

# SCCARA-GRAM

Santa Clara County Amateur Radio Association

Volume 12, Number 7

July 1996

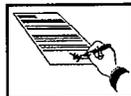
## President's Prose

The June Flea Market at Foothill College was a great success. We had lots of SCCARA members out there to help and shop around for bargains. I am not going to steal Lou's WA6QYS thunder by going into details but it was a lot of fun and we added substantially to our treasury. I can't believe we had 540 donuts on hand and I only ate one. I must be slipping.

I was out there at about 0500 hours with a load of tables, garbage cans, the canopies, and the BBQ in my 1954 Chevrolet pick-up truck along with my stepson, Chris KF6APP. We helped set things up and pulled the 0700 to 0900 shift at the food booth. Then we shopped around and Chris picked up some game software and a name tag with his name and call on it. Afterwards we helped clean up and then took the tables and stuff that we had borrowed back to the Palo Alto Red Cross. We had a great time. This sounds like a big day for me and Chris but Lou WA6QYS was out at the college at 0300 and after everything went over to Clark's KE6KXO house to help Clark KE6KXO and Don KO6HH put up the club antenna so it could be tested by the World Radiosport Team Championship people. Now here is a man who really had a big day. Thanks to everyone who worked on the Flea Market but especially thanks to Lou WA6QYS.

A good amount of work got done on the antenna trailer. One of the crank down jacks at the back of the trailer got bent some how and would not crank down. Clark KE6KXO was able with much effort to straighten it out and get it working again. I put two coats of paint on the wood part of the trailer and I rubbed out the metal parts with car polish. It looks pretty good. There is still more work to be done on it before the World Radiosport Team Championships, but it will be OK for now to use at Field Day.

Hugh, KD6EFL



## Calendar

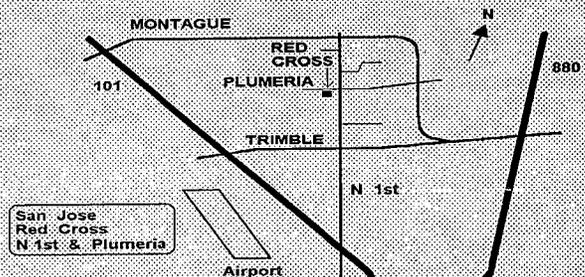
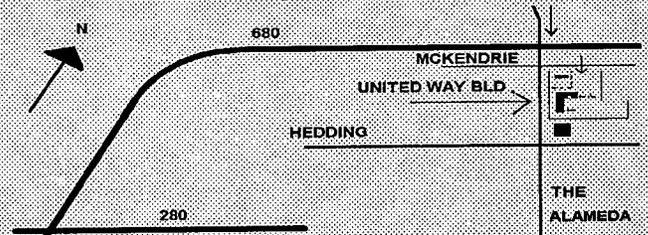
- 7/8 SCCARA General Meeting
- 7/13 Foothill Flea Market--We Host!
- 7/15 SCCARA Board Meeting--(San Jose Red Cross, 7:00p, all are welcome)
- 8/12 SCCARA General Meeting
- 8/17 SCCARA Special Event station

### Next General Meeting

Day: Monday, July 8, 1996  
Time: 7:30 PM  
Place: United Way Building  
Agenda: Don Ferguson KD6IRE:  
satellite communications

United Way Building 1922 The Alameda

From 680 in San Jose, take the Alameda turn-off South, left on McKendrie, then right into the parking lot (far end).



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 and *Special Services Club* of the American Radio Relay League.

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, W6ZRI	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

## Dogs in Demand at the Flea Market

After two dismal years at the Foothill Flea Market, SCCARA finally had its "Day in the Sun!" It was heartening to have a bright sunny day after the previous two rainy endeavors. Our perseverance paid off in that our profit was probably more than the previous two years' profits put together. We had a great crew. Some were up at Foothill before the birds and others stayed till the bitter end. SCCARA owes a debt of gratitude to the following hams:

WB5VUL Rick, WB6YRU Gary, KA6YMD Wally, KD6EFL Hugh, KE6KXO Clark, N6BUO Rex, WN6U Doug, KE6NBO Glen, KG6PY Art, WA6VJY Stan, KD6CXS Marilyn, KO6HH Don, K8ERL Mike, K6EJF John, KC6SCO Terry, WD6CGI Henry, KD6FJI Lloyd, WM6M Dan, KB6LCJ Mike, and KE6NHK Ron.

Special thanks to KF6APP Chris, Hugh's stepson. He was there from the beginning till the end, busy every minute, helping with what needed to be done.

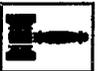
Selfless dedication has made this a great club. Let's continue in that tradition and leave a legacy of industriousness for our successors.

Thank you everyone for making it a successful day.

Lou WA6QYS

## Meeting Minutes

### General Meeting, May 13, 1996



7:38 p.m. Meeting called to order by club president Hugh, KD6EFL. Self introductions followed as is our custom.

Our guest speakers tonight are Tom Dideum, from IFR Systems and Bill Townes, N6NHN, of CMC North. They brought in and demonstrated a spectrum analyzer.

#### Business Meeting:

Don, KK6ME, said he will try to get someone from Metricom to discuss the Ricochet Internet access system.

Treasurer's Report: Rex, N6BUO, reported that we have \$16,454 in the treasury.

Editor's Report: Gary, WB6YRU, a years subscription to World Radio would go to the SCCARA member who

submitted the best article. The winner this time is Mike, KC6LCJ.

Lou, WA6QYS, advised us that SCCARA will be hosting the June Foothill flea market and passed around a sign up sheet for those who would like to help.

Mike, KC6LCJ, announced that the class is over and we have 2 new tech+ amateur radio operators.

Dan, WM6M, Field day chairman, announced that he is trying to arrange transportation to our field day site for those who would like to come but don't have transportation. If you need a ride or if you can drive someone to Field day, please contact Dan. There will be our usual CW vs phone competition at field day.

Don, KO6HH, said that there will be a dry run before the World Radio Sport competition to test out the sites.

