Editor’s Notes
By John Wright, K6CPO
I must apologize for the delay in this issue of Spurious Emissions. Unfortunately, life catches up to us all and things get postponed.

In this issue, those that participated in Field Day will give their observations. Also in this issue is the second installment of John Markham’s article about installing antennas at his son-in-law’s house in Northern California and Dan Romancik has contributed another article, this time about the return of Heathkit.
In the early spring, my truck was broken into up near Joshua Tree National Park and my radio was stolen. I’m contributing an illustrated article about installing a replacement Yaesu FT-7900 in the truck.

Happy reading!

New Members
We would like to welcome the following new member to SOBARS:
Sarah Honaker, KK6DKP

License Upgrades
The following SOBARS members upgraded their licenses during the second quarter of 2013:
Steve Hecht, N6TPI Extra
Bill Honaker, N9LZ Extra
Bille Torre, KK6BGQ General
Sarah Honaker, KK6DKP General

From the President’s Desk
By John Wright, K6CPO
Field Day 2013 has come and gone and Bill Metzger, W6RGS, our Field Day Chairman, put together another great team this year. Unfortunately, through no fault of his, public attendance was way down compared to the last two years and we had no visits from the local government officials. The results are not yet in, so we don’t know where we placed. More on Field Day will be in an article later in the issue.

The project to convert the repeater to 100% solar power is proceeding. We have obtained tentative approval from the City of Chula Vista, but there are still details to be ironed out regarding insurance and a Hold Harmless agreement. The club officers will be meeting to further discuss our options and how we are going to proceed.

The Friday before Field Day, I contacted the Chula Vista Yacht Club about whether the room was going to be available for our rescheduled
July meeting. That was when I was informed that the CVYC was likely going to have to move because they were unable to afford the rent on the space any longer. After an inconclusive exchange of e-mails with the Yacht Club Commodore, the SOBARS officers decided to cancel the July meeting and start searching for a new meeting place.

Thanks to Don Johnson, K6ZAG, we were able to secure the meeting room at the Chula Vista RV Resort, just up the street from the Yacht Club. Don took the initiative and reserved the room for us for each first Thursday. Fred Curtis, K16GRO, SOBARS Secretary-Treasurer, and I met with Don and looked over the room. It is an excellent space and has more than enough room for our purposes.

The usual SOBARS schedule of nets is occurring each week. Our net control operators, Dick Cupp, K6SJAA (440 and 220.), Fred Curtis, K16GRO (2 meters.) and John Markham, K6DVKW (10 and 40 meters) are all doing an excellent job. Thanks goes out to Ramon Duenas, K6QQK, for his assistance as alternate net control for the 2 meter net and for the Chula Vista CERT net on 2 meters. The Thursday 6 meter net is holding at about five check-ins per week, but a lot of this is attributable to the lack of a suitable repeater and to the fact that not all members have 6 meter capable rigs.

The year is half gone and our annual potluck dinner is rapidly approaching. It will take place at the December meeting, December 5, 2013. Put this on your calendars now.

This brings us up to date for the second quarter of 2013. 73 everyone! ✤

A Different Perspective on Field Day
By The Participants

Editor’s Note: Rather than ask some one to write a single article on Field Day, I took a suggestion from Lionel Mordecai, K6CEQ, and asked each of the participants to write up a short blurb about their personal experience at Field Day and what they took away from that experience. The responses ranged from a couple of paragraphs to fifteen words.

John Markham, KD6VKW

Regrettably, my Field Day experience didn’t measure up this year. For K6QM operation, I chose to go back to VHF, which had previously been an enjoyable and productive Field Day experience. 2013 didn’t work out for me. It seemed like practically nobody was there. I made a few contacts in San Diego and Orange County which were strong and clear but the ham population seemed to have practically deserted 2M, the only band above 50 MHz that ever had much traffic on prior Field Days.

I had a good transmit vswr with 60 Watts into a beam antenna. As an experiment, I tried the Catalina repeater (line-of-sight blocked by Point Loma, by the way) with power temporarily dropped to only 5w. That machine came right back to me, full scale. I think that ruled out both bad equipment and poor propagation. It was people, for some reason.

I established a GOTA station, to which I was able to recruit one soul. He worked for about three hours and only was able to make six qsos. They do not contribute to our score, since they were made on the GOTA station call, not K6QM. The station needed an operator to log twenty contacts for any points to be claimed.

