

M A Y 2 0 0 9

SCOPE

A newsletter by and for the Palomar Amateur Radio Club of San Diego, California.
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DON'T LET THIS HAPPEN TO YOU

READ ABOUT WHAT HAPPENED AND HOW YOU CAN PREVENT IT ON PAGE 10.

Save the Date!

Club Meeting

6 May 2009

Field Day Planning

Trail Run

9 May 2009

Pacific Crest Trail 50 trail run. Digital communications provided by amateur radio volunteers.

Board Meeting

13 May 2009

7:00pm at W6GNI QTH.



Club Reports

Got news? Send reports about your activities and things that you think other club members need to know to scope@palomararc.org.

April General Meeting

Andre Hansen K6AH did the talk for the April membership meeting. Meeting photos at left and below by Paul KB5MU. Andre explained and demonstrated the Runner Tracking system that will be used in the race.

April Fold and Staple

April SCOPE Fold & Staple Crew
W6GNI Al & Kathy, KB6NMK Jo

Membership Report

New Member Joining PARC: N1CUX. Five others reinstated their memberships after a delay. Please welcome this new member, on the air, and in person.

We now have about 70 members that have decided to receive their newsletter, the SCOPE, on line, saving the club the cost of printing and mailing the SCOPE.

Unfortunately, without the colored label on the snail mail edition, it's easy to forget when one's membership has run out. I send e-mails for reminders - but only when I have a "good" e-mail address.

So, as mentioned previously we will print the last two letters of the calls of those that have "expired".

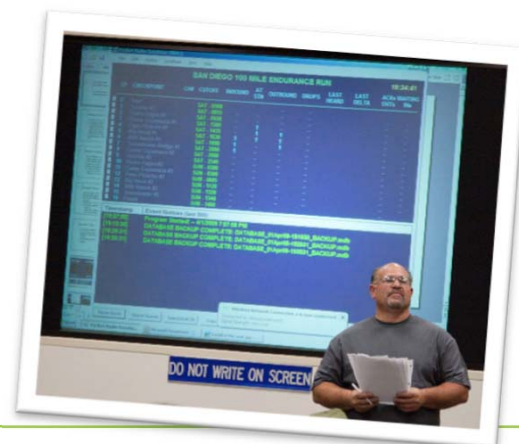
Obviously, there may be other members in good standing with the same ending call letters, but we didn't think it proper to identify one by printing the whole call.

The list: KP, VN, JS, AY, JG. Members with calls ending in those letters, please check to see if your membership has run out! (Those 5 ran out in February and March 09) Please!!

Al W6GNI



Above, Georgia and Dave man the auxiliary demo stations at the back of the room



Antenna Story

By Dennis KD6TUJ

Putting up a half wave wire antenna can be interesting. Cutting an 80m antenna should be easy, just double the 40m size, right? So being that a 40m wire uses 33 feet on each leg, double is 66 per leg.

I went to Radio Shack to pick up some light wire (75 ft 24 gauge speaker wire) and a SO 239 connector for less than \$15.00

Next, I went home to cut and throw the wire up. I checked it, and it worked great-----at 3.2MHz, not centered at 3.85. I cut 6 inches off per side and rechecked. Then, I did it again. No big move. OK, I pulled out the calculator. $468/3.85=121.55$ feet. A little different than 132 feet! Oh well, I measured to 61 foot per leg and checked. Not bad, close to

3.75. A couple of snips and another check later and it's close enough to 3.85 MHz. A few days later I put up a 40m inverted V. It was much easier to check the calculator before wasting time.

The 80m was put up at 30' above flat terrain and it surprised me to hear Georgia on one night. The 40m listened much better so I was listening on 40m and switching to 80m to transmit. It worked pretty good! Works better when you DO switch to 80m. Made the contact, but I think the transceiver was a little unhappy. I noticed after I finished. OOOPS!

