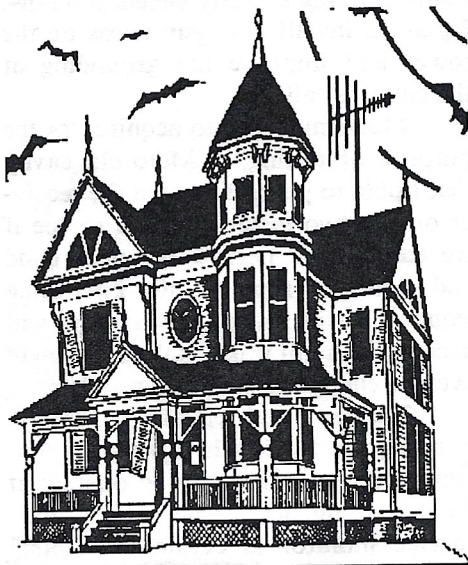




READOUT

Year 16 Number 10 October 1994

The official newsletter of the Stanislaus Amateur Radio Association



Wiretaps ok'ed on the Information Superhighway

The Information Super-highway is to have a wire-tap key. The Federal Bureau of Investigation and other law enforcement agencies are being given the technical means to perform legal wiretaps as the telecommunications industry moves from analog to digital technology.

Pending legislation authorizes an expenditure of up to \$500 million for the development and implementation of new encryption technology, the skeleton key to which will be held by law enforcement. Common carriers (both wired and wireless) must make the necessary modifications to their networks to enable "authorized" wiretapping.

The proposed digital wiretap laws do not cover on-line service providers, (like Prodigy), commercial Internet providers, electronic mail or operators of private communications systems. The bill is expected to win quick Congressional approval since it addresses the nation's number one concern: violence. Privacy advocates oppose the bill as an infringement of human rights.

Raffle deadline approaching

October 18, 1994 is approaching soon. That is the date of the drawing in SARA fund raising project. The winning ticket will drawn at the club meeting that night and all ticket stubs and money must be in by that date. If you are planning to mail the stubs, please allow time for us to get them. We suggest that you mail no later than October 10, 1994 to ensure we get them in time for the raffle. Stubs and money will be accepted at the meeting that night which, of course, will be the last moment you can turn them in.

We still have a supply of extra tickets. If you need any more, contact Bob, WA6ZLO, 523-5880, and he will get them to you as soon as possible. Thank you for your support!

FCC changes

On Monday, Aug. 1, 1994, literally all the top Civil Service officials in the FCC changed jobs as part of a massive reorganization. While the end result of this change is difficult to forecast, there is hope for better enforcement activity and support for Amateur Radio in the long term.

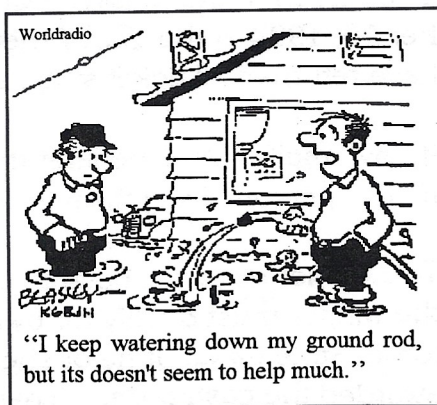
In other FCC matters, the FCC has apparently cut the turn around time on new licenses to about 6 weeks from the time for the examination. This is down from the 12-14 weeks recently experienced. FCC apparently has applied additional resources and the new computer equipment to the process.

Unfortunately, there is still a backlog of some 6,000 applications, going back to April, that require correction or questions. Some will be returned, others the FCC may be able to clear in house. There is no indication as to when, or how, these will be addressed.

ARRL Pacific Div. Update

In this issue

The READOUT Facts	2
SARA Technical Report	2
Raffle Notice	2
PACIFICON'94 set	3
An easy way to sink a ground rod	4
Antenna or antennae	4
A commutating junction	5
Letters	5
SARA Minutes	6
Editors Notes	6
From the desk of N6ZUC	7
Amateur call signs issued	8
VE test results	8
SARA Roster	9-10-11





The READOUT is published monthly by the Stanislaus Amateur Radio Association. COPYRIGHT 1994 by the Stanislaus Amateur Radio Association, Modesto, CA. All Rights reserved. Permission is granted for reproduction in whole or in part provided credit is given to The READOUT and the authors of the reproduced material.

1994 SARA Officers

President

Elizabeth Eyre, KD6GIW
667-5299

Vice President

Mark Lemmons, WB6BJN

Acting Secretary

Bob Pinheiro, WA6ZLO
523-5880

Treasurer

Bob Kimball, KC6TVE
892-8664

SARA VHF Net

Thursdays @ 8 p.m.
(Except Holidays)

2 meters 145.39 MHz WD6EJF
220 Band 224.14 MHz WD6EJF

Contributions to *The READOUT* are always welcome and may be submitted to the editor by mail or via packet at KD6JZZ on 144.97 MHz. Or you can reach the editor's PBBS, WA6ZLO-1 via packet on 144.91 MHz. If you can not reach it direct on .91, you can go through the SARA K-Node of Mt. Oso. Type C SARA then C-WA6ZLO-1. The deadline for articles is the 15th of the preceding month. Articles regarding religion or politics are not accepted.

Editor

Bob Pinheiro, WA6ZLO
1221 Mist Flower Ct.
Modesto, CA. 95355
209-523-5880

An ARRL affiliated club!

ARRL membership may be paid through SARA with the club retaining a \$2.00 commission. Please send your ARRL membership form along with your check made payable to "SARA". We will deduct the \$2.00 and send a check to the ARRL.



Technical Report

By LeRoy Campbell, NV6S

I've been up the hill a couple times recently working on various items. Once Our editor Bob, WA6ZLO, accompanied me and the other time Tony, KD6YAZ went along for the ride. The most recent trip was primarily for my employer and to do a check of the county's communications site after the recent earthquake. Aside from perhaps a bit of additional loose gravel on the roadway, there was no damage that I could see from the quake.

I took care of business at the county site and spent a couple minutes at our site before leaving the mountain top. I had made a temporary installation of another set of duplexers in an attempt to isolate the interference problems on the two meter machine. The other duplexers seemed to make things worse so the original duplexers are back in line. I have some other things that I plan to try as well.

On the earlier trip hard line was installed to replace the 9913 coax on the 440 repeater. That coupled with a couple other adjustments on the antenna have seemed to make a significant improvement in our repeater. I am able to work it quite easily from most

places around Modesto now and I've done quite a bit of work using a rubber duck from inside my pickup. It really is doing a pretty decent job now. I plan to install new guy wires on the tower and improve the grounding at the site this fall.

I have managed to acquire, for the purpose of testing, a Motorola cavity that I plan to put in line with the receiver on the two meter machine to see if we can further narrow the pass band and eliminate some of the interfering signals. I will not know what that will accomplish until it is installed. It might even be enough to solve the problem.

The low level repeater is currently sitting on the bench. I've had problems getting the receiver to operate at the new frequency. The old Cushman service monitor is crystal controlled and doesn't have the new frequency as of yet. I'm really working in the dark. Alex, K6LPG, has agreed to give me a hand soon and perhaps the new repeater will be on the air shortly after that. The site still hasn't been given official approval so we might have to wait for that.

Once again I thank those who have helped with technical chores

NOTICE

The SARA Fund Raising Raffle drawing will be held on October 18, 1994 at the SARA meeting. Please make sure you have returned all ticket stubs and money prior to the drawing.