I prepared an “Educational Event,” in the form of a practical Emergency Communications station using shortened antennas of the “Hamstick” variety. I feel it proved the case for a very simple station, assembled in
minutes, being fully functional for HF communications. I cycled a dozen or more people through the process of inserting the particular ham-band antenna rod in a mag-mount base, deploying radials of appropriate length, evaluating the SWR and adjusting the tuner. My GOTA operator used this bare-bones station and made five or six contacts that were all in the 100-0-mile range.

The Educational Event was my only success. I consider it especially notable considering the heavy QRM associated with Field Day.

Joe Bennett, W6VMX

Having only recently joined SOBARS, I was pleasantly surprised when I was asked to participate as a station at the 2013 ARRL Field Day to be held at the “J” Street Marina site. I, my son Eric, and fellow member and friend Jack, N6FUG, arrived at the site on Friday, the 21st, at about 3pm in order to begin setting up our station. I was able to find a good place to park my Explorer, and with Eric and Jack’s help we set up my power/antenna cart, pop-up, and lean-to that allowed us to put my Icom IC-7000 on tables in readiness for operation. It only took a few minutes to put up the Wonderpole antenna mast with my brand new 1/2 wave 20 meter dipole and a Diamond X50A dual band 2m/440 antenna topping it. I was able to extend the mast up to a comfortable 35 feet with the dipole set for about 35 degrees as an inverted “V”.

Once everything was wired up, I turned it all on and was happy to hear a lot of traffic on 20m phone. I tried a few contacts, and was able to chat with a station in Hawaii (KH6RC) first thing at 0237 UTC on 14.245. I was able to make a number of other contacts on Friday as well. The station and cart system was working extremely well, with plenty of electrical power to operate all of the equipment. We shut things down for the evening at around 2000 PST and Jack and I spent the night on-site with some of the other participants.

We woke up early, checked the system over, re-orient-ed the solar panels, and turned it all on again for testing. I made a great contact with VK2BXE, located just north of Sydney, Australia at 1303 UTC on 14.2385 for my log book. When the start time arrived, we began operations as K6QM and immediately began logging contacts on various 20 meter frequencies. I had 5 contacts logged within just a few minutes and all was working very well with the logging software. Eric was operating the laptop and logging in contacts as I wrote them down, and he quickly got the hang of using the software and looking up section information on each station. Then, we began to get interference on the 20 meter band that blanked the entire band for seconds and minutes at a time. I was able to make contacts during the open times, but it seemed that once I heard my call returned by a station, and tried to send my class and section, the interference would cover any further contact. I suspect that I lost several hundred contacts that we could not confirm due to the interference. Several other stations operating on some of the other bands also reported interference problems, but I know 20 meter phone was pretty much shut down for most of the remaining day.

John Markham, KD6VKW, right, demonstrating the procedure for tuning a field expedient HF antenna to a Field Day visitor.

John Wright, K6CPO

John Markham, KD6VKW, center, shows a Field Day visitor how to read power and SWR on the GOTA station while Sarah Honaker, KK6DKP, right, mans the information table.

John Wright, K6CPO

Jim Beckman, N6RSL

Field Day: Too much work. Not enough contacts. Would I do it again? Can’t wait...
on Saturday. We kept Jack running between the other stations checking on interference too. We were able to make only a handful of other contacts during our remaining operations, but we were able to add at least 10 states to the club contacts. The station worked great throughout the hours of operation, and I received some great comments regarding the cart and station set up from a number of the guests that stopped by. I had some good conversations explaining how the system was powered and configured too. There was plenty of electrical power that kept our systems working at peak operation for the entire period.

We were very happy to have participated, and look forward to doing it again in 2014. We learned a few lessons that should make us a better station next year. Thanks to SOBARS for providing the opportunity for us to be a part of the 2013 Field Day operation.

Sarah Honaker, KK6DKP

Field Day is difficult to describe. My experience with it so far even more so. Last year I was sure I had everything under control and the day would be perfect. How much more could I be wrong? This year I was full of anxiety and worry about the day. After the first couple of contacts all that went away and the day became about the connection being made with my son, Matt. The contacts were so important at first as the measure of my contribution to the club. Again, how wrong could I be? Working the digital corner of the house needs strong and efficient communication between operating partners.