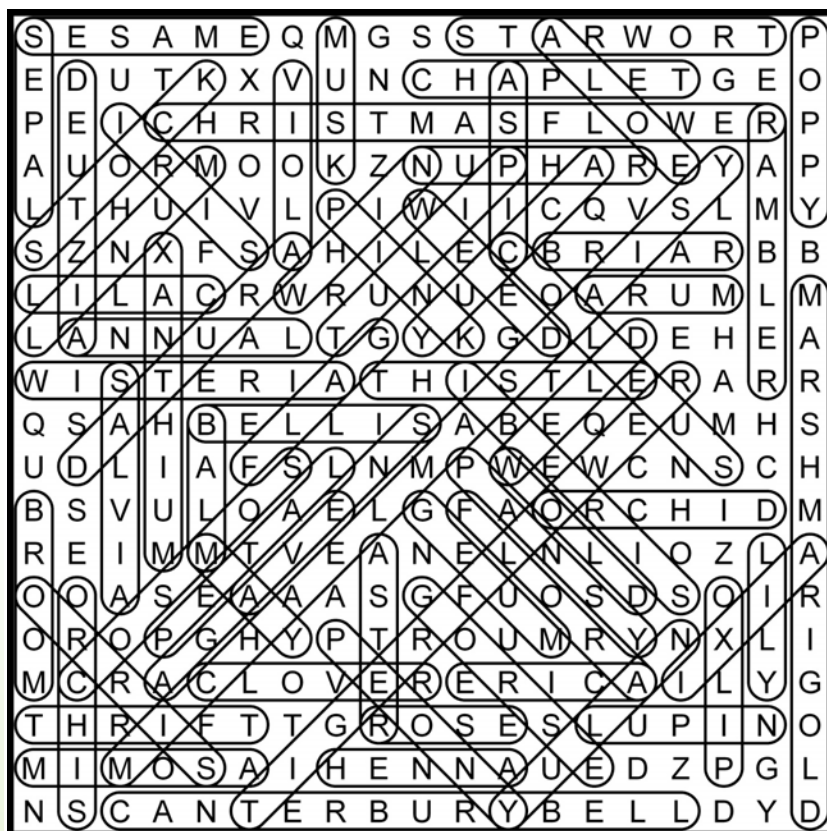


Have fun on the Air! Dennis KD6TUJ

May I Puzzle You?

John's hybrid car, with a dual-channel mobile radio, traveled North on a U.S. Interstate highway.

Five hours after passing mile marker 100, traveling at a steady 60 miles per hour with no stops, it passes mile marker 250. How is this possible? (April solution at right)



Bonus word: ham

Vandals Strike Bay Area Infrastructure, Hams Provide Communications Support

By Ken Easton Excerpts from ARRL.org, the Santa Cruz Sentinel and the San Jose Mercury News

In Santa Cruz County, District Emergency Coordinator Cap Pennell, KE6AFE, was awoken that Thursday morning just after 5 AM by uniformed police at his door. Sent by Dominican Hospital President Nanette Mickiewicz, the police officers escorted Pennell to the hospital for a brief on this situation: The fiber optic lines that had been cut in San Jose had affected the Santa Cruz hospital's communications infrastructure, cutting off communications from the hospital to the outside world. Santa Cruz is located on the northern edge of the Monterey Bay, about 72 miles south of San Francisco.

Hundreds of thousands of AT&T, Verizon, Nextel and Sprint customers with land lines, cell phones and Internet service were affected. The loss of land line, cell phone and Internet service was amplified by the fact that multiple carriers send traffic on the same fiber optic cables. For example, Verizon said more than 50,000 household land lines were affected as well as an unknown number of cell phone connections.

The incident revealed what many experts have known for years: the humdrum infrastructure behind daily routines is extraordinarily vulnerable to random accident or deliberate mischief.

