

# The READOUT

Year 15

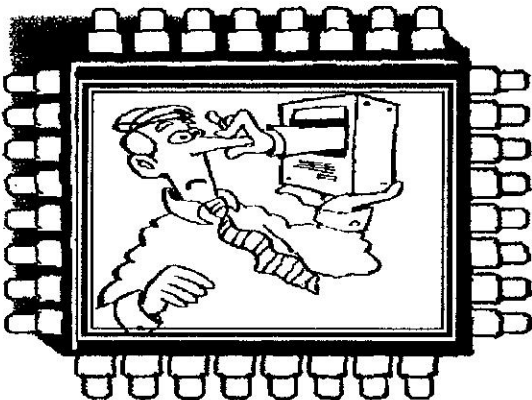
Number 2

February 1993

*The Official Newsletter of the Stanislaus Amateur Radio Association*

## In This Issue

1993 VE Exam Schedule .....	2
SARA Minutes .....	3
Editor's Notes .....	4
FCC Test Car In Museum .....	5
Amateur Radio in Space .....	6
Watch Your Language .....	7
From the Desk of N6ZUC .....	8
SARA Technical Report .....	9
Frugal Fluorescent Bulbs .....	10
ARES Report .....	11
San Diego Jammer Arrested .....	12
ARRL Pacific Division Update .....	14



**This is it!** If you have not paid your 1993 Dues, this will be the last newsletter we can send you and your name will be dropped from the roster. Please don't let that happen. Your support is vital to the club. Each and every member is important. Please send in your dues now. Use the handy renewal form on page 15 of this issue of *The READOUT* and mail your check or money order to the club's post office box today. Thank you!

## Club Secures Mobile Communications Trailer

By Ernie Rader, K6UVI

Well, we did it! For quite some time the club has wanted to acquire a mobile communications trailer for use in several ways. Some have even suggested that it house the club station. The club now has such a vehicle, though it really needs some TLC.

For those of you who missed the January 19th *SARA* meeting, we offer this as a substitute to the 15 minute video which was shown at the meeting.

We have Steve Crabtree of the Stanislaus County chapter of The American Red Cross to thank for our acquisition. The trailer was donated at no cost to the club by the Navy at Rough & Ready Island near Stockton. A trailer

used to transport it from Rough and Ready Island was donated by Andy, KD6MOD's father. The pickup and trailer made it possible to transport the trailer without having to license it, attach signal lights, or register it with DMV.

This way the club could view the unit before committing to its repair, and invest nothing to do so. It was merely fork lifted onto Andy's trailer and brought down to Jim, UGH's ranch outside of Patterson.

One small fly in the ointment made taking it off Andy's trailer almost impossible. The lift driver that set the unit on the trailer did so in a way that made it hang up on the supporting unit. The only way it could be taken off was by the use of two fork lifts at

See 'Trailer' page 14

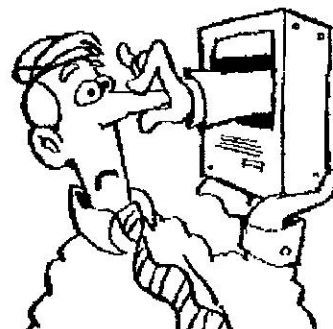


**Stanislaus Amateur Radio Association PO Box 4601 Modesto, CA. 95352**

# 1993 Area VE Examinations

# This is It!

The Tri-County VE Team sponsors Amateur examination sessions monthly in either Stanislaus, Merced or Tuolumne Counties. Test fee is \$5.60 (except Novice). Bring the original and a photocopy of your ham ticket and any CSCEs in your possession. 610s provided by the team. All materials returned to the ARRL/VEC via Air Express to ensure prompt issuance of licenses. For additional information, contact Chet (W6XK @ KK6SZ) or (209) 883-2968. All sessions are ARRL/VEC sponsored.



## Schedule for 1993

Date	Time	Location	Contact	Phone
3/13/93	9:00 A.M.	Modesto	W6XK	(209) 883-2968
5/8/93	9:00 A.M.	Turlock	W6XK	(209) 883-2968
6/12/93	9:00 A.M.	Modesto	W6XK	(209) 883-2968
9/11/93	9:00 A.M.	Modesto	W6XK	(209) 883-2968
10/9/93	9:00 A.M.	Merced	KI6PR	(209) 383-2166
12/11/93	9:00 A.M.	Modesto	W6XK	(209) 883-2968

All sessions accept walk-ins (pre-registration is not required) and will offer examinations for all classes of license. The test fee for 1993 is \$5.60 (except Novice) and all test materials are returned to the ARRL/VEC by Air Express. Phone the "contact person" for specific details regarding location or changes.

If you have not paid your 1993 club dues, this will be the last issue of the newsletter you will received. We hope you have only forgotten to send in your dues and will sit down right now while your are thinking about it and fill out the renewal form on page 15 and mail it along with your check or money order to the club's post office box. Your support is vital. Please renew your membership today. Keep **The READOUT** coming.

