

SCCARA-GRAM



Santa Clara County Amateur Radio Association

Volume 12, Number 9

September 1996



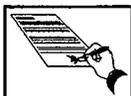
President's Prose

The Special Event Station put on by SCCARA Saturday, August 17 was a great success. Clark KE6KXO was our host at his home in Alviso. SCCARA provided a lunch of hamburgers, BBQ'd to perfection by Don K6PBQ. Everyone had a good time operating and visiting. Those on hand to help out and to operate included: Don KO6HH, Lou WA6QYS, Don K6PBQ, Clark KE6KXO, Lloyd KD6FJL, Neal KO6WM, Roy K6VIP, Bill KE6OUG, Bob KB6OHO, Ernie N6HN, Gary WB6YRU, Imre KD6MZM, Ron KE6NHH, who brought his friend Mike (who had recently passed his test but did not have his call yet), and Sam AC6WG. By the way, Sam is an Extra and I understand operated on HF for the first time at our Special Event, making around 19 of our 78 contacts. Thanks again to Clark KE6KXO for hosting the event.

There are some exciting things coming up in September. First is our SCCARA Club picnic which will be held at Mary Gomez Park in Santa Clara on Saturday, September 7 from around 11:00 till 15:00. SCCARA will provide burgers, hot dogs, soda, condiments, and tableware. If everyone could bring a potluck item we should have plenty of yummy food as usual. Please join us for what should be a great event. Also our annual Lasagna dinner will be held on Monday, September 9 at 18:30 at the United Way. To read this you would think that all we do as a club is eat. That is certainly an enjoyable way to visit and talk about our hobby.

As you can see, there are lots of exciting things to participate in as a SCCARA member. We will keep you all posted on upcoming events.

Hugh KD6EFL



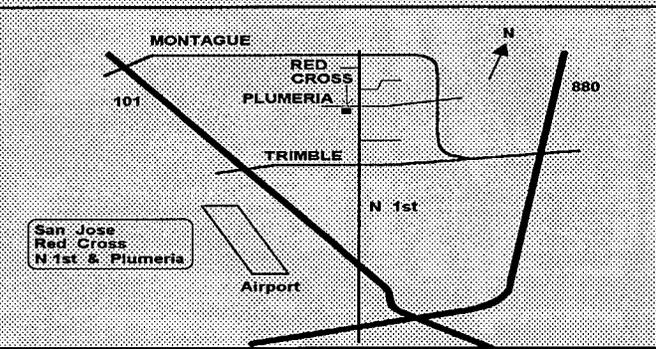
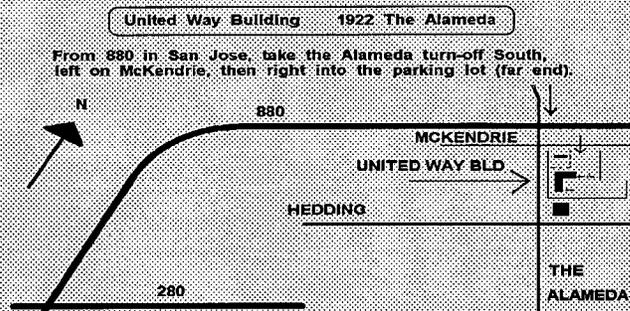
Calendar

- 9/9 SCCARA General Meeting
- 9/14 Foothill Flea Market
- 9/16 SCCARA Board Meeting--(San Jose Red Cross, 7:00p, all are welcome)
- 10/14 SCCARA General Meeting

Next General Meeting:

Day: Monday, September 9, 1996
Time: 6:30 PM, (start eating at 7)
Place: United Way Building
Agenda: Lasagna dinner meeting

\$5



The **SCCARA-GRAM** is published monthly by the **SANTA CLARA COUNTY AMATEUR RADIO ASSOCIATION**, PO Box 6, San Jose CA 95103-0006. Permission to reprint articles is hereby granted, provided the source is properly credited.

SCCARA was formed as a general interest amateur radio club in 1921 and became a non-profit corporation in 1947. SCCARA is an affiliate of the American Radio Relay League (ARRL).

The club station, W6UW, is currently out of service.

Articles for the SCCARA-GRAM must be submitted to the editor a week before the last Monday of the month.

OFFICERS and DIRECTORS

President	Hugh Collis, KD6EFL	246-9374
Vice President	Don Apte, KK6MX	629-0725
Secretary	Lloyd DeVaughns, KD6FJI	225-6769
Treasurer	Rex Skiver, N6BUO	263-5277
Station Trustee	Stan Getsla, WA6VJY	275-0735
Director	Clark Murphy, KE6KXO	262-9334
Director	Imre Takacs, KD6MZM	251-9686
Director	George Brady, AB6OZ	729-9012
Director	Don Village, K6PBO	263-2789
Director	Lou Steirer, WA6QYS	241-7999

STAFF

Editor	Gary Mitchell, WB6YRU	265-2336
Facilities	Don Village, K6PBO	263-2789
Historian	Jean "Doc" Gmelin, W6ZRJ	973-8583
Mailman	Tony Sanchez, K6MOB	296-6676
Photographer	Bob Keller, KB6OHO	725-1034

COMMITTEES

Repeater	Keith Butts, KN6K	248-3849
Youth Group	George Brady, AB6OZ	729-9012

SCCARA REPEATERS

SCCARA owns and operates two repeaters under the call W6UU:

2 meter:	146.385 +	PL 114.8 (none for basic use)
70 cm:	442.425 +	PL 107.2

Phone patch capability is available with a small subscription fee. The two meter repeater is located in the Mt. Hamilton foothills, Alum Rock area. The 70 cm repeater is located at the Alexian Brothers Hospital, North of 280 and 101.

SCCARA NETS

On our two meter repeater: Mondays at 7:30 PM, (not the second monday--it's our meeting night). Net control: Joe WA6DXP.