"While I was meeting with hospital department heads, Bob Wolbert, K6XX, had started our ARES Resource Net on the W6WLS/W6MOW linked repeaters," Pennell told the ARRL. "During the briefing, the hospital determined to implement HICS/SEMS for this emergency. There hadn't been telephones or Internet anywhere since about 2:30 AM. The hospital's phone system did work, but only within the

hospital. Their internal computer local area network wasn't working either, so they were instantly on a 'paper system.'"

By 6:15, Pennell said they had established tactical radio links on the K6BJ/KI6EH linked repeaters between the Dominican Hospital Emergency Operations Center in Santa Cruz and the Watsonville Community Hospital emergency room; Watsonville is about 15 miles south of Santa Cruz via the Pacific Coast Highway. "We established HEARNET 155.385 simplex between both hospital ERs and County 911; HEARNET is the Hospital Emergency Administrative Radio Network. Once HEARNET (ER staff) and K6BJ repeater (hams) were staffed and operating at both hospitals, I left the hospital to become our initial ham operator at the County Emergency Operations Center and operated as ARES/ACS shift supervisor from there for the rest of the day," Pennell reported.

Throughout the day, Pennell said that hams -- including some in Monterey County who had been working telephones -- helped dispatch ambulances, conferred with the Poison Center on a children's poisoning case, ordered replacement blood supplies for two hospitals from San Jose Red Cross, relayed a complex major "whole hospital" day's food order to the supplier out of county, tracked down various doctors for emergency consultations and shared status updates from our area. "We did all this while in unity with the County government, public safety agencies and California Emergency Management Agency's Coastal Region," he said. "Greg Smith of Cal-EMA spent the day in the Santa Cruz EOC with us." All service was restored by 12:15 AM on Friday, April 10.

Gilroy City Administrator/Director of Emergency Services Thomas J. Haglund expressed his thanks to the Amateur Radio operators who assisted with communications support, saying, "This particular emergency situation underscores that our reliance on technology should be balanced with maintaining the very types of capabilities that you provided to us. Communication is an obvious key

Fiber Cut continued on page 9

Transceivers Become The Standard Of Amateur Radio

By Ron K2RP

As we've discussed, until the 1960s, almost all ham stations on the HF bands consisted of separate receivers and transmitters, plus needed accessories. In many cases, receivers needed external speakers, transmitters required outboard VFOs, and numerous other peripherals were commonly used.

Now, of course, virtually all HF stations consist of transceivers, which not only provide both transmit and receive functions, but many circuits are shared. Some early combo units were not true transceivers, in that transmit and receive functions were completely independent, perhaps sharing only the power supply.

The major factor that led to the practical development of the modern transceiver was the rise in popularity of SSB over AM. Before SSB became the predominant mode, frequency was controlled by a VFO, either separate from or integral to the transmitter, or by a crystal for a specific frequency. The fact that our bands are harmonically related ($3.5 \times 2 = 7$, $7 \times 2 = 14$, $7 \times 3 = 21$, etc.) meant that a VFO operating on one or two frequency ranges could be multiplied in multiplier stages to produce output on the desired band. This system had the advantage of simplicity, but had some distinct disadvantages. First, the fact that on the higher bands the frequency of the oscillator was multiplied several times made it difficult to build a stable, chirp free oscillator, since any imperfections and drift were multiplied as well. Break-in operation required the oscillator to be keyed, since it would be heard in the receiver if it were to be kept running. If the oscillator were to be kept running for stability, then there needed to be some provision for turning the oscillator on and off when switching between transmit and receive in the separate units.