If by mail: Mail no later than October 10, 1994

If by person: Bring them to the meeting on October 18, 1994

The winner does not need to be present to win. However, the winner must qualify for ownership of the gun under California State Laws. If he or she does not, the winner will awarded the cash prize. Thank You!

PACIFICON '94 set for Concord October 21-22-23

Just when you thought it couldn't be any better, along comes PACIFICON '94. More exhibitors, exciting technical presentations, state of the art hardware displayed by all of the major suppliers, more things to see and do. PACIFICON '94, on October 21, 22 and 23, will again be at the Concord Hilton. in Concord. Located just east of San Francisco, it's about half-way between San Jose and Sacramento.

This year's theme, "HAM Radio - your on-ramp to the Information Highway", will be apparent in much to be seen and to do. With technical programs on Internet, Automatic Packet Reporting (APRS), TCP/IP and Global Positioning Systems, there will something for everyone. Introductory sessions will be held as well as advanced coverage of items of great interest to all. The Northern California Packet Association (NCPA) will again do a major presentation on beginning

packet as well as provide a comprehensive source of packet Elmers who will be available to help amateurs get their systems running.

Brad Wyatt, K6WR, Pacific Division Director, will speak at the ARRL Forum with new information about recent ARRL developments. Jim Maxwell, W6CF, Pacific Division Vice Director, will speak on ARRL happenings from a National point of view and Rod Stafford, KB6ZV, ARRL First Vice President, will have just returned from the International Amateur Radio Union, Region 3, conference in Singapore and will share his expectations from that perspective. Also attending will be the ARRL General Counsel, Chris Imlay, N3AKD, who has been working very closely with the FCC and Congress on several issues.

Banquet speaker

The featured presentation at PACIFICON '94 Saturday night banquet will be made by Steve Odum whom many will remember as a wide receiver with the Greenbay Packers (No. 84.) Steve is now a sergeant with the Berkeley, California Police department. In a departure from the usual radio-related speakers of the past, the committee thought that a talk of wider interest to HAMS and non-HAMS would be well received. Steve will present a lively and entertaining program concerning public involvement in our communities and how we can help to bring back some of the older value systems that kept us from many of the civic and domestic problems of today.

Banquet dinner:

As usual, the choices of entrees for the banquet include prime beef, chicken and a vegetarian entree. The banquet always sells out early, so get your reservation in early. The banquet door prize is an Alinco DR600T dual band transceiver. The banquet will begin at 6 PM with a social hour and no-host cocktails. Dinner will be served at 7:00 PM.

Events:

Directly across Diamond Boulevard from the Concord Hilton is the Willows Shopping Center where the convention Swap Meet will be held directly behind the

Benihana Restaurant. The hours are 7 AM to 11 AM Saturday morning. Admission is free to buyers and only \$10 to sellers. Double-wide spaces are available on a first-come basis with no advance reservations.

Old Sacramento bus tour:

An Old Sacramento bus tour is new this year. Old Sacramento is tourist Mecca that should not be missed. Besides the specialty shops, there is a railroad museum that has received national acclaim. The tour will start precisely at 9 AM Saturday morning from in front of the Concord Hilton and will return by 5:00 PM. The tour is available for Hams, spouses, children and friends at just \$20.00. Please make your reservation early.

Exhibitors

Over 42 major Amateur Radio equipment vendors have participated in PACIFICON in the past and this year will be no different. The exhibit hall is always one of the biggest draws and experience has shown that show prices are among the best to be found. The exhibit hall will be open Saturday from 9:00 AM to 5:00 PM and Sunday from 9:00 AM to 1:00 PM. In addition to the exhibit hall, there will be table vendors throughout the convention as well.

Wouff-Hong

There is an opportunity to join this select society. You need to be a member of the American Radio Relay League and to have a current Amateur Radio operator's license. The mystic ceremony will be held at midnight Saturday.

Shake your foot and fanny

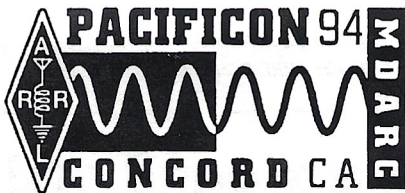
You will have the opportunity to send Morse code using a telegraph key that is about 20 times the normal size. You can send using your foot or... well, you get the idea. Certificates will be awarded for those who can send simple words like "Mississippi" and "Tennessee."

The Hunt Is On

The Transmitter hunts will be held Sunday morning. You don't need any special equipment to participate, just a hand-held with an S-meter. If you bring a paper mailing tube large enough that your hand-held will fit inside and perhaps a foot or so longer, you will be shown how to make a first-class hunting system for no cost. Be at the swimming pool at 9 AM Sunday morning and join in on the fun.

See "PACIFICON'94" page 4

The American Radio Relay League
Pacific Division



AMATEUR RADIO CONVENTION

OCTOBER 21, 22 & 23, 1994
CONCORD HILTON HOTEL

TECHNICAL FORUMS

SWAP MEET

EXHIBITORS

VE EXAMS

CONTINUING EDUCATION CLASS

Admission is only \$3.00 in advance.
ORDER TODAY!

For more information contact:

PACIFICON '94
P.O. BOX 272613
Concord, CA 94527
(510) 932-6125

PACIFICON'94

from page 3

ARRL Walk-In VE Test Sessions

The tests will cover Novice through Extra Class. Testing will run from 9 AM to Noon both Saturday and Sunday. Each person to be tested will need to have picture identification and copies of his license and any certificates or Successful Completion of elements passed. The fee \$5.75.

Exhibitors

Vendors are already staking out their exhibit space for PACIFICON '94 with plans to demonstrate the best and latest in Amateur Radio equipment. The exhibit hall is always one of the biggest draws and experience has shown that show prices are among the best to be found. The exhibit hall will be open Saturday, from 9:00 AM to 5:00 PM and Sunday from 9:00 AM to 1:00 PM. In addition to the exhibit hall, there will be table vendors throughout the convention as well.

Technical Sessions:

Over 30 technical sessions are scheduled. They begin at 2 PM Friday and continue through Saturday and Sunday.

Electromagnetic fields & your health

Gerri Lee of the California Department of Health Services has been given the responsibility for conducting a two-million dollar, four year study on the health affects of electromagnetic fields. This session will explain some of the study's findings, how power line radiation affects us, and how it concerns radio operators. Medical affects of radiated energy is one of the most important issues facing radio amateurs today — don't miss this important presentation.

Personal Safety

The Concord Police Department will show how to protect yourself and your home from crime. Bud Wasson, a veteran personal defense instructor (and a HAM), will demonstrate how you can become "street smart" and explain how to help keep your neighborhood safe.

Working with public safety agencies

Jerry Boyd, KG6LE, Chief of the Martinez Police Department and Pacific Division assistant director, will discuss working with public safety agencies. If HAMS are to play a role with emergency agencies, a good working knowledge of how they work and what they expect is necessary.

Fire Safety for the home

John McKenzie, KD6QEC, will demonstrate ways to protect yourself and family from the devastating affects of fire. Practical examples and demonstrations will help you learn how to handle yourself in a fire emergency.

New HAM forum

Conducted by Jim Maxwell, W6CF, Vice Director

Pacific Division ARRL. Jim would like to welcome new Amateurs into the community. Representatives from many different Ham organizations will be on hand to describe their groups and what they have to offer, and show how much is available to radio amateurs. If you are new to HAM radio, or just starting to get interested, the new HAM forum is just for you!

