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February 2002

P.O. Box 1005, Newcastle, CA 95658

At the Key of S.F.A.R.C.



2002 Calendar of Events

(Operating Events in Italics)

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REPORTERS

Satellite Report

Greg Dolkas, KO6TH

40 Years Ago at the SFARC

Gary Cunningham, KQ6RT

REPEATERS

145.430 (-0.6 MHz/PL 162.2)
440.575 (+5.0 MHz/PL 94.8)
223.860 (-1.6 MHz/PL [none])

CLUB NET

All welcome to check in
Thursdays, 7:30PM, K6ARR/R
145.430

CLUB MEETINGS

Second Friday of the month,
7:30PM at the Auburn
Library, 350 Nevada St,
Auburn

CLUB BREAKFAST

Last Sat of the month at
Susie's Café, Cirby at
Riverside, Roseville - 8:00 AM

NET CONTROL OPS

Dave Jenkins, WB6RBE
Gary Cunningham, KQ6RT
Joe Sylvia, KF6OQY

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<i>Feb 3</i>	<i>NA-Sprint (SSB)</i>
Feb 8	Regular Club Meeting
<i>Feb 10</i>	<i>NA-Sprint (CW)</i>
<i>Feb 16-17</i>	<i>ARRL Int'l DX (CW)</i>
Feb 23	Club Breakfast
<i>Mar 2-3</i>	<i>ARRL Int'l DX (Phone)</i>
Mar 8	Regular Club Meeting
<i>Mar 10</i>	<i>NA-Sprint (RTTY)</i>
Mar 30	Club Breakfast
<i>Mar 30-31</i>	<i>CQ WW WPX</i>
Apr 12	Regular Club Meeting
Apr 27	Club Breakfast

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Meeting Program Schedule

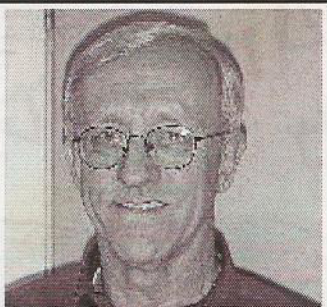
SFARC News Goes PDF

National Ham News

Sunspots

**From the
President's
Shack**

**Richard
WA6RWS**



Well, it is good to be back in California after my vacation to Chicago and Wisconsin. I am sorry I missed the January meeting. I understand Eldred did a terrific job. Thanks Eldred.

As we move into 2002, I want to continue planning as far ahead as possible. Please call me and share any ideas as to what we can do to improve the club from public service, meetings or the newsletter.

Postage will be going up again and the target date is June 30th. Postage is going from 34 cents to 37 cents. If any of you would like to have your newsletter e-mailed to you or you would prefer to download the newsletter from the web site, please let me know. Our biggest expense for the year is the newsletter. Almost 10% of the membership download the newsletter now, saving approximately \$75 a year on copying and postage. Please let me know if you would like to do that.

I am looking forward to seeing all of you at the February meeting.73,

Richard, WA6RWS

Secretary

**Steve
KF6OCE**



This is my first submission to the newsletter as the Secretary of SFARC for 2002.

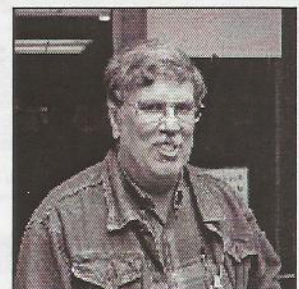
I would imagine that all the new officers are just getting acquainted with their new positions and responsibilities as I am doing now. Joe Sylvia, the 2000/2001 club secretary handed me the "BOX" (no, not a radio) with all the club records in it at the club's first board meeting of 2002. I have been sifting through the papers so that I can get a better feel for the workings of the club. I am looking forward to the aggressive speaker schedule that our vice president Eldred has lined up, especially the one where Wayne KE6DJE will give us a presentation on ARES. Also, for those of you who may not have heard, there will be an EMCOMM convention of sorts this coming April. Everything you ever wanted or

needed to know about emergency communications will be there. For more information go to the Internet at www.emcomm2002.net. Have a good New Year, and safe communications to all.