When SSB became popular, a new system emerged. The sideband signal needed to be generated at one frequency regardless of band in use. It became common practice to generate the SSB signal at 9 MHz, (then called 9 Mc.), and

mix it with a VFO running at 5 to 5.5 MHz, in the same manner as a superhet receiver. Notice that the sum of the frequencies covered 14 to 14.5 MHz for the 20 meter band, and the difference covered 4 to 3.5 MHz, for the 80 meter band. By selecting the proper tuned circuit, both bands were covered. Now, the oscillators can both run continuously, and the mixer stage can be keyed. Thus, the advantage of not keying the oscillator can be joined with the benefit of break in operation, since neither oscillator is on the operating frequency! Additionally, since the VFO covered 5 to 5.5 MHz no matter the transmitting frequency, the VFO could be made linear resulting in the same tuning rate on all bands. Note that the SSB signal will be inverted with this system; that is, the lower sideband will be generated on one band and upper sideband on the other. Thus began the tradition of lower sideband on 80 and 40 and upper sideband on the higher bands. Many early transmitters of this type tuned high to low on some bands, and low to high on others.

To cover the other bands, all that was needed was a second oscillator, usually crystal controlled, and mixer as in a double conversion receiver.

I believe it was Collins, who introduced the milestone KWM1 transceiver in 1957, who pioneered this concept. They used the same oscillators and mixers that generated the transmit signal to control a receiver, enabling the transmitter and receiver to be exactly on the same frequency at all times.

This system was the genesis of all modern transceivers. The drawback was that the circuitry was complex and expensive. In the early 60s, a few companies offered single band transceivers, such as Swan, with their 120, 140 and 175 models, soon followed by Heathkit's HW12, HW22, and HW32 models. Heath in particular was responsible for the transceiver boom, as their monoband kits were priced at only \$120, plus power supply. Both AC and DC (mobile) supplies were offered, with the AC supply selling for \$40. Compare this to the contemporary KWM2 at \$1150, plus \$115 for an AC power supply. This was for a 5 band unit, compared with the KWM1 which covered only

Transceivers continued on page 8



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Minutes of the Palomar
Amateur Radio Club Board of
Directors Meeting
11 March 2009

---Treasurer's Report
Georgia KI6LAV distributed the treasurer's report for February. Total Assets were \$11,379.80. The prepaid dues were \$6186.00. The club's self insurance at the site was discussed. Loren AD6ZJ made a motion to approve the treasurer's report and was seconded by Paul, KB5MU. The motion carried.

Secretary's Report
Loren AD6ZJ presented the February Secretary's report. A motion was made to accept the minutes as amended (typos and other grammatical corrections) by Paul, KB5MU and seconded by Mike K6MRP. Motion carried.

Discussion Items
1 – MARC TOUR DE CURE 447.000 Use 4/17, 18 – OK to use – Loren to send OK to Frank Littlebury KE6WOE.
2 – Ham club Info for AB9IF – Should we send them info – No the ARRL does fine
3 – Scout Fair 4/18 – At Qualcomm Stadium – Club members should be encouraged to help
4 – New repeater firmware with voice – No voice upgrade at this

time
General Meeting: April meeting
- Andre K6AH Radio runner tracking

Future Topics:
June: Monica Zech
Lin Robertson KJ6EF – Vintage broadcast radios
We need to find more Amateur radio related topics for our meetings. Ideas are welcomed

Membership Report: Presented by Al W6GNI
Current club membership is 353. 60 members are now choosing to get the scope online only.

Repeater Site/Technical Report: Presented by Mike K6MRP
- Eric Thompson KA6UAI has removed his repeaters off the site. The PARC tower now looks lopsided and should be re-balanced. We need to formally end the contract with Eric. Loren will review the original contract.

- The repeater phone had an outage and it turns out the line is in Stan's name. We should see if we can transfer the account without incurring extra charges.

- There were many broken branches from the latest round of storms. Mike took several truckloads of branches down the hill.

- The ID is out on the ATV repeater and needs to be

shut down until repaired.

New Business:

-

OLD Business:

- Paypal on the PARC website– The PARC Paypal account - we discussed various page options for using the paypal links within the PARC website for annual dues and donations.

- 3905 Century club eyeball – no new items decided – several early planning items passed along. Will put together a flyer for interested PARC members.

- Field day –Bradley Park is out as a possible field day site. Actively looking for a good site.

- Testing at field day is possible depending on what VE personnel are willing to run it.

