

# SCCARA-GRAM



## Santa Clara County Amateur Radio Association

Volume 17, Number 3

March 2001



## Remote Base

by Brad Wyatt, K6WR

### Amateur Radio with a 21st Century Twist--How to operate without a rig or antennas

#### Conceptual discussion

Imagine working HF, repeaters, or satellites, on Amateur Radio from your downtown apartment, your hotel room, your hospital room, your RV, your boat, your retirement community, your own room, or your radio club even though you have no antennas and no rig, but you do have a computer and access to the Internet. Consider the implications for hams who are blind or otherwise handicapped. Just perhaps this concept will help entice young people into and retain old timers actively involved in Amateur Radio.

The first phase of this concept has been implemented by Keith Lamonica, W7DXX, and Bob Arnold, N2JEU, in the current W7DXX Remote Base System.

The system itself is located at the home of Keith, W7DXX, in N. Easton, MA, some 20 miles south of Boston. The actual equipment is a Kachina 505DSP and a Ten Tec Pegasus for HF work. The antennas consist of a Cushcraft multiband beam, Cushcraft multiband verticals and a 75 meter dipole plus the necessary computer hardware.

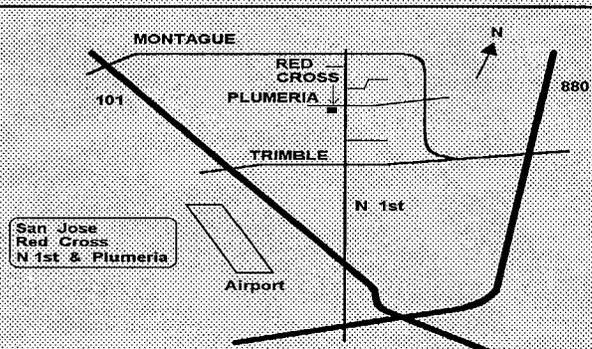
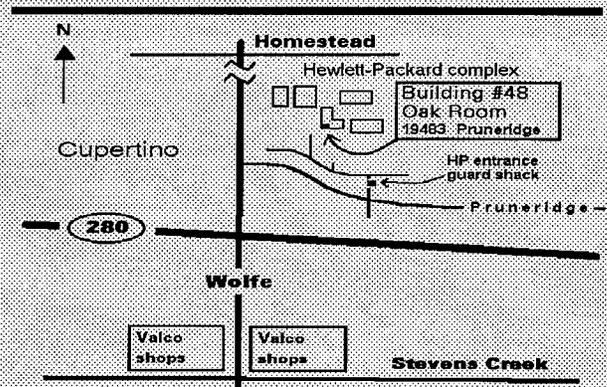
Bob Arnold, N2JEU, has developed the software interface which allows a licensed ham to operate the equipment remotely using only an IBM compatible PC, and a boom mike and headset combination. Of course, some other software and hardware are necessary at the operator end the PC must have a sound card, Windows 98, an appropriate browser, Microsoft Net Meeting 3.01 (for audio input and

## Calendar

- 3/10 Foothill Flea Market--WE HOST!
- 3/12 SCCARA General Meeting
- 3/19 SCCARA Board Meeting--(San Jose Red Cross, 7:30p, all are welcome)

#### General Meeting:

- Day: Monday, March 12, 2001
- Time: 7:30 PM
- Place: Hewlett-Packard's Oak Rm. Bld #48
- Featuring: Brad Wyatt K6WR, will talk about remote controlled HF station over the internet.



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. The deadline for articles is one week before the last Monday of the month.

SCCARA was formed in 1921 and became a non-profit corporation in 1947. SCCARA is an affiliate of the American Radio Relay League (ARRL). The club station is W6UW. Web page: <http://www.qsl.net/sccara>.