Mike, K8ERL, purchased a Hal Communications P-38 digital communications unit and he will soon be on Clover.

Don, KK6ME, announced that the SCCARA 75th anniversary picnic and special event station will be August 17. The site has not been confirmed, but it most likely be Cunningham Park in East San Jose.

Gary, WB6YRU, said that N0ARY wants to move his bbs system out of his house to another location, possibly the Red Cross.

Raffle.

9:45 p.m. Meeting adjourned.

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## Board Meeting, May 20, 1996



Present: Hugh, KD6EFL; Clark, KE6KXO; Dan, WM6W; Lloyd, KD6FJI; George, AA6OZ; Gary, WB6YRU; Don, K6PBQ; Rex, N6BUO; Lou, WA6QYS; Imre, KD6MZM

7:38 p.m. Meeting called to order by club president Hugh, KD6EFL.

Gary, WB6YRU, wanted the wording the minutes of the last meeting corrected. The April 15 minutes were amended. Motion by Don, K6PBQ, to approve minutes as appeared in SCCARA-GRAM. Approved.

The correct spelling of the location for the 1996 Christmas party is La Rinconada Country Club.

President: Hugh, KD6EFL, received the bill for June Flea Market. The people who put on the flea market want there money before the June 8 date.

Treasures Report: Rex, N6BUO, total assets for the club is \$15,789.86

There was a discussion about the treasury and why it has gone down. There were several reasons given for the decline of the treasury. One suggestion for raising the treasury is to increase the dues. Another reason is that we have had more expenses this year.

Editor's report: Gary, WB6YRU, the cost of the SCCARA-GRAM for this month was \$260.

Dan Dietz, WM6M, Field Day Chairman: Dan wants to know how many will come to field day if they had transportation. A discussion of providing transportation and volunteers to drive them. A meeting of the committee will be held Thursday may 23 at the Home Town Buffet. 7:00 p.m. We will run the generators and we need computer. We will be 3A this year. One phone and one CW station. There will be antenna party June 1 at Clark's QTH at 10:00 a.m.

75th anniversary picnic and Special Event Station: The choice of locations is Lake Cunningham City Park or Berryessa City Park. Motion by Don, K6PBQ, that Clark check out Berryessa Park and if it is possible then have him make reservation for August 17, if not then have him make reservations for Lake Cunningham Park. Motion passed.

Imre made a motion that for the picnic, the club will pay for the sodas, entree, chips, ice, charcoal and utensils. Motion Passed.

Flea market: Lou, WA6QYS, said that we could always use more help to man the booth.

Gary, WB6YRU, N0ARY want to get his BBS moved from his house. There was a discussion of placing the BBS in the Red Cross Bldg. Motion by George that we investigate the feasibility of sponsoring the N0ARY packet BBS. Motion passed. Passed unanimously.

9:46 p.m. Meeting adjourned.

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## General Meeting, June 10, 1996



7:46 p.m. Meeting called to order by club president Hugh, KD6EFL. Self introductions followed as is our custom.

Repeater Committee: none.

Youth Group: George, AA6OZ, nothing to report concerning the youth group. George did say that there is a teacher who just received her Ham license.

President report: Hugh, KD6EFL, has received the keys to the Red Cross. This means that we now have access to the radio room.

Treasurer's report: Rex, N6BUO, gave the report.

Station Trustee: Stan, WA6VJY, nothing to report.

Editor's report: Gary, WB6YRU, the cost of publication has gone up and he is in the process of looking for a new copy center. Terry, KC6SOC, suggest that some of the articles in the SCCARA-GRAM should be eliminated to bring the cost of publication down. There was a discussion of Terry's suggestion.

Lou, WA6QYS, Flea Market Report: There were 161 seller for a total of \$2120 for the rental of spaces. SCCARA made a net of \$2723.38. We sold 45 dozen donuts.

Don, KO6HH, reports that a World Radio Sport representative looked at Clark Murphy's QTH and said the site was ok.

New Business: Gary, WB6YRU, reports that N0ARY is looking for someone to take over the BBS. Gary thinks that SCCARA could take over the BBS and put it in the Red Cross building in the radio room.

Don, KK6MX, reports that all of the paper work has been signed and everything is ready for the move. We need the signed paper work back from RACES and the City and then we can move.

Business Meeting: Field Day Video 1987.  
Barbara, KD6QEI, discussed the dinning arrangements. Friday night, there will be CDF chile and pot luck.

1 p.m. Friday, June 21, we will meet at Carl's Jr. on the corner of Branham and Almaden Expressway for convoy to the Field Day at Mt Madonna Park.

Raffle.

9:25 p.m. meeting adjourned.

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## Board Meeting, June 17, 1996



Present: Lou, WA6QSY; Imre, KD6MZM; Hugh, KD6EFL;

Don, K6PBQ; Clark, KD6KXO; Lloyd, KD6FJI; Gary, WB6YRU; Don, KK6MX

7:39 p.m. Meeting Called to order by Hugh, KD6EFL, club president.

Committee reports:

George, AB6OZ, was not present tonight but, Hugh, KD6EFL, reported that George will be running another youth class this summer.

Hugh, KD6EFL, announced that his wife is expecting. Hugh also said that he painted the SCCARA trailer and also rubbed the fenders and the tool boxes.

Don, KK6MX, announced that Don Ferguson, KD6IRE, will be the guest speaker for the July meeting.

Gary, WB6YRU, SCCARA-GRAM editor, announced that the price of publishing the SCCARA-GRAM has gone up and he looked at other places and found that they are about the same price. Gary has not received any articles for publication in the SCCARA-GRAM. There was a discussion of reducing the size of the SCCARA-GRAM.

Clark, KE6KXO, made a motion that Gary, WB6YRU, use his own judgment in finding a place to print the SCCARA-GRAM and its the size and content. Second and passed.

Clark, KE6KXO, said that a World Sport Radio representative looked at his place for the competition and said it was a good location.