**The READOUT** is published monthly by the Stanislaus Amateur Radio Association. © COPYRIGHT 1993 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.

### 1993 SARA Officers

#### President

Sandra Ingram, KC6TBK,  
575-4765

#### Vice President

Elizabeth Eyre, KD6GIW

667-5299

#### Secretary

Ernie Rader, K6UVI 838-2921

#### Treasurer

Andy de Groot, KD6MOD  
892-3459

#### SARA VHF Net

Thursdays @ 8 P.M.

(Except Holidays)

2 meters 145.39 MHz WD6EJF

220 Band 224.14 MHz WD6EJF

10 Meters 28,440 kHz USB

Tuesdays at 730 P.M.

ARES Net Wednesday 800 P.M.

Contributions to **The READOUT** are always welcome and may be submitted to the editor by mail or via packet at WA6KTK-BBS on

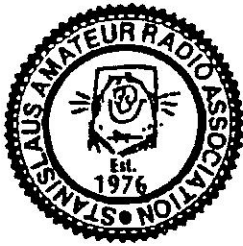
145.79 MHz. The deadline for articles is the 15th of the preceding month. Articles regarding religion or politics are not accepted.

#### 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.



# SARA Minutes

By Ernie Rader, K6UVI, *SARA* Secretary

---

The regular monthly **SARA** meeting was called to order by President Sandy Ingram, KC6TBK at 7:29 PM on January 19th, 1993. Introductions and sign-in took place immediately.

The treasurer's report was given, but the secretary forgot to get it at the meeting, so it can't be passed along as of the printing of this report. I'll give two reports in the printing of next month's minutes.

It was moved and seconded to accept the minutes of the previous meeting as they were printed in the last **READOUT** with the exception that Bart reminded us that handicap license classes are being given with the help of Mark, WB6BJN, at his home.

The secretary also urged those members at the meeting to pick up an ARES application along with some training material needed for the ARES net the following evening. Vice President, Liz, KD6GIW told us that she's going to be involved with several ways to advertise our club and its activities, and suggested the rest of the members do the same.

Under old business, Ernie showed a 15 minute video tape of his efforts at getting our new communications trailer acquired and transported from Rough & Ready Island down to Jim's (N6UHG) house. Discussion followed and it was decided to keep the unit, as Jim, N6KMR, is to head a committee to get estimates for its repair.

Sandy reported that the work with the local fairgrounds has been

effectively canceled. Our participation would not help that much as the local sheriff department was already taking care of that service. Sandy went on to tell of the safety vests that she'd found, and it was moved and seconded to purchase a dozen of them.

Chuck, KJ6DO, reported that his license classes were moving along smoothly, and there were approximately 40 students in his class in Oakdale.

There was a short break, and when everyone returned, Bob, WA6ZLO, was asked if he would produce an information pamphlet to be distributed to the public. This pamphlet would tell about our club and its activities, and some of the services we as an organization can provide.

Several club fund raisers were suggested. Instead of the club members spending money in the machines for sodas during meetings, it was moved and seconded to have Liz purchase sodas at wholesale prices, sell them to members at the break, and the profits from those sales to go to the club treasury. The generation of a recipe book was tabled as was a raffle. It was decided that the yearly raffle had been used too much in the past. Then Sandy asked the members for other ideas for raising money. Nothing else was suggested.

A special event station was suggested for Graffiti Fest '93, and the membership wondered if the communications trailer would be completed by then. We didn't know. Discussion continued with regard to what was needed

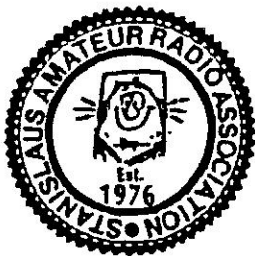
to register for special event station status, and everyone agreed that this needed to be looked into further. Jim, UGH was asked if we had ever officially entered Field Day last year, and he said yes. However, there was a mixup with the paperwork between here and the ARRL.

Media awareness was discussed, and Sandy reported that she's been hard at work in this area. She's been sending copy to radio stations and cable companies. Some of the spots had already been heard on the local broadcast stations.

Jim, UGH, had Sandy read a report suggesting that people within simplex range should not tie up the repeater, and our repeaters needed technical help. At this point LeRoy was asked to give his technical report and several problems were cited with our equipment. Ernie, UVI, reported on a club executive meeting held just a few days before where it was suggested that we, as a club, seek additional technical help to assist Leroy. He subsequently talked with Alex, K6LPG, asking for his help. He'd already contacted LeRoy in that regard for his reaction—a very positive one. Ernie was to coordinate the future efforts of all concerned and affect future upgrades.

Sandy reported that after next meeting, speakers were to be scheduled for special presentations, and it moved and seconded to adjourn the meeting at 9:32 PM.

Respectfully submitted, Ernie, K6UVI, Club Secretary.