**OFFICERS - DIRECTORS - STAFF**

President	Barbara Britten, KD6QEI	293-3847
	e-mail: ka6ymd@juno.com	
Vice President	- - -	
Secretary	- - -	
Treasurer	Lloyd DeVaughns, KD6FJI	225-6769
	e-mail: ldevaughns@aol.com	
Station Trustee	Stan Getsla, WA6VJY	275-0735
	e-mail: wa6vjy@juno.com	
Director	Clark Murphy, KE6KXO	262-9334
	e-mail: murphycr@jps.net	
Director	Don Apte, KK6MX	629-0725
	e-mail: kk6mx@aol.com	
Director	Don Village, K6PBQ	263-2789
Director	Lou Steirer, WA6QYS	241-7999
	e-mail: wa6qys@aol.com	
Director	Wally Britten, KA6YMD	293-3847
	e-mail: ka6ymd@juno.com	
Editor	Gary Mitchell, WB6YRU	265-2336
	e-mail: wb6yru@aenet.net	

**COMMITTEES**

Repeater	Wally Britten, KA6YMD	293-3847
	e-mail: ka6ymd@juno.com	
N0ARY BBS	Gary Mitchell, WB6YRU	265-2336
	e-mail: wb6yru@aenet.net	

**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 auto-dial and auto-patch is available. The two meter repeater is located at the Santa Teresa Hospital, south-west San Jose (near IBM). The 70 cm repeater and N0ARY BBS is located at the Regional Medical Center (formerly Alexian), east of downtown San Jose (north of 280 and 101).

**SCCARA NETS**

On our two meter repeater: Mondays at 7:30 PM, (not the second monday--our meeting night). Coordinator: Don K6PBQ. On ten meters, 28.385 MHz USB, Thursdays at 8:00 PM. Net control: Wally KA6YMD. Visitors welcome.

**N0ARY PACKET BBS**

SCCARA hosts the packet BBS N0ARY (San Jose). User ports: 144.93 (1200 baud), 433.37 (9600 baud), telephone 408 259-8497, internet (by registration only, get info by sending e-mail to: [info@n0ary.org](mailto:info@n0ary.org)). Sysop: Gary WB6YRU

**TELEPHONE NUMBERS**

SCCARA contact Clark KE6KXO:	408 262-9334
ARRL/VEC Silicon Valley VE group:	408 243-8349
me-ae6z@worldnet.att.net	

output and VOX control of the transmitter).

As currently implemented, the system can be operated on 75 through 10 meters including the new bands, SSB only, controlled by VOX. The current implementation is limited by various Internet and other technical restrictions dealing with information packets and their speed of transmission over the Internet. The current Kachina implementation is transceive only, but the Pegasus implementation can operate split frequency.

A licensed ham must be registered with the system, receive appropriate passwords and instructions on how to use the system. Further details are available on the web at <http://www.lamonica.com>.

Keith, W7DXX, is the owner and control operator of the station at his home. Keith is the one who authorizes use of the system through his control operator function. Once you are a registered user you have direct access to the system through the password system, Keith does not have to be present. Obviously, only one operator can control the transmit function of the station at a time, this aspect is controlled by Net Meeting.

Bob, N2JEU, is the computer software interface designer and implementer. He started in this activity providing an Internet controlled remote receiver facility at his home. This receive only project is still operational. You can learn more about the receive project as well as the transmit interface software by contacting Bob at <http://n2jeu@ralabs.com>. Bob's contribution is truly unique as only a computer, mike and headset are required to operate the W7DXX Remote Base System.

After you think about what has been accomplished to date by Keith and Bob, you marvel at what they have done. It is exciting to how this activity might be extended in different directions. For example, while the current implementation is for HF SSB only, there is the obvious desire to implement CW, PSK31 in HF, operate other bands through various converters to use repeaters, and satellites. All this work is yet to be done by someone. Of course, spreading this concept horizontally by developing more such stations is needed to service the many operators desiring to use such a system.

The current implementation permits operators from all over the world to use the system. This world wide availability raises some interesting points about reciprocal licensing and operating. Fortunately, the CEPT and IARP reciprocal licensing programs have already been implemented in throughout many parts of the world. The implementation of the current password system allows the control operator to permit operation by any licensed ham who meets these requirements. Yes, FCC has been contacted and the matter already discussed and agreements reached. There are currently operators with transmit permission on all continents

with the exception of Antarctica, but no one has yet applied from there.

**K6WR actual operating experiences, September 2000--February 2001**

Where does Brad Wyatt, K6WR, fit into this picture? He is one of the "early adopters" as an active operator for the last several months of year 2000. He has operated the remote base station from his home QTH in Los Gatos, CA, portable from Atlanta, GA, and from Charleston, SC, in recent months where his travels have taken him.