Automatic Packet Reporting System

Ken Swaggart, W7KKE, will explain a wonderful new use for packet radio. The automatic packet radio reporting system links several stations together in a wide area network. Stations equipped with global positioning equipment can be plotted on a real time map. GPS is also great for transmitter hunting.

Computer control of Amateur Radio equipment

Ron Luttringer, K6XC and Volunteer Counsel for the Pacific Division will again show how to merge the power of your computer with the pleasure of Amateur Radio.

Beginning HF

Jeff Jones, AB6MB, will show you how to get started working the world on the HF bands. Learn the tricks that make HF operating so exciting.

Radio Control and Amateur Radio

Jim Pratt, WA6FNI, has over thirty years experience with radio control modeling. Jim will share his experience and show you the advantages of radio control in the Amateur bands.

QRP Technology

Learn how far a little power will go. QRP is low power operation, and the challenge of QRP adds a new dimen-

sion to Amateur Radio.

Lasers - how they work

Bill Pfeffer, a laser design engineer, will explain lasers and how they work. Bill will discuss lasers from an introductory level, so if you've been wondering how they work, come by and hear his talk.

Global Positioning System

The global positioning system is a solution to the age old problem of global navigation. Global positioning systems are relatively low cost and are a new tool to for radio enthusiasts. Visual Basic - an introduction Pete Tormey, N6QGN, will explain visual programming using the hottest language available today. Visual programming for Windows is easy and powerful.

Antennas - Theory and Practice

Tom Schiller, N6BT, of Force-12 Antennas, will present a practical way to understand antennas. Tom has many years experience designing antennas, and his talk on antennas is a PACIFICON favorite.

SQUIRT — a new concept in satellites

Dive into the soul of a new satellite as Bob Twiggs of Stanford University explains the ongoing Stanford Quick Research Test-bed satellite. This small satellite is a quick way to get projects into space. For its first launch it will carry an ATV camera. A working prototype model will be presented during this session.

The Internet - the information superhighway?

Jeff Jones, AB6MB, will demonstrate how to access the Internet, what you can find on the Internet and show how it relates to Amateur Radio.

Thanks ARRL Pacific Director Update

An easy way to sink a ground rod

By Ralph Grover, NS2S

When it was time to install the ground rods for my stationsome years ago, I climbed up a wobbly step ladder and pounded away at the wobbly rods with a sledge hammer until they sank to the right level. Their tops ended up battered like circus tent pegs.

I recently observed the installation of a ground rod for a new commercial repeater, and found out how the pros do it.

The pro's chucked the rod into a heavy duty, half-inch electric hammer-drill and zipped it into the ground slick as a whistle in 30 seconds. —no banging and no cauliflower deformation of the top of the rod.

From the "Peconic Amateur Radio Club Newsletter"
—Ralph Grover, NS2S, editor via ARNS.

Antenna or antennae

While looking through the dictionary the other day I found two definitions for the word ANTENNA. Of course you know what they are -don't you? Well, try this one on for size.

“—ANTENNA: a movable segmented

organ of sensation on the head of insects, myriapods, and crustaceans.”

One might wonder if those heretofore called antlers on Moose and Deer are really multiband lowband vertically/horizontally polarized antennae.

A commutating junction

Source of power line noise

By Jim Lawrence, N5CT

Power line noise is a subject that will come into the life of every HF operator sooner or later. When I returned to Utah and rejoined the active group of Amateur Radio operators in February 1993, my power line noise was terrible. The noise was present on all amateur frequencies from 10 through 160 Meters. The noise completely covered WWV on 10 MHz during the daylight hours. I'd had the fortune of not having to deal with power line noise for many years. My memories of the techniques for finding the sources of the problem were outdated.

In the early 1960s I was fortunate enough to have a seventy foot tall tower. The antenna array was a TA-36 tribander on the bottom of the stack and a 2 element 40 Meter Yagi eight feet above the TA-36. By changing bands and frequencies and rotating the antennas, I was able to get a fix on most of the line noise I encountered. Then driving around and using the car's AM radio I'd listen for the strongest noise source. Unfortunately, I was wrong about the specific pole causing the problem most of the time. I wasted a lot of the power company's time and energy. They were not any better at finding it than I was.

Here is what I didn't know about power line noise back then — the actual mechanism responsible for power line noise is a commutating or rectifying junction. In other words, it's a loose connection or insulation arc that's generating a square wave at ultrasonic frequencies (500 Hz to 100 kHz). Because the square waves are very steep, the frequency spectrum of power line noise is rich in harmonic energy, extending well into UHF. The lower frequency components (those your HF rig is hearing) couple very well into the power grid's distribution lines. These low frequency waves propagate for miles as a traveling wave, making low-frequency detection impossible. That's why my broadcast band car radio detection technique did not work.

Don't be fooled by an HF beam heading, you could very well be listening to main beam or side lobe of a power line (in effect the line is acting like an antenna). On the other hand VHF/UHF can be very effective in tracking down line noise. The higher frequency spectrum decays fast near the signal source because the energy does not couple into the distribution system. VHF/UHF detection is nearly true line of sight. The radiator becomes a point source which can be spotted with accuracy.

My experience says that you will save time by hunting for the noise source yourself. Power companies typically have limited RDF training, time, and resources. I have found that they are willing to cooperate and will usually try hard to find noise. However, many times the source they find is not the one you're hearing. They usually have a 300 MHz "super-snoop" noise detector with a 3 element Yagi. This usually is too broad to locate a specific pole or piece of hardware.

So how did I solve the problem of locating my power line noise sources. My first purchase was a Radio Shack PR0-43 scanner. It's capable of receiving AM signals on any frequency in its range. Remember an FM detector will not work for locating power line noise, it discrimi-

nates against noise. I also purchased a three element 2 Meter beam and 450 MHz 6 element beam.

Starting from my QTH with the 2 Meter beam, I performed an omni-directional search of the area. When the noise source peaked in a direction I started in that direction. When the direction of the noise reversed 180 degrees, I then went back toward the source. The discrimination of the 2 Meter was good, but not superb. As soon as I was sure of my findings I switched over to the 450 MHz antenna. Not only did it find the pole, it was able to identify the offending piece of hardware.

Some final words of advice in dealing with the power company. If the pole is in a distribution network about your QTH, it could very well be the one, but be very sure before you cry wolf. If you are more than 2 miles from a low amplitude source, check carefully for another source closer to you. Have a friend listen to your receiver while you are locating noise sources. Determine that you are right before calling the power company. When you are confident that you have identified the noise location, give the power company a call. Be prepared to provide the exact location and pole number. Good luck!

Watts News, Ogden ARC via Worldradio Magazine.

August 15, 1994



Stanislaus ARA
P. O. Box: 4601
Modesto CA; 95352

Congratulation, Bob Pinheiro, WA6ZLO, Editor, of The READOUT and your staff for winning a Superior rating in the

1993 Newsletter Contest conducted by the Amateur Radio News Service. Not only did you win a Superior rating, but you were voted one of the top three newsletters in the contest! That is a very high honor indeed, but even more important from my perspective is that you are telling the Amateur Radio story. Thank you for sending me the newsletter as I enjoy reading it and it keeps me informed on the activities of the club. Again, congratulations, Bob and your staff!