# Editor's Notes

By Bob Pinheiro, WA6ZLO

1993 renewals have been coming in at a steady pace. However, there are a few of you that have, hopefully, overlooked sending in your 1993 dues. So, please use the handy renewal form on page 15 of this newsletter and send in your check or money order in today. If we don't hear from you by March 1, 1993, we will be forced to drop your name from the roster. Please don't let that happen.

Speaking of the membership, I would like to welcome back to our ranks a couple of former members. WC6D, Mark Taylor and KG6TG, Rudy Arreygue, both of Modesto. Thanks to everyone for their support.

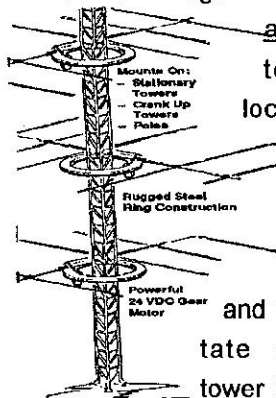
The club is off to an excellent start beginning our 17th year of existence. We have come a long way from that first meeting held at the old studio's of radio station KBEE in downtown Modesto in 1976. I was there along with about 20 other hams from the Modesto area. Twice before (in prior years) clubs in Modesto had been formed only to fall apart and disappear. This time was different. We had a 2 meter repeater on the air to rally around and several local energetic men and women to roll up their sleeves and put in the work and money necessary to insure it's survival. It was tough, but we did it. Today we are on a smooth course with strong leadership, a membership of almost 200 and three repeaters and a digipeater on the air.

In addition, we have been successful in obtaining a communication trailer which we will be restoring this year.

Your help, muscle and monetarily, will be needed. More about this from Ernie, K6UVI, who headed the effort to obtain the trailer, next month. We also hope to have pictures of the unit. We couldn't have done it without you.

Thumbing through all the Amateur radio magazines I get, I noticed lots of new products on the market. One that really caught my eye was the new TIC-RING. What's a TIC-RING you say?

It's a rotor designed to mounted



around a tower at any location on the tower. You then mount your beams to the rings and they then rotate around the tower instead of on the top of the tower as we do today. The rings and the control box that comes with them are expensive, \$649.00 for each ring and one control box, plus shipping and handling from TIC General, Inc. in Thief River Falls, MN. See page 199 of the February QST.

ICOM is out with a new telephone style dual band (2M and 440) talkie, IC-W21AT. According to ICOM, the W21AT is the first and only handheld to give your full duplex that works like a telephone. ICOM added a second microphone and single band dual receiver which allows you to listen to both bands at the same time. The device is also capable of full cross band repeat, and a sensing circuit that

matches output power to the incoming signal strength to extend your on-air time. If you want the price and more information, call ICOM at 1-800-999-9877.

In response to three petitions that involve unrelated changes to the rules for the amateur service 222-225 Mhz band, the FCC has issued a Notice of Proposed Rule Making which: (1) creates a small new subband where repeaters are prohibited; (2) authorizes frequency privileges to the Novice Class operators in the entire band; and (3) allows Novice Class operators to be licensees and control operators of repeaters in the 222- 225 MHz band as well as in the 1270-1295 MHz segment of the 1240-1300 MHz band.

The American Radio Relay League (ARRL) requested in RM7869 that a new subband be designated at 222.000-222.150 MHz where repeaters would be prohibited, but where all other types of station operation could continue. It said a small segment is needed where experimentation can take place but where frequencies need not be shared with repeaters.

ARRL also asked in RM-7868 that the frequency privileges accorded Novice operators be expanded to encompass the entire 222-225 MHz band. It believes that Novice Class operators would benefit from such expansion because they would be exposed to routine types of amateur station operation other than repeater operation. That's it for this month. 73, Bob.



# FCC Test Car in New Museum

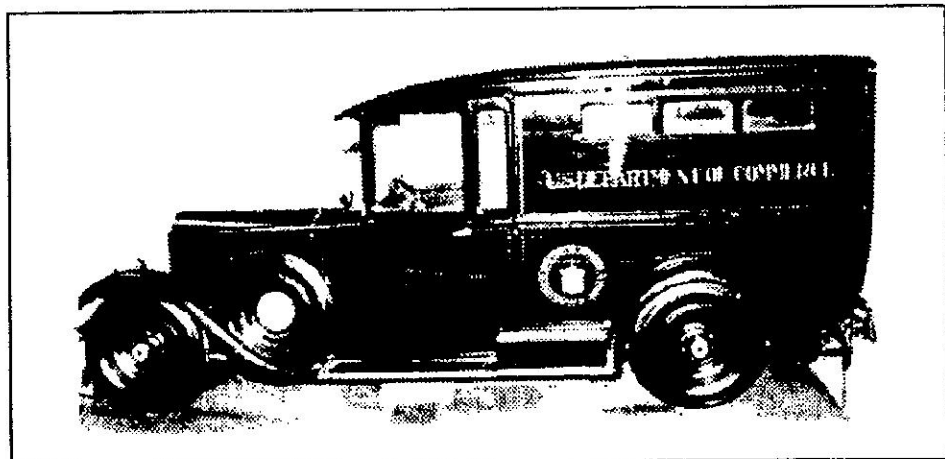
By Bob Rockwell, W3SYT

The Federal Communications Commission will soon open a museum at its former Central Monitoring Facility at Grand Island, Nebraska. The museum will display several hundred radio transmitters and receivers, photos, equipment manuals, and books. The building itself is in the National Register of Historic Buildings. One of the prime exhibits is a 51-inch model of the FCC's first Field Car.