Clark, KE6KXO, looked at Lake Cunningham for the SCCARA Special event station and said that it will cost \$100.00 for the space and \$3.00 for each car. Don, KK6MX, said that RACES, set up in Happy Hollow Park and he suggested that this maybe a good location for the Special Event Station.

Gary, WB6YRU, the property list has listed a Hy-Gain beam and no one remembers anything about it. This will be crossed off the property list since it is there in error.

Radio Room: The board took a tour of the radio room. SCCARA has a small section of desk space for all of our radios and maybe the N0ARY BBS.

Antenna(s): there was a discussion of putting up a vertical HF antenna instead of a beam. SCCARA owns a vertical and a beam. The beam needs work. If we put up a vertical, it will cost a lot less because we will not need the support structure that is needed for a beam.

N0ARY BBS: There was a discussion of SCCARA operating the BBS and the expenses that we will have to incur to set it

up and operating it. There was also a discussion of RF problems that may arise and the costs of eliminating them. There may be several radios operating on the same band which could cause interference.

Motion to adjourn by Clark, KD6EXO, second and passed.

Lloyd, KD6FJI, Secretary

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## HAMS and MSS

### Amateur Radio Supports Multiple Sclerosis Society

Each year the MS Society puts on two fund raisers. In April they have the MS walk in Campbell to Los Gatos and one in Palo Alto. In June they have the *Back-to-the-Beach Bike Tour* in Watsonville going 50, 75 or 150 miles over two days.

In April's walk we had 13 HAM operators running communications at the rest stops and bike mobiles on the course. In June's bike tour they had 22 HAMs running communications at the rest stops and several in cars and motorcycles. Both events used two-meters linked with 440. Without the aid of amateur radio operators they would not be able to put on these events. Safety of the walkers and bikers is most important. Amateur radio provides a very valuable community service for these events.

73, Don Village, K6PBQ

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## Introduction To Packet Radio

by

Larry Kenney, WB9LOZ

Part 14

### TNC COMMANDS - continued

**MAXFRAME:** Sets the upper limit on the number of unacknowledged packets the TNC can have outstanding at any time. (The outstanding packets are those that have been sent but have not been acknowledged.) MAXFRAME also determines the maximum number of contiguous packets that can be sent during one transmission. The value can be set from 1 to 7. The best value to use depends on the frequency conditions. The better the conditions are, the higher the value you can use. If conditions are poor due to frequency congestion, noise, or

other variables, (shown by lots of retries) MAXFRAME should be reduced to improve throughput. The best value of MAXFRAME is determined through experimentation. MAXFRAME of 1 should be used for best results on HF packet.

**MFILTER:** This command allows you to enter up to four ASCII character codes, 0 - \$7F, for the control characters that you want eliminated from your monitored packets. Codes may be entered in either Hex or Decimal. Here are the ASCII codes for some of the more troublesome control characters found in monitored packets:

HEX	DEC	FUNCTION	POSSIBLE RESULT
\$07	07	Control G	Rings bell or "beeps" speaker
\$0C	12	Control L	Form feed - could clear screen
\$13	19	Control S	Can cause screen to stop scrolling
\$1A	26	Control Z	Can clear your screen
\$1B	27	Escape	Can cause cursor to move to a random point on the screen and can raise havoc with printer control.

AEA has added a new code, \$80, that will not allow ANY control characters to be displayed on the user's screen from monitored packets.

**MHEARD:** An immediate command that causes the TNC to display a list of stations that have been heard since the command MHCLEAR was given or the TNC was powered on. This command is useful for determining what stations can be worked from your QTH. Stations that are heard through digipeaters are marked with an \* on most TNCs. On the AEA PK-232, the stations heard direct are marked with the \*. (Check your TNC manual.) The maximum number of stations in the list is 18. If more stations are heard, earlier entries are discarded. Logging of stations heard is disabled when the PASSALL command is ON. (See below.) If the DAYTIME command has been used to set the date and time, entries in the MHEARD list will show the date and time the stations were heard.

**PASSALL:** Causes the TNC to display packets that have invalid checksums. The error-checking is disabled. If PASSALL is ON, packets are accepted for display, despite checksum errors, if they consist of an even multiple of eight bits and are up to 330 bytes. The TNC attempts to decode the address field and display the call signs in standard format, followed by the text of the packet. PASSALL can be useful for testing marginal paths or for operation under unusual conditions. PASSALL is normally turned OFF.

**PERSIST:** Used in conjunction with the SLOTTIME command (see below) to provide less clutter on a busy packet frequency. As more and more TNCs are upgraded to include the PERSIST and SLOTTIME commands, fewer and fewer packet collisions will occur. If you have these commands available in your TNC, you should set DWAIT

to 0 and set these commands for use. Note: On some TNCs, such as the PK-232, you have another command that determines whether you use DWAIT or PERSIST/SLOTTIME. It's the PERSIST command (with 2 P's). Set it ON to use PERSIST/SLOTTIME; set it OFF to use DWAIT. I strongly recommend that you set PERSIST to ON.

PERSIST specifies a threshold value for a random-number attempt to transmit. The value ranges from 0 to 255. 0 signifies a 1/256th chance of transmitting every SLOTTIME; 255 allows the TNC to key the transmitter every SLOTTIME. Through experimentation, it has been determined that the best value for PERSIST is in the 60 to 70 range.

SLOTTIME: This command determines the time interval the TNC waits between generating random numbers to see if it can transmit. This random number generation and the value of PERSIST work together to provide smoother operation on a busy packet frequency. The SLOTTIME value may be set from 0 to 250. Through experimentation it has been determined that the best value for SLOTTIME is in the range of 10 to 20.

SCREENLN n: This parameter determines the length of a line of text on your computer screen. The value may be 0 to 255, and is usually set to 40 or 80 depending on the screen display you have. A carriage return and line feed (CR/LF) are sent to the terminal in Command and Converse modes when n characters have been displayed. A value of zero inhibits this action. If your computer automatically formats output lines, this feature should be disabled.