- SANDARC representation – we need to get members to represent PARC. Those interested should contact Dennis, KD6TUI.

- SDGARES vote is coming up on the 14th of March. Must be a member of ARES and ARRL to vote.

Motion to adjourn made by Loren AD6ZJ and seconded by Georgia KI6LAV. Motion carried at 9:15 PM

Transceivers continued from page 5

20, 15, and 10 meters. A good case can be made for the argument that Heathkit's HW100 and HW101, and the SB100, 101, and 102 5 band models were the units that sparked the transition to SSB over AM and transceiver over separate transmitters and receivers. In almost every way, cost, performance, space requirements, and versatility, the Heathkits were far superior to the competition. They were probably Heath's most successful amateur kits, and more were made than any other transceiver in history. They were followed by the slightly more sophisticated SB series of transceivers, and SB series of "separate" radios. By the late 60s, it seemed that there were more Heathkit SSB rigs on the air than all other brands combined! Over 40 years later, it's still not unusual to hear these rigs on the air. Pictured are the lower cost HW100 and HW101 models. The HW100 (below) was introduced in 1968, and advertised as the "world's fastest selling transceiver."



At only \$250 (plus \$40 AC power supply and a speaker), it represented a great value, and enabled thousands to enter the world of SSB. Unlike the single band units offered previously, the HW 100 and 101 offered full coverage of the 80 thru 10 meter bands (10 meters covered in 4 segments), selectable sideband, and CW operation. CW sidetone, 100 Hz calibrator, VOX, and PTT were included.

The HW100 was followed by the HW101 in 1970, and production continued for an astounding 13 years! Estimates are that 40,000 were built, and many are still on the air. Several small changes

were made, notably better receiver sensitivity, better "feel" for the tuning mechanism, and availability of a switchable CW filter option. This was by far the most popular radio that Heath ever produced, and the last tube type rig Heath offered. Below is a picture of the HW101.



PARC Anniversary Call for Volunteers

The Palomar Amateur Radio Club began in February 13, 1936 as North San Diego Radio Club. The name changed to Palomar Radio Club prior to the June 1936 publishing of QST. Association with ARRL began on May 8, 1937. February 2009 marks our 73rd anniversary. Two more years will be our 75th and we would like to do something very special.

First, we would like a volunteer to lead the 75th anniversary organizational effort. We would like to see events throughout the year take advantage of our anniversary theme. Second, we would like to hear from all of you that may have any stories, memorabilia, documents, photographs, and other items that could be presented and shared at our 75th anniversary events.

Please contact board@palomararc.org or any officer at a meeting to help with making our 75th anniversary year special. Thank you for your participation and support. Dennis KD6TUJ and Michelle W5NYV

Working W6P and W6A

By Conrad KG6JEI

With my busy schedule I am not able to get much time on the radio. However, I caught W6P, the Palomar Amateur Radio Club special event station, on the repeater on the way to the monthly club meeting, I never managed to hear W6P on 20m when they went to that band. I thought I was just too early to catch him. No harm – off I went to dinner, to solve the problems of the world.

W6A was met in person at the "Valentines Day Food Massacre" (which did not occur on valentines day). It was a simple affair. W6A announced he would start on 10 meters later in the evening.

I made it home in time to mount the 10m stick, the car being the only station with HF availability.

W6A was found coming in loud and clear. Of course, being in the county, this should all be expected.

W6A was convinced to work on 6m, 10m, 20m, 40m and 80m. All were strong contacts, although the lower in band we were, the more trouble we had in hearing each other with less distinct voice quality. Good contacts were made all the same and W6A went on his way to work someone else.

Two weeks later I happened to be at Ron N6XT's house after the North County Monthly Lunch. I had wanted to load his towers on a flatbed when he wasn't looking but he wouldn't turn his back on them! -- Oh well, another time I'm sure!