73,
s/s Bradley W. Wyatt, K6WR
Director Pacific Division, ARRL, Los Gatos, CA. 95030



Editor's Notes

By Bob Pinheiro, WA6ZLO

According to an article in the August 15, 1994 issue of the W5YI report, a group of New Zealand amateurs are spearheading an effort to amend international regulations regarding Morse code proficiency.

As you know, international radio rules require amateur radio operators to be Morse proficient when their operation takes place in the medium and high frequency bands. Prior to 1959, ham operators had to know CW if they operated on any amateur band below 1000 MHz (1 GHz). This level was dropped to 144 MHz at WARC-59. A further reduction was made at WARC-79 to its present 30 MHz. World Administrative Radio Conferences are where the various ITU nations meet to agree on telecommunications standards.

Now that manual telegraphy is being phased out in the commercial radio sector, the question is should Morse code knowledge remain a requirement for amateur radio. Many amateurs (and professionals) do not think so. The computer and satellites have totally revolutionized communications, especially during the last decade or two. There are simply more reliable, accurate and efficient wireless communications modes available today.

The amateur group out of New Zealand is proposing to modify RR-2735, a part of Article 32, which regulates the Amateur and Amateur-Satellite Service. Rather than work with national amateur radio societies, however, they are going directly to the international regulators.

The group is deadly serious. The Organization Requesting Alternatives By Code-Less Examinations Inc. (ORACLE), have already formed a corporation and have written their constitution. Their sole objective is to lobby nationally and internationally in opposition to Morse code proficiency as a mandatory component in the examination process for amateur radio licenses.

The group is administered by six New Zealand managers and is particularly interested in reaching amateurs in various countries who also feel the amateur service telegraphy requirement is outdated. ORACLE believes that amateur radio uses a wide range of communications

modes and it is illogical to focus on just one of them.

Here is a couple of paragraphs from their by-laws: "Choice of mode of transmission in the amateur service is basically interest driven. Individual operators are the deciding parties rather than any regulatory direction. Actual use of Morse code as a percentage of amateur radio contacts is generally decreasing with time, as interests diversify. SSB voice operation, using the English language, is now the most common mode for international amateur communication. These factors suggest that there is no need to have mode-specific qualification requirements when so many modes are available."

"It is inconsistent that Morse code is the only single element in the amateur examination syllabus that places a pass/fail outcome on obtaining a license for operation in certain bands. Most of the other

radio services have greatly reduced emphasis on Morse code, none being more obvious than in the maritime service with general conversion to GMDSS by 1999."

ORACLE also believes that the main intention today of the telegraphy requirement is to limit access to amateur bands below 30 MHz. The next two World Radio communication Conferences (WRC's) are scheduled for 1995 and 1997. (They are no longer called World Administrative Radio Conferences or WARC's.) Simplification of the International Radio Regulations is a known key topic at both the WRC-95 and WRC-97.

The FCC has also formed a new sixth Working Group (WG-6) to the WRC-95 Industry Advisory Committee. They are charged with making agenda recommendations for WRC-97.

SARA Minutes

By Bob Pinheiro, WA6ZLO
Acting Secretary

The September 20, 1994 meeting of SARA was called to order at 730 PM by President, Liz, KD6GIW. Introductions followed of 30 members and guests present. Minutes of previous meeting accepted as printed in the newsletter. Acting Secretary, Bob, WA6ZLO, reported that he plenty of extra raffle tickets if anyone needed more. He reported that our membership stood at 176 prior to the meeting. Four new members were signed up at the meeting bringing our membership to 180 for the year. Treasurers report:

For the year:
Income: \$3, 102.25
Expenses: 3, 338.54
..... < 236.29 >
Checkbook balance 1, 910.60
Raffle:Income to date: 1,005.00
Expenses 635.99
(including the prize (\$500.00))

The treasurer reported that the Stanis-

laus County Bike County purchased 100 raffle tickets and then donated the tickets back to the club.

Liz reported the explorer scouts scheduled to be at this meeting could not make it and would be at the October meeting. She also announced the Riverbank Cheese Festival Bike run was coming up on October 9th and approximately 10 radio operators would be needed. Contact, Bob, KC6TVE.

It was suggested that Jim, N6UGH, be allowed to use the club's low band rig until he's able to replace his. In as much as our club station is down and the rig was not being used, the suggestion was approved.

ZLO reported the following new members. Larry, KE6HDT; Don, KE6JVF; Harry, KB6JLE and Tony, KE6FCN of Merced.

Meeting adjourned at 850 PM. The video tape of Field Day taken by Ernie and Rita was shown. Cookies provided Chris and Mike Camp, KB7ZGC and KI7FQ.

Respectfully submitted by Bob, WA6ZLO, Acting Secretary.

From the desk of N6ZUC

J. T. "Tim" Low

On occasion, I hear Amateurs complain about the short useful life they receive from the tubes in their power amplifiers. In a few instances, this is due to poor design by the amplifier manufacturer, and in others, because of poor quality control in the manufacture of the tubes themselves. More often than not however, it's because of factors that can be controlled by the user.

Squeeze the pickle

If you're one of those who think you must run all the power you can muster each time you squeeze the pickle, and you spend a great amount of time on the air, then you might be better off leaving the filaments on your amp in the glow stage at all times. Turning on the amp is hard on it. Each time you cycle it on, the initial in-rush current can be very high, especially when temperatures are low. Each on/off cycle of your filaments will reduce your tubes life span by many hours. When you compare the cost of the tubes, with the cost of electricity to keep them warm, you may be better off leaving them in the simmer mode.

Another benefit in leaving the heaters on, is that in moist climates, such as during the rainy season, it'll help keep moisture from condensing on components. When coupled with the dust and dirt that naturally accumulate, this creates a good path for high voltage arc overs. It's no substitute for regular cleaning however. (See the June 1993 edition of **The READOUT** for maintenance tips on care of tube equipment.)

Other ways to extend life

For most of us, the amp is used only in those cases when propagation's poor, and we have a need to get through. In this case, it's not worth the cost of electricity to leave it permanently in the standby

mode. There are other things we can do to extend the life of our tubes though.

Air flow is a major consideration in the life span of a power tube. Volumes of clean, cool, fresh air are needed to keep the waste heat, dissipated by the tube, from destroying it. To clarify, cool air doesn't necessarily mean that it's air conditioned. When compared to the temperature of the tube, 100 degree air will cool it quite nicely. What's important is the amount of air passing over the tube. Make sure that the fan in your amp is moving a good quantity of air. Some poorly designed amps use small low volume muffin fans that just don't move enough. If this is the case, replace the fan with a larger one. Practically speaking, there's no such thing as too much air.

Reduce your power output by ten percent

Speaking of heat, why not reduce your power output by ten percent? I flat guarantee you'll not notice the difference. Folding the power back a few percent reduce's stress, and less waste heat will be generated. The power bill will be lower, and the time between purchasing new tubes extended. If your amplifier has an overall efficiency of 50 percent by way of example, reducing power output by 100 watts, from 1000 to 900, means a savings of 200 watts, half of which is given up as heat. Remember, heat kills.

Vibration is hard on tubes. Make sure your amp sits securely on a solid flat surface, free of any vibration. A good sharp jolt when the grids and plate are hot, can cause arching, and in poorly designed tubes, even direct shorts. I guess the point is, when the amp's running, don't pound on the table during those heated QSO's.

Burn in period

Little known is the fact that all tubes should have a burn in period if you intend

to get the best longevity. It's a simple procedure, and is done when first installing them. Most tubes will have some residual gas remaining in the envelope, and can accumulate quite a bit of gas if left sitting on the shelf for a long period after manufacture. The object is to burn this remaining gas.