On ten meters, 28.385 MHz USB, Thursdays at 8:00 PM. Net control: Wally KA6YMD.

Visitors welcome to join in on the SCCARA nets.

IMPORTANT TELEPHONE NUMBERS

SCCARA HOTLINE:	249-6909
ARRL LICENSE (VEC) HOTLINE:	984-8353

Good And Welfare

It is with great sadness that I must report the passing of two SCCARA members.

Bill Stevens, W6ZM, became a silent key on Saturday, August 17. Bill was a past president of SCCARA, as well as ARRL Pacific Division Director from 1978 to 1985. He was also Vice-President of the ARRL in 1986. Bill had been a ham since 1934 and joined SCCARA in 1935. He was number one on the DXCC Honor Roll for many years. Bill was also a member of the Nor-Cal Chapter of the QCWA. He was very active in our club in a variety of capacities, always willing to help new members and officers with his valuable experience. He will be missed by all who knew him.

On Friday, August 16, Cliff Furlow, KE6HM became a silent key. Cliff became a ham in 1981 and joined SCCARA in the same year. Cliff was an avid fan of HF and had many contacts around the world, especially in Hawaii. Cliff was a member of the SCCARA board in the 80's.

It is sad to have to report the loss of these two SCCARA members. Our thoughts will be with their families.

Hugh KD6EFL

Meeting Minutes

General Meeting, Aug. 12, 1996



7:36 p.m. Meeting called to order by club president Hugh, KD6EFL. Self introductions followed as is our custom.

Hugh, KD6EFL, announced that SCCARA's special event station will be this weekend, August 17. It will be held at Clark Murphy's, KE6KXO, house.

The speaker tonight is David Waitt, KF6COV, from Metricom. His topic is the Ricochet 900 MHz Spread Spectrum Modem and service.

Business Meeting:

The SCCARA picnic will be held Sept 7, at Mary Gomez Park in Santa Clara. Sept. 9 meeting will a dinner meeting.

Keith, K6NK, Repeater Committee. The San Jose City Council has to vote on the agreement to make it official. All other groups have an interest in our move to the city communications vault have signed it.

Treasures Report: There is \$17,500 in the treasury.

Don, KK6MX, we have special certificates for both contacts and operators at the special event station.

Don, KO6HH, announced that it is time to think about new officers for next year.

9:34 p.m. Raffle

9:39 p.m. Meeting adjourned.

Board Meeting, Aug. 19, 1996



Present: Hugh, KD6EFL; Clark, KE6KXO; Gary, WB6YRU; Imre, KD6MZM; Lloyd, KD6FJI; Lou, WA6QSY; Don, K6PBQ

7:42 p.m. Meeting called to order by club president Hugh, KD6EFL.

Reports:

President: Hugh, KD6EFL, said the special event station was a success. Hugh also announced that Bill Stevens, W6ZM and Cliff Furlow, KE6HM are silent keys.

Gary, WB6YRU, the cost of the newsletter is going down. The newsletter is now being done at Staples at substantially less cost than our other publishing place.

Clark, KE6KXO, said that he saw in 73 Magazine that they will give a years subscription to the magazine if a club will send them a newsletter for a year. Lloyd, KD6FJI, will investigate and report back.

Old Business:

The Radio Room at the Red Cross: What is going on with the radio room? Lou, WA6QSY, said that the Red Cross said that putting in phone lines for the BBS is no problem. Gary, WB6YRU, said that we will have to install cavities when we install antennas to prevent the radios from interfering with each other. There was a general discussion of what we need to do and the equipment that has to be installed in order to have a well equipped station.

Imre, KD6MZM, made a motion to change what was previously agreed to, to give certificates to all those who participated as opposed to those who operated. Motion Passed.

New Business:

The September 7 dinner meeting will start at 6:30 p.m. and dinner will be served at 7:00 p.m. The cost of the dinner will be \$5.00 for adults and children 12 and under are free.

Lou, WA6QSY, said that Brad Wyatt, K6WR, informed him

that we are not a special services club. The special services club status will be researched.

Motion by Lou, WA6QYS, to spend up to \$50.00 each plus a card for flowers or a charitable donation in the name of Cliff Furlow, KE6HM, and Bill Stevens, W6ZM, both of whom recently died. Motion passed.

8:56 p.m. Motion to adjourn by Don, K6PBQ. Motion seconded and passed.

Lloyd, KD6FJI, Secretary

Thank You

Thank you to the SCCARA gang, particularly to KE6KXO and KO6HH, for their help with the 1996 World Radiosport Team Championship! The event was a huge success and we really appreciate the assistance we got from SCCARA both in providing an operating site for the Italian team (I2VXJ/I4UFH) and from all the members who got on and worked the team stations. WRTC-96 will QSL 100 percent of the contacts made by the team stations using the special 1x1 call signs. We will send all the cards via the QSL bureaus, so anyone who worked the contest should make certain they have envelopes on file with the W6 bureau.

73 de Rusty Epps, W6OAT
WRTC-96 Publicity Chairman



Officers & Directors

SCCARA's Elected Officials

In SCCARA-GRAM masthead you will find a listing of "OFFICERS and DIRECTORS," "STAFF," "COMMITTEES," and other SCCARA items. The "OFFICERS and DIRECTORS" are the Elected Officials of SCCARA who appoint the "STAFF" and "COMMITTEES" as well as members for temporary assignments such as Field Day. The President, Vice-President, Secretary, Treasurer, and Station Trustee (the "OFFICERS") are elected annually by the membership for one year terms. The directors are elected for two year terms, with either two or three elected every year.