Steve, KF6OCE
Secretary

**40 Years
Ago At The
SFARC**

**Gary
KQ6RT**



Home of C. Goodpastor
Auburn, Calif.
Feb. 14, 1962

The meeting was called to order by Pres. Dick Lund, at 8:00 PM.

Mr. Dean Pratt of CD dept. was our guest speaker. He spoke with emphasis on the dangers of fall out, and how to handle the situation. We were told that 60 to 1000 Rimkins (?) was fatal and that two days later it would be down to 100, which is not critical. It is a matter of first staying alive, and then take measures to get back on your feet.

There were uncertainties regarding the part amateurs can play in the RACES and CD program. Dean Pratt will find out and report to us later.

Question was proposed by Clayton on possibility of our club to maintain and set up the CD radio equipment and also be able to use them. This plan was received quite favorably.

CD now has use of the front room of the old Naval Reserve building, and the second room is jointly available for our clubs use, and we have been promised the keys as soon as everything is settled. At this time Mr. Pratt left because of his other duties.

Minutes of the previous meeting was read and approved and Jim Carman made the treasurer's report. Everyone was asked to pay their dues to end of year.

Linn Hunter and Otto Rudd have found a place at Mt. Hallow or Wolf Mt., For Field Day about the last week in June.

Act. Chrmn. Bob Richier brought in some high frequency equipment for demonstration, and Sage passed out Viking Amateur Cat. 961 to those who so desired.

Meeting was closed at 9:45 pm and refreshments prepared and served by our host.

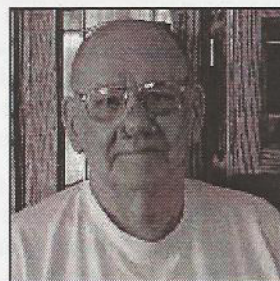
Respectfully Submitted,
Sage Otow

73,
Gary, KQ6RT

for cost over run, and open your junk box pull out some old radio parts, coat hangers, coil wire, etc.

VE Report

**Bob
W6SUP**



Volunteer Examiner Report

Exam Dates for 2002

Feb 13

Mar 13

Apr 10

May 8

Bob and Jerri plan to conduct exams once a month on the second Wednesday evening. Pre-registration is required. Contact Bob, W6SUP, or Jerri, K6GKR, for more information.

Special arrangements and dates can be made to accommodate the disabled, including conducting tests at home.

73,
Bob, W6SUP
511 Oak St.
Roseville, CA 95678
916.783.7610
w6sup@rsvl.net

Vice President's Corner

**Eldred
KD6ZSL**



2002 Meeting Programs

FEBRUARY - ARES

Wayne Mikel, KE6DJE, is the ARES Emergency Coordinator for Western Placer County. His address is: PO Box. 1142 Lincoln, CA. 95648. Tel:1-916-645-0565. e-mail ke6dje@arrl.net

Wayne said he would be delighted to speak at the February meeting, also in attendance with Wayne will be Gary Willett, District Emergency Coordinator for ARES

MARCH - Radio on a Horse

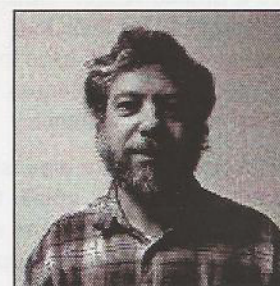
Operating a radio in the wilderness on horse back is quite a balancing act, and to add to the radio operator dilemma he or she must sweep the trail while talking on the radio and controlling the horse, so come to the March meeting an Mary Anne Balthrope, KE6EST, who will tell you all about the thrills and chill that you can encounter on the supporting the Western States Endurance Run and Tevis Cup Endurance Ride. Mary Anne will demonstrate, and let you see the equipment that is used by the radio operators.

APRIL - QRP

Bob Balthrope, KD6WTY, Tel: 1-916-682-9871, e-mail kd6wty@yahoo.com QRP presenter. Ask bob about QRP, he will tell you how to start, and transmit your radio signal around the world with a few watts. Would you like to build a QRP rig? Just ask Bob and all you will need a sardine can, or old aluminum pot (this will impress the wife like you are going to cook a pot of stew) at the same time ask for \$20.00

Amateur Satellites

**Greg
KO6TH**



AO-40 takes a shortcut

One of the challenges in running a satellite is the need to be ever vigilant in watching the satellite's power budget. Let the batteries run down, and you've got a sick bird on your hands, or worse.