Burn off remaining gas

When you install the tubes, turn on the amp and let it operate with only filament voltage for a few hours. Make sure that the voltage applied to the filaments is at the rated value. When that's accomplished, using low power, carefully tune the amp into a dummy load. Let it operate for a half hour. Running your radio at low power into the amp for that length of time shouldn't hurt it or the amp. Gradually increase power until you get up to full power, then let it sit for a few minutes. If all goes well, no fuse blows, no smoke rolls out, and no frying sound is heard, you're ready to operate.

Setting your filament voltage properly is the single best thing you can do to extend the operating life of power tubes. There are several methods to accomplish this, some of which require specialized

See "From N6ZUC" page 8

Printed Circuit Board Design

J.T. (Tim) Low
N6ZUC

Phone or FAX
(619) 735-9125

2936 Amanecer Place
Escondido, CA. 92027

AMATEUR RADIO CALL SIGNS

As of the first of August 1, 1994

Radio District	Extra	Advan.	Tech/Gen	Novice
Ø	AAØRW	KGØOO	(***)	KB8ØKY
1	AAIJV	KD1VZ	N1SUN	KB1BJW
2	AA2TB	KF2WQ	N2UY	KB2RFN
3	AA3IF	KE3NT	N3TBF	KB3BEH
4	AD4UV	KR4XT	(***)	KE4PKY
5	AB5VT	KJ5ZS	(***)	KC5IVA
6	AC6DS	KO6FG	(***)	KE6KYY
7	AB7DK	KJ7BA	(***)	KC7EUY
8	AA8PM	KG8KK	(***)	KB8UIY
9	AA9II	KF9WU	N9YCQ	KB9JAN
N.Mariana Is	KH8I	AH8AU	KH8DL	WH8ABA
Guam	WH2F	AH2CU	KH2KA	WH2ANK
Johnston Is.	AH3D	AH3AD	KH3AG	WH3AAG
Midway Is.	AH4AA	KH4AG	WH4AAH	
Hawaii	(**)	AH6NN	WH6WD	WH6CRH
Kure Is.		KH7AA		
Amer.Samoa	AH8K	AH8AG	KH88G	WH8ABB
Wake W.Peale	AH9C	AH9AD	KH9AE	WH9AAI
Alaska	(**)	AL7PS	WL7WJ	WL7CHS
Virgin Is.	WP2O	KP2CD	NP2HQ	WP2AHU
Puerto Rico	(**)	KP4XE	(***)	WP4MEJ

CALL SIGN WATCH: *=All 2-by-1 "W" calls, **=all Group A (2-by-1), and ***= all Group "C" (1-by-3 "N") call signs have now been allocated.

[Source FCC, Gettysburg, Pennsylvania via W5YI Report]

VE test session results

By Chet, W6XK

The results of the ARRL/VEC sessions held in Modesto and Stockton (California Youth Authority) on 9/10/94:
 Number of applicants: 24
 Number of new licenses: 9
 New Novice: 0
 New Technician: 6
 New Technician-Plus: 0
 New General: 1
 New Advanced: 2
 New Extra: 0

Pass rate (total elements administered): 44% Participating VEs: W6XK, K6RAU, N6SAE, KI6PR, WA6OHP, AA6TQ, KC6WXX, AB6TA, WA6CSC, WA6GUO, WA6PIC, KI6YQ.

Total number of applicants served by the Tri-County VE Team:
 1986: 15 1987: 104
 1988: 187 1989: 123
 1990: 107 1991: 221
 1992: 224 1993: 220
 1994: 237 Total: 1,438

Upcoming test sessions:

October 8, 1994 - Merced. Contact-KI6PR @ K6RAU or (209) 383-216.

December 10, 1994 - Modesto. Contact-W6XK@KD6JZZ or (209) 883-2968

This was an ARRL/VEC Sponsored session.

From the desk of N6ZUC

from page 8

equipment, another only a relative power meter, and a good voltmeter. The idea will be to optimize the filament voltage, but before doing this, get a few operating hours on your amp at the rated filament voltage. This helps break them in.

You first must determine if your amp has adjustable filament voltage. On some it's fixed, and if this is the case, you'll need to modify it. Modification can be done by adding a suitable variable resistor on the primary side of the filament transformer. If you're not capable of determining value, size and location, consult a skilled technician. Set the primary voltage to a value that will correspond to the correct secondary

voltage required by your tubes. Use a true RMS reading voltmeter of good accuracy to make the measurements.

To optimize the filament voltage, make sure you have a power meter in line, and a voltmeter connected to the filament supply. Starting at rated filament voltage, and at full power output, slowly begin to decrease the filament voltage until power just begins to drop off. Take note of the volt meter reading, and then increase the voltage .2 volts beyond the point where the power began to dip.

You have now optimized your filament voltage to give you the longest possible life. Running the filament voltage at lower than rated value can increase the useful life many fold. You'll need to re-check the adjustment from time to time to maintain it at the correct value. Remember also that as the power grid rises and falls according to load, so will your filament

voltage. If this is the case, set the filament voltage according to the lowest voltage your line normally hits. As the tubes age, as they eventually will, you will need to gradually increase filament voltage to maintain power output.

Although tubes are generally rugged, make sure you have proper surge suppression on your mains. As with all equipment, anomalies on the power source can wreck havoc with your equipment.

I hope this little run through on increasing tube longevity has been of help to you. Good RF tubes are expensive, and anything you can do to increase their life, just leaves more money in the fun fund to buy other new toys.

As always if you have any comments or suggestions, direct them to me in care of The READOUT, or via packet at N6ZUC@KJ6VC.#SOCA. CA.USA.NA. 73 -Tim