The Board of Directors meets once per month, presently at the San Jose Red Cross on the third Monday of each month at 7:00 PM. The voting members are the President, Vice-President, and the five directors, (the other

officers are not board members, but report to the Board). The Board meetings are open to all SCCARA members and usually one or more members attend to observe or bring items to the Board. The Board meetings are the place where almost all SCCARA business items are discussed and decided. The Board also may conduct club business between General or Board meetings.

The President has two primary tasks: he is the chair for the General meetings and the Board meetings, and is the contact for SCCARA with external organizations. Most years this position requires less than two hours per week, although many things need to be done for SCCARA and the President is often the first to know of them.

The Vice-President also has two primary tasks: he is responsible for the programs at the General meetings (including getting the speaker and running the raffle), and he is responsible for the duties of the President when the latter is unable to perform them. This position generally requires about the same amount of time as the President's, although it can be rather frantic when a speaker backs out at the last minute.

The Secretary takes and keeps the minutes of all meetings and provides them to the Editor of the SCCARA-GRAM. In addition, the Secretary keeps the documents for SCCARA and is responsible for maintaining the membership roster. Familiarity with a computer, a word processor, and database is important.

The Treasurer is responsible for the day to day financial affairs of SCCARA including: the bank accounts, seeing that the bills are paid, and receiving the dues and repeater fees from members. In the past this position covered a lot of items, which lead to a difficult job, but I believe that this problem has been at least partially reduced. This position also requires familiarity with a computer and *Quicken* financial software.

The Station Trustee is concerned with the relationship between W6UW and W6UU, and the FCC. This position is defined by the FCC rules and requires little time as long as nothing goes wrong. He is also the officer in charge in case of any illegal operation involving the club stations and reports any such activity to the Board.

The Directors do not have specific tasks similar to Officers, but are expected to attend General and Board meetings, set club policy, and help decide what SCCARA should do. The Officers do the day-to-day work of keeping the club running while the Board of Directors is the club's ruling body.

Being a Director or Officer of SCCARA can be a rewarding experience and gives one a different perspective of one of the important parts of amateur radio.

RF Safety Rules

From *The ARRL Letter*, August 9, 1996

New FCC RF Safety Standards Include Amateur Radio

New FCC RF safety standards that become effective January 1, 1997, could affect the way some hams operate. As a result of a Report and Order adopted by the FCC on August 1 (ET Docket No. 93-62, Guidelines for Evaluating the Environmental Effects of Radio Frequency Radiation), Part 97 will require hams running more than 50 W PEP to conduct routine RF radiation evaluations to determine if RF fields are sufficient to cause human exposure to RF radiation levels in excess of those specified. "Measurements made during a Commission/EPA study of several typical amateur stations in 1990 indicated that there may be some situations where excessive exposures could occur," the FCC said in ending the blanket exemption for Amateur Radio. Amateur operation at power levels of 50 W PEP or less is "categorically excluded" from the new requirement in most cases. Where routine evaluation indicates that the RF radiation could be in excess of the limits, "the licensee must take action to prevent such an occurrence," the Report and Order stated. The FCC said this could mean altering operating patterns, relocating the antenna, revising the station's technical parameters--such as frequency, power, or emission type--or "combinations of these and other remedies."

Although the new exposure criteria will apply to portable and mobile devices in general, at this time routine evaluation for compliance will not be required of devices such as "push-to-talk" portable radios and "push-to-talk" mobile radios used by Amateur Radio operators. These transmitting devices will be excluded from routine evaluation.

The FCC encouraged the amateur community "to develop and disseminate information in the form of tables, charts and computer analytical tools that relate such variables as operating patterns, emission types, frequencies, power and distance from antennas." The Commission said it intends to provide "straightforward methods for amateur operators to determine potential exposure levels" by year's end.

"Exactly what is involved in conducting a 'routine RF radiation evaluation' is not yet clear," observed ARRL Executive Secretary David Sumner, K1ZZ, adding that the FCC has promised to release a revised OST/OET Bulletin Number 65, "Evaluation Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation." The League is now studying the 100-plus page docket, to see if the League should seek reconsideration of any aspects of the FCC decision.

In the Report and Order, the Commission adopted Maximum Permissible Exposure (MPE) limits for electric and magnetic field strength and power density for transmitters operating at frequencies from 300 KHz to 100 GHz. These MPE limits are generally based on recommendations of the National Council on Radiation Protection and Measurement (NCRP) and, in many respects, are also generally based on the guidelines issued by the Institute of Electrical and Electronics Engineers Inc (IEEE) and subsequently adopted by the American National Standards Institute (ANSI) as an ANSI standard (ANSI/IEEE C95.1-1992). The Commission used the 1992 ANSI/IEEE standards instead of the 1982 ANSI standards that had formed the basis for the existing rules under which Amateur Radio stations were categorically exempted.

ARRL Laboratory Supervisor Ed Hare, KA1CV, said the new regulations will give hams an incentive to demonstrate that Amateur Radio operation is safe. "Although this means that hams will have to become more educated about RF safety, most amateur stations are already in compliance with the new regulations," Hare said.

Sumner said that for certain unusual situations where there is "uncontrolled exposure" to neighbors and the general public, "amateurs may well have to make changes in how they operate." The ARRL Lab staff and the RF Safety Committee are continuing to evaluate the new requirements.

Hare noted that the administrative burden for hams will be minimal, and the FCC does not require amateurs to submit any documentation to the FCC. "In essence, the FCC is telling amateurs that if they run more than 50 W, they need to learn about RF safety and evaluate how this applies to their own operation," he said.

The new regulations also will require the addition of five questions on RF environmental safety to the amateur examinations for Novice, Technician, and General-class elements 2, 3(A) and 3(B). Sumner noted that the Commission's Report and Order does not take into account the practical problems associated with such a significant revision to the volunteer-administered amateur examinations, and that more time than the Commission has allowed will be required to do a good job.