## FCC Field Cars

In 1910, the United States enacted its first radio laws, which required licensing of ship and shore radio transmitters, examination of radio operators and the inspection of transmitters. It became necessary to organize a radio inspection and enforcement service. The advent of radio broadcasting increased the workload and the variety of tests needed, precluding hand-carrying all the equipment. A special automobile was the answer.

The first car made to FCC's specifications began service in 1925. Built by Packard Motor Car Company it had a heavy-duty chassis, special wheels and spring suspension—all nec-



essary to support an oversized gas tank and the radio equipment. Packard delivered ten vehicles and the FCC built the body almost entirely of non-metallic materials to avoid affecting operation of the radio equipment.

The cars had a desk across the front of the radio compartment with monitoring and field strength equipment mounted on it. On the right, a radio frequency oscillator provided accurate calibration signals from 20,000 meters down to ten meters (15 KHz to 30 MHz). Storage batteries under the car's floor-boards supplied power.

Other equipment included a crystal oscillator, also used for calibration, a variety of wavemeters and

omnigraphs, a field intensity test set supplied by Western Electric, a complete radio direction finder with loop antennas and a five-Watt transmitter for emergency communications. A typewriter and two dome lights made the car in to a mobile office where measurements or operator examinations could be performed day or night.

The car normally carried a crew of two, one man driving and one operating the equipment in back. The two-man crew arrangement also meant one could drive while the other slept, for extended time and distance coverage. □

*From the August '92 Steel City ARC Carnegie, PA KiloWatt Harmonics. Material for the article was submitted by Rebecca R William of the FCC via ARNS.*

## Digital Imaging Standard

The Society of Motion Picture and Television Engineers (SMPTE) held a technical conference to adopt guide lines for a new standard of digital imaging. With digital signal processing and computers overtaking the industry, the

engineers wanted to write rules that everyone would accept when it comes to enclosing television, film and computer images.

The average consumer is not very far away from hooking up a desktop mouse to the VCR and using the "point-and-click" system to program when to start recording. Videotape editing can be made much sim-

pler using a word processor and a mouse to seamlessly splice images together. Digital soundtracks mean little or no signal degradation. Microsoft's new entry into this field is called Video for Windows, which brings television into PC's without adding expensive and complicated expansion boards. These new formats may soon show up in ATV and SSTV.

W5YI Report

# Expanding Student's Horizons via Amateur Radio in Space



*Editor's Note: The following article appeared in the NASA Education Division Newsletter Winter 1992 issue. Thanks to Ivan & Marj Lowe for sending us a copy and the National Aeronautics and Space Administration for the article.*

This is Bob, NQ1R calling Shuttle Columbia...It's "hammer" time again." That is—time to get those amateur radio (ham) operators geared up for SAREX, the Shuttle Amateur Radio Experiment.

The SAREX project is an educational innovation developed jointly by NASA's Education Division, the American Radio Relay League (ARRL), and the Radio American Satellite Corporation (AMSAT). SAREX is scheduled for flights in February, March and April of 1993 on board STS-55, STS-56, and STS-57 respectively, as a secondary payload.

Already, SAREX has flown in various hardware configurations on Space Shuttle Missions. The most recent experiment was on STS-47, in the fall of 1992, when students and other ham operators from around the world communicated with crew members on board Orbiter Endeavor.

During SAREX, the Space Shuttle crew uses its spare time to talk via Amateur Radio with students and other Ham operators on earth. If the astronauts are busy or asleep, there is a robot computer ham station aboard the orbiting Shuttle vehicle. It will receive the transmission from an amateur's computer and automatically

transmit an acknowledgment of the contact with the base. Frank Bauer, Vice President for Manned Space Programs for AMSAT, said there is always the potential to have contact between the U.S. Space craft and MIR, the Soviet Space Station.

When STS-55 lifts off in February, at least four of the Astronauts will be licensed ham operators: the Commander of Columbia, Colonel Steven R. Nagel, N5RAW and Mission Specialist Colonel Jeny L. Ross, N5SWC, as well as two payload specialists from Germany.

Students involved in this project may also interact with other students from across the country and around the world. This type of experiment not only piques students' interests in space but, also excites them enough to study other social cultures, geography and foreign languages.

NASA is participating in amateur radio experiments during Shuttle flights because it wants to encourage public participation in the space program and to support educational opportunities offered by amateur radio. "SAREX" provides an opportunity for the public, especially students to become directly involved in the U.S. Space Program by witnessing demonstrations of amateur communications with the Shuttle.

