this article!

Congratulations to Icom for creating a radio that results in a giant leap in HF/50 MHz performance while maintaining simplicity of operation. If you are looking for a high end rig with incredible QRM/QRN fighting features, beautiful audio quality (Transmit & Receive), superb receiver characteristics and that is simply a pleasure to operate, I highly recommend the 7800. It is the pinnacle of transceivers for DXing, contesting and ragchewing. Simply world class!

More information on the IC-7800 can be found on Icom's website at:

<http://www.icom.co.jp/world/products/amateur/7800/index.htm>

The current street price is \$10,599. If you have any questions regarding the features or operation of the IC-7800, you are welcome to contact me at 714-544-9846, or via email at n6peq@dxer.com

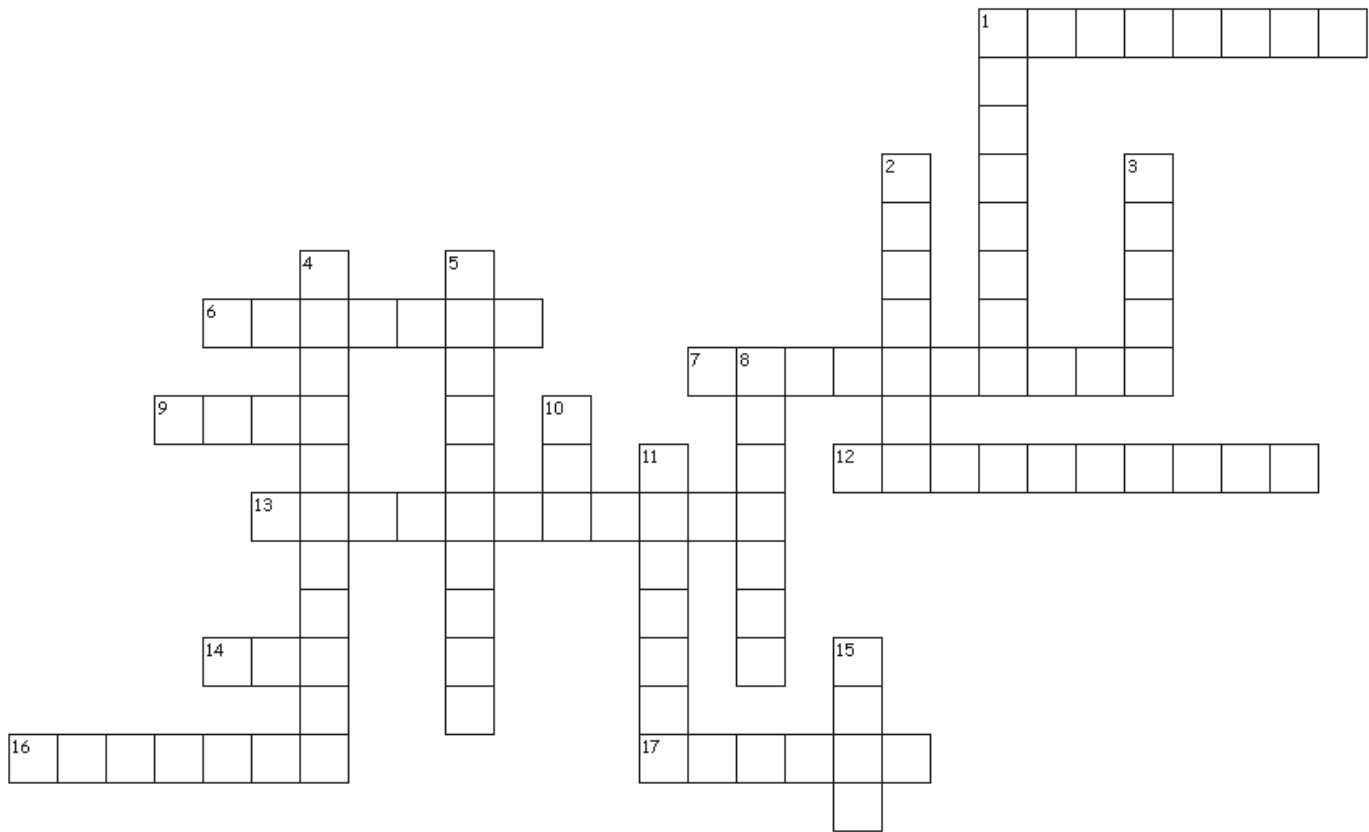


Dan N6PEQ and Bob Heil K9EID pose for a picture with the new Heil PR780 microphone at the QTH of Dan N6PEQ & Kristin K6PEQ. Bob specifically designed this microphone for use with the Icom IC-7800, and it sounds great!



The Icom IC-7800 HF/50 MHz transceiver. Note the large and colorful TFT LCD display!

Ham Criss-Cross Puzzle



ACROSS

1. A transmitted signal
6. Emergency drill in June (minus a D)
7. One radio wave cycle
9. Directional antenna
12. Country allocated with prefix "5R"
13. Region between ionosphere & Earth
14. Michael Powell's gift to Ham Radio
16. Type of RFI suppressor
17. Distress call in voice mode

DOWN

1. Negatively charged particle
2. Hometown of U.S. Towers
3. Type of filter used to remove heterodyne
4. Hometown of Ten-Tec
5. State with largest ham population
8. Instrument used to measure current
10. Power output of 5 watts or less
11. Country allocated with prefix "ON"
15. Common type of feedline

Answers in next month's RF!

Great Pictures from January Meeting!

Jay, W6JAY, begins his presentation on ARDF.



Ken Konechy, W6HHC, leads the introductions of the visitors in the meeting.

The club toasts Michael Powell leaving the FCC!



Inland Empire Council of Amateur Radio Organizations
Proudly Presents the

2005
ARRL SOUTHWESTERN DIVISION
CONVENTION
RIVERSIDE CONVENTION CENTER
RIVERSIDE, CALIFORNIA

September 9-11, 2005

ARRL Forums
Antenna and Propagation Forums
Contesting / DX Forums
Sunday T-Hunt
Wouff Hong
W1AW/6 Special Event Stations

Saturday Luncheon
Sunday Breakfasts (DX & VHF/UHF)
Grand Banquet guest speaker:
H. Ward Silver, N0AX
Author of
“Ham Radio for Dummies”

Convention Highlights Include:

Low Power (QRP)
Public Safety Demonstrations
Prize Drawings in every program
Thousands of dollars in prizes
(see our web site for a list of prizes & raffle info)
VE Testing
Non Ham Forums

For hotel and updated information see
our web site at: <http://arrlswdconv.org>

ORANGE COUNTY AMATEUR RADIO CLUB, INC
P.O. BOX 3454
TUSTIN, CA 92781-3454

First Class Mail

Time Dated Material.
Please Expedite!!