The Commission acknowledged the updated guidelines generally are more stringent than the current rules and are based on recommendations of the federal health and safety agencies, including the Environmental Protection Agency and the Food and Drug Administration. The Commission said that the new rules will protect the public and workers from strong RF emissions. Adoption of the new rules by August 6 was required by the Telecommunications Act of 1996.

The Commission also incorporated into its rules provisions of Section 704 of the Telecommunications Act of 1996 that preempt state or local government regulation of personal

wireless services facilities based on RF environmental effects, to the extent that such facilities comply with the Commission's rules concerning such RF emissions. This preemption does not directly affect Amateur Radio, however.

The FCC said amateur stations "present an unusual case with respect to compliance with RF exposure guidelines," in part because they are authorized to transmit from any place where the Commission regulates the service, as well as on the high seas, and the FCC does not pre-approve individual amateur station transmitting facilities and no additional application is made for permission to relocate an amateur station or to add additional stations at the same or other locations. The FCC also noted that amateur stations "vary greatly" from one location to another, transmit intermittently, and can involve "as many as 1300 different emission types--each with a distinctive on-off duty cycle." The FCC said most amateur stations engage only in two-way communication, thus cutting the transmitting time of any given ham station. "There are many variables, therefore, to be considered in determining whether an amateur station complies with guidelines for environmental RF radiation," the FCC said in the Report and Order.

In comments filed earlier with the FCC, the ARRL strongly opposed adoption of the new requirements. The ARRL said most Amateur Radio users do not possess the requisite equipment, technical skills, and/or financial resources to conduct an environmental analysis. The League has, for several years, recommended a policy of "prudent avoidance" of exposure to electromagnetic radiation as a common-sense approach to potential--but not yet proven--health hazards and against such practices as running high power to indoor antennas or to mobile antennas that might expose the vehicle's occupants. The ARRL also argued that amateur stations, because of their intermittent operation, low duty cycles, and relatively low power levels, rarely exceed the 1992 ANSI/IEEE standard. Finally, the ARRL noted that unlike other radio services, RF safety questions already are included in amateur license examinations.

The FCC agreed in part. "We concur with the ARRL that amateur operators should follow a policy of prudent avoidance of excessive RF exposure," the Commission said. "We will continue to rely upon amateur operators, in constructing and operating their stations, to take steps to ensure that their stations comply with the MPE limits for both occupational/controlled and general public/uncontrolled environments." But the FCC expressed concern that Amateur Radio operations "are likely to be located in residential neighborhoods and may expose persons to RF fields in excess of the MPE guidelines."

For now, the League advises hams not to panic and to read up on the subject. You can download the complete Report and Order by pointing to http://www.fcc.gov/Bureaus/Engineering_Technology/Orders/fcc96326.txt. Other resources are available on the ARRL

Web page at <http://www.arrl.org/news/rfsafety/>.

General information on RF safety is available in the safety sections of the 1996 edition of The ARRL Handbook and in the 15th edition of The ARRL Antenna Book. These materials offer guidelines on how to comply with the ANSI standard the Report and Order refers to. Additionally, the ARRL Technical Information Service offers an information package on RF safety. It includes a reprint of the Handbook material, an April 1994 QST article by Wayne Overbeck, N6NB, and a bibliography on the subject. This package is available for \$2 for ARRL members or \$4 for nonmembers, postpaid. Nonmembers should include payment with orders. Contact Bridget DiCosimo, e-mail bdicosimo@arrl.org or write 225 Main St, Newington, CT 06111. Other resources are available on the ARRL Web page at <http://www.arrl.org/news/rfsafety/>. The ARRL Web information will be updated as circumstances dictate.

Introduction To Packet Radio

by
Larry Kenney, WB9LOZ
Part 16

PUTTING TCP/IP ON THE AIR

INTRODUCTION

Getting your station set up for TCP/IP operation will require some time and effort on your part. You just can't put a disk in your computer and go on the air. You have to get an IP address, set up specific directories, get some needed files, and make up a few necessary files for your own operation. You also need a TNC that operates in KISS mode. Most now have the KISS command available, but check your TNC operating manual before you start anything else to ensure that the KISS command is available in your TNC. Also while you have the manual out, learn how to use the KISS command; it works differently from most commands you're familiar with.

THE SOFTWARE

The first thing you need, of course, is the software. The KA9Q Internet Package, commonly called NET, has been the most common program in use, but a later version of the program, called NOS, has now become the standard. There are versions available for the PC and clones, the Macintosh, Amiga, and Unix computers. Where do you get it? The easiest source is a local ham that has a copy of the version you need. Put a message on your local BBS to see if there is anyone in your area that is already on TCP/IP. Not only will you be able to get the

software from him, but you'll have someone to ask questions of if you have problems.

The Tucson Amateur Packet Radio Association (TAPR) has the version for the PC and clones available for \$4.00. You can write to them at TAPR, PO Box 51114, Denton, TX 76206-0114, or call them at (817) 383-0000.

If you have a telephone modem, there are several sources available to you. You can download the package from some of the ham related telephone BBSs. It's available from Dennis Humphrey, WA6RDH's BBS in California at (916) 678-1535, from Howard Leadmon, WB3FFV's BBS in Maryland at (301) 335-0858, or from Gary Sanders, N8EMR's BBS in Ohio at (614)-457-4227. All use 8 bits, no parity, 1 stop bit. The software is also available from Compuserve in the Hamnet section.

IP ADDRESS

In addition to the software, you also need to obtain an IP address. This is a series of numbers that will uniquely identify your station on the air. To get an address assigned, you need to contact the IP address coordinator in your area. Ask around to find out who the local coordinator is, or contact Brian Kantor, WB6CYT, the national IP address coordinator, at 7108 Werner Street, San Diego CA 92122. Send the following information with your request:

- Your first name, last name, and call sign.
- Your full mailing address.
- The city where your TCP/IP station is going to be located.
- Whether it's a home or work location.
- The call sign of your home BBS.
- Your Internet address, if you have one.