My memories of this year’s Field Day will be the confidence coupled with a smile on my son’s face. There is also a feeling of regret. Contacts on the digital station came at a price. I rudely ignored the fact I was over driving my audio from my PC and was causing far too much interference for my 20 meter cohort working the phone side of the aisle. His contact count in the morning was on a good pace. Not until looking over the phone contacts the next day did I realize how evident the interference was. I should have taken this seriously and not been so cavalier. My apologies to Joe Bennett. I have to some degree taken care of this issue and will always be aware of it in the future. A lot of people came together and made great efforts to make Field Day enjoyable. Thank you all.

Bill Honaker, N9LZ

Field Day 2013 was for me a very enjoyable experience. I became a ham a little less than a year ago, and so I had little real experience in radio operating compared to others in the club. I also did not have any equipment with which to operate in the wilds of Chula Vista’s waterfront. Jim, N6RSL, was kind enough to share his rig and setup with me. My daughter, Sarah, KK6DKP, got her Technician in April and upgraded to General the weekend before Field Day. We both had a great time with Jim. We went over to his house to inventory the equipment and practice setting up the antenna. As we spent time with Jim, enjoying his stories, we were also learning more about this wonderful pastime called ham radio. However, on Field Day, the bands were not in our favor and we only had about a 30 minute window on 10 meters. Despite this, the entire day was a lot of fun and I really enjoyed getting to know the other club members, talking with the public who passed by, eating hot dogs from the Franks (pun intended)! Now, I am looking forward to next year and more fun!

John Wright, K6CPO

My responsibility at Field Day this year was staffing the Public Information table. I have to admit that this year it was a bit of a disappointment. There was nowhere the pedestrian traffic as in past years. We also didn’t have any visits from our local public officials.

John Wright, K6CPO
(Perhaps because it’s not an election year?)

We had a first for Field Day this year. Because the normal location was unavailable, the Southbay VE team held license testing at the Field Day location. There were 7 candidates, with 4 passing the Technician, 1 passing the General and 1 passing the Extra, our own Steven Hecht, N6TPJ. Holding the testing session at Field Day was enough of a success that we are considering making it an annual occurrence.

My thanks to Sarah Honaker, KK6DKP, for her assistance in staffing the information table.

License testing took place at Field Day this year. One candidate takes his examination while two others are checked in by VEs Mike Todd, K6WD and John Schultz, AG6IO.

John Wright, K6CPO

Is Heathkit Coming Back?
By Dan Romanchik, KB6NU

Shortly after the Dayton Hamvention, word started spreading among the ham radio community that there was a possibility that someone might be reviving Heathkit. Then a frequently-asked-questions (FAQ) page appeared on the Heathkit website (http://www.heathkit.com/heathkit-faq.html). Here are a few interesting excerpts:

**Big changes, big plans:**

Q. Is Heathkit back?
A. Yes. We’re back.

Q. So are you really going to make Heathkit® kits?
A. Yes.

Q. Wow! That simple? “Yes?”
A. Yes.

Q. Will Heathkit products include entirely new designs?
A. Yes.

Q. Will you revive any old kit designs?
A. Very likely. Tell us what you’d like – take our survey.

Q. When can I start ordering Heathkit® kits?
A. They’re coming. But it’s a long road, and we need every product we offer to be Heathkit® quality. We will communicate with you, here and elsewhere, as we make progress. Thanks for being patient while we rebuild this great company.

Q. I have great ideas—about products I wish you’d make, and past kits I’d buy if Heathkit brings them back. What should I do?
A. You are our favorite customer. We want to hear from you. Of course, don’t tell us anything proprietary unless you have a non-disclosure agreement signed with us. But if you want to tell us about yourself, your favorite past or future Heathkit product, and what you most hope to see and buy from us: Please—take our survey.

**Questions about the company:**

Q. So who are you guys?
A. More on this later. Notwithstanding this FAQ, we’re presently in stealth. But here’s what we want you to know right now: We have enormous respect for the Heathkit® name, and we know you do too. We consider ourselves this decade’s caretakers of the most respected name in do-it-yourself and educational electronics and related products over the past century. It’s a terrific opportunity and a historical responsibility we take seriously, and we want to preserve and grow this opportunity, together with you. We know we need to earn and keep your trust every day. Meanwhile, to whet your appetite: Our new CEO/President, and every member of Heath Company’s Board of Directors, are avid kit-builders and DIYers. We own and use Heathkit® products ourselves. For those with this interest, it happens we all are licensed amateur radio operators. (Also happy with our team will be: car buffs, pilots, musicians & artists, sports/outdoors enthusiasts, parents, educators, and people who value community service.) Our management team have substantial experience as high-tech executives, in startups and public companies, and in technology and finance. We are carefully growing a team of highly experienced industry advisors. Most importantly, we want you to help and advise us too. Ultimately, it is you, with your excitement and enthusiasm and interest in doing great things with great products, who will make Heathkit a success.