I have operated the W7DXX remote base system from my home in Los Gatos, CA; Atlanta GA, and Charleston SC on several bands over the last several months. At home I live in a condo with all the problems of CC&Rs dealing with antennas and with very close neighbors. I do have a 100 watt transceiver, mostly used on 75 SSB, with indoor antennas in the attic. This arrangement is quite a comedown from my former station with a beam, tower, and KW and the ability to operate all bands and modes. At one time, I was at the top of the ARRL DXCC Honor Roll with all countries worked and confirmed complete with the #1 plaque from ARRL on my wall.

Consider where this concept and its further implementation might extend with the advent of wireless Internet connections and palm size computer systems. It is readily possible to foresee the operation of a remote base station from anywhere in the world--but we all have work to do. Please join Keith and Bob to implement and expand on this implementation!

(continued p. 4)

## Projects & Kits

U1 LM386 Audio Amp  
C1 0.1 uf  
C2 10uF (See note 1)  
C3 100uf (Bypass)  
C4 0.05u<sup>2</sup> (See note 2)  
C5 250uf  
R1 10-5k Pot  
R2 0-5k (See note 1)  
R3 10 Ohm (See note 2)

Notes:

1. Gain can be adjusted from 20 to 200 using a pot at R2. If R2 is a short, the gain is approximately 200. With R2 at about 5K the gain should be about 20.
2. R3 and C4 can be omitted under some Lo-Z load conditions.
3. A small cap may be used between pins 2 and 3 of the 386 if you have problems with RF oscillations
4. None of the values are critical and almost any type of construction can be used. I have had good success using PC boards, wire-wrap and dead-bug (Ugly) construction techniques.
5. This circuit is capable of delivering up to 0.5 watts with a 12V supply when driving a 16 ohm load.

**Simple 1/4-3/4 Watt Audio Amplifier** Rik Schneider - AD6QV

At home I use a desktop computer with Windows98 and other features including Microsoft NetMeeting. On the road I use a laptop with the same software. It is quite a thrill again to be active on all bands and especially to have the opportunity to operate and explain this system on the air. Sometimes it takes a bit of doing to explain to the operators at the other end that I am using a computer at my home or on the road to control the remote base station in the Boston area. When working others it is also a bit startling for them to hear a K6 in their local area on 75 meters or a K6 when only the east coast of the US is being heard in Europe on 10, 12, 15, 17 or 20 meters!

One current operational aspect you need to understand is that there is a time lag for the audio over the Internet which means that the operator must wait for the vox to drop and the Internet time lag to expire. It is a bit disconcerting at first, but you get used to it. For this reason, the present implementation does not allow very rapid transition between transmit and receive so rapid breakin is not currently possible.

In December 2000 and January 2001, I lived temporarily in Atlanta for medical treatment. I took my laptop with me and have been able to continue using the W7DXX remote base system from the rented apartment. I spent the Christmas holiday in Charleston SC with friends and took the laptop with me to operate the station from there also.

I have been personally able to experience some of the actual functions described in the conceptual discussion I outlined earlier. As a result, I have been revitalized in Amateur Radio with new experiences!

Thanks, Keith and Bob

---

## **NOARY BBS**

If anyone has had trouble getting into N0ARY BBS lately via the 9600 baud UHF port (433.37), or has experienced a slowdown in getting messages forwarded, there is reason. K6BEN (San Jose) recently put an ATV repeater on 433.17. This is causing interference for not just N0ARY but all packet in the south bay area and 70 cm satellite operations too (435-438). N0ARY's two meter port is unaffected, but the backbone nodes serving the South Bay and Monterey bay areas are having a very hard time hearing the others.

K6BEN appears to be on the air almost all the time, which makes the problem even worse. Since this is a repeater with a wide bandwidth ATV signal covering the segments forbidden to repeaters, it's also violating 97.205(b).

K6BEN has been notified of this, but has not stopped. The NCPA, NARCC, and the ARRL SCV Section Manager are getting involved. NARCC reports that K6BEN

is *not* a coordinated repeater.

We're continuing to work on the problem. In the mean time, keep trying to use the BBS. Hopefully this problem will be cleared up soon.

Gary WB6YRU

---

## **Meeting Minutes**

### **General Meeting, Feb. 12, 2001**



Called to order at 7:46 PM by Wally KA6YMD.

Introductions

No speaker, went around the room each telling how they got started in amateur radio.

KA6YMD announced Bill Orr W6SAI died 1/24/2001. Also, Bill O'keef WE6V has cancer.

Stan Getsla WA6VJY offered to run for Station Trustee. Voted in.