FILES NEEDED

A copy of the HOSTS.NET file is required for the NET program or a copy of DOMAIN.TXT is need for NOS. They're available for downloading on many of the packet BBS's. Check for a TCP/IP directory using the W command. If you can't locate the file, ask your local sysop for assistance. The file is fairly lengthy, so plan on spending a little time downloading it. The file is used by the program to look up the IP address for each station you wish to contact, so you'll need it before you go on the air with your TCP/IP station.

If you're using the PC/clone version of NET, I strongly suggest that you also get a copy of the file BEGIN.DOC, written by Gary Ford, N6GF. It explains what you need to do to set up your station in clear, easy to understand terminology and then goes into details on all of the commands used with the NET program. There is documentation that comes with the software, but I found it to be difficult to understand in many places. It also isn't as complete as Gary's and the descriptions of some of the functions are missing. Gary's documentation takes all of the guess work out of the process. Gary's documentation is also available in booklet form from the Northern California Packet Association, P.O. Box 61716, Sunnyvale,

CA 94088-1761 for \$5.00.

There are two other files you'll also find very helpful once you're up and running. One is called FINGER.DOC, describing the user identification application, and the other is BM.DOC, the "BM User Manual" by Dave Trulli, NN2Z.

(Continued in Part 17)

Packet Pieces

Downloaded from the packet network:

=====
Date: 6 Jan 96 23:36
From: AA2AD@KB2OBB
To: TEKTIP@ALLUS
Subject: Power Supply Repair #4

TEKTIP.10 - Fixing power supplies, part 4

The purpose of power supply rectifiers is to convert the a.c. from the transformer to d.c., suitable for filtering, regulating, and operating the rig's circuits. It has been a little misleading to wait until now to discuss troubleshooting the rectifier circuit of your power supply. Because silicon rectifiers almost always go to a dead short and blow the rig's fuse when they fail, and because rectifier failure is probably the most common power supply problem, it is often appropriate to begin troubleshooting by checking rectifiers, especially if a new fuse blows immediately. Because they are very sensitive to over-voltage conditions, rectifiers are often the first components to fail in event of a nearby lightning strike or other voltage-surge condition. TEKTIP.10 will concentrate on identifying power supply diodes. Please refer to TEKTIP.1 for details on the procedure for testing rectifiers.

Rectifiers come in many shapes, sizes and configurations. The simplest forms are axial: a small smooth cylinder with a lead at each end, or a round ball with two leads. The cases are almost always black and the end that is marked either by a silver band or by a conical nose, is ALWAYS the cathode end. (It is nice to be able to state something in absolute terms!) Full-wave rectifier components are often rectangular boxes with three wires or solder terminals. Internally, a full-wave rectifier is two single diodes connected end to end in a single case. There is often a schematic of the component stamped on its case, indicating lead configuration.

Bridge rectifiers are more common than full wave (three-terminal) rectifiers. Bridge rectifiers are

characterized by a rectangular package with four connections, either wire or solder terminal. Internally, a bridge rectifier is four single diodes, connected in a standard bridge configuration. The markings are typically (+) for the common cathodes, (-) for the common anodes, and tildes (~) at both of the a.c. connections.

Solid state rectifiers are available in other case styles. You may stumble across TO-3 and TO-22 cases (they look like transistors), or stud (industrial) case styles.

You may find a string of rectifiers tied together, end-to-end for one of two possible reasons. First, rectifiers with a lower-than-needed voltage rating may be wired in series to provide higher voltage handling capability. In this application, you may find resistors and/or capacitors across each diode, which equalize the voltages across the devices. They are important, exact replacement is practiced in series-strings. Often, if one of a series of rectifiers fails, excessive voltages on the remaining devices causes them to fail also. Second, you may find multiple diodes in voltage-multiplier circuits. The same rules for replacement apply.

Another type of solid-state rectifier that you may see in older equipment is the selenium rectifier. Selenium rectifiers are characterized by an integral finned heat sink. If you are in the room when a selenium diode fails, you will note a small wisp of smoke accompanied by a much more noticeable nauseating, acrid odor. The fumes are toxic.

No article on rectifiers and ham radio would be complete without a mention of vacuum tube rectifiers. Tubes were commonly used in power supplies for some time after the introduction of solid state devices because of their superior current and voltage handling capability. There may be as few as three wires to a vacuum tube rectifier, if it uses a directly heated cathode (i.e. the filament and cathode are one and the same). An indirectly-heated cathode will have four active connections, and some vacuum tube rectifiers boast dual plates, for full-wave applications. Don't be confused if there are more wires soldered to the socket than you would expect: it was common practice to use the unused terminals on a tube socket as tie points for other circuit components. If the tube lights and the d.c. output voltage is correct, the tube is good.

Both selenium and vacuum tube rectifiers may be replaced by silicon devices if you compensate for the lower internal resistance of the original device by inserting an appropriate series resistance. Use Ohm's Law to calculate resistance and power values, and then check the results with a voltmeter.

When choosing a replacement device, it is almost always acceptable to use a new diode with higher voltage and/or current ratings. It is never acceptable to use a diode with either lower voltage or lower current ratings. There is not

much of a safety factor built into the factory specs, so don't even think about pushing your luck. On the other hand, physical shape has little or nothing to do with electrical characteristics. Don't hesitate to replace four discreet rectifiers with a bridge unit, or vice versa. Above all, practice SAFE TROUBLESHOOTING!

=====
Date: 26 Aug 95 04:08
From: KB1BCA@KC1CE
To: COMBAT@ALLUS
Subject: MURPHY'S LAW OF COMBAT

This is something that I got when I visited a friend at Fort Riley, Kansas this past June. This was made up and written by a soldier at Fort Riley.