In addition, the new owners have posted a survey (http://heathkit.com/survey/index.php/278489/lang-en) to collect some information on what potential customers might want. It asks a lot of questions about amateur radio, leading me to believe that the new owners are hams.
I’d encourage you to take the survey. You can do so anonymously, but the survey page notes, “If you don’t provide personally-identifying info, we will not know who you are. If you give us your email address, we’ll add you to the Heath Insider mailing list, and you’ll find out more about our plans as they develop, through occasional insider-only notices and follow-up surveys.”

I gave them my contact information, but I’ve yet to be granted “insider” status. I guess I’m just going to have to wait along with the rest of you.

When he’s not pondering the fate of Heathkit, Dan, KB6NU enjoys working CW on the HF bands and teaching ham radio classes. For more information about his operating activities and his “No-Nonsense” series of amateur radio license study guides, go to KB6NU.COM or e-mail cw-geek@kb6nu.com.

The Best Laid Plans ... Part 2
By John Markham, KD6VKW

I recently visited my daughter and son-in-law in Livermore, California. My son-in-law, Rick, was licensed as a Tech earlier this year and I wanted to help him set up an antenna so he could work some local repeaters and, perhaps, work into a linked repeater system that also served Southern California. There are several, including Condor (220 MHz), the WIN System (mostly 440 MHz) and a new entry, CALNET.

I hoped that we could hit something on one of those systems from Livermore, so I brought a 70cm beam antenna and the materials precut to make a 1.25m beam antenna.

My initial efforts on 70cm were slowed by the discovery that I had brought some bad cables with me from home to Livermore. When I resolved that issue, it was time to see what I could hit. The two WIN system machines, one south of San Jose and one north, near Vacaville, were the best possibilities. While I was able to hear both machines, much of the reception was affected by reflections from nearby homes. Often, I was faced with actually aiming the antenna away from the station in order to get the best signal. I had only 20 feet of mast; more antenna height would have solved most of the reflection problem but the hardware and my time were both limited. At the moment, a tower is not in Rick’s plans.

I assembled the 1.25cm beam from the parts that I brought from home. The calculated gain for this design was about 11 dBi, although I haven’t measured it. The directivity of the antenna seemed excellent. When I monitored the Condor machine on Mount Hamilton near San Jose, moving the antenna off-axis always resulted in a loss of signal, but the signals were always weak at best, largely due to terrain blockage.

I performed an Internet search for any additional linked repeater systems that might serve our needs. I discovered the Cal-Net (or CALNET) system. I was optimistic it would work. Cal-Net is represented though most of California and I was able to communicate with a Cal-Net repeater in Stockton. The downside of Cal-Net is that regular users are expected to become members -- at $130 per year. This isn’t appealing for people who have 100% availability of telephones and only want to make an occasional ham QSO just for its own sake, not out of necessity.

The remaining opportunity for Rick and me to communicate directly will be by Internet-linked repeaters. There are several successful systems, including Winlink, IRLP and EchoLink. They offer stability and reliability but they are not pure ham radio. They are hybrid systems, incorporating both radio and the Internet. We’ll meet them in Part 3 of this series.

Installing an FT-79000 in my Truck
Article and photos by John Wright, K6CPO

In mid-April 2013, I was on a trip to Joshua Tree National Park when my truck was broken into at the hotel where I was staying. Among other things, the thieves took the radio portion of the Yaesu FT-7900 I was using as my mobile. The not-so-bright crooks left the control head and microphone behind, rendering the radio useless to them.

Because the radio was not physically secured to the truck, it was relatively easy to remove. It was then I decided that when I put a new radio in the truck, I was going to do it properly. With this in mind, I purchased another brand new Yaesu FT-7900 and a Lido LM-300 seat bolt mount for the control head. I had already purchased, but not yet installed, an NMO antenna mount with coax and an NMO antenna to replace the magnetic mount antenna I was using at the time of the break-in.