Down here on Planet Earth, when you need to recharge your HT's battery, into the charger it goes. You don't give it a second thought. But in orbit, things are different. The power to recharge the spacecraft's batteries comes from solar cells, and to operate properly, the cells need to point more or less at the Sun. Early satellites often covered the whole surface of the satellite with the cells. That wasn't very

efficient, but at least you didn't need to worry about which way the bird was pointed. Couple that with omni-directional antennas, and all was wonderful.

This technique works well when you have a satellite that can use omni antennas, but let's think about this for a moment: Omni antennas spray their signals in every direction. The signals that happen to be aimed towards us down here are the useful ones; the rest are wasted power, but at least you could use those all-over solar cells.

What if the objective of the satellite is to provide DX coverage? In order to cover such a wide area, the satellite's orbit must be very high - many thousands of miles. To make such a satellite useful, the signals from it must be loud enough to be heard. To do this, with only solar cells for power, means that the antennas need to have a high gain to them. By definition that means they can't be omni's, and they must be aimed at the Earth. If the satellite is aimed in a certain direction, there's no reason to put solar cells all over it; that adds weight and cost. So you end up with a satellite like AO-40.

AO-40's antennas, at least the ones we're using, are all on one end of the spacecraft. For most of the orbit, that end of the satellite is pointed at Earth. The solar cells are around the side of the spacecraft, so as long as the antennas aim at Earth, and the side is aimed at the Sun, everyone is happy. But just as AO-40 orbits the Earth, the Earth is orbiting the Sun. At times during the year, the Earth carries AO-40 to a position where this doesn't work. We're entering one of those times now.

The original plan was to rotate the satellite, to keep the all-important solar panels oriented towards the Sun. But that meant that the antennas wouldn't be pointed perfectly at Earth anymore. To make matters worse, the instruments that allow the ground team to control the spacecraft's orientation have a limited range. Outside that is a "dead zone", where the sensors lose their lock on the universe. To keep them working, they would have to point rotate the spacecraft a lot - so much that the antennas would be essentially useless for several months. Bummer.

Then someone had a brain storm. If they didn't have to use the instruments to guide the satellite's orientation, they wouldn't have to rotate the spacecraft quite so far, allowing the transponder to be kept operational on a limited basis.

Ever since launch, the ground team has noticed that the satellite tends to rotate in a certain direction all by itself. Called the "Mystery Effect", they now know that this is due to a residual magnetic field in part of the spacecraft interacting with the Earth's field. AO-40's a big compass needle in space! And, it turns out, the direction that the spacecraft wants to point will gently rotate the spacecraft right through the instrument's dead zone. Instead of going all the way around the dead zone, the Mystery Effect will guide AO-40 safely right through the middle of it.

Late in December, 2001, the Sun Sensor lost its lock, officially putting the satellite in the dead zone. If all goes well, it should regain lock around January 9th, 2002. From there, the ground team will actively follow the Sun, guiding

AO-40 in a grand cosmic dance that will be completed in April. During this time, the transponder schedule will be continually adjusted as the bird rotates, keeping communications open as much as possible, while keeping watch on the spacecraft's power budget.

73,
Greg, KO6TH

(Ed. Note: There's apparently a reason why they call it "rocket science")

Coming Ham Events

Foothill Flea Market - 2nd Saturday of each month from March through October at Foothill College, Los Altos.

Livermore Swap Meet - 1st Sunday of each month at Las Positas College in Livermore, 7:00 AM to noon, all year. Talk in 147.045 from the west, 145.35 from the east. Contact Cliff Chiba, KF6EII, larkswap@usa.com

RadioFest 2002. Saturday, Feb. 16, 2002, 7:00AM to 3:00PM at the General Stilwell Community Center, Ord Military Community, 4260 Gigling Road, Seaside, CA. Talk-in 146.97- PL 94.8. Sponsored by the Naval Postgraduate School Amateur Radio Club. See <http://www.k6ly.org/radiofest> for additional details.

Sunshine Report

Jerri
K6GKR



No news from Jerri, which is good news for us.

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530.823.7595

For Sale

Cushcraft 220 MHz beam, exc. condx, -- \$30.