****MURPHY'S LAW OF COMBAT****

1. You are not Superman.
2. If it's stupid but works, it isn't stupid.
3. Don't look conspicuous-it draws fire.
4. When in doubt, empty your magazine.
5. Never share a foxhole with anyone braver than you are.
6. Never forget that your weapon was made by the lowest bidder.
7. If your attack is going really well, it's an ambush.
8. No plan survives the first contact intact.
9. All 5-second grenade fuses will burn down in 3 seconds.
10. Try to look unimportant because the bad guys may be low on ammo.
11. If you are forward of your position, the artillery will fall short.
12. The enemy diversion you are ignoring is the main attack.
13. The important things are always simple.
14. The simple things are always hard.
15. The easy way is always mined.
16. If you are short of everything except enemy, you are in combat.
17. When you have secured an area, don't forget to tell the enemy.
18. Incoming fire has the right of way.
19. Friendly fire-ISN'T.
20. If the enemy is in range, SO ARE YOU.
21. No combat ready unit has ever passed inspection.
22. Beer math is: 2 beers x 37 men= 49 cases.
23. Things that must be together to work, usually can't be shipped together.
24. Radios will fail as soon as you need fire support desperately.
25. Anything you do can get you shot- including doing nothing.
26. Tracers work both ways.
27. The only thing more accurate than incoming fire is

- incoming friendly fire.
28. Make it tough for the enemy to get in, and then you can't get out.
29. If you take more than your fair share of objectives, you will have more than your fair share of objectives to take.
30. When both sides are convinced they are about to lose, they are both right.
31. Professional soldiers are predictable, but the world is full of amateurs.
32. Murphy was a grunt.

I hope you enjoyed this, I don't know the name of soldier who wrote it.

73 JOHN, KB1BCA @ KC1CE.RI.USA.NOAM

=====
Date: 15 Jul 96 01:04
From: KE6HLU@KE6LW
To: HUMOR@ALLUS
Subject: dup of the bear?

As the family entered the camp ground the forest ranger gave them this advice. Watch out for the black bears as they will eat you. The brown bears won't. So they went and set up their camp and they saw a brown bear and they did not give it any thought while they went about their camping. The little brown bear snuck up behind the last camper and knocked him out, and drug him into the bushes and up to a black bear and said, would ya like to trade for some berries?

From the Happy Club, 73 DE Nancy KE6HLU@KE6LW

Newsletter Notes

I brought up the subject of where and how to display the SCCARA logo in the newsletter at the last board meeting. The consensus was to try it as you see it on the first page in this issue. Another possibility is to weaken the image and have it fill the first page, much like the "digital watermark" ARRL logo on the ARRL Update page. If the club wouldn't mind spending more money on the newsletter, we could even have color versions of the logo. So far, the only comments I've received were those at the board meeting. Any other ideas or comments?

73, Gary WB6YRU, editor

ARRL Pacific Division Update

September 1996

World Radiosport Team Championship

On July 13-14 in the San Francisco Bay Area, one of the unique opportunities from an operating and social point of view happened in the Amateur Radio family. Assembled in one area were 52 teams plus 2 exhibition teams of the best contesters from all over the world to work from standardized stations. While the contest was the reason they all came together, the opportunity to meet with these outstanding hams all in one place was the highlight for many of us.

Thanks to the committee and staff from the Northern California Contest Club who worked tirelessly under the direction of Rusty Epps, W6OAT and Bruce Sawyer, AA6KX. This crew is an exhausted but happy bunch. Thanks, too, to the host station owners, the officials, and everyone involved!

New FCC Rules on RF Exposure

On Aug. 1, 1996, the FCC issued a Report and Order changing dramatically the rules under which all transmitters licensed under the FCC will be operated from an RF Safety point of view. The rule goes into effect on Jan. 1, 1997.

The FCC had been considering this docket (93-62) for sometime. The Telecomm Act of 1996 told the FCC to do something within 180 days from the February 1996 enactment. This R&O is the result. Unfortunately, apparently no one outside the FCC has been recently involved in the discussions and so no advance warning was given for the announcement.

While there is a lot of "on the air" and Internet traffic concerning this R&O, about all that is really certain is that an Amateur Radio transmitter operating under 50 watts is exempt from the certification requirement. Previously, all Amateur Radio transmitters had been exempt. If your rig is over 50 watts then some type of calculation and certification will be required. Just what and how this will be done is very unclear at the moment. ARRL is actively working this problem from both technical and policy points of view.

The text FCC R&O (ET Docket 93-62) can be found on the FCC web site <http://www.fcc.gov/oet/>

Visit the ARRL web site for all the information currently known.

Between now and Jan. 1, 1997, there will be lots of discussion on what this all means. There may also be Petitions for Reconsideration of the R&O filed with the FCC. So, stay tuned!

[There are more details on this RF Exposure subject from the ARRL Letter, reproduced elsewhere in this newsletter. - Editor]

FCC has a toll free number for questions

Call (888) 322-8255 [888 FCC TALK] to learn what information the FCC National Call Center, part of the Compliance and Information Bureau, in Gettysburg, PA, delivers. The center is open 8:00 AM to 4:30 PM ET Monday through Friday. Outside those hours there is a very rudimentary voice response system.

Calls during working hours gets you to a real human being who tries to be helpful but seems not overly well informed on many aspects of the Amateur Radio Service and related matters. For example, if you want to discuss a repeater jammer problem, they tell you to contact the ARRL without giving you any clue of how to reach ARRL or who to ask for.

Another example, if you want to discuss interference involving a piece of consumer home entertainment equipment, they suggest you call the manufacturer. If you ask about telephone service problems, they refer you to your state Public Utility Commission. No mention is made of existing and available FCC brochures and policy statements.