ARRL has an Education Activities Department which is helping teachers and their students get excited about science and technology. Rosalie White, ARRL educational activities manager, said using ham ra-

dio on the Space Shuttle is a great way to get students involved with hands-on activities. "When the teachers are sharing this type of experiment, the students think their teachers are really neat," said White.

According to White, the teacher's enthusiasm trickles down. She remembers, one school in Bethany, Oklahoma created a project that made each student feel as though he or she were apart of the experiment. The students wrote essays and participated in poster contests to prepare for one of the SAREX projects. "Sometimes these communities just go hog-wild," said White. One community even went around to area stores asking to put displays in the windows so that people could see the type of technology in which the students were involved.

The ARRL provides SAREX lesson plans, activities and games for teachers to share with their students. According to White, all grade levels may participate in SAREX. SAREX is also used quite successfully on the college level.

How can your school get involved? Schools are asked to submit proposals to ARRL. They may write ARRL at the address in the concluding paragraph for guidelines. The ARRL and AMSAT, in cooperation with NASA, select the schools that will actually have their students talk to the astronauts. However, all schools may participate by listening on a ham radio or by using a computer satellite tracking program. Teachers and administrators are

See 'SAREX' page 7

# Watch Your Language

By Jim Jones, N6UGH

Help—I'm being "Q" signaled to death. QRL QRV QRO QRI QRK QRM QRQ QSM QSZ QRU...if any of you interpreted all of these, you are a die-hard CW operator.

However, there is no need to use abbreviations when talking phone. There is sometimes more confusion when "Q" signals are used, particularly with some of our newest members to the hobby.

Granted, some of these people are "no-coders", and like it or not these people do have a legal right to the frequencies just like all the rest of us. By using these signals around some of these new-comers, we just might discourage someone from up-

grading their license.

Who knows, one of these new-comers might someday make some big electronic discovery to revolutionize our cushiony way of life. If using "Q" signals is someone's way of impressing others by what they know, well, I don't impress very easy. If this is meant to impress people who aren't licensed yet, don't bother, just talking across town on a little HT will impress most people we come in contact with.

The idea of using all these "secret codes" just might dissuade someone from wanting to get their ham ticket. There are even a few of us "legiti-

mate" or "coders" who are put off by all of the "secret codes".

Just think, how many of us might not have become hams if going in we knew we had to learn code AND a bunch of secret codes.

So think about it the next time you are talking "on the repeater" or SSB on one of the lower bands, speak in plain English. Who knows who might be listening in on a scanner or may be a new ham just waiting to be the next Einstein. □



## SAREX

From page 6

advised to get ham operators from the community to come into their schools to help them set up a program. Local amateur radio clubs will often bring equipment into the school and provide students with exciting and informative demonstrations in radio and computer communications. Bauer suggests that schools post flyers asking others in the school whether they are ham operators.

Some schools have teachers, principals and building staff who are hams, or they may know someone who is a ham operator. For more information on SAREX contact the American Radio Relay League, 225 Main St., Newington, CT 06111, (203) 666-1541. For a computer tracking program write or call the Radio American Satellite Corporation, 850 Sligo Ave. Silver Spring, MD 20910, 301 589-6062.

## Destinated or Interstated

By Jack R. Main, W4YCZ

Last summer, I jumped into my pickup truck and headed for the country to get a load of top soil. I turned on the 2M rig and heard two friends on the 73 machine. They were discussing the merits of the word "destinated." Both agreed that it wasn't a real word and shouldn't be used. I inserted my call and one of them answered me, so

I told him I also agreed and that I would like to stay and talk with them but was just going up the I-64 ramp headed for Suffolk to get my top soil. Just for meanness, I passed my regards and said I was hanging up the mike as I was now "interstated." My friend then asked if, when I got to Suffolk, I would be "Suffolkated?"

Thanks Worldradio

Worldradio



This is called a "feather duster duckie". It allows you to make yourself useful while you listen to the repeater.



Please pay your 1993 dues!

# FROM THE DESK OF **N6ZUC**

Tim Low, Escondido, CA

mission line, normally 50 ohm coax. An appropriate SWR meter is inserted between the transmitter and transmatch, and the system is "tuned" for lowest reflected power. Now we're cookin', right? Well, maybe. What's actually going on in

this system?

My old electronics Instructor taught me to break any circuit down to it's simplest form. In this case we have a signal source, and a load. Any component in this circuit is either part of the signal source, or is part of the load. In this one, the transmitter is the signal source, and every thing after it, transmatch, coax and antenna is part of the load. I will assume you know what I mean when I speak of the "signal source".

The load on the other hand is the part of the system that takes the generated energy and performs the work. In this case hopefully coupling it to the atmosphere in the form of radio frequency radiation. Again, the idea is to as efficiently as possible, deliver this generated power to the antenna, so it can be radiated.

For maximum transfer of energy, the input impedance must be equal to the load impedance. Impedance being the total opposition to the flow of current, taking into account both the resistive component, and the reactive component of the circuit.