Midland 13-509 radio for 220 MHz (xtal-controlled, has simplex & RAMS xtals), -- \$40. Beam and radio as package for \$60.

Antique code practice unit with paper tapes, \$80 firm.

Triex Tower: There is a Model 37TC two section (37') Triex tower for sale in the L.A. area (S/N 56676). It includes an Alliance 73 rotor with a KLM 13LBA (13-element long-boom). Price is \$300 plus cost (~\$50) to get here from L.A.

I'm picking up another tower the same day (middle February) and can pick up the subject tower, rotor, and antenna at the same time. Since I'm already hauling one tower, I'd split the cost of the trailer to bring it back to Sacramento.

If you are interested in any of these items, call Lee, K6LQT, at (530) 885-9201. k6lqt@jps.net

Regular Meeting

January 11, 2002

The January 11th meeting was attended by a total of 36 persons, 20 of whom are members, and 16 were visitors. 17 are members of the ARRL. With President Richard on vacation in the tropical paradises of Chicago and Wisconsin, the meeting was ably conducted by Vice President Eldred, KD6ZSL.

The program for the evening was a presentation by Calvin Groom, KE6QEH, Salvation Army Coordinator for Northern California and Nevada. His subject was "The Salvation Army Mission, and how SFARC members can assist with communications support."



Cal began his presentation with a video of the Army's support during the Oklahoma City bombing, however his primary focus was on the communications network required to coordinate the Army's mission in disaster relief. This Salvation Army Telecommunications Emergency Relief Network (SATERN) is composed of amateurs and other communications personnel.

The SATERN net meets on Saturdays at 0700 Pacific time on 14.265 MHz. There is also a Northern California net on the 147.060 repeater on Monday evenings.

Cal was accompanied by SA Capt. Mick Sonders, and SATERN and Mount Diablo ARC members, Lauren and Liz Styles, WA6CIE and KG6HLV. Lauren and Liz are active

in the SATERN network and have participated in a number of Salvation Army Relief efforts.



Anyone interested in participating in SATERN can contact Cal at 916.563.3791 ke6oeh@earthlink.net, or Lauren and Liz at lstyles@california.com

Thanks to Cal, Capt. Sonders, Lauren, and Liz for an interesting and informative

presentation.

SFARC News Goes "PDF"

For any readers who just arrived on the planet, "PDF" is the acronym for "Portable Document Format," an invention of Adobe Systems, and currently the de facto standard for publishing documents electronically. For example, most of the documents available on the FCC, GPO (such as Part 97 of the FCC rules, and the ARRL web sites are presented as PDF files.

Adobe makes a reader for PDF files available for free on the Internet. Just go to

<http://www.adobe.com/products/acrobat/readstep2.html>,

download the current version and follow the instructions.

As Richard mentioned in his column in this issue, reproducing and mailing the SFARC News is the single largest annual expense for the club, and it will be climbing now that the first class postage will go to 37¢ this summer.

So, in an effort to encourage members to get their copy of the newsletter electronically, the Board of Directors authorized the purchase of Adobe Acrobat, the software that creates PDF files from virtually anything (well, it won't make a pot of chicken soup into a PDF file, but you get the idea).

Beginning with this issue, those currently receiving their newsletter via email will find it in PDF, and the downloadable version on the Club's web site (and the mirror



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site <http://home.pacbell.net/andrea/SFARCHome.htm>) will also be in PDF. Generally, the PDF files do a better job of compressing images and are thus a bit smaller than the humongous MS Word files of the past.

In order to get images to reproduce during printing, we must convert them to monochrome grayscale and halftone them. In future issues, the PDF version will contain images in living color. Those readers who enjoy mousing around can also access the HTML version of the news on the club web site.

To get on the email list for the newsletter, just drop an email from the address you'd like to receive it at to the editor at k6dgv@arrl.net and we'll put you on the list.

The SFARC is not the only ham organization working to move to electronic publishing ... The ARRL Board of Directors, in cost cutting measures, has decided to drop the minutes of its meetings from QST since they are already published on the ARRL web site. Additionally, they are considering dropping the Section News and individual line scores in favor of the web site as well.