Five VHF/UHF/SHF Bands at Risk

2m/70cm Band Threat

There have been two more meetings of the IWG2A since the last Update. There has been no substantive discussions on removing the 144/440 bands from the list of candidate bands; no mechanism has appeared to remove them; and no effort has been launched by anyone to develop even a plan for a compatibility study for sharing. The meetings are scheduled every three weeks. ARRL will be there.

It appears likely that little or nothing will happen in IWG2A until the November 1996 time frame when their report is due to the WRC97 Advisory Committee.

So WHAT do we do now?

1. Monitor the progress of this unfolding drama!

For the latest news on this volatile issue, read QST, ARRL Letter, Pacific Division Updates in hard copy. Read ARRL Letter, Pacific Division Updates on email; visit Pacific Division WWW site. Visit the ARRL Home page at <http://www.arrl.org/> and click on "Band Threat News."

2. Join ARRL!

The ARRL is the only effective national organization fighting for YOUR 2 meter and 70 cm hand held operating privileges. It is easy to join and help us win this battle to preserve our privileges.

3. Then write. Right now--and continue through Summer and Fall!

Comments by e-mail should be sent to: wrc97@fcc.gov. Hard copy written comments, with an original plus one copy, should be sent to: Office of the Secretary, Federal Communications Commission, Washington, DC 20554. Each comment should include at the top, "Reference No. ISP-96-005" and "Advisory Committee Informal Working Group 2A."

We must keep up this activity consistently throughout the Summer and Fall until November.

You can find further background information in previous Pacific Division Updates (see the Pacific Division WWW site -- pdarrl.org), QST, and the ARRL WWW site.

1296 MHz Band Threat

The following information was sent to me by John, WB6QKF, on July 22, 1996 and delivered to ARRL HQ, ARRL General Counsel, and the Pacific Division 1296 MHz Alert Team:

"I noticed the following item in GPS World magazine, July 1996, page 22, *NEWSFRONT*. The proposed 1258.29 MHz frequency is smack in the middle of the 1240-1300 MHz Amateur Radio allocation. The GPS frequencies use a 20.46 MHz bandwidth (plus guard-bands) which would eliminate amateur radio use of 1245-1270 MHz. We already lost 1215-1240 for the GPS L2 frequency (1227.60 MHz). All GPS frequencies are on multiples of 10.23 MHz."

We must act quickly to protect this valuable spectrum. In urban areas, this band is the only spectrum available for additional repeaters, especially Amateur Television, high speed data links, and new modes. I am sure the military and FAA would object to use of the 1207.14 frequency as intruding on the available TACAN and DME spectrum.

The GPS signals use a direct-sequence spread spectrum modulation which permits multiple satellites to transmit on the same frequencies using different modulation codes. This technique uses a lot of bandwidth, which must be protected from interference due to the extremely low signal levels received on the ground."

2400 MHz Band Threat

On June 10, 1996, DSC Corp. of Plano TX filed a petition with FCC (RM 8837) to start a wireless local loop telephone service using wireless to replace telephone drop lines from the pole to homes. A wide range of spectrum is involved but some of it is in the 2400 MHz Amateur Radio Service spectrum. The ARRL HQ and General Counsel are very involved and the Pacific Division 2400 MHz Alert Team has been passed the information. Unfortunately the date for filing comments on this fast track, surprise petition was Aug. 10, 1996. Fortunately, even if the petition is granted, there should be another round under a Notice of Proposed Rule

Making, where all interested parties will have a chance to comment. ARRL plans to file on this matter.

5800 MHz Band Threat

This threat is by NPRM ET Docket 96-102, based on the petitions from Apple Computer and WINForum, to grant access to the Amateur Radio Spectrum from 5725-5875 MHz band for the NII/SUPERNET proposal for free spectrum for very high data rate LAN's and other activities for schools, libraries, and hospitals. This is a very highly charged political matter. ARRL HQ, General Counsel, and the Pacific Division 5725-5875 MHz Alert Team are in action. Comments were filed on July 15, 1996, and Reply Comments are due Aug. 14, 1996.

It is very unclear what will happen in this NPRM as the FCC Commissioners want to grant something to this service, but how far they will go is unknown. It is also clear that action will likely be taken prior to the November Presidential elections to allow maximum political benefit.

Amateur Vanity Calls Update

Gate 1 opened May 31; it is for those who want to retrieve a long lost call, obtain the call of a deceased close relative, or for retrieving long lost club calls. Gate 1A, which opened July 22, is for a club station trustee to request, in memoriam, the call sign previously shown on the station license of a deceased person who was a member of the club. The club must have held a club station license grant on March 24, 1995.

ARRL has established a one-stop vanity call sign page at <http://www.arrl.org/fcc/vanity.html>.

NOTE: There are persistent stories that Gate 2 (for Extra Class holders) will open in the next couple of months.

Bill to Protect OO/VE Volunteers

On March 29, 1996, Congressman Bill Baker (R-CA 10th - East Bay Section) introduced H.R. 3207, a bill to amend the Communications Act of 1934 to facilitate utilization of volunteer resources on behalf of the amateur radio service. Contact your Congressional Representatives to urge them to become co-sponsors of the bill.

Third Bay Area 2.4 GHz Repeater Active

By the dedicated efforts of Dan Smith, K6PRK, Bob Warmke, W6CYX, and many others, there is now a third 2.4 GHz repeater active. They expect to have a fourth up shortly. Good work, guys!

Coming Events

- Livermore Swap Meet - 1st Sunday of each month at Las Positas College in Livermore, CA, 7:00 AM to noon, all year. Talk in 147.045 from west, 145.35 from the east. Contact

Noel Anklam, KC6QZK, (510) 447-3857 eves.

• Foothill Flea Market - 2nd Saturday of each month from March to September at Foothill College, Los Altos. Talk in on 145.23-PL 100 Hz.