In the setup I've outlined above, this condition is not met. Yes, the transmitter is happy, because it sees the 50 ohm load provided by the transmatch, and is transferring all of its energy. There is no standing wave between the tuning unit, and the transmitter.

Ok, so what kind of a load is the

output of the transmatch seeing? The input impedance shown to the transmatch is a combination of the combined resistance and reactance of the antenna, as well as the characteristic impedance of the transmission line. You've twisted all the knobs on the transmatch to set its output to the input of the transmission line, and its now happy, and transferring all its energy into the coax. This assumes no loss in the transmatch components. Of course in reality there is, though we can assume it's minimal, and therefore insignificant. Because of this matched condition, there is no standing wave at the output of the transmatch.

Up the line this generated power goes, all the way to the antenna. Oops, roadblock dead ahead. On the other end here, we have a problem. The input of the antenna doesn't match the characteristic impedance of the transmission line. Since the condition necessary for the maximum transfer of power is not met, we have minimal power coupled to the antenna, and high standing wave at its input. Therefore power is reflected back along the coax. Kind of a brick wall effect.

The more serious the mismatch, the more power reflected, and the less radiated by the antenna. Where does this power go? It can't go back to the transmitter, remember it's coupled to the transmission line via the transmatch, therefore seeing a good 50 ohm load. Where does this power go?

Well, we know that energy can't be destroyed, only changed. In this case there are two possibilities. It can be turned into heat energy when absorbed by the dielectric of the coax. In which case you may just catch that wonderful aroma of burning vinyl, but this is only

Does your feed line radiate? Have you ever stopped to think about that one? When you install what's commonly called a transmatch, or antenna tuner, between your transmitter and antenna, attempting to cure a poor match condition, what is actually happening? Do you know? Interesting question if you stop to think about it.

I've always assumed this was fairly straight forward. I didn't realize that there were those who were really confused by it, and it was the subject of recent discussion on one of my favorite 2 meter haunts. As a matter of fact, the discussion went on, off and on, for the better part of 3 weeks. Discussion, re-discussion, and more confusion. There were actually those who held opinions opposite of mine on this topic. Imagine that! I always try my best to keep in mind that others are entitled to their opinions, even if they are wrong, HI HI.

Let's assume for example, you have an antenna that has a resistance of 300 ohms, and a reactance of +j100. For those of you not schooled in the terminology, let's just say it's a serious mismatch for a 50 ohm transmitter and transmission line. How do you make this work? Obviously you need some type of matching network.

Many people will buy a transmatch for this purpose. They're manufactured by many companies, and available at any ham radio supply store. This device is now hooked up at the output of the transmitter, and then fed into the trans-

See 'N6ZUC' page 9



## From Desk of N6ZUC

From page 8

going to happen with poor quality coax in which you've exceeded the power handling ability. That leaves us with the other option. It radiates. Yes your coax has become the radiating portion of the antenna. This is one of the chief reasons why some hams become the proud owners of the "worked all neighbors" award. If the idea is to get that signal out there in space, and it is, so other amateurs can converse with you, then partner, you ain't makin' it.

Under ideal conditions, any antenna tuning unit should be located at the input to the antenna. This will cause all of your power to be efficiently coupled to the antenna, and therefore radiate. Now I must state for the record here, that I too use a transmatch on the radio side of the system. However, my antenna is resonant on the bands on which I operate, and I only use it to provide the radio with a perfect load, it's easier on it, and to increase the usable bandwidth of the system. While this system is not ideal, I'm willing to except the tradeoffs because the losses are minimal, and it gives me more flexibility in operation. Because I start out with a well trimmed antenna, the problem stated above is not a big factor.

My advise then is to not head the advertising hype that states you can use "their" wonderful transmatch to tune up a coat hanger through 50 feet of RG-8U coax, and operate 160 meters. You can of course, but your only contact may be your neighbor when he comes knocking on your door. Not the way to promote peace and tranquility around the homestead.

Questions? Comments? Send me a packet at N6ZUC @ KC6NZN. #SOCA.CA.USA.NA, or write me in care of *The READOUT*. 73 -Tim.



## SARA Technical Report

By LeRoy Campbell, NV6S

It has been a busy month for repeater repairs as well as for me. Andy, WB6GUM and I made a trip up the hill where we put the Drake transceiver in line on the KA-Node digipeater and have that working.

We have been experiencing problems with interference from other services on the 2 meter machine. We were taking a severe hit from packet and we found that our receiver had problems and a stage was oscillating. On that trip I had no signal generator along and made an attempt to do what I could with the available equipment to correct the problem.

