

# SCCARA-GRAM



## Santa Clara County Amateur Radio Association

Volume 26, Number 2

February 2010



## February Meeting

The February 8 meeting of SCCARA will be held at the Hometown Buffet, 2670 El Camino Real, Santa Clara. This is in the Moonlight Shopping Center at Kiely Boulevard. Dinner time will start at 6:30 PM and will be held in the private room at the back corner of the restaurant. Bring your wife, husband or significant other to join us at dinner and meet the other club members. Our dinner meeting is traditionally held in March but a speaker had already been scheduled for the March meeting. The BOD voted to move the dinner meeting to February. Hope to see you there!

Gwen KF6OTD

## President's Prose

Well, it's time to start writing again. Our editor (Gary, WB6YRU) needs the inputs for the *SCCARA-GRAM* by the last Monday of the month and since he always manages to get the publication out on time, we contributors need to hold up our end as well. This version of Micro\$oft XP and Word is driving me nuts because I can be typing along and suddenly the text starts appearing somewhere else in the document. I understand that I'm not alone. Will wonders never cease? Will it go away with Windows 7?

Somewhere in this edition you should see an announcement that our next regular meeting will be a dinner meeting at the Home Town Buffet. No program, just some introductions and socializing. Bring the family.

I attended the SVECS quarterly breakfast on January 23. Pat Moore, KG6RLR, made an excellent presentation on what happened ham radio-wise when the fiber optic cables were cut in April, 2009. He reported the usual glitches and things to do better next time, as well as things that went well. The bottom line was that ham radio responded and provided radio communication when all else failed. I know that EMCOMM isn't for everyone, but we all need to keep in mind that the FCC doesn't provide our frequency allocations so that we can have contests, get WAS or WAC or DXCC or buy a new radio or go digital or put up another antenna. They tolerate us because some of our number are willing and able to provide a useful public service.

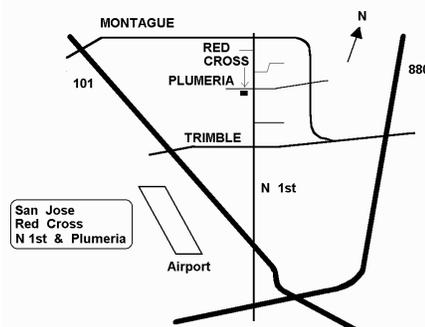
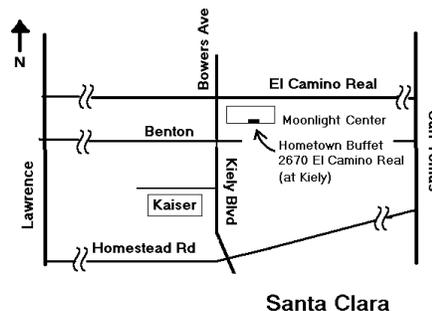
Your Board of Directors met on January 18. Two of the actions that we need to complete are updating the "Elmers" list in the *SCCARA-GRAM*, and updating the property list. If you feel qualified and willing to Elmer in some area, let one of the Board members know. The Bylaws are also being reviewed and will

## Calendar

- 2/8 SCCARA General Meeting--Dinner meeting!
- 2/15 SCCARA Board Meeting--(San Jose Red Cross, 7:30p, all are welcome)
- 3/8 SCCARA General Meeting

## General Meeting

Day: Monday, Feb. 8, 2010  
Time: 6:30 PM  
Place: HomeTown Buffett  
Featuring: Dinner meeting



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 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**

(all officers are also directors)

President	Don Steinbach, AE6PM	867-3912
	e-mail: <a href="mailto:ae6pm@arrl.net">ae6pm@arrl.net</a>	
Vice President	Fred Townsend, AE6QL	263-8768
	e-mail: <a href="mailto:fred@detolight.net">fred@detolight.net</a>	
Past President	---	
Secretary	Jeannie Felix, KG6YOR	293-3847
	e-mail: <a href="mailto:jrfv7600@yahoo.com">jrfv7600@yahoo.com</a>	
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	e-mail: <a href="mailto:ac6yy@arrl.net">ac6yy@arrl.net</a>	
Station Trustee	Don Village, K6PBQ	263-2789
	e-mail: <a href="mailto:donvillage7@yahoo.com">donvillage7@yahoo.com</a>	
Director	John Glass	
Director	Lou Steirer, WA6QYS	241-7999
	e-mail: <a href="mailto:wa6qys@aol.com">wa6qys@aol.com</a>	
Director	Wally Britten, KA6YMD	293-3847
	e-mail: <a href="mailto:ka6ymd@arrl.net">ka6ymd@arrl.net</a>	
Director	John Parks, W6JPP	309-8709
	e-mail: <a href="mailto:w6jpp@arrl.net">w6jpp@arrl.net</a>	
Director	Gary Mitchell, WB6YRU	269-2924
	e-mail: <a href="mailto:wb6yru@ix.netcom.com">wb6yru@ix.netcom.com</a>	