Eventually we proceeded to discuss ignition noise on trucks and a side-by-side signal comparison was done between his Screwdriver and my Hamstick mount.

A station, the call I do not remember, was heard S7 on Ron's rig and not at all on mine. Further talks about fuel pump RFI proceeded, but further

testing would have to be done at such a time as when the truck could receive a signal.

The next day the antenna was to be checked for resonance and the coax for shorts, however this procedure was interrupted before it began. The radio was found to be connected to the tuner, but the tuner was found not to be connected to the antenna coax. Such a shame! This might explain why I never was able to hear W6R.

Hope to hear you on the air, now that the coax is attached. Oh look, the QSL cards just arrived!

Fiber Cut continued from page 4

to adequately responding to any emergency and the efforts of the Mutual Aid Communicators and the Gilroy Police VIP's provided the necessary communication and public visibility in this instance and demonstrated just how important your training and skill is to our community. Thank you very much for your dedication and expertise."

Gilroy Police Chief Denise Turner echoed Haglund's comments: "We truly appreciated all of your help during this challenging event! Each of you played a key role in a successful operation. I feel better knowing we have dedicated volunteers like you that will come to our aid in time of need! Thank you!"

About 25 operators were handling the radio traffic while another 50-60 had signed up to fill in when other volunteers got tired.

In an era of homeland security, when a few vandals with a crowbar can practically disable communications in Silicon Valley, amateur radio emergency response to manmade disasters can be as important as the response to natural disasters. Are we ready in San Diego County if this happened here?

The Risk of a Temporary Setup

By Michelle W5NYV

On a busy morning just a few weeks ago, I turned on the 2m radio early in the morning in order to listen to the traffic on the repeater. The radio, a D710, sits on top of an Astron power supply on the back corner of a table in the lab. This table is near a window that overlooks the vegetable garden. In between the table and the window is a terrarium full of carnivorous plants.

These plants had become overgrown and crowded over the years. The peat moss had slowly broken down over time as the sun dews, octopus plants, Venus fly traps, and several types of pitcher plants had all grown fat and happy with a steady supply of various insects that the children brought them from the gardens outside.

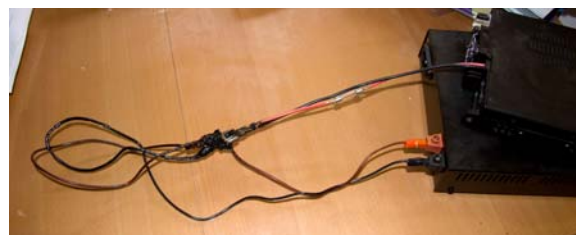
The APRS status and reply messages had referenced the D710 being “bench tested” for quite a while. The transition from bench to vehicle had taken, like many other radio projects, longer than expected. In order to get the radio on the air as quickly as possible, I’d used alligator-banana plug cables to clip the power leads to the power supply. I’d pulled the insulating sheaths down well over the exposed metal and not given it a second thought. It was, after all, a temporary setup.

After listening to several conversations on the radio, doing a load of dishes and starting some laundry in the meantime, I decided to accomplish another chore that needed finishing, and began a long-delayed replanting of the terrarium with fresh peat moss and some new plants from the bug-eating section of the local nursery.

I stepped around the table, carefully hefted the terrarium, and took it to the kitchen. I lifted out the top layer of plants and set them on some spread out newspaper, separated out a few examples of each of the overgrown masses of plants, put in a few bags of fresh peat moss, and then planted the old survivors with the fresh

young newcomers. About this time I heard a shout from upstairs. Ken, who was working at a computer on the second floor, had smelled smoke and spotted the smoke rising from the back of the radio. He raced down the stairs, unplugged the radio, and opened the front window to air out the room before I could get out from under the peat moss.

An inspection revealed what had happened. I’d inadvertently brushed against the clipped-together cables. While the alligator style leads seemed to be firmly ensconced against the contacts from the D710, they had somehow managed to short together, and the wires and insulation were a solidly burned mass. See the photo on the front page for a detail of the damage. Below is a photo of the radio and power supply after they were removed to the kitchen for examination.