Andy and I made a trip a week later and retuned the receiver but have noticed the receiver is not doing very well and the RF stage is pretty well down. I am planning to pull that and fix it soon. We have a set of 440 duplexers borrowed from WB6GUM which will have to be returned very soon as he has a need for them. Anyway they

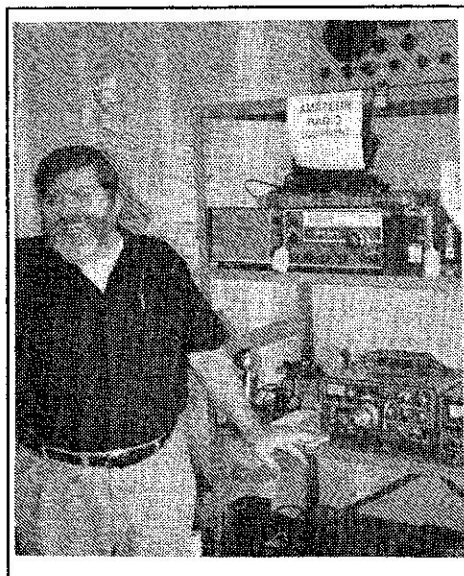
have improved the 440 repeater.

We are still experiencing commercial broadcast signal mixing in our final and being transmitted on our squelch tail. Also we still have some desense from another source even with the good duplexers. More effort and expense will be needed here to have a decent 440 repeater.

The 220 repeater seems to be doing great. We have been having some problems with the link but I think that is solely because the relay needs more exercise. I've also had a couple more trips up the hill this month to chase intermittent audio on the two meter repeater. I think I finally located the culprit there which was a broken wire. With that problem solved hopefully we will not loose the audio again for a while.

I thank everyone for patience when things aren't running as we would like. I also thank WB6GUM, KC6VWO, KC6WXX, KD6MOD, and others who have donated time and or equipment to assist in the technical chores.

73 LeRoy



**Modesto Consignment Shop** owner George Ledoux, K1TKJ, displays some of the Amateur equipment on consignment at the newly opened shop. The shop is located at 1046 Reno Ave., Modesto, CA and is open every Saturday from 9 am to 5 pm.

# Frugal Fluorescent Bulbs Save Bucks

By Skip Kritcher, N6ZAA, Tracy, CA

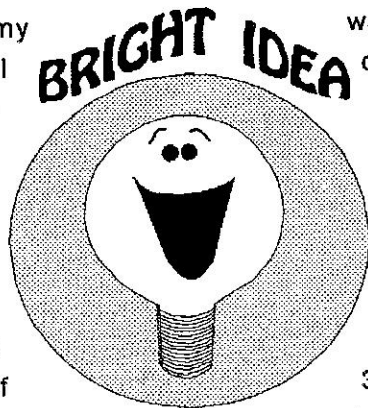
Every time my PG&E bill arrives, I see RED! As a result, I've been doing some research looking for ways to decrease this monthly charge and thereby save some money. Turning off everything electrical

didn't seem practical, so other alternatives needed to be explored. I decided to see what the cost difference would be between incandescent and fluorescent light bulbs.

My wife has a reading lamp that has a 150 watt, three-way bulb at the top, and three 60 watt bulbs below. They consume 330 watts when all are burning.

I started my preliminary investigation by learning that an 18 watt fluorescent gives off the same amount of light as a 75 watt incandescent bulb, and a 15 watter equals 52 watts of the "glowing" kind. Should these new fixtures replace the incandescent ones, the difference in power consumption would be 261 watts (I could put three 18 watters in place of the 60's, and a 15 where the three way was ( $3 \times 18 + 15 = 69$ , and  $330 - 69 = 261$ )). This combination would give me almost the same amount of light to read by as before. So far, this is beginning to look VERY good!

Out came the calculator. PG&E tells me I'm paying \$0.11439 per kilo-



watt hour, or about 11.44 cents per thousand watts.

Let's compare the operating cost of each of these lighting systems. Since my wife has this light on about six and a half hours a day, then:

Incandescent Bulbs:

330 Watts X 6.5 hours a day = 2,145 Watts consumed per day (2.145 KW) 2.145 Kilowatts X 11.44 cents = 24.54 cents per day to light the "oldies". If this lamp was lit 365 days a year, it would cost \$89.57 a year for my wife to use this lamp to read under.

Fluorescent Bulbs:

69 Watts X 6.5 hours a day = 448.5 Watts consumed per day (.4485 KW) .4485 Kilowatts X 11.44 cents = 5.13 cents per day to light the fluorescent bulbs. If this lamp was lit 365 days a year, it would cost only \$18.72 a year instead of \$89.57: a difference of \$70.85 EACH AND EVERY YEAR!

Now, I realize that in all fairness the cost of the more expensive fluorescent bulbs must be taken into consideration. Therefore, I offer the following list of lifetimes of different types of lights, and then a calculation of what each system would be with the initial purchase of the bulbs included.

Standard incandescent bulbs last approximately 1,000 hours. Compact fluorescent bulbs last 10,000 hours under normal use.

With this in mind, a standard incandescent bulb would last 153+ days

being used only 6.5 hours per day. Fluorescent bulbs last ten times longer, or 1,530+ days. That means the incandescent bulbs would have to be replaced ten times as often as the fluorescent ones. Having replaced the old bulbs many times before, I know all four will cost about \$2.00 or about \$20.00 during the lifetime of one set of fluorescent. The fluorescents will cost a bit more initially (about \$34.63).