TRANS: This is an immediate command causing the TNC to change from Command mode to Transparent Mode. Transparent mode is used when you want to send data such as executable programs where characters in the data would conflict with the operation of the TNC. Characters such as "Control C", "Control R", "Control S", "carriage return", "linefeed", etc. all effect the operation of the TNC when in Converse Mode. In Transparent Mode none of the data characters affect the operation. All eight bits of each character are sent to the radio exactly as they are received by the TNC from the computer or keyboard. Packets are transmitted at regular intervals set by the PACTIME command or whenever a full packet of information is ready. The receiving TNC must also be in Transparent mode and nodes and digipeaters cannot be used in the transmit path. Since the characters normally used for TNC operation have no affect in this mode, a special procedure is required to exit Transparent Mode and return to Command Mode. Refer to your TNC operating manual for details on how this procedure is performed on your particular TNC. You should also check your manual for information on the CMDTIME, PACTIME, START, STOP, TRFLOW, TXFLOW, XFLOW, XOFF and

XON commands before using Transparent Mode.

TXDELAY n: This parameter tells the TNC how long to wait before sending data after it has keyed the transmitter. All transmitters need some start up time to put a signal on the air. Some need more, some need less. Synthesized radios and radios with mechanical relays need more time, while crystal controlled radios and radios with diode switching require less time. External amplifiers usually require additional delay. Experiment to determine the best value for your particular radio. TXDELAY can also be useful to compensate for slow AGC recovery or squelch release times at the distant station.

There are many additional commands available to you. Spend some time reading the owner's operating manual that came with your TNC to discover some of the surprises the other commands offer. New versions of the TNC software have added several commands that you might find useful in your packet operating.

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## Packet Pieces

### Downloaded from the packet network:

=====

Date: 11 Jun 96 21:47

From: W1AW@W1AW

To: QST@ARRL

Subject: ARLB038 FCC closes sites

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QST de W1AW

From ARRL Headquarters Newington CT June 11, 1996  
To all radio amateurs

FCC closes monitoring stations, field offices

As part of a previously announced restructuring of its Compliance and Information Bureau, the FCC has closed 12 HF spectrum monitoring stations and six district offices, effective May 29.

The monitoring stations shut down were in Belfast, Maine, Powder Springs, Georgia, Vero Beach, Florida, San Juan, Puerto Rico, Allegan, Michigan, Kingsville, Texas, Grand Island, Nebraska, Anchorage, Alaska, Douglas, Arizona, Livermore, California, Honolulu, Hawaii, and Ferndale, Washington.

District offices closed were in Buffalo, New York, Norfolk, Virginia, Miami, Florida, Houston, Texas, Portland, Oregon, and St Paul (Maplewood), Minnesota.

The FCC says "a downsized professional staff" will remain in Buffalo, Norfolk, Miami, Houston, Portland, St Paul, Anchorage, Honolulu and San Juan.

The FCC is replacing its HF monitoring stations with "advanced, automated equipment" that will remotely control monitoring sites from an operations center in Maryland.

The FCC also plans to install a nationwide toll-free call center, and service is scheduled to begin on a regional basis this month. Until the nationwide toll-free service is available, the FCC says people may call one of the remaining district offices for assistance. Here's a list of service facilities for localities where FCC offices have been closed:

Allegan, Michigan: Detroit District Office, 810-471-5924.

Anchorage, Alaska, Ferndale, Washington, Portland, Oregon: Seattle District Office, 206-821-9037.

Belfast, Maine: Boston District Office, 617-770-4023.

Douglas, Arizona: San Diego District Office, 619-467-0549.

Grand Island, Nebraska, Norfolk, Virginia: Kansas City District Office, 816-353-3773.

Honolulu, Hawaii, Livermore, California: San Francisco District Office, 510-732-9046.

Houston, Texas, Kingsville, Texas: Dallas District Office, 214-235-3369.

Miami, Florida, San Juan, Puerto Rico, Vero Beach, Florida: Tampa District Office, 813-348-1508.

Powder Springs, Georgia: Atlanta District Office, 770-279-4621.

St Paul, Minnesota: Chicago District Office, 847-298-5401.

Individuals needing FCC forms or other documents should call the FCC's Forms Distribution Center at 800-418-3676.

=====  
Date: 14 Dec 95 05:22  
From: AA2AD@KB2OBB  
To: TEKTIP@ALLUS  
Subject: Service Power Supplies Part 2  
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TEKTIP.8 - Fixing power supplies, part 2

In the last TEKTIP, we left our technician just as he (or she) decided that there may be a problem in the power supply. Since a power supply consists of input, rectifier,

filter, regulator, and output subunits, we will apply Black Box Theorem #2 (Each step of the troubleshooting process should be an attempt to divide the problem in half.) and check the filter stage for appropriate inputs and outputs.

**BE CAREFUL!**

There can be symptoms which would lead you straight to the filter circuit of your power supply. In equipment without speakers, defective filters can create a wide variety of symptoms, including failure of voltage-doubler circuits. If there is a speaker, the most obvious symptom might be an audible 60 Hz hum. The easiest test is to use jumper wires (wires with alligator clips at each end) to connect a known-good capacitor of equal or slightly higher capacitance rating (in mfd) and equal or slightly higher voltage rating (in d.c. volts) in parallel with the old capacitor. Be certain to observe polarity!! It is rarely necessary to remove the old capacitor while making this test.

Excessive a.c. voltage component can also be seen as ripple on an oscilloscope display, or measured with your voltmeter's a.c.-volts function. A d.c. blocking capacitor is placed in series with the meter's probe leads when you set the meter to measure a.c., so any indication of voltage is the result of a.c. ripple.

Voltages are almost always measured using the chassis ground as a reference point. You should clip the negative lead of your voltmeter to a good, clean connection on the chassis, such as a bolt, and leave it there until it is time to check a negative voltage. If you have an autoranging meter, you may not have to exchange leads even then.