**COMMITTEES**

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	e-mail: <a href="mailto:ka6ymd@arrl.net">ka6ymd@arrl.net</a>	
N0ARY BBS	Gary Mitchell, WB6YRU	269-2924
	e-mail: <a href="mailto:wb6yru@ix.netcom.com">wb6yru@ix.netcom.com</a>	

**SCCARA REPEATERS**

SCCARA owns and operates two repeaters under the call W6UU:

2 meter: 146.985 - PL 114.8  
70 cm: 442.425 + PL 107.2

Phone auto-dial and auto-patch is available. The two meter repeater is located at Eagle Rock near Alum Rock Park in the foothills of east San Jose. The 70 cm repeater 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 Village, K6PBQ. On ten meters, 28.385 MHz USB, Thursdays at 8:00 PM. Net control: Wally Britten, KA6YMD. Visitors welcome.

**N0ARY PACKET BBS**

SCCARA hosts the packet BBS N0ARY (Mt Umunhum). User ports: 144.93 (1200 baud), 433.37 (9600 baud), telnet sun.n0ary.org (login "bbs"). Sysop: Gary Mitchell, WB6YRU (packet info: [www.n0ary.org/ncpa](http://www.n0ary.org/ncpa))

**TELEPHONE NUMBERS**

SCCARA contact Clark KE6KXO:	408 262-9334
ARRL/VEC Silicon Valley VE group, Morris Jones, AD6ZH:	408 507-4698

likely be revised again.

It appears that the 2012 ARRL National Convention will be held at Pacificon in Santa Clara on October 19-21 (2012). This is according to the 2010 Annual Board Meeting notes on the ARRL website. I assume that the Mount Diablo Amateur Radio Club will be the sponsor, but I don't see anything on their website yet.

That's it for now. Don't forget the 2-meter FM net on Monday nights, and the 10-meter SSB net (28.385 MHz USB) on Thursday nights. Anyone who has a license can participate in these nets.

73,  
Don - AE6PM



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## ARRL News

From *The ARRL Letter*, January 14, 2010

### IN THE WORKSHOP: DEADLINE FOR SECOND HOMEBREW CHALLENGE APPROACHING

All entries for the Second ARRL Homebrew Challenge must be received in the ARRL Lab no later than close of business on February 28, 2010. Since that is a Sunday, the judges will accept entries arriving with the first mail delivery on Monday, March 1, 2010. In 2006, the ARRL sponsored a successful competition for a 5 W, 40 meter voice/CW transceiver that could be built for \$50. This second Homebrew Challenge offers an opportunity to boost that power to 50 W with an amplifier built from no more than \$125 of parts. Rules, subsequent requests for clarification and responses, as well as a list of prizes, can be found on the ARRL Homebrew Challenge Web page <[www.arrl.org/qst/hbc/](http://www.arrl.org/qst/hbc/)>.

### FOCUS ON THE FCC: FCC SEEKS PUBLIC'S HELP IN REFORM EFFORT

According to its chairman, the Federal Communications Commission wants to change the way it is seen by the American public. In order to further that effort, on January 7, FCC Chairman Julius Genachowski announced that the Commission had launched a new Web site -- [Reboot.FCC.gov](http://Reboot.FCC.gov) -- saying it is the first-ever Web site dedicated to soliciting public input on ways to improve citizen interaction with the FCC, "creating a forum where the public can participate in improving the FCC." Read more here <[www.arrl.org/news/stories/2010/01/08/11281/?c=1](http://www.arrl.org/news/stories/2010/01/08/11281/?c=1)>.

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## The Care and Feeding of Lead-Acid Batteries

Don Steinbach, AE6PM

Most of our portable and/or emergency radio equipment uses one of four different rechargeable battery types:

- 1 Lead acid
- 2 Nickel cadmium (NiCd)
- 3 Nickel metal hydride (NiMH)
- 4 Lithium ion (Li-ion)

Equipment that uses self-contained batteries usually use NiCd, NiMH or Li-ion batteries and include battery chargers for them.