KK6MX: motion to appoint a board member to be authorized to sign checks if the president isn't here. (Currently, it takes two people to sign a check: the treasurer and president.) Seconded and passed unanimously. Don K6PBQ volunteered to do it.

Newsletter, WB6YRU: The SCCARA-GRAM has one submission so far for the new Projects column from Rik AD6QV.

Repeater, KA6YMD: Repeater still needs to be bolted down at the new site. There was a fire in the building, but it didn't affect the area where the repeater is. Still no progress on the club station at Regional Medical Center.

BBS, WB6YRU: The 70 cm user port and backbone are suffering from interference from an ATV station, we're working on it.

Foothill Flea Market is March 10--we host. Lou WA6QYS agreed to chair the effort.

K6PBQ: The M.S. society. will have a walk-a-thon April 21. More HAM volunteers are needed for communications.

9:43 PM Adjourned.

Recording for the secretary: Gary Mitchell, WB6YRU



{Nothing received by the deadline. -Ed.}

---

## **CQ SKN DE K6PBQ**

### **Straight Key Night**

On January 1 (4 PM New Years eve to 4 PM New Years day) the ARRL sponsors the activity of Straight Key Night. A good way to start the year off.

This is not a contest, but an activity to get back to basic hand keys. A lot of hams also get out their old tube rigs of 40 years ago.

I've been operating this activity for several years and find it a lot of fun. I managed to make between 20 to 23 contacts that day. These are long rag-chew QSO's compared to contest contacts.

After a day with a hand key, my wrist gets a little bit tired compared to operating my bug.

After it's over, I send my log sheet into the ARRL and everyone gets a participation certificate.

So, let's dust off our hand keys for next year.

73, Don Village, K6PBQ

---

## **News from the ARRL**

From the *ARRL Letter*, February 23, 2001

### **LF-TO-LF TRANSATLANTIC AMATEUR CONTACT**

Amateur Radio history was made this month when amateurs in Canada and the UK completed what appears to be the first two-way transatlantic Amateur Radio exchange on 136 kHz. Larry Kayser, VA3LK, and Lawrence "Laurie" Mayhead, G3AQC, managed the LF feat using extremely slow CW that featured 90-second-long dits and 180-second-long dahs. The two-way contact took two weeks to complete.

"We are the first to do a two-way QSO on LF across the North Atlantic as far as I am concerned," Kayser said. "We are the ones who put the stakes in the ground; others will build on what we have done."

The VA3LK-G3AQC contact began February 5 and was completed February 19 with the reception and confirmation of VA3LK's report by G3AQC. Kayser said the participants agreed in advance to a "firewall" between them for the

duration of the contact and that all QSO information was exchanged over the LF radio link.

Mayhead said it was clear from the outset that, because of the relatively short band openings, he and Kayser would have to spread the contact out over several days. "It was not easy," he said. "I stayed up late most nights--3 AM on one occasion--changed blown fuses in my transmitter six times, and reconfigured my receiver to include a narrow filter because of interference that was desensitizing it." Kayser says he once had to climb the tower supporting his wire antenna in total darkness.

The UK has authorized amateur operation on 136 kHz, with special authorization and strict limits on radiated power. While Canada has not yet authorized general Amateur Radio operation on 136 kHz, Kayser and a few other Canadian amateurs have received special authorization to experiment there.

Reception of weak LF signals typically is done using spectrographic software like ARGO or Spectran. Signals are transmitted using dual-frequency CW--or DFCW--or very slow-speed CW, also known as "QRSS." Using their particular brand of QRSS, Kayser calculated that it took nearly 70 minutes for him to send his call sign. "Certainly the information rate will improve," he said. "We did the best we could with what we had to work with over the last two weeks."

G3AQC and VA3LK were using a combination of commercial and surplus equipment at their respective stations. G3AQC estimated his effective radiated power at 350 mW, while VA3LK said he might have been at the 5 W ERP level.

In October 1998, the ARRL petitioned the FCC to create two amateur LF allocations at 135.7-137.8 kHz and 160-190 kHz. The FCC has not yet acted on the request.

### **WWV SURVEY PLANNED**

The National Institute of Standards and Technology plans to survey users of WWV and WWVH later this year. The time and frequency-standard stations have been airing occasional announcements about the upcoming poll in order to start building a mailing list of survey recipients. The announcements state that NIST "is seeking information on how listeners use the broadcast services offered on the WWV broadcast," but the survey will not begin for at least several weeks.