Switch your meter to an appropriate d.c. range and check for voltages across all of the filter capacitors. If you don't have a schematic with specific voltage notations, you can assume that the voltages across the filter capacitors should be (very roughly) 80% of the voltage rating marked on the capacitor. THINK! To protect your analog meter, get the polarity right the first time. BE CAREFUL! Voltages of 800 volts or more are common in tube type rigs. You may find a filter capacitor with multiple leads. Generally, there is one common negative lead and the others are separate positive polarity sections. If the capacitor is a chassis-mounted metal can, the can case is generally negative, and the solder terminals are positive.

Power supply filter circuits often have components other than filter capacitors. You may find inductive components, called chokes, in series with the current flow. These often look like small power transformers with only two leads. Chokes do sometimes open up, and can be tested either for continuity or by measuring for identical d.c. voltage values at both ends.

When you replace a power supply component, lead dress

is less critical than in r.f. circuits. Component replacement is easiest if you can locate a physically similar part, but don't be afraid to try something that looks different, if the ratings are appropriate and you can shoehorn it in!

I will risk belaboring the obvious: If you measure appropriate voltages without excessive ripple, everything between the wall socket and the filter is ok and you can direct your attention downstream. If there is zero or very low voltage present at the filter, you will work your way back toward the wall socket.

'Till next week, when we will move toward the wall socket because we found no voltage across the filter capacitors.

73, Peter (AA2AD@KB2OBB.#WNY.NY.USA.NOAM)

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## 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.

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

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@1x.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

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## Newsletter Notes

Please don't forget about the offer of a year's subscription to World Radio magazine for the best amateur related article per issue from club members. Again, this is for articles, not notices or reports.

So far I'm very surprised at the lack of response. Except for reports and notices, nearly everything continues to come from outside sources. I sure hope you guys aren't this bashful when operating on the air! The only submissions received to date are the set of dog photos from Mike and the ground diagram from David (this issue).

At the last general meeting, someone suggested having fewer pages to help cut printing costs and that the *Packet Pieces* column should be the first to go. Someone else immediately said he finds that column very informative, (there's no way to please everyone). The board recently voted to pretty much keep things as they are and leave the decision making as to the size to yours truly. My feeling is that since this is a news letter and most of the items in that column are of a news-related nature, it should remain. All non-news stuff in that column is filler anyway.

73, Gary WB6YRU, editor

# ARRL Pacific Division Update

July 1996

## Two Meter and 70 cm bands challenged

There is a very real threat to the continued use of the 2 meter and 70 cm bands by amateurs by a group of commercial folks promoting the "little LEO" satellites. The following editorial from the July issue of QST explains the situation...

### It Seems To Us

#### *Write Now!*

*Get out a pen and paper, or boot up your computer. There's work to be done! Your help is needed to defend two meters and 70 cm. Yes, that's right--the two most popular and most crowded amateur VHF/UHF bands! But don't panic, and don't "go ballistic."*

*Here's what's happening, and what you can do about it.*

*The United States is preparing for the 1997 ITU World Radiocommunication Conference, WRC-97. In the past, the public has been able to participate in the preparations for such conferences by responding to FCC Notices of Inquiry. In March, the FCC announced a streamlining of its International Bureau's preparatory processes for WRCs. Under the new scheme, the NOIs have been eliminated in favor of increased emphasis on WRC Advisory Committees.*

*For WRC-97, a series of Informal Working Groups (IWGs) of the Advisory Committee has been created to address specific agenda items. The output of each IWG will go directly to a joint FCC- NTIA-Department of State Steering Committee of the Advisory Committee. There, draft proposals as received from the IWGs will be reviewed and forwarded to the FCC for possible release as preliminary US proposals for public comment.*

*In announcing the streamlined WRC preparatory process, the FCC tried to reassure those who might be concerned about reduced opportunities for public participation: "Interested parties should note that input to the Advisory Committee may be sent at any time..." A pre-press version of this editorial, circulated far and wide by e-mail and packet radio, caused so much input to be generated--more than 1,000 comments in less than a week--that the FCC had to modify its procedures to cope with the deluge!*

*Hold that thought while we shift gears to the substance of the issue.*

*One of the WRC-97 agenda items includes consideration of possible additional frequency allocations for the mobile-satellite service. So-called "little LEOs," low-earth orbit*

*satellites below 1 GHz, already have allocations. Their proponents claim these are inadequate and are trying for more. The needs of little LEOs are being addressed in IWG-2A, chaired by Warren Richards of the Department of State. The ARRL technical relations staff participates in IWG-2A to represent Amateur Radio interests.*

*At the May 7 IWG-2A meeting, an industry representative presented a list of "candidate bands" for little LEOs. The list included a number of bands that would negatively impact existing services, and does not include others that would appear to be technically more feasible but to which strong objection from incumbents could be expected -- the point being that some political, rather than purely technical, judgment already has influenced the list. We have asked for, but to date have been given no explanation of why some bands were included and not others.*

*Incredibly, 144-148 and 420-450 MHz were included on the list! This is the first time in memory that another service has been proposed for the two-meter amateur band. We must make sure it is also the last time.*

*We do not need to explain to ARRL members the extensive use that is made of these bands by amateurs. The two bands provide the backbone of our local public service communications effort. Voice and data, mobile and fixed, even television--the list of present amateur uses is a long one, and of future uses is even longer. Both are already used for satellite services and for moonbounce and extended-range terrestrial operations requiring extremely sensitive receivers and high levels of effective radiated power.*

*Apparently we did need to explain all this to the little LEO industry representatives, so we did just that--both at the meeting and in a follow-up letter on May 15. We also explained that we had to regard the matter as extremely serious. No one with the slightest background in radiocommunication could possibly believe that a mobile-satellite service could be introduced into either band without disrupting existing and future amateur operations. Therefore, we said, if we did not receive assurance that they would be taken off the list of candidate bands by the deadline for this issue of QST, we would have no choice but to bring the matter to the attention of the entire membership.*

*The response we received was unsatisfactory. In effect, we were told the little LEO industry would consider our views but that until their spectrum needs are satisfied, all bands must remain under consideration.*

*So, this is a call to action. We must get across to the industry and government participants in IWG-2A that the 144-148 MHz and 420-450 MHz bands cannot be considered as candidates for mobile-satellite services. We need to drive the point home so forcefully, with so many grassroots responses, that no one is ever tempted to try this again. Which brings us back to that invitation for "interested parties" to send input "at any time." There's no time like the present! According to the Commission's new procedures, comments by e-mail should be sent to: [wrc97@fcc.gov](mailto:wrc97@fcc.gov). 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." FCC staff assures us that comments will be given prompt consideration, and asks that parties refrain from filing comments in accordance with previous instructions.