We frequently use lead acid batteries to power equipment in the field. They are relatively inexpensive, can provide a lot of power, and tolerate a fair amount of abuse. Unlike the other three types, they are seldom included in portable equipment and have no built-in or external charger. You are usually on your own to maintain lead acid batteries, with the exception of those in your UPS. Thus, this article.

Typical lead acid battery vendor specifications include:

- The nominal battery voltage (usually 6 or 12 volts).
- The capacity in ampere-hours (usually averaged over 20-hours).
- The float or maintenance charging voltage.
- The maximum cyclic charging voltage.
- The maximum charging current.

Sometimes the specifications are printed on the battery case. Otherwise, they can usually be found with an internet search.

Table 1 shows the actual specification values for seven batteries that I have on hand.

Lead-acid batteries are made up of 2-volt cells (driven by the chemistry). All of the batteries except #4 are nominally 12 volts and consist of 6 cells. Battery #4 is 6 volts and contains 3 cells.

All of the batteries except #7 have their electrolyte either suspended in a glass mat, or in the form of a gel, making them spill-proof and safe to use or store in any position. Battery #7 is a flooded battery (like a typical car battery) where the sulphuric acid electrolyte is liquid and can spill if the battery is tipped or inverted. The CCA and MCA values for battery #7 indicate how much current the battery can provide for a brief period of time, such as cranking a starter motor, and are meaningless in our applications.

Table 1  
Specifications for seven typical lead-acid batteries.

Ref #	Description	Amp-Hr Capacity	Float Charging Voltage	Cyclic Charging Voltage	Maximum Charging Current
1	Smart 12-375 Absorbed Glass Matt (AGM) Technology	110 amp-hr @ 20 hr rate	13.5 – 13.8		C/4 amps
2	EnerSys NPX-150R Sealed Rechargeable Lead-Acid Battery	40 amp-hr @ 20 hr rate to 1.75 volts per cell	13.5 – 13.8	14.4 – 15.0	10.0 amps
3	DiaMec DM12-4.2 Sealed Rechargeable Battery	4.2 amp-hr @ 20 hr rate	13.3 – 13.8	14.4 – 15.0	1.26 amps
4	Panasonic LC-R0612P Rechargeable Sealed Lead-Acid Battery	12 amp-hr @ 20 hr rate	6.8 – 6.9	7.25 – 7.45	4.8 amps
5	Power-Sonic PS-1270F1 Rechargeable Sealed Lead Acid Battery	7.0 amp-hr @ 20 hr rate	13.5 – 13.8	14.4 – 14.7	2.1 amps
6	YUASA NP-12 Valve Regulated Lead-Acid Type Rechargeable Battery	2 amp-hr @ 20 hr rate to 1.75 volts per cell	2.275 volts per cell	15.8	C/4
7	Kirkland Group 24 DC Deep Cycle Marine	550 CCA, 700 MCA, 85 amp-hour			

### Discharging

Note that none of the batteries (except #7) specify how much current they can provide. Rather, the current is derived from the battery capacity which is the product of how many amperes it can supply for how many hours (amp-hrs), usually over a 20-hour period. The battery will not deliver that many amp-hrs if it's discharged in fewer hours. Conversely, it will deliver more amp-hrs if discharged at a lower rate. The battery may be degraded if discharged too deeply (i.e., discharged until the terminal voltage is less than 1.75 volts per cell, typically). Be advised that a "deep cycle" battery such as #7 is not designed to be discharged "more deeply", but is designed to withstand many cycles of being discharged "deeply" (to 1.75 volts per cell, for example). The ordinary automotive battery is designed to provide a lot of current for a short time to start the car, be barely discharged, and then be charged for a long time. It's not designed to be deeply discharged. The deep-cycle battery, on the other hand, is designed to provide a lesser amount of current for a longer period of time, and be deeply discharged and recharged many times. Typical deep-cycle battery applications include such things as powering golf carts.

### Charging

Batteries need to be recharged to reverse the chemical reaction that took place while they were being used (discharged). Electrochemical efficiency being what it is, more energy must be pumped back into the battery than was taken out. One could monitor the energy extracted from the battery and force perhaps 125% of that back into the battery, but we aren't NASA so we'll do it another way.