STANISLAUS AMATEUR RADIO ASSOCIATION, INC.
P.O. BOX 4601
MODESTO, CALIF. 95352

TOTAL MEMBERS = 181

09/21/94

WD6ACW	T	MCDONALD, RODNEY	3736 MADERA CT.	RIVERBANK	95367	869-0759
AB6AE	E	FULLINGTON, DON	PO BOX 935	SALIDA	95368	577-4220
W6AFS	G	PEITZ, BILL	902 CALIFORNIA AVE	MODESTO	95351	523-4352
KE6AIP	T	KENDRICK, PAUL	2506 TORRID AVE	MODESTO	95358	578-2958
KE6AIS	T	BREITENFELD, JIM	3305 TULLY RD. APT. 53	MODESTO	95350	572-3047
W6AJU	A	ASHBY, FRANK	PO BOX 1300	EATONVILLE,WA	98328	000-0000
K6BII	G	PURVIANCE, CAL	3328 CLAREMONT AVE.	MODESTO	95350	529-8921
KB6BJH	G	THOMPSON, PHIL	5828 BALDWIN	VALLEY SPRINGS	95252	772-2228
WB6BJN	G	LEMMONS, MARK	113 VILLAGE RD.	MODESTO	95354	000-0000
W6BMA	E	JOHNSON, DESMOND	665 JENNIFER COURT	GALT	95632	745-0200
KD6BNV	T	PALACIOS-RADER, RITA	1736 CARIGNANE WAY	ESCALON	95320	838-2921
KD6BOR	T	ADDISON, DICK	6911 CHANDLER DRIVE	SACRAMENTO	95828	383-2113
WD6CEV	A	CRAWFORD, BOB	2120 BARRINGTON LANE	MODESTO	95350	522-9111
KD6CGB	T	JENKINS, CARL	495 OLSON CT.	OAKDALE	95361	847-8579
KA6CIO	T	EATON, BILL	3001 HOLIDAY LANE	MODESTO	95350	523-8820
KJ6CK	A	LETTIN, CHARLES	P.O. BOX 508	KEYES	95328	667-5496
NK6C	E	JOHNSTON, BRUCE	87 WILLOWOOD DRIVE	OAKDALE	95361	847-0232
WA6CSC	E	FISHER, KEN	P.O. BOX 235	HICKMAN	95323	874-4289
KA6CXR	A	LACY, ED	3500 BRENTFORD WAY	MODESTO	95356	529-9794
KE6CXX	T	SCHAFFER, LINDA	2301 DENNY CT.	CERES	95307	537-5205
KE6CXZ	T	SOUZA, JEFFREY	1900 OAKDALE RD. #273	MODESTO	95355	551-1819
WA6CYR	E	STORNE, JACK	260 E. EVANS REIMER RD	GRIDLEY	95948	846-6717
KE6CZW	T	CORREA, PATRICIA	1312 KURT ST.	MODESTO	95350	523-5673
KD6DFN	T	BRADLEY, JEFF	2832 BELHARBOUR DRIVE	MODESTO	95355	551-5506
KB6DJ	A	SMITH, JIM	P.O. BOX 407	MERLIN,OR	97532	476-5611
KE6DJK	T	MARTIN, CHRIS	PO BOX 544	MANTECA	95336	000-0000
KA6DJR	T	LUEBKE, WILLIAM	1901 MARGATE WAY	MODESTO	95355	575-6284
KJ6DO	A	BOWERS, CHUCK	837 RIDGEVIEW CT.	OAKDALE	95361	847-5491
KE6DOY	T	SLOCUM, MARIE	3205 SHANE LANE	MODESTO	95355	527-3809
KE6DPB	N	BILLIKOPF, ANDREA	3521 BALFOUR LANE	MODESTO	95357	525-9125
W6DSM	A	HORNBERG, BOYD	1400 BAYWOOD DRIVE	MODESTO	95350	524-7412
KD6DTR	T	HERRINGTON, CHARLES	1708 JACQUELYN WAY	MODESTO	95355	579-2242
KB6DXX	G	WINDUS, LYNN	2341 EDSEL LANE	MODESTO	95358	523-0141
N6EKV	G	FARIES, STEVE	1126 DURANT ST.	MODESTO	95350	521-7834
WD6EYX	A	CARUSO, PAUL	2416 CANYON DRIVE	MODESTO	95351	537-6659
WA6FBE	G	COFFMAN, DERRILL	P.O. BOX 54	CERES	95307	537-9129
KB5FB	A	SHEA, JIM	729 N. GOLDEN STATE BLVD	TURLOCK	95380	632-9787
KE6FCN	T	DIAZ, ANTHONY	2725 MCNAMARA RD.	MERCED	95340	725-0998
WD0FFX	A	HARTZ, PHIL	365 GRANDVIEW DRIVE	BISHOP	93514	000-0000
KD6FGD	T	RODERICK, GEORGE	2421 MOUNTAIN RIDGE DRIVE	MODESTO	95351	538-6388
KK6FH	A	ROBBINS, FRED	554 TRASK LANE	MODESTO	95354	529-1300
KE6FNR	T	SINGER, HAL	PO BOX 1374	LODI	95241	333-8448
KE6FNU	T	NUNLEY, STEVE	16300 ORANGEBLOSSOM #11	OAKDALE	95361	881-3469
KE6FOB	G	HEENAN, MIKE	237 CHARLEMAGNE WAY	MODESTO	95350	579-0920
WA6FOL	G	MENDONCA, LEN	1407 S. STORY ROAD	TURLOCK	95380	634-1475
KI7FQ	E	CAMP, MIKE	PO BOX 764	VERNALIS	95385	000-0000
KJ6GE	A	SHAFFER, CHARLES	2301 DENNY CT.	CERES	95307	537-5205
KL7GHT	A	NICHOLS, JERRY	PO BOX 70212	EUGENE,OR	97401	687-6833
KD6GIW	T	EYRE, ELIZABETH	BOX 211	HILMAR	95324	667-5299
W6GIW	E	BEWLEY, ED	3318 COLORADO AVE.	TURLOCK	95382	634-4550
KD6GJF	G	MAHAN, JUDY	1817 MT. VERNON	MODESTO	95350	577-1251
KA6GJN	G	WALLACE, DAVE	16 SODERSTROM LANE	TURLOCK	95380	667-7429
WB6GJT	G	DEWITT, LARRY	420 BALBOA WAY	MODESTO	95350	523-5952
WA6GKS	G	LEE, HARLEY	1613 ROBBIE AVE.	MODESTO	95350	577-0866
NW6G	E	LOVELAND, CHUCK	POB 345	COULTERVILLE	95311	878-3669
N6GOX	G	STOREY, MAX	P.O. BOX 425	JAMESTOWN	95327	984-3318
WA6GUO	E	BERMANN, DAVE	UNPUBLISHED	MODESTO	95356	000-0000
K0GVY	G	BOOTH, ROBERT	6397 CRESSEY WAY	ATWATER	95301	394-2491