The first step was to install the LM-300 mount. I bolted this to the left front passenger seat bolt and bent it to position the top at a convenient viewing angle. I
made sure it didn't interfere with the seat sliding forward. Since my truck has a manual transmission, I had to make sure to position the control head where I wouldn't bang my knuckles on it when shifting gears. I also realized the microphone cable would get all hung up in the shift lever if I used the existing microphone holder on the dash. I relocated the holder to the front of the cup holder, which slides out of the seat under the console/armrest.

Yaesu radios have indicator bars on the volume and squelch knobs but these are the same color as the rest of the radio. In order to make these more visible, I paint them white with a Sharpie® paint pen. This is a vast improvement over the original knobs. The paint pens can be purchased at any office supply store.

The next step was to mount the radio itself. This was again going under the driver’s seat, but this time it was going to be screwed into the floor. With the driver’s seat all the way forward, I determined there was enough space to mount the radio between the rear seat bolts and that once the radio was installed, it wouldn't interfere with the movement of the seat. I then squirmed under the truck, located the seat mounting bolts and determined there was nothing in the way that could be damaged when I drilled the screw holes.

It was a simple matter to drill the holes, attach and mount the radio. I then hooked up the power—luckily the thieves didn’t damage the original wiring—attached the separation cable to the radio and control head and powered it up. Voila! It works!

The next step was to install the antenna. This was going to require a leap of faith because the nmo mount I selected required drilling a ¾ inch hole in the roof of the truck’s cab. The first thing required was to loosen and drop the headliner down to gain access to drill the hole. I removed the dome light, the clothes hook on the passenger side, and the upper passenger seat belt mount. This loosened the headliner and door post trim, but, as it turned out, didn’t drop the headliner down far enough. More on that later.

After making careful measurements to ensure the antenna would be on the truck’s centerline, I drilled a pilot hole through the roof using an angle drill attachment left over from my aircraft assembly days. This hole was located halfway between the roof cross-member and the dome light. I then moved outside and, using a step drill, drilled the ¾ in hole. When I looked back inside the truck, I realized the drill had punched a small hole in the headliner right in front of the dome light location. Oops...
The hole had some sharp edges on it so I used a file to remove those. I then fed the coax in through the hole until the mount was in position and tightened the ring on the mount. The mount has an O-ring on the bottom which provides a seal against water leakage when it’s secured. The only thing showing on the top of the truck when the antenna isn’t installed is a ⅜ inch high by 1 inch diameter threaded “button.” I mounted the antenna, connected the coax to my MFJ antenna analyzer and discovered I had almost a perfect 1:1 SWR match on 2 meters. A later check with another analyzer covering the 70 CM band showed a near-perfect SWR on that band as well.

I then threaded the coax across under the headliner, down inside the trim on the passenger door post, under the seats and connected it to the radio. Once the headliner, door post trim, clothes hook and seat belt mount were replaced, the only thing remaining was programming the radio.

Since I was installing the same model radio as the one that was stolen and I also use an FT-7900 as a 2 meter/440 base in my home shack, I already had the proper programming cable and the software installed on my netbook computer. I took the computer and cable out to the truck, plugged them into the radio and a few mouse clicks later, I was all programmed and ready to go.

The radio separation cables—both radio and speaker—provided by Yaesu are approximately 20 feet long; more than long enough to mount the radio in the trunk of the average automobile. When making an installation in a pickup truck where the distance between the control head and the radio might be as little as three feet, all the excess cable has to be bunched up under the seats. I figured there had to be a better way.

Making a new speaker cable was easy. The original speaker was still in the truck, so I just soldered up a new cable and 1/8 inch phone plug. The radio separation cable was another matter altogether. The cable is terminated in 6-conductor RJ11 plugs and these require special tools to install.

I still had the separation cable that was left behind after the theft, but it had been cut so one of the plugs was gone. After a bit of internet research, I felt I could install a new plug after obtaining the proper tools. This turned out to be more difficult than first anticipated. After buying the tools at Fry’s and attempting to install a new RJ11 on the cable, I decided there had to be a better way. The problem was trying to get all six conductors in the proper position in the connector. The connector is designed primarily for flat cable and the Yaesu cable is round.

Noting that the cable used to connect the radio and control head when the head is mounted directly on the radio is a flat cable, I e-mailed Yaesu tech support and learned I could make my own cable using the RJ11...
connectors and flat cable. Another trip to Fry’s got me a roll of six-conductor flat cable and after that it was a snap to make a three-foot long cable to connect the radio and control head. This can have other applications as well, such as the making of Go-Boxes and kits where the radio is separated from the control head.