Here are the minimum recommended steps to charge your 12-volt lead-acid battery:

- Begin by charging the battery from a 14.4 – 15.0 volt (the "Cyclic Charging Voltage") source. Limit the current to the battery specification value for the "Maximum Charging Current" or 25% of the amp-hr rating, whichever is less. Continue charging until the battery terminal voltage reaches 14.0 volts while charging. If the battery terminal voltage reaches 14.0 volts immediately, proceed directly to the next step.
- Set the charger voltage to 14.9 volts (2.48 volts per cell). Continue charging until the current decreases to 0.01C (100 mA for a 10 amp-hr battery).
- Set the charger voltage to 13.5 – 13.8 volts (the "Float Charging Voltage"). The battery can remain connected to the

charger indefinitely, or the charger can be disconnected. There are smart-chargers that recharge the battery following a predefined voltage/current/time profile. Some are 'smarter' than others, and some are simply sales hype. The three steps described above constitute the Bulk, Absorption and Float modes of a typical smart-charger. Some chargers include a fourth mode, Equalization, where the charger voltage is raised to 2.6 volts per cell and held there for one-half the time it took to complete step 1. I've used the three-step method many times and my batteries seem to hold up well. I don't usually leave the batteries connected to the charger (float charging) but I check them every 3 to 6-months and run them through the three-step charging process. I usually leave them at step 3 for 24 hours before returning them to storage.



Lead-acid batteries are frequently used in the amateur radio service. A fully charged 12 volt battery like these will have an open circuit voltage of 12.6 to 12.9 Vdc, depending on the type. The batteries should not be discharged to less than 10.5 VDC.

Summary

Here are some general recommendations for lead acid battery care:

- a) Do not discharge the battery to less than 1.75 volts/cell (5.25 volts for a 6-volt battery, 10.5 volts for a 12-volt battery).
- b) Observe the "standby" or "float" voltage maximum values for long-term steady-state maintenance charging. When held at this voltage, the battery will seek its own current level and maintain itself in a fully charged condition, per Panasonic/Power-Sonic.
- c) Never exceed the maximum charging current. Temporarily reduce the "cycle use" voltage or otherwise limit the current if required. In the absence of any other information, limit the charging current to 25% of the battery amp-hr capacity (e.g., 2.5 amps for a 10 amp-hr battery).

## SCCARA tours KLOK

These photos are of the SCCARA tour of AM broadcast station KLOK 1170 on South King Rd.

KLOK is a 50 KW Day / 5KW Night, Nautel solid state transmitter, digitally modulated. There are three vertical towers phased to achieve the desired directional pattern.

Our host was KE6PID John Buckham Chief Engineer in charge of the KLOK transmitter (amongst others). Special

thanks, great tour!

Joe Castellano, W6SNV



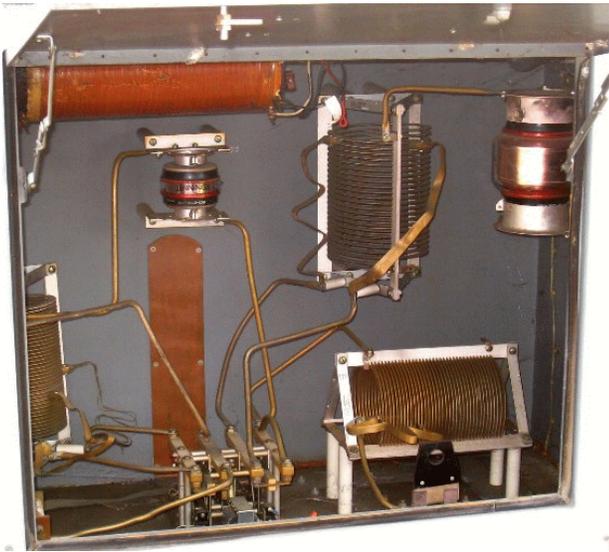
KLOK Satellite links and studio



Exciter and modulator



Base of one tower and tuner (behind tower)



Tuner (in the box at the base of the tower)



John, our host, explains the backup generator



50 kW solid state transmitter, and our host ‡



Transmitter and control ‡

‡ These photos are by Teresa Nemeth

## Meeting Minutes

### General Meeting, Jan. 11, 2010



Kaiser Santa Clara

The meeting was called to order at 7:31 pm by Don Steinbach

Introductions of members and guests and any announcements

Gary Mitchell has 2 badges for club members

Lou Steirer gives credit for photo's taken last month at the Holiday Luncheon & Thank you to Teresa

Lou Steirer also announced the Quarterly SVECS Breakfast is on January 23,2010, Breakfast is at 9am and Presentation is at 10 am. The Speaker will be KG6RLR, Pat - EC from Gilroy, CA. & the Presentation will be about April 2009 Morgan Hill Cable Cut

Don Village announced the reservations for Field Day at Mt. Madonna are now complete also The Club Station will be open the last Saturday of each month starting from about 11am-2 or 3pm.