*Do comment. But be civil. Don't abuse people who are simply doing their jobs. We have to get across that casting covetous eyes on amateur bands is counterproductive, and contrary to the public interest. To accomplish this we need a lot of comments, including yours. But remember that the objective is to educate and persuade, not to intimidate. We don't need to. The facts are on our side.*

*For the latest news on this particular issue, check the ARRL Home page at <http://www.arrl.org/> and click on "Band Threat News." Then write. Right now!*

*--David Sumner, K1ZZ*

Note: Continuing research is being done on who the "little LEO" folks really are and how this added information might be useful. Also, preliminary plans are being formulated to get the message to the newly licensed primarily 2 meter hams who may not be aware of what is going on. Any and all suggestions on strategy and tactics will be appreciated.

### **Vanity Calls - Gate 1 Opened May 31**

This gate 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. The complete story was in the June Pacific Division Update and will be in the July QST.

As this article is being written in mid June, a number of vanity calls have been issued, so the system is working.

Note: ARRL has established a one-stop vanity call sign page at: <http://www.arrl.org/fcc/vanity.html>. This information is also available on the Pacific Division WWW Home Page, in the ARRL Letter for May 3 and 10, 1996, and in the June 1996, Pacific Division Update.

### **World Radiosport Team Championship**

The WRTC-96 contest will be held July 13-14, 1996, during the IARU Contest. All stations will be in the San Francisco Bay Area. There will be 52 teams from all over the world with equivalent equipment competing. Each station will be issued a unique call (W6A to W6Z and K6A to K6Z). The contest runs from 12:00 UTC on Saturday, July 13 until 06:00 UTC on Sunday, July 14. In addition to the regular IARU HF Championship awards, there will be a whole family of separate achievement awards available to those who work the requisite numbers of WRTC stations. All QSOs will be QSLed automatically.

There are many interesting aspects to this contest ranging from social events to the actual contest itself. Details can be obtained from Rusty Epps, W6OAT at [epps@netcom.com](mailto:epps@netcom.com). Information is also available on the W R T C - 9 6 W W W site at: <http://ourworld.compuserve.com/homepages/n6ip>. Financial

contributions made through the NCDXF, PO Box 2368, Stanford, CA 94309-2368 on a tax deductible basis will be appreciated.

### **Bill to Protect OO and VE Volunteers**

On March 29, 1996, Congressman Bill Baker (R-CA 10<sup>th</sup> - 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." This bill provides liability protection for amateurs engaged in statutory defined activities with the Volunteer Examination program and with the Amateur Auxiliary to the FCC. It does so by declaring that, when they are engaged in these activities, they are considered "federal employees" for the purposes of the Federal Tort Claims Act.

Please spread the word, and ask every Pacific Division ham to contact his/her Congressional Representatives urging them to sign on as cosponsors of the bill. Passage of this bill is critical to the success of helping contain the interference problems in our bands!

Details on the bill and the cosponsor to date were contained in the June Update.

### **New Assistant Director Announced**

It is my pleasure to announce the appointment of Randy Foutch, KE6HCI, the Webmaster for the Pacific Division as an Assistant Director. Randy has been instrumental in setting up the Pacific Division Home Page on the World Wide Web. Thanks, Randy!

### **5725 - 5875 MHz Band is Threatened**

On May 6, 1996, the FCC released a Notice of Proposed Rule Making, ET Docket 96-102, for a proposed wireless Internet called NII/SUPERNet. This proposed unlicensed service would occupy the 5725 - 5875 MHz segment of the 5650 - 5925 MHz Amateur Band. Due date for Comments is July 15, 1996. Reply Comments are due Aug. 14, 1996.

A special Pacific Division 5725 - 5875 MHz Alert Team is already in place with all the information necessary to work with ARRL and comment on the NPRM to help save the band.

If there are any others interested in being part of this team, please contact me at my Internet address, below.

The text version in ASCII format (no footnotes and without special formatting) is available via Internet. There are two parts to this bulletin; each part is about 45K bytes in length.

If you wish a WordPerfect or Word for Windows copy which contains special formatting and the footnotes, W6CF can e-mail you a zipped, UUencoded copy. Please note that the zipped, encoded WordPerfect and Word for Windows files are 105K bytes and 67K bytes in length, respectively.

You'll need to decode and unzip the files before printing. Please contact w6cf@arrl.org if you wish this service.

We will need all those interested in retaining 5725 - 5875 MHz to be part of the Comment and Reply Comment effort.

## Coming Events

- Livermore Swap Meet - 1<sup>st</sup> Sunday of each month at Las Positas College in Livermore, CA, 7 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 - 2<sup>nd</sup> Saturday of each month from March to September at Foothill College, Los Altos CA. Talk in on 145.23- PL 100Hz.
- WRTC - 96 July 13-14, 1996; 40 - 10 meters CW and SSB.
- Pacific Division Convention - Pacificon '96 Oct. 18-20, 1996, at the Concord Hilton Hotel in Concord CA. Details can be found on the Pacific Division WWW Home Page at <http://www.pdarrl.org/> or by calling (510) 932-6125; e-mail [Pacificon@designlink.com](mailto:Pacificon@designlink.com) or WWW:<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/>

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[The following is from Fred W5YI sent via a nation-wide internet re-mailer for amateur radio coordinators. --Editor]

The following letter was received from the FCC today. I am releasing it to the amateur community since I believe it to be of general interest. It concerns the recent publicity about consideration being given by a WRC-97 Industry Advisory Committee to future use of the 144-148 and 420-450 MHz bands for commercial low-earth orbiting (LEO) satellites. I feel it would be advantageous to give this information the widest possible distribution, therefore you may redistribute it without limitation. 73/Fred/W5YI

Federal Communications Commission  
Washington, DC International Bureau  
Satellite and Radiocommunication Division  
Room 500, 2000 M Street, N.W. Washington, DC 20554

June 5, 1996

The W5YI Group, Inc.  
Fred Maia, W5YI - Editor  
P.O. Box 565101 Dallas, TX 75356

Dear mr. Maia:

In recent days, over 1,000 members of the Amateur Radio community have contacted me regarding the upcoming 1997 World Radiocommunication Conference in Geneva and expressed strong concern that U.S. proposals will impact adversely on spectrum allocated for Amateur bands. My purpose in writing to you is to respond to these concerns and to provide you with additional information regarding the WRC-97 preparatory process and its relation to existing services.