KC6GXQ	T LUSBY, ARLO	324 N. SHADYGLEN DRIVE	COVINA	91724	966-5570
N3GXU	G GRAY, JOHN	402 N. STADIUM DRIVE	STOCKTON	95204	467-7516
W6GYN	A SAYRE, MAX	P.O. BOX H	WATERFORD	95386	874-9488
KE6HDT	T OWENS, LARRY	1919 TRACY CT.	MODESTO	95350	571-0188
NQ6H	E VAN DYK, MARILYN	19119 E. RIVER RD.	RIPON	95366	599-3030
KE6HTN	N CLUKEY, ROBERT	1629 WYLMA WAY	MODESTO	95350	524-2883
KE6HTO	T LOWELL, PAULINE	1516 GALVEZ AVE	MODESTO	95355	000-0000
KE6HTP	T GONZALEZ, JASON	1212 OJAI LANE	MODESTO	95355	521-8747
KE6HVA	T JACKSON, JERRY	1801 CARDIGAN WAY	MODESTO	95355	527-0836
KJ6IC	A CATON, WALTER	3608 10TH ST.	CERES	95307	538-1541
WB6IDT	A STEINERT, JACK	820 TASSAJARA COURT	MODESTO	95358	577-0731
KE6IVU	T BOHLING, PATTY	1505 SHERWOOD AVE.	MODESTO	95350	575-1141
KE6IVV	A BOHLING, JOHN	1505 SHERWOOD AVE	MODESTO	95350	575-1141
KB6JLE	N BRADBURY, HARRY	1614 ETHEL CT.	MODESTO	95350	575-3603
KM6JO	A GARCIA, MATT	740 S. CONEJO AVE	MODESTO	95354	529-0174
N6JTD	T FARIES, LORI	1126 DURANT STREET	MODESTO	95350	521-7834
KE6JVF	T SWANGER, DON	561 CHURCH ST.	EMPIRE	95357	524-0773
KD6JWE	T REEDY, LOYD	1146 7TH STREET	RIPON	95366	599-6486
KC6JYD	T LOVELAND, MARY	POB 349	COULTERVILLE	95311	878-3669
KD6KAC	T TIDWELL, PAUL	3205 SHANE LANE	MODESTO	95355	572-1741
KD6KAK	T KENDRICK, RICHARD	2506 TORRID AVE	MODESTO	95358	578-2958
KE6KAZ	T BARNES, JOHN	549 PIRINEN LANE	MODESTO	95354	522-2161
WA6KDC	A TONINI, DANIEL	SILENT KEY	CERES	95307	000-0000
N6KDJ	T JOHNSON, HAROLD	P.O. BOX 197	KEYES	95328	537-2565
WA6KEP	G TROYER, JAMES	1433 QUEENS AVE.	MODESTO	95355	522-3056
W6KET	A NORBY, DICK	908 NEWCASTLE COURT	MODESTO	95355	523-3853
N6KMC	T CORREA, ABDON	1312 KURT STREET	MODESTO	95350	523-5673
N6KMR	A HERTEL, JIM	PO BOX 2104	CERES	95307	576-7330
KE6KTW	T WEIN, DARYL	3916 SHARPSBURG DRIVE	MODESTO	95357	527-2867
KE6KTZ	T SALEHI, JOHN	1424 PROSPECT LANE	MODESTO	95355	521-8518
W6KU	A HUFF, BOB	3028 FREDRICKSBURG	MODESTO	95355	522-7831
KB6KYI	G ROOT, DALE	3208 TOPEKA ST.	RIVERBANK	95367	869-4763
KD6KZP	T KENDRICK, RICHIE	2506 TORRID AVE	MODESTO	95358	578-2958
AB6LE	E MAYS, BOB	4121 GOLDUST DRIVE	MODESTO	95355	577-1547
K6LKM	G CALONICO, JIM	109 DOGWOOD PLACE	SAN RAMON	94883	828-3667
N6LRB	T SOUTHERLAND, LOUIS	P.O. BOX 151	OAKLEY	94561	757-2032
N6LSA	T GRISWOLD, TOM	2020 MATHER DRIVE	MODESTO	95350	577-3524
N6LSF	A JOHNSON, TOM	9031 DEKOVEN DRIVE SW	TACOMA, WA	98499	000-0000
N6LTX	T HAYES, ROBERT	823 SEYBOLD AVE.	MODESTO	95351	522-5450
KC6LVT	T FREY, TESSIBEL	3347 E. PERRIN RD.	MANTECA	95337	823-2041
KD6MGT	T PADGETT, WALTER	1120 CRISMON COURT	MODESTO	95350	522-6996
W6MMH	G WHEELER, FRANK	150 W. CATALINA DRIVE #57	YUMA, AZ	85364	000-0000
KC6MSQ	G STROMBERG, KENT	331 S. ROXIE DRIVE	RIPON	95366	599-6430
KC6NEB	T CAMPBELL, JAMES	PO BOX 1137	WATERFORD	95386	874-4964
W6NLX	G BELCHER, FRANK	1635 ARDMORE AVE	MODESTO	95350	529-0205
KB6NMF	T ZIMMERMAN, MARION	920 NORTH BERKELY AVE.	TURLOCK	95380	634-3283
WA6NSK	A CLARK, JIM	P.O. BOX 638	MI WUK VILLAGE	95346	586-4917
N6OCS	G VREUGDENHIL, BOB	4024 MCHENRY AVE #30	MODESTO	95356	522-6127
NU6O	E JONES, DENNIS	3408 ELKE CT.	MODESTO	95355	579-0402
KD6OQI	T HARWOOD, ARLO	16805 ESCALON BELLOTA RD.	ESCALON	95320	838-3729
KG6OU	A COWMAN, JOHN	1300 WOODLARK WAY	MODESTO	95355	527-7258
WJ6O	E FARR, TOMMY	5535 DOWNIE ROAD	DENAIR	95316	632-1790
K2OXU	G ELLIS, DON	1208 CLIFTON DRIVE	MODESTO	95355	576-8281
WA6OYP	A MC COY, MEL	1228 BRADY AVE.	MODESTO	95350	523-7941
WB6PJY	T SCANLON, CHARLEAN	PO BOX 576713	MODESTO	95357	000-0000
N6QD	E HARTON, JOHN	1349 ELENA DRIVE NBU #6	RIPON	95366	599-6431
KB6QLI	E KACHLINE, CLIFF	300 N. PENNSYLVANIA	MODESTO	95357	529-7066
WA6QWY	A BUTTERFIELD, DON	1124 SKYVIEW	OAKDALE	95361	847-6523
WB6REM	A BETHMAN, JOHN	29480 S. KOSTER RD.	TRACY	95376	835-5748
KD6REW	G LORANG, DENNIS	326 ALTURAS AVE.	MODESTO	95351	526-6788
N6RHC	G CUNNINGHAM, GLEN	780 CORONADO BLVD	SACRAMENTO	95864	488-4574
N7RXW	T ZEILSTRA, BILL	240 SUN VALLEY COURT	RIPON	95366	599-5235
N6SAE	E DIONIZIO, AL	3932 PALI PLACE	MODESTO	95355	523-4485
W6SBE	E CRON, DAN	1525 GALVEZ AVE.	MODESTO	95355	521-2032