WWV Station Manager John Lowe says the announcements are being broadcast now as a heads up and to encourage early mailing list sign-ups. The survey itself will not be released until approved by the Office of Management and Budget, Lowe said, and he doesn't expect that to happen

until May, although it could be sooner. The survey period likely would extend through the summer, he said.

According to Lowe, the last WWV-WWVH user survey was done in 1985. "We just don't know who our user base is anymore," he said. Lowe confirmed that the data collected ultimately could be used to determine whether WWV and WWVH remain on the air--especially given the popularity of NIST's other outlets, including its Web-based time server that gets in excess of 3 million hits a day.

"If we get only two people who say they're using WWV, then we've got a problem," he said. Lowe added that he does not think WWV and WWVH will be shut down, and he vowed to "fight for the radio stations," if it came down to that. "But the ultimate decision is not in my hands," he said. "We have to look at our budget and our users."

Lowe strongly encouraged WWV users to get on the mailing list and to send in a survey when the time comes. He suggested, however, that more weight will be given to survey responses from corporate and institutional users of the radio service as opposed to individual users.

To be added to the NIST WWV-WWVH survey mailing list, send your name and postal address to the NIST Radio Station WWV, 2000 E County Road 58, Ft Collins, CO 80524, or e-mail the information to [nist.radio@boulder.nist.gov](mailto:nist.radio@boulder.nist.gov). Lowe urged WWV-WWVH users to hold their fire until the survey begins.

WWV in Ft Collins, Colorado, and WWVH on Kauai, Hawaii, broadcast continuous time and frequency information to millions of listeners worldwide. For more information, visit the NIST Web site, <http://www.nist.gov>.

---

## Packet Pieces

### Downloaded from the packet network:

=====

Date: 16 Mar 99 21:43  
From: KE6SLS@KE6SLS  
To: HUMOR@USA  
Subject: MENS RIGHTS :))

-----  
I just saw this and thought it was really funny:

#### RULES THAT GUYS WISH GIRLS KNEW

2. If you think you're fat, you probably are. Don't ask us.
3. Learn to work the toilet seat: if it's up put it down.
4. Don't cut your hair. Ever.

5. Birthdays, Valentines, and Anniversaries are not quests to see if he can find the perfect present, again!
6. If you ask a question you don't want an answer to, expect an answer you don't want to hear.
7. Sometimes, he's not thinking about you. Live with it.
8. Don't ask him what he's thinking about unless you are prepared to discuss such topics as navel lint, the shotgun formation and monster trucks.
9. Get rid of your cat. And no, it's not different, it's just like every other cat.
10. Dogs are better than ANY cats. Period.
11. Sunday = Sports. It's like the full moon or the changing of the tides. Let it be.
12. Shopping is not sport.
13. Anything you wear is fine. Really.
14. You have enough clothes.
15. You have too many shoes.
16. Crying is blackmail. Use it if you must, but don't expect us to like it.
17. Your brother is an idiot, your ex-boyfriend is an idiot and your Dad probably is too.
18. Ask for what you want. Subtle hints don't work.
19. No, he doesn't know what day it is. He never will. Mark anniversaries on a calendar.
20. Yes, peeing standing up is more difficult than peeing from point blank range. We're bound to miss sometimes.
21. Most guys own two to three pairs of shoes. What makes you think we'd be any good at choosing which pair out of thirty would look good with your dress?
22. Yes and No are perfectly acceptable answers.
23. A headache that lasts for 17 months is a problem. See a doctor.
24. Your Mom doesn't have to be our best friend.
25. Foreign films are best left to foreigners.
26. Check your oil.
27. Don't give us 50 rules when 25 will do.
28. Don't fake it. We'd rather be ineffective than deceived.
29. It is neither in your best interest nor ours to take the quiz together.
30. Anything we said 6 or 8 months ago is inadmissible in an argument. All comments become null and void after 7 days.
31. If you don't dress like the Victoria's Secret girls, don't expect us to act like soap opera guys.
32. If something we said can be interpreted two ways, and one of the ways makes you sad and angry, we meant the other one.
33. Let us ogle. If we don't look at other women, how can we know how pretty you are?
34. You can either ask us to do something OR tell us how you want it done - not both.
35. Whenever possible, please say whatever you have to say during commercials.
36. Christopher Columbus didn't need directions, and neither do we.
37. Women wearing Wonderbras and low-cut blouses lose their right to complain about having their boobs

stared at.