Many of the comments I received have focused on a list of "candidate" frequency bands discussed at the May 7 meeting of the WRC-97 preparatory Industry Advisory Working Committee Informal Working Group 2A (IWG-2A). The comments suggest that the Amateur Radio Service bands, specifically the 144-148 and 420-450 MHz bands, have been targeted as a source of spectrum for future Mobile Satellite Service (MSS) operations.

First, I want to assure the amateur radio community that no amateur bands have been selected for reallocation. The list of bands generated on May 7th represent only the IWG-2A's initial efforts to study spectrum use below 1 GHz in order to assess the feasibility of proposing world-wide MSS allocations in that range. Before recommending preliminary proposals for consideration by the Commission, IWG-2A participants must first conduct sharing studies among a range of services using frequencies below 1 GHz. These studies are necessary in order to determine the feasibility of sharing between services, and whether recommending any specific frequency band will be fruitful.

Second, the bands listed reflect only the initial component of a long-term effort to conduct sharing studies before submitting the Committee's proposals to the Commission for review. We intend to conduct sharing studies in bands currently occupied by government and non-government users. In any case, I want to emphasize that the survey on spectrum use is an international matter which involves all frequencies below 1 GHz.

Finally, the current WRC-97 preparatory process, as in years past, operates under a Congressional statute designed to encourage maximum participation by all interested parties. Therefore, all written and electronic comments received at the Commission to date by Amateur Radio operators have been included as part of the public record on WRC-97 proceedings. However, in the interest of efficiency, we have created a designated FCC office and e-mail site to channel future WRC-97 comments directly to the WRC-97 Committee Chairs. I have included our latest Public Notice outlining these changes and urge you to share it with your members.

I appreciate the many valuable contributions the amateur radio community has made to the progress of radio technology and to ensuring the safety of the American public. I look forward to working with you so that we can continue to advance

*the use of exciting telecommunications technology both in the U.S. and abroad.*

*Sincerely s/ Cecily C. Holiday  
Director, WRC-97 Preparatory Team*

----- Public Notice-----

Procedures for submitting comments to the WRC-97 advisory committee --FCC, June 6, 1996

On March 14, 1996, the Committee released Public Notice (No. 61997) (Streamline Notice), that announced its new streamlined World Radiocommunications Conference (WRC) preparatory process. Under this new process, formal Notice of Inquiry (NOI) proceedings are eliminated in favor of developing WRC proposals in the Commission's WRC-97 Advisory Committee. This removes the redundancy that was inherent in our previous "NOI-WRC Advisory Committee" process and enables the United States to respond more effectively to the rapidly evolving international environment and to the ITU's new two-year WRC schedule.

The Streamline Notice included general guidelines for submission of public comments to the Advisory Committee. The Notice states that procedures would be developed to ensure that members of the public continue to have full opportunity to participate in the development of WRC proposals under the new streamlined process, including those parties who do not attend meetings of the Advisory Committee and IWGs.

Since the release of the Streamlining Notice, we have gained experience with our new process. We now provide these procedures for submitting comments to the Advisory Committee.

\* Comments on Ongoing Advisory Committee Matters: Parties who wish to comment on the ongoing deliberations of the Advisory Committee and its IWGs may do so at any time.

\* Comments on Preliminary Proposals: As announced in the Streamlining Notice, preliminary WRC proposals developed by the Advisory Committee will be released by the Commission in periodic Public Notices. These Public Notices will allow an opportunity for public comment and will provide the appropriate procedures, such as filing deadlines, to be followed.

In either case, parties wishing their comments to be considered directly by the appropriate Advisory Committee group and to become part of the Advisory Committee's public record should submit their comments in writing to Office of the Secretary, Federal Communications Commission, Washington, DC 20554, or by e-mail at "wrc97@fcc.gov." Commenters are requested to file an original plus one copy.

The comment should reference the Advisory Committee public record file number "Reference No.

ISP-96-005" and the appropriate Advisory Committee Informal Working Group, if known, in which their submission should be considered. The FCC staff will ensure that comments filed are considered in the appropriate groups.

For the most expeditious and efficient consideration of their comments, parties should refrain from filing comments directly with the Chair of the WRC-97 Advisory committee, with the Chairs and Vice Chairs of the Informal Working Groups, with individual FCC staff members or private sector participants in the Advisory Committee process.

For additional information, contact Cecily C. Holiday, Federal officer of the WRC-97 Advisory Committee, or Damon C. Ladson, Alternate Federal Officer at (202) 418-0749, or consult the WRC-97 Homepage on the Inbternet (<http://www.fcc.gov/ib/wrc97/>)

-----End of Public Notice-----

73/Fred/W5YI

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*[Other misc. tid-bits on the subject from packet and internet notices. --Editor]*

List of "Candidate Bands" as tabled at the May 7 IWG-2A meeting by Mary Kay Williams of Final Analysis, Inc. (All Frequencies are in MHz):

138-144	144-148	216-218	380-400
401-406	406.1-410	410-420	420-450
450-460	460-470	790-862	890-902
1427-1432			

Here are some key addresses, including those of the mobile-satellite industry folks who seem to have started the ruckus:

Cecily C. Holiday, International Bureau, FCC, Washington, DC 20554, [choliday@fcc.gov](mailto:choliday@fcc.gov), fax 202-418-0748.