WB6SHE	G MATHIES, BILL	PO BOX 425	COPPEROPOLIS	95228	785-3721
W6SKH	G LOWE, IVAN	6419 W. MAIN ST.	TURLOCK	95380	634-8424
NV6S	E CAMPBELL, LEROY	1105 EL VECINO	MODESTO	95350	523-4727
W6SQP	E HANSON, JIM	412 STANDIFORD AVE.	MODESTO	95350	523-8516
K6SWW	A HARDING, CHARLIE	RR 67 BOX 1082	BIG SUR	93920	523-0290
AK0T	E TIFFT, CHUCK	2804 ROSEWOOD AVE.	CERES	95307	531-2644
KD6TBA	T MCWAIN, ED	2416 BELLAMY STREET	MODESTO	95354	526-3238
KE6TBA	T SCHROEDER, GREGORY	2408 ORCHARD PARK WAY	MODESTO	95355	551-7141
KC6TBK	T INGRAM, SANDRA	13813 SKYLINE BLVD.	WATERFORD	95386	874-4765
KC6TDH	A JOHNSON, BRAD	13813 SKYLINE BLVD.	WATERFORD	95386	000-0000
KG6TG	A ARREYUE, RODOLFO	1300 MOCCASIN DRIVE	MODESTO	95351	522-2126
N6TIV	A BUSH, HARTLEY	333 MAXWELL AVE.	OAKDALE	95361	847-2819
KC6TVC	T ERICKSON, RAY	1108 ALLEN DRIVE	MODESTO	95350	524-0625
KC6TVD	T KIMBALL, LAURA	13218 SYCAMORE AVE	PATTERSON	95363	892-8664
KC6TVE	T KIMBALL, ROBERT	13218 SYCAMORE	PATTERSON	95363	892-8664
KC6TVG	T DOBBINS, DOBBY	13066 ATKINSON ROAD	LODI	95240	931-4307
KD6TZI	T TROCHEZ, PETER	1939 PONTIAC ST.	OAKDALE	95361	847-6953
N6UCL	A COLLINS, RICK	6007 BACON RD.	MODESTO	95358	545-1556
KD6UEE	T HETZLER, SHARI	PO BOX 1882	OAKDALE	95361	847-7266
N6UGH	A JONES, JIM	336 EUCALYPTUS AVE.	PATTERSON	95363	892-2484
KF6UL	E JONES, ED	2613 CALEB CT.	RIVERBANK	95367	869-4905
N6USH	T VILLINES, MYRLE	612 S. VEACH AVE.	MANTECA	95336	823-4613
K6UVI	E RADER, ERNIE	1736 CARIGNANE WAY	ESCALON	95320	838-2921
KC6VBV	T NEFF, STEPHEN	2005 KRUGER DRIVE	MODESTO	95355	575-4397
KD6VDY	T ANDERSON, DAVID	3832 TAHITI LANE	MODESTO	95356	529-2028
KD6VEA	N MCBRIDE, REX	3108 KNOLES COURT	MODESTO	95350	577-3514
N6VGK	T BILLIKOPF, LINDA	3521 BALFOUR LANE	MODESTO	95357	525-9155
KA7VJW	A MADISON, LEWIS	4812 ESMAR RD. #29	CERES	95307	531-1623
KA6VVV	E BILLIKOPF, GREGORY	3521 BALFOUR LANE	MODESTO	95357	525-9155
KD6VZE	T BERTOMEN, LINDSEY	5231 CHRISTOFFERSON ROAD	TURLOCK	95380	668-8795
N6WAG	T BILLIKOPF, DAVID	3521 BALFOUR LANE	MODESTO	95357	525-9155
WB7WAV	G HARTMAN, CYRIL	1937 SEQUOIA STREET	CERES	95307	538-8344
KA6WBY	G HOTCHKISS, GLEN	2250 N. GRATTON RD.	TURLOCK	95382	634-1859
KC6WGM	T BORBA, WILLIAM	1624 BRENTWOOD CT.	MODESTO	95350	579-7009
WB6WHK	G BULLARD, SHERRILL	PO BOX 11990	OAKDALE	95361	847-6573
AB6WN	E WARD, MICHAEL	1211 DAVIS CUP CT.	TRACY	95376	832-3982
WB6WQL	G TERRY, DAVE	382 LAMBUTH AVE.	OAKDALE	95361	847-6968
KA6WWT	T HOTCHKISS, RANDY	4801 # F MCKINLEY PL	MT. HOME, ID	83648	832-4429
KC6WXX	E FORER, DENNIS	1829 ROSSMORE WAY	MODESTO	95355	526-9721
W6XK	E JENSEN, CHET	3124 PIONEER RD.	HUGHSON	95326	883-2968
KD6YAZ	T GRAY, ANTHONY	937 ALAMO	MODESTO	95351	524-2113
KD6YCB	T BURLESON, STEVEN	3625 TOOMES RD.	MODESTO	95358	545-1364
KC6YDA	T RILEY, MARION	1416 LANSING DRIVE	MODESTO	95350	526-3347
N6YJR	T VOWELL, ELMER	PO BOX 644	WATERFORD	95386	000-0000
N6YLN	A MAXWELL, MERLE	1009 HUNTINGTON DRIVE	MODESTO	95350	529-7209
KC6YTE	T HANSEN, DEBBIE	4001-B ELMO LOOP	MODESTO	95356	545-5491
KC6YTI	T GRISWOLD, GAIL	2020 MATHER DRIVE	MODESTO	95350	577-3524
KD6YWD	T SWAN, MALVIN	6030 WILLOWSONG COURT	RIVERBANK	95367	869-0302
KD6YWQ	T SUND, TRACY	500 BENNINGTON AVE.	TURLOCK	95382	632-4780
N6ZAA	T KRITCHER, SKIP	PO BOX 1534	PATTERSON	95363	000-0000
KD6ZAD	T DEGRAFF, TOM	1100 LUPINE ST.	LOMPOC	93436	735-5668
KN6ZE	A GRIFFIN, BARRY	836 CHALONE DRIVE	MODESTO	95358	578-3877
KB7ZGC	T CAMP, CHRIS	PO BOX 764	VERNALIS	95385	836-2546
KC6ZKE	T ORR, JOHN	1210 DURANT STREET	MODESTO	95350	529-5543
WA6ZLO	A PINHEIRO, BOB	1221 MIST FLOWER CT.	MODESTO	95355	523-5880
N6ZUC	E LOW, TIM	2946 AMANECER PLACE	ESCONDIDO	92027	741-1054
ASSOC.	SPEARS, JOHN	2405 LILAC CT.	CERES	95307	537-7328
ASSOC.	WALTON, RAY	PO BOX 37	MODESTO	95353	549-0553
ASSOC.	DAVILA, CAM	1716 FALMOUTH WAY	MODESTO	95355	571-9026

Thank you for your support!



Calendar

- Oct. 7-9 1st National Hamfest 3 days
Bakersfield, CA.
- Oct. 8 VE Testing in Merced 9 AM
Contact K16PR 383-2166
- Oct. 18 SARA monthly meeting 730 PM
Raffle Drawing
- Oct. 21-23 PACIFICON94 3 days
Hilton Hotel, Concord, CA
- Dec. 10, 1994 .. VE Testing in Modesto 9AM
Contact Chet, W6XK, 883-2968

SARA meets the third Tuesday of each month (except holidays) at the Stanislaus County Administration Building 11th and H Streets in downtown Modesto. The meetings are held in the lower-level conference room at 730 pm. Visitors and interested persons are most welcome to attend. SARA is an ARRL affiliated club and is also affiliated with the Stanislaus County and City of Modesto RACES/VARES programs.

The READOUT is mailed with a bulk mailing permit. Please notify us if you move as the Post Office will not forward bulk mail regardless if you left a forwarding address.



SARA Membership Application

Call _____ Date _____

Name _____

Address _____

City _____

State _____ ZIP Code _____

Are you a member of the ARRL? (Yes) (No)

Home Phone _____

Business Phone _____

Occupation _____

Date of Birth _____

Class of license _____

Year first licensed _____

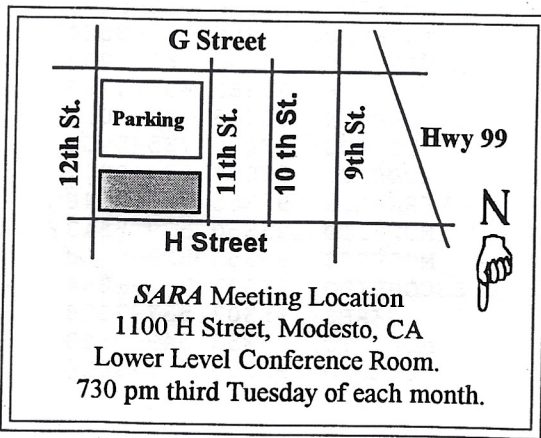
Dues: Renewal \$23.00 per year. Out of area more than 150 miles from Modesto is \$11.00. New first time applicants dues are pro-rated from the month you join the club. Use \$1.91 times the number of months remaining in the year. ie.- You join in July- 6 x \$1.91= \$11.46

SARA repeaters on Mt. Oso at 3,300 feet- 145.39(-) MHz PL 136.5 Hz. 224.14 (-) MHz. 440.225 (+) MHz PL 136.5 Hz. KA-Node Digipeater (SARA) 144.91 MHz. 10 meter digipeater 28.103 kHz.

Stanislaus Amateur Radio Association, Inc.
P. O. Box 4601
Modesto, CA. 95352

Address Correction Requested

Bulk Rate
 U. S. Postage
 Paid
 Permit 5
 Modesto, CA.



TO:

1994

Next SARA Meeting is Oct. 18, 1994 at 730PM & You're Invited!