Lou Steirer announced silent key KA6YRK in London

Byron Beck,KG6UOB announced Amtech Day on January 30,2010 from 8 am - 9 pm and the website is [www.fars.k6ya.org](http://www.fars.k6ya.org)

SCCARA Presentation is about AM Transmitters by KE6PID, John Buckham John gave a very interesting slide show and explanation and took questions during and after the presentation

For those interested a tour of radio station KLOK in San Jose at 2905 S. King Rd. contact AE6QL, Fred Townsend for further details at [ae6ql@arrl.net](mailto:ae6ql@arrl.net). Fred mentioned he would send out a email to the email club list and to Webmaster KA6YMD, Wally Britten so it could be posted on the club webpage.

Meeting Adjourned at 9:13 pm

Submitted By, Jeannie Felix,KG6YOR - Secretary

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## Board Meeting, Jan. 18, 2010



Red Cross,2731 N. 1st St.,San Jose, CA

The Meeting was called to order at 7:40 pm by AE6PM, Don Steinbach

### Attendance

Don Steinbach, AE6PM, President; Fred Townsend, AE6QL, Vice President; Jeannie Felix, KG6YOR, Secretary; Ned Tufekic, AC6YY, Treasurer; Don Village, K6PBQ, Trustee; John Glass, NU6P, Director; Lou Steirer, WA6QYS, Director; Wally Britten, KA6YMD, Director; Gary Mitchell, WB6YRU, Director; John Parks, W6JPP, Director.

Visitors: Gwen Steirer, KF6OTD; Herman Dekruyff, KI6ETZ David Paul, AE6MV.

### Announcements

Don Steinbach asked the board to review the agenda. There were no changes. Don announced the deadline for the upcoming SCCARA-GRAM is 01/25/2010.

Lou Steirer announced the SVECS Quarterly Breakfast is on January 23,2010.

Don Steinbach announced quarterly drill for ARES/RACES is this Saturday, January 23,2010 from 1400-1600.

Don Steinbach announced there is a VHF Sweepstakes this weekend, January 23 - 25,2010

### Old Business

Lou Steirer made a motion to send 1 complementary SCCARA-GRAM to visitors each month and John Parks Seconded the motion. The motion passed unopposed.

Gary Mitchell is redoing the SCCARA bylaws to make them legal for California.

3 months of minutes approval postponed until next month.

### New Business

#### Treasurer's Report

Be more frugal with money. Make cuts in some places if possible.

Refer banking summary report until next month.

Current figures for expenses remain the same as last month

The board discussed on having 1 general membership meeting be a equipment clinic night.

The board discussed quantity and location of club repeater controllers and power supplies - Report to be given next month.

#### Vice President's Report

Fred Townsend asked for excused absence for the General Membership and Board meeting for February, will be out of state.

Fred announced there will not be a speaker for February. The board agreed to have a dinner meeting instead for February 8 at Hometown Buffet at 6:30 pm.

John Parks announced he has arranged a speaker for March and the presentation will be about remote control of your HF base station.

Fred Townsend made a motion to buy a computer projector for the club at a cap of \$400.00 for future meetings. Gary Mitchell seconded the motion. Motion passed unopposed.

Fred Townsend suggested doing a technical evening at a future meeting.

Gwen Steirer will send report about next month's meeting to Gary Mitchell for the SCCARA-GRAM.

#### Station Trustee

Don Village has made and confirmed the reservations at Mt. Madonna for Field Day 2010.

Don Village announced the club station will be open last Saturday of each month for operation.

Don Village has put in the reservations for the Club Christmas Luncheon.

#### Newsletter

Gary Mitchell announced the newsletter needs to include name etc. of the speaker for the next meeting.

#### BBS

Gary Mitchell announced everything seems to be running fine, will verify later. Gary is working on 6 meter antenna for BBS link.

Repeater: Wally Britten announced everything seems to be working normally.

Webmaster: Wally Britten announced he is posting info as it comes.

Secretary: Jeannie Felix asked for second key to PO Box.

Other:  
John Parks reports visit to USS Hornet is on second Saturday of each month but must attend 1 hour meeting before being allowed to tour the ship

440 Repeater is still on order and still hasn't arrived

The meeting was adjourned at 9:07 pm

Jeannie Felix, KG6YOR-Secretary

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 fill out an Elmer form from the club secretary.