38. Consider Golf a mini-vacation from you. We need it, just like you do.

39. Telling us that the models in the men's magazines are airbrushed makes you look jealous and petty, and it's certainly not going to deter us from reading the magazines.

40. The relationship is never going to be like it was the first two months we were going out.

41. Anyone can buy condoms.

#### AND FINALLY, THE NUMBER ONE RULE:

1. Don't rub the lamp if you don't want the genie to come out.

Jaye:-} M.J. Inabnit, KE6SLS e-mail ke6sls@jps.net

---

## 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, K6PBQ, WB6YRU  
Lightning protection, grounding: WB6YRU  
Station set-up, equipment: K6PBQ  
TVI/RFI: WB6YRU  
Homebrew projects, construction: KD6FJI, WB6YRU  
Computers: KB6NP; IBM PC: WB6YRU  
Packet Network (BBS, forwarding): WB6YRU  
Code operating and installations: WB6EMR, K6PBQ  
DX (long distance/propagation): WB6EMR  
Emergency operating/preparedness: WA6QYS  
FM (VHF/UHF, repeaters): WA6VJY  
HF operating techniques (SSB, CW): WB6EMR, K6PBQ  
NTS & traffic handling:  
Classes/license upgrading: W6ACW  
Legal/FCC rules: WB6YRU  
SCCARA (club inner workings):  
KO6HH, K6PBQ, WA6VJY, WB6YRU, WA6QYS  
Children's Discovery Museum, volunteer operator: K6PBQ

W6ACW, Ed Hajny, (408) 739-6105

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

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

KO6HH, 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

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

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@aenet.net

---

## Newsletter Notes

This issue contains the first submission to the new *Projects & Kits* column. Thanks Rik AD6QV. Let this be the first of many such articles. Remember, they can be anything from designs to just something you worked on and would like to pass on your experience.

In the last issue, someone recognized the title of my opinion article "Where Have All the Members Gone?" as being similar to a song. Yes, that was intentional...the song is "Where Have All the Flowers Gone." It came out in the late 1960's in reference to those who died in war (specifically the Viet Nam war). SCCARA hasn't lost anyone to war, but many of our long-time members have died over the past several years. Unfortunately, very few new people have joined to take their place. Somehow the title just felt appropriate.

On another topic, this issue marks the start of my 9<sup>th</sup> year as the *SCCARA-GRAM* editor. It's hard to believe that so much time has passed.

Since the start of the last decade, the production of the *SCCARA-GRAM* became much more automated--a necessity since the number of people working on it has dropped to pretty much just me. During that time we've also seen a large drop in membership, making it more economical to switch from bulk mail to standard first class postage. In addition to the reduced count, this makes the final preparation a little easier.

As I write this, the roster database shows 46 dues members, 26 on the mailing list (mostly other clubs), and 18 complimentary issues sent to new amateurs. I hope my stewardship of the *SCCARA-GRAM* helped to slow down the membership decline instead of the opposite.

I'd like to thank El Wirt K6ZYY for helping this past year with the mailing aspect (stapling, labeling) of the production.

73, Gary WB6YRU, editor

---

# S.C.C.A.R.A. Membership Form for 2001

(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: \_\_\_\_\_ - \_\_\_\_\_ Licence Expiration  
Date (mo/yr): \_\_\_\_\_

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

E-mail: \_\_\_\_\_ Packet: \_\_\_\_\_

For family memberships (at the same address), please fill out a separate form for each. Indicate the "primary member" (for mailing purposes) name and call:

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.

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/Auto-Patch codes (no charge, circle): ..... Yes  
WE MUST BE ABLE TO VERIFY YOUR AMATEUR RADIO LICENSE  
BEFORE ANY REPEATER CODES WILL BE SENT TOTAL: \_\_\_\_\_

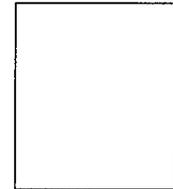
Give this completed form (or copy) with payment to the Secretary or Treasurer at any meeting or mail to the return address below:

===== PLEASE DO NOT TEAR OR CUT FORM =====

**SANTA CLARA COUNTY  
AMATEUR RADIO ASSOCIATION**

PO BOX 6  
San Jose CA 95103-0006

Affiliate of the American Radio Relay League



**ADDRESS SERVICE REQUESTED**

**FIRST CLASS**