I feel this installation is much more secure than the previous one as the radio is securely bolted to the floor of the truck, the control head and antenna are both easily removed, making the installation less conspicuous, and the back window into the truck bed can be left closed and latched.

Obviously, there are a couple of things I missed, such as not dropping the headliner far enough, and next time I need to vacuum the floor of the truck before I take pictures...

Now that the radio has been installed in the truck for a while, I’m finding I’m not 100% satisfied with the Lido seat bolt mount. While it positions the radio within easy reach of my right hand when I’m driving, I find it requires me to look away from the road to see the screen. A mount somewhere on the dash would be preferable.

![The finished control head installation. (Looks a little like Johnny 5 or Wall-e on top of that stalk...)](image)

**47 CFR Part 97**

Editor’s Note: From time to time, when space permits, I will be including excerpts from Title 47 – Part 97 of the Code of Federal Regulations (CFR). Part 97 sets forth regulations for the Amateur Radio Service.

**Subpart A—General Provisions**

§ 97.3 Definitions. (Continued from last issue.)

(31) Local control. The use of a control operator who directly manipulates the operating adjustments in the station to achieve compliance with the FCC Rules.

(32) Message forwarding system. A group of amateur stations participating in a voluntary, cooperative, interactive arrangement where communications are sent from the control operator of an originating station to the control operator of one or more destination stations by one or more forwarding stations.

(33) National Radio Quiet Zone. The area in Maryland, Virginia and West Virginia Bounded by 39°15’ N on the north, 78°30’ W on the east, 37°30’ N on the south and 80°30’ W on the west.

(34) Physician. For the purpose of this part, a person who is licensed to practice in a place where the amateur service is regulated by the FCC, as either a Doctor of Medicine (M.D.) or a Doctor of Osteopathy (D.O.)

(35) Question pool. All current examination questions for a designated written examination element.

(36) Question set. A series of examination questions on a given examination selected from the question pool.

(37) Radio Regulations. The latest ITU Radio Regulations to which the United States is a party.

(38) RACES (radio amateur civil emergency service). A radio service using amateur stations for civil defense communications during periods of local, regional or national civil emergencies.

(39) Remote control. The use of a control operator who indirectly manipulates the operating adjustments in the station through a control link to achieve compliance with the FCC Rules.

(40) Repeater. An amateur station that simultaneously retransmits the transmission of another amateur station on a different channel or channels.

(41) Space station. An amateur station located more than 50 km above the Earth’s surface.

(42) Space telemetry. A one-way transmission from a space station of measurements made from the measuring instruments in a spacecraft, including those relating to the functioning of the spacecraft.

(43) Spurious emission. An emission, or frequencies outside the necessary bandwidth of a transmission, the level of which may be reduced without affecting the information being transmitted.

(44) Telecommand. A one-way transmission to initiate,
modify, or terminate functions of a device at a distance.

(45) **Telecommand station.** An amateur station that transmits communications to initiate, modify or terminate functions of a space station.

(46) **Telemetry.** A one-way transmission of measurements at a distance from the measuring instrument.

(47) **Third party communications.** A message from the control operator (first party) of an amateur station to another amateur station control operator (second party) on behalf of another person (third party).

(48) **ULS (Universal Licensing System).** The consolidated database, application filing system and processing system for all Wireless Telecommunications Services.

(49) **VE.** Volunteer examiner.

(50) **VEC.** Volunteer-examiner coordinator.

(b) The definitions of technical symbols used in this part are:

(1) **EHF** (extremely high frequency). The frequency range 30–300 GHz.

(2) **HF** (high frequency). The frequency range 3–30 MHz.

(3) **Hz.** Hertz.

(4) **m.** Meters.

(5) **MF** (medium frequency). The frequency range 300–3000 kHz.

(6) **PEP** (peak envelope power). The average power supplied to the antenna transmission line by a transmitter during one RF cycle at the crest of the modulation envelope taken under normal operating conditions.

(7) **RF.** Radio frequency.

(8) **SHF** (super-high frequency). The frequency range 3–30 GHz.

(9) **UHF** (ultra-high frequency). The frequency range 300–3000 MHz.

(10) **VHF** (very-high frequency). The frequency range 30–300 MHz.

(11) **W.** Watts.

(c) The following terms are used in this part to indicate emission types. Refer to §2.201 of the FCC Rules, Emission, modulation and transmission characteristics, for information on emission type designators.