Antennas, feed-lines, tuners: WB6EMR, W6JPP, K6PBQ, WB6YRU  
Lightning protection, grounding: WB6YRU  
Station set-up, equipment: K6PBQ, W6JPP  
TVI/RFI: WB6YRU  
Homebrew projects, construction: KD6FJI, WB6YRU  
Computers: older IBM PC: WB6YRU  
Packet Network (BBS, forwarding): WB6YRU  
Code operating and installations: WB6EMR, K6PBQ  
DX (long distance/propagation): WB6EMR  
Emergency operating/preparedness: WA6QYS  
HF operating techniques (SSB, CW): WB6EMR, K6PBQ  
Classes/license upgrading: W6ACW  
Legal/FCC rules: WB6YRU  
SCCARA (club inner workings): K6PBQ, WB6YRU, WA6QYS  
EchoLink: KK6MX

W6ACW, Ed Hajny, (408) 739-6105

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

KD6FJI, Lloyd DeVaughns,  
(408) 225-6769 e-mail: kd6fji@arrl.net

KK6MX, Don Apte, (408) 629-0725  
e-mail: kk6mx@aol.com

W6JPP, John Parks, (408) 309-8709  
e-mail: w6jpp@arrl.net

K6PBQ, Don Village, (408) 263-2789  
e-mail: donvillage7@yahoo.com

WA6QYS, Lou Steirer, (408) 241-7999  
e-mail: wa6qys@arrl.net

WB6YRU, Gary Mitchell, (408) 269-2924  
packet: home BBS NOARY  
e-mail: wb6yru@ix.netcom.com

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## Packet Pieces

### Downloaded from the BBS packet network:

=====  
Date: 24 Jan 2007 14:50  
From: ZL3AI@ZL2BAU  
To: HUMOR@WW  
Subject: Excuse/Progress/Cannibal  
-----

#### Excuse

-----  
Wife: "What's your excuse for coming home at this time of the night?"

Norm: "Golfing with friends, my dear."  
Wife: "What? At 2 a.m?!"  
Norm: "Yes. We used night clubs."

#### Progress

-----  
As the horsepower in modern automobiles steadily rises, the congestion of traffic steadily lowers the average possible speed of your car.  
This is known as Progress.

#### Another Silly Cannibal Joke

-----  
The Christian missionary was making his first visit to a tribe in Borneo. The missionary asked the chief, "Do you people know anything about religion?" After a pause, the chief answered, "We got a little taste of it when the last missionary was here..."

73, David ZL3AI.

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## Newsletter Notes

It rarely rains, but when it does it pours!  
Another great article from Don AE6PM. Thanks Don!  
And an article with photos from Joe Castellano, W6SNV and some photos by Teresa Nemeth. Thanks guys!  
Isn't the *SCCARA-GRAM* much better with articles from our own members? I think so.

73, Gary WB6YRU, editor

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## Need Help?

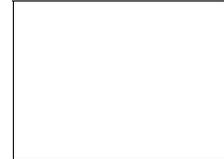
Amateurs have a long history of helping each other.



**SCCARA**

Santa Clara County Amateur Radio Association  
PO Box 6  
SAN JOSE CA 95103-0006

Affiliate of the ARRL,  
American Radio Relay League



**FIRST CLASS**

**ADDRESS SERVICE REQUESTED**

**SCCARA Membership Form for 2010**

If none of your info has changed, fill in name and call only

Name: \_\_\_\_\_ Call: \_\_\_\_\_ Class: E A G T+ T N

Address: \_\_\_\_\_ Licensed since (yr): \_\_\_\_\_

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

Telephone: ( ) \_\_\_\_\_  New Member  Renewal  
 I'm also a member of the ARRL

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

Memberships begin January 1 and expire December 31.

**If renewing:** annual membership dues (base rate) are: \$20 Individual, \$25 Family, \$10 Student (under 18)

**For new members:**

If joining in January: base rate

If joining in February through October: base rate x (11 - month) x 10% (e.g. for June, that would be: base rate x 50%)

If joining in November or December: free for November and December if paying the base rate for the following year

\$ \_\_\_\_\_ **Dues payment for:**  individual  family  student

For family memberships (at the same address), please include a separate form for each family member.

**I want the newsletter by:**  U.S. Mail  internet (make sure your e-mail address is legible and correct)

Give this completed form (or copy) with payment to the Secretary or Treasurer at any meeting or mail to the club address.