National Ham News

(Courtesy ARRL Bulletins and ARRL Letter)

Novice Band Re-farming

In a number of actions at its meeting January 18-19 in Ft. Worth, TX, the ARRL Board of Directors has adopted a modified proposal to reform the Novice bands, now that the FCC no longer issues Novice licenses. The ARRL Novice Spectrum Study Committee had proposed allowing

Novice and Tech Plus (or Technician with Element 1 credit) licensees to operate CW on General-class 80, 40, 15 and 10-meter CW segments at up to 200 W output. The panel recommended re-farming the current Novice/Tech Plus CW subbands, in part to allow expansion of phone allocations on 80, 40 and 15 meters.

The Board approved a modified plan that would drop the US phone band to 3725 KHz on 75 meters but leave it at 21,200 KHz on 15 meters. The 75-meter proposal would expand

the phone band by 50 kHz for Generals over the present allocation and by 25 kHz for Advanced and Extra licensees. On 15 meters, Generals would get another 25 kHz of phone spectrum, but phone privileges for Advanced and Extra class operators would stay the same.

The Novice Spectrum Study Committee's original recommendations for 40 and 10 meters were accepted. The ARRL plans to propose the modified re-farming plan to the FCC later this year along with other regulatory requests.

Vanity Calls On The Move (again)

The vanity call sign logjam has begun to break up. The FCC granted 27 vanity call signs January 9, based on applications received October 15, 2001.

FCC policy gives paper and electronically filed vanity applications equal priority. Mail problems due to the recent anthrax scare caused some applications filed on paper to be delayed, and vanity processing has been on hold since last fall. FCC Licensing Branch personnel have been attempting to obtain new paperwork from applicants, however.

Prior to this week, the FCC had not issued any new vanity call signs since last October 30. The FCC has a record of when it receives all vanity applications. Once the Commission has all paper and electronic applications for a given date, all submittals will be processed in chronological order.

All vanity fee payments have been recorded and deposited or charged to credit card holders' accounts. The FCC has been using vanity fee payment data from the FCC's fiscal agent, Mellon Bank in Pittsburgh to contact applicants directly to have them resubmit their applications.

Amateur Radio Emergency Communications Course

February registration for Level I will open Monday, February 4. Courses must be completed in order, starting with Level I. To learn more, visit the ARRL Certification and Continuing Education Web page <http://www.arrl.org/cce> and the C-CE Links found there. For more information, contact Certification and Continuing Education Coordinator Dan Miller, K3UFG, cce@arrl.org.

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Sunspots

Another Space Story

With the influx of new hams that we've been experiencing, and the recent simplifications to the license structure and examination process that have resulted in more hams being able to use the HF bands, the question, "What is solar flux and why should I care about it" is heard resounding around the bands. You had to have been around ham radio six or seven years ago with a 10 meter receiver to begin to get a feel for the effect the sun has on our hobby. So, in a never ending quest to keep SFARC members the best informed hams in Northern California, we shall discuss that burning question right now.

Oversimplifying a bit (!), the sun is a ball of mainly hydrogen, some helium, and a dash of heavier elements (up to iron in the periodic table) in space. It is a big enough ball that the force of gravity creates temperatures and pressures in its core high enough to ignite thermonuclear reactions (sort of a continuous hydrogen bomb?). These reactions fuse hydrogen atoms into helium atoms, and, in the process, there is a bit of mass left over which appears as gobs of energy. Hence, the sun is hot and emits energy in the form of electromagnetic radiation (heat, light, radio noise, etc).

The gas atoms in the sun are mostly ionized (i.e. their electrons have been stripped away by the high temperatures), so they conduct electricity very well. The sun is also rotating, making one revolution (at the equator) in about 27 days ... since it's a ball of gas, all parts don't have to rotate at the same speed ... and they don't. The sun has a magnetic field like the Earth's, only much stronger. A conductor (the plasma), moving 'round in a magnetic field is a generator, and this one generates incredibly strong electrical currents.

All of this causes the sun to expel some of its energetic, ionized gases (solar wind) at high velocity ... high enough that a few days after leaving the sun, they pass by and/or crash into the earth's upper atmosphere. The earth has a magnetic field, and the ions react to it because they are electrically charged, causing electrical currents to flow around the earth in the "ionosphere." This results in the aurora ("northern and southern lights"), and the currents can induce similar currents in long distance power lines. For hams it results in quite a bit more too.