(1) **CW.** International Morse code telegraphy emissions having designators with A, C, H, J or R as the first symbol; 1 as the second symbol; A or B as the third symbol; and emissions J2A and J2B.

(2) **Data.** Telemetry, telecommand and computer communications emissions having (i) designators with A, C, D, F, G, H, J or R as the first symbol, 1 as the second symbol, and D as the third symbol; (ii) emission J2D; and (iii) emissions A1C, F1C, F2C, J2C, and J3C having an occupied bandwidth of 500 Hz or less when transmitted on an amateur service frequency below 30 MHz. Only a digital code of a type specifically authorized in this part may be transmitted.

(3) **Image.** Facsimile and television emissions having designators with A, C, D, F, G, H, J or R as the first symbol; 1, 2 or 3 as the second symbol; C or F as the third symbol; and emissions having B as the first symbol; 7, 8 or 9 as the second symbol; W as the third symbol.

(4) **MCW.** Tone-modulated international Morse code telegraphy emissions having designators with A, C, D, F, G, H or R as the first symbol; 2 as the second symbol; A or B as the third symbol.

(5) **Phone.** Speech and other sound emissions having designators with A, C, D, F, G, H, J or R as the first symbol; 1, 2 or 3 as the second symbol; E as the third symbol. Also speech emissions having B as the first symbol; 7, 8 or 9 as the second symbol; E as the third symbol. MCW for the purpose of performing the station identification procedure, or for providing telegraphy practice interspersed with speech. Incidental tones for the purpose of selective calling or alerting or to control the level of a demodulated signal may also be considered phone.

(6) **Pulse.** Emissions having designators with K, L, M, P, Q, V or W as the first symbol; 0, 1, 2, 3, 7, 8, 9 or X as the second symbol; A, B, C, D, E, F, N, W or X as the third symbol.

(7) **RTTY.** Narrow-band direct-printing telegraphy emissions having designators with A, C, D, F, G, H, J or R as the first symbol; 1 as the second symbol; B as the third symbol; and emission J2B. Only a digital code of a type specifically authorized in this part may be transmitted.

((8) **SS.** Spread spectrum emissions using bandwidth-expansion modulation emissions having designators with A, C, D, F, G, H, J or R as the first symbol; X as the second symbol; X as the third symbol.)
(9) Test. Emissions containing no information having the designators with N as the third symbol. Test does not include pulse emissions with no information or modulation unless pulse emissions are also authorized in the frequency band.

More Pictures From Field Day

The ten meter antenna used by Jim Beckman, N6RSL.

Dave Kaltenborn, N8KBC

Bill Honaker, N9LZ, working Jim Beckman’s ten meter station.

John Wright, K6CPO

An attempt by Bill Metzger, W6RGS, to maintain a low profile and cut down on wind noise at the same time.

John Wright, K6CPO

Our thanks go out to the Spurgeons, Frank Sr., W6FSS, and Frank, Jr., W6FSJ, for the excellent food they served up on Field Day.

John Wright, K6CPO

Frank Spurgeon, Jr., W6FSJ, working his 15 meter station.

Dave Kaltenborn, N8KBC

The camera kite flown by Frank, Jr, W6FSJ

Dave Kaltenborn, N8KBC
The “field expedient” antenna rotator system used by John Markham, KD6VKW, on his 2 meter beam antenna.

John Wright, K6CPO

The food and 15 meter station tent.

John Wright, K6CPO

Sarah Honaker, KK6DKP, and John Markham, KD6VKW, share a lighter moment with two Field Day visitors.

John Wright, K6CPO

An 11 element Yagi antenna used by John Markham, KD6VKW, for the 2 meter GOTA station.

John Wright, K6CPO

SOLUTION HAM RADIO PUZZLE NO. 3

The TORA Award is Timed Out Repeater Award. One must invoke 10 timeouts to get the award.

CLUES:

1. RATIO
2. GTOR
3. TOLL
4. ADA
5. AWG
6. RAY
7. A

Some Historical Facts and Random Trivia:

• During WWI, after the antennas were shot down, they loaded trees for antennas.

• I once raised the local repeater with a 1 watt 50w clip resistor across the antenna terminals.

• A DX Story: From the 70’s a DX operation in an African country that was experiencing civil unrest, allegedly the DXers continued QROing while gunshots and explosions could be heard over the transmissions. They continued until the power was cut...