I immediately noticed that the fuse, visible in the upper right wire leading from the burned intersection to the radio, was intact. Taking a closer look at the terminals of the power supply, I could see that the plastic banana plugs were cracked, as if from high heat. I was momentarily concerned that the power supply might be damaged. However, the supply powered up and passed basic tests of functionality. I assumed that the supply had provided power through the short up to its maximum output of 20A. While this was hot enough to burn the insulation around the alligator clips, it wasn’t enough to trip the breakers.

How to prevent an incident like this? Take the time to inspect your equipment. Transition any temporary setups to permanent ones. Now the radio and power supply have short, dedicated wires that don’t provide any opportunity for shorting out when they’re bumped or moved.

Field Day Checklist

By John WB6IQS

TOOLS FOR SET UP / TEAR DOWN

1. Tool bag or tool belt
2. Open end or box end wrenches. 3/8" through 9/16"
3. Socket wrenches, 7/16 through 9/16"
4. Electrical tape or duct tape
5. Knife; box cutter or folding type
6. Pliers. Medium
7. Misc. screwdrivers (slotted and Philips)
8. Tape measure, 12' or longer

SET UP / TEAR DOWN, PROTECTION & PERSONAL GEAR

1. Gloves, flexible leather types are best.
2. Sun hat / hard hat and sun screen
3. Boots or high topped shoes. No flip/flops or lightweight tennis shoes
4. Back brace belt (if desired)
5. Long sleeved shirt, for sun protection
6. Long pants, blue jeans are preferred
7. 2 Meter, Handie-Talkie, to monitor local announcements

TEST YOUR GEAR BEFORE FIELD DAY

Test your antennas and generators before bringing them to field day.

GENERATOR

1. Run your generator for at least a half-hour using an electrical heater or high wattage light bulbs as a test load.
2. Change the oil. Especially if it hasn't been done in the last year or two.
3. If you "know" that the oil is fairly new, then check the oil level. Top it up if needed.
4. Clean the air filter. Check the carburetor.
5. If the carburetor's insides look dirty, shoot a few squirts of carburetor cleaner in the air intake while the generator is running. This will loosen up any crud in the throttle plate and clean out the jets.

ANTENNAS

1. If you have a totally new antenna that has not been tried before, leave it at home. Use only known good, tired and true, antennas for field day.
- 1A. You do not want to build a brand new antenna kit only to find out that some of the parts are missing. Likewise, it is no fun working in the dark because the design was more trouble to erect than anticipated.
2. If you need assistance in checking a new antenna's VSWR or need a coaxial cable, pipes, ropes, etc. to set up the trial installation, let the club know. We have loose antenna parts and several antenna analyzers (HF - VHF) available for loan.
3. For HF antennas, simple sloping wire antennas without adjustable traps or exact installation angles are best. The only thing that you can guarantee on Field Day is installation problems.
4. The club will provide pre-tested beam antennas, rotators, towers and most all of the necessary hardware and cables for each station.

GENERATORS, SUPPLIES

1. Gasoline, 5 gallon cans. Approx. 15 gallons for two days supply are typical.
2. Spare quart of oil for crankcase.
3. Extension cords, 12 gauge is best. 100' long (or more).
4. 1-gallon gasoline can to fill generator.
5. Large mouth funnel for gasoline. Long necked oil filler funnel.
6. Fire extinguisher, dry chemical. Bigger the better.
7. Multiple AC plug strips. Surge protector strips for rigs & computers.

Come to the membership meeting 6 May 2009 to discuss and plan Field Day and get your questions answered.

SCOPE

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Featured Program

The program for the general meeting at 7:30pm on 6 May 2009 at the Carlsbad Safety Center, 2560 Orion Way, Carlsbad will be on the subject of Field Day. Preparations, advice, and planning will occur!