The sun's surface layers are in a turmoil, and often form storms, which we call sunspots, because they are cooler (relatively!) than the other parts and look dark. Sunspots tend to be associated with regions where increased amounts of gas are expelled. So, more sunspots = more solar wind, and more effects on earth.

Some of those effects are good: The charged particles in the aurora will reflect VHF and UHF signals, and because they are high, it becomes possible to communicate long distances on otherwise line-of-sight frequencies. The wind increases the levels of ionization in the upper atmosphere which increases their ability to refract and reflect HF radio signals. It also affects the earth's magnetic field, sometimes dramatically.

If we started at a fairly low frequency, say 160 or 80 meters in the daytime, the ionosphere will absorb nearly all the energy and the distance we can communicate will be limited to the ground wave. If we increase the frequency, the absorption decreases, and when we get up between 40 and 20 meters, a substantial fraction of the energy will be sent back down, thousands of miles away. Thus, the DX fanatic is born. Continue upward in frequency, and we reach a fairly sharp cutoff called the Maximum Useable Frequency (MUF) where the ionosphere stops refracting and reflecting the signal, and it passes through out into space.

So, you can probably see the pattern here: More sunspots = bigger, stronger ionosphere. Stronger ionosphere means more absorption at lower frequencies and higher MUF. And the opposite holds as well. In the daytime, when we're facing the sun, the higher bands give worldwide propagation and 160, 80, and 40 are nearly dead except for locals. At night, the ionosphere on our side of the world weakens; 20, 15, and 10 close down as the MUF drops, and 160, 80, and 40 pick up as the absorption drops.

Now, for many reasons, only a few of which are actually understood very well by anyone, the sun seems to have several cycles. The most famous is the "Sunspot Cycle," in which the number and intensity of the spots grows and wanes over time. This cycle takes about 11 years, and we are currently just past (some think) the peak of Cycle 23 ... or maybe not ... predicting sunspots is a lot like predicting the weather. The strongest peak in the last 100 years occurred in Cycle 19 in the mid '50s.

When the sun is active, the MUF can climb above 50 MHz in daylight, and six meters opens. Ten meters is open all day most days, and a few watts to simple antennas will span the globe. On the other hand, the lower bands are truly dead in the daytime. Conversely, during the minimum sunspot activity, 10 will go days with no opening at all, which sometimes happens to 15 as well, and everyone migrates to LSB on 40, 80, and 160.

A sunspot will often persist for several months, and they tend to occur in groups. If a very active group is facing the earth, and causes a period of very high MUF, look for it to happen again in about 27 days ... another "sun cycle" resulting from it's rotation.

There appear to be several longer cycles, although we haven't been observing the sun long enough to really understand them. And, there are just unexplained variations as well. One occurred in the 19th century when the spots declined, but the next cycle did not start again for several decades. It is often blamed for a long period of extremely long, cold, and harsh winters in Europe. And there is geologic evidence of a millennium or more of no sunspots at all called the Maunder Minimum. During these times, the discovery of the usefulness of "short waves" would have been just about impossible.

So, if you're on 10 now, enjoy it! In 4 or 5 years, ten meters will sound like 2 meters ... without repeaters.

**SIERRA FOOTHILLS AMATEUR RADIO CLUB
2001 MEMBERSHIP APPLICATION**

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Phone Number: _____ Application: (Circle One) New Renewal

Member Dues: Circle Amounts That Apply. Applications received in the middle of the year will be pro rated. Contact the President or Treasurer for exact rate.

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ARRL (Spouse)	\$ 5.00	Newsletter Booster:	\$ _____
ARRL (Special)	\$28.00	Worldradio Renewal:	\$ _____
		TOTAL:	\$ _____

NOTE* Renewing your ARRL membership through the Club earns the Club money with no additional cost to you. To renew your ARRL membership through SFARC, make check payable to SFARC and mail to P.O. Box 1005, Newcastle, CA 95658.

OFFICE USE ONLY:		DO NOT WRITE BELOW THIS LINE	
Date: _____	Treasurer: _____	Secretary: _____	Roster: _____
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