• The Bakersfield ARA is holding its third Annual Hamfest at Costerisan Lake, near Bakersfield CA on Oct. 10-13, 1996. For more info, write to BARA Hamfest, POB 80222, Bakersfield CA 93380-0222 or call Rob at (805) 588-7065; George at (805) 323-3691; or Ed at (805) 589-4163.

• Pacific Division Convention - Pacifcon '96 Oct. 18-20, 1996, at the Concord Hilton Hotel in Concord CA. Details can be found on the Pacific Division Home Page at <http://www.pdarrl.org/> or by calling (510) 932-6125; e-mail Pacifcon@designlink.com or at <http://www.mdarc.org>. The Mt.Diablo ARC (MDARC) is the sponsor again this year.

Brad Wyatt, K6WR
Director, ARRL Pacific Division



18400 Overlook Rd. #5
Los Gatos CA 95030-5850
(408) 395-2501 (voice & fax)

Packet: K6WR @ N0ARY.#NOCAL.CA.USA.NOAM
Internet: k6wr@arrl.org
Pacific Division WWW Home Page <http://www.pdarrl.org/>

Need Help?

Amateurs have a long history of helping each other. An experienced amateur who helps another is traditionally called an "Elmer." If you have a question or problem, you are encouraged to ask one of SCCARA's Elmers. Below is a list of topics including who to contact for each.

If you consider yourself to be reasonably competent in at least one area of amateur radio and would be willing help others, please ask the club secretary for an Elmer survey form and fill it out.

Subjects and elmers:

Antennas, feed-lines, tuners:
WB6EMR, AC6FU, K6PBQ, W6PHF, K6RQ, WB6YRU
Lightning protection, grounding: W6PHF, WB6YRU
Station set-up, equipment: AC6FU, K6PBQ, W6PHF, K6RQ
TVI/RFI: W6PHF, WB6YRU
Homebrew projects, construction:
AC6FU, KD6FJI, W6PHF, WB6YRU
Computers: KB6NP; IBM PC: WN6U, WB6YRU

Packet Network (BBS, forwarding): WB6YRU
Other digital modes (AMTOR, RTTY): WN6U
Code operating and installations:
WB6EMR, AC6FU, K6PBQ, W6PHF, K6RQ
Contesting & techniques: W6PHF, K6RQ
DX (long distance/propagation): W6PHF, WB6MER, K6RQ
Emergency operating/preparedness: W6PHF, WA6QYS
FM (VHF/UHF, repeaters): W6PHF, WA6VJY
HF operating techniques (SSB, CW):
WB6EMR, AC6FU, K6PBQ, W6PHF, K6RQ
Mobile operating: W6PHF, K6RQ, WN6U
NTS & traffic handling: W6PHF
QRP (HF low power, all modes): W6PHF, WN6U
TEN-TEN (10 M only): AC6FU
Classes/license upgrading: W6ACW, AC6FU, W6PHF
Legal/FCC rules: WB6YRU
SCCARA (club inner workings):
K06HH, K6PBQ, WA6VJY, WB6YRU, WA6QYS
Math applications: AC6FU
Children's Discovery Museum, volunteer operator:
K6PBQ

How to reach the club elmers:

W6ACW, Ed Hajny, (408) 739-6105

WB6EMR, James D. Armstrong, Jr.,
day: (408) 995-0621, evening & msg: (408) 945-1202

KD6FJI, Lloyd DeVaughns,
day: (408) 299-8933, evening: (408) 225-6769
packet: home BBS KB6MER

AC6FU, Jack L. Ruckman, (408) 379-4846

K06HH, Don Hayden, (408) 867-4643
packet: home BBS NOARY

KB6NP, Jon Dutra, day & msg (408) 428-2058
evening (408) 867-8654
packet: home BBS NOARY
internet: jad@aol.com

K6PBQ, Don Village, (408) 263-2789

W6PHF, David Palmer, (415) 948-9527

WA6QYS, Lou Steirer, (408) 241-7999
packet: home BBS NOARY

K6RQ, Frank Glass, (408) 356-1026

WN6U, Doug Eaton, (408) 377-3736
packet: home BBS NOARY
internet: deaton1@ix.netcom.com

WA6VJY, Stan Getsla, day: (408) 738-2888 x5929,
evening & msg: (408) 275-0735

WB6YRU, Gary Mitchell, msg (408) 265-2336
also (408) 269-2924
packet: home BBS NOARY
internet: wb6yru@arasmith.com

S.C.C.A.R.A. Membership Form for 1996

(Fill in name and address if there is no mailing label below; make corrections if the label is incorrect)

Name: _____ Call: _____ Class: E A G T+ T N

Address: _____ Licensed since (yr): _____

City: _____ State: _____ Zip: _____

Telephone: () _____ New Member I'm also an
 Renewal ARRL member

For family memberships (at the same address), please list other name(s) and call(s):

Annual membership dues are payable at the first of the year and expire the following December 31. New members joining on or after July 1, pay half the membership dues (and half auto-patch fee).

Annual Membership dues: Individual \$15 Family \$20 Student (under 18) \$5 _____

I want _____ SCCARA badges @ \$3 ea. Badge name & call: _____

Please send the repeater Auto-Dial codes (no charge, circle): Yes

Please send the repeater Auto-Patch codes (includes Auto-Dial), \$10.00

WE MUST BE ABLE TO VERIFY YOUR AMATEUR LICENSE
BEFORE ANY REPEATER CODES WILL BE SENT

TOTAL: _____

Give this completed form (or copy) with payment to the Secretary or Treasurer at any meeting or mail to the return address below:

== PLEASE DO NOT TEAR/CUT ==

**SANTA CLARA COUNTY
AMATEUR RADIO ASSOCIATION**

PO BOX 6
San Jose CA 95103-0006

Affiliate of the American Radio Relay League

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FORWARD & ADDRESS CORRECTION

TIME DATED BULLETIN