Warren G. Richards, Chair, IWG-2A, Department of State, C I P 2 5 2 9 , W a s h i n g t o n , D C 2 0 5 2 0 , [richardswg@ms6820wpoa.us-state.gov](mailto:richardswg@ms6820wpoa.us-state.gov), fax 202-647-7407.

Tracey Weisler, FCC Rep, IWG-2A, International Bureau, FCC, Washington, DC 20554, [tweisler@fcc.gov](mailto:tweisler@fcc.gov), fax 202-418-2824.

Mary Kay Williams, Final Analysis, Inc, 7500 Greenway Center, Suite 1240, Greenbelt, MD 20770, fax 301-474-3228.

For the latest WRC-97 preparations, visit the FCC's WRC-97 home page at: <http://www.fcc.gov/ib/wrc97/>.

-- David Sumner, K1ZZ

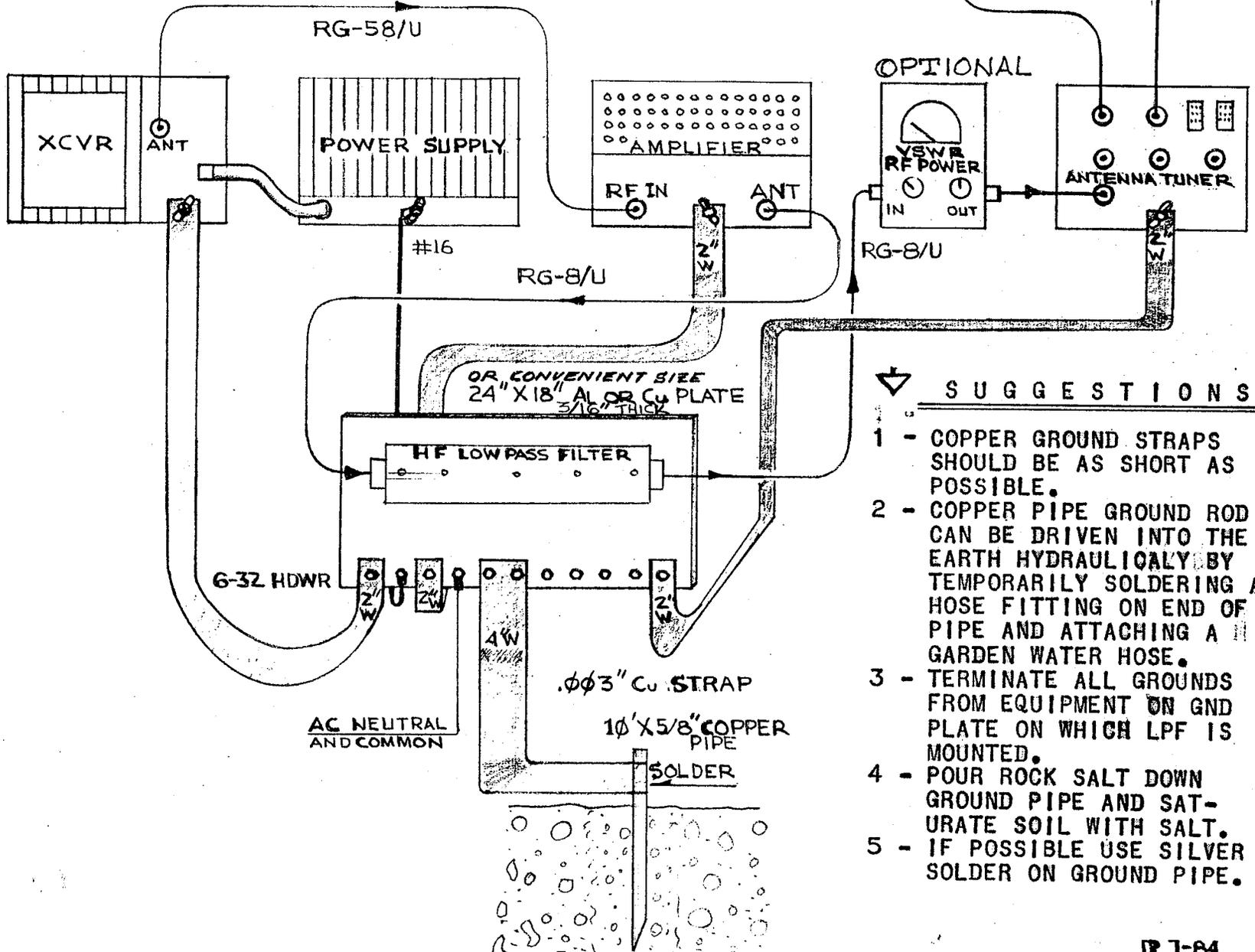
**\*\*\* WIRELESS ROOM EARTHING SCHEME OR HOW TO CREATE AN RF GROUND AT 30MC \*\*\* W6PHF \*\*\***

(7-84)

IF PROPERLY INSTALLED WILL REDUCE TVI AND RF FEEDBACK CREATED BY UNDESIRED CIRCULATING RF CURRENTS,  $\leq 2$  MHZ.

**W6PHF**

DAVID H. PALMER  
638 Benvenue Ave.  
Los Altos, Ca. 94024 USA



**SUGGESTIONS**

- 1 - COPPER GROUND STRAPS SHOULD BE AS SHORT AS POSSIBLE.
- 2 - COPPER PIPE GROUND ROD CAN BE DRIVEN INTO THE EARTH HYDRAULICALLY BY TEMPORARILY SOLDERING A HOSE FITTING ON END OF PIPE AND ATTACHING A GARDEN WATER HOSE.
- 3 - TERMINATE ALL GROUNDS FROM EQUIPMENT ON GND PLATE ON WHICH LPF IS MOUNTED.
- 4 - POUR ROCK SALT DOWN GROUND PIPE AND SATURATE SOIL WITH SALT.
- 5 - IF POSSIBLE USE SILVER SOLDER ON GROUND PIPE.

# 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:

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