Bear with me, we have some more fourth grade arithmetic to work with. For simplicity's sake, let's say the life of an incandescent bulb is 1/2 year. 153 days is actually less, but the "hot" one needs a friend right now. For more simplicity's sake, let's say the life of a fluorescent bulb is only four years. During a given four year period, here's what each kind of lighting system would cost per year:

Incandescent bulbs: \$89.57 per year X 4 years + \$20.00 for bulbs = \$378.28/4 = \$94.57 per year.

Florescent bulbs: \$18.72 per year X 4 years + \$34.63 for bulbs = \$109.51/4 = \$27.38 per year. Savings of: \$67.19 per year, ON ONLY ONE LAMP!!!

So, there you are! Needless-to-say, if you really got serious about this, and every incandescent bulb were replaced by fluorescent ones, the savings could be significant. The only possible draw back is the chance that RFI might get into your electronic equipment, particularly the low band gear in your shack. That's a subject to explore another time.

73's, Skip, N6ZAA.

Name \_\_\_\_\_ Call \_\_\_\_\_



# AMATEUR RADIO EMERGENCY SERVICE REGISTRATION FORM

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Bus. Phone \_\_\_\_\_ Home Phone \_\_\_\_\_ County \_\_\_\_\_

Class of License \_\_\_\_\_ Primary radio interest: \_\_\_\_\_

Check (x) bands/modes you can operate:

	160	80	40	30	20	17	15	10	6	2	220	440	33cm	23cm
CW														
FM														
RTTY														
SSB														
MOBILE														
PACKET														

If operating packet, list callsign of your PBBS here \_\_\_\_\_

Can your home station operate without commercial power? ☐ Yes ☐ No

If yes what bands? \_\_\_\_\_

Signed \_\_\_\_\_ Date: \_\_\_\_\_

**Detach and send to Stanislaus County EC, Ernie Rader, K6UVI, 1736 Carignane Way, Escalon, CA. 95320.**

## To All Radio Amateurs:

The Amateur Radio Emergency Service (ARES) is a voluntary organization of licensed radio amateurs who have registered their capabilities and equipment for providing emergency communications as a public service to the community. The purpose of the ARES is to furnish communications in the event of natural disaster, when regular communications fail or are inadequate. Sponsored by ARRL, the ARES functions at the local level to meet local communications needs.

The ARES has a long history of public service going back to its formal inception in 1935. Since that time the ARES has responded countless times to communications emergencies.

Experience has proven that radio amateurs respond more capably in time of emergency when practice has been conducted in an organized group. There is no substitute for experience gained before the need arises. The ARES in each locality operates under the direction of the Emergency Coordinator (EC), whose function is to direct the activities of the ARES to maintain a state of readiness.

To register in the Stanislaus County ARES, complete the registration form above and mail it to Ernie Rader, K6UVI. ARRL membership is not required for registration. Registration does not require possession of any specially designed equipment. All amateurs can be of assistance to the ARES. There is provision in the ARES for every amateur regardless of class of license, equipment owned, or personal circumstances.

# Be Prepared... Join ARES

By Ernie Rader, K6UVI  
Stanislaus County ARRL  
Emergency Coordinator

Several months ago I was appointed Emergency Coordinator for Stanislaus County. Part of my job in support of the County Office of Emergency Services, is to have adequate manpower should there be a need for additional communications during an emergency.

We've begun an active ARES organization and have taken on the task of learning how to handle traffic. Several activities are to be planned in the near future and everyone with a Amateur license is welcome to participate.

However, I've been met with a bit of initial resistance to joining ARES. The response has been something to the effect that "Sure, I'll help in an emergency, but I don't want to join another club and spend a lot of time tied to it." This message, and the printed ARES application are here to help change your mind about joining ARES. Believe me, no one knows and understands a statement like that anymore than me, and those who help me put this organization together.

By that same token, if there is an emergency, we need to know who is willing to participate out there, and what kind of equipment they have to help with. That's the reason we need as many people as possible to fill out and send in these ARES application forms. From them, I'm building a data base of members who are willing to help should the need arise.

See 'ARES' page 13

## Renew Your ARRL Membership Through SARA

Please remember, **SARA** is an affiliated club of the ARRL and you can renew your ARRL membership through **SARA**. We make a \$2.00 commission for each renewal and \$5.00 for any new members joining the ARRL via **SARA**. Send your check for the full membership amount made payable to **SARA**. We will deduct our commission and send the ARRL our check for the difference. Please remember to make your check payable to **SARA** and not the ARRL. Thank you!

## Neighbor Cuts Hams Coax Lines

A Lancaster, PA woman has been fined \$100, placed on two years probation and ordered to pay restitution to her neighbor for causing damage to his Amateur Radio equipment.

Linda Ann Van Aulen, 47, upset with RFI, deliberately cut two coax cables that were connected to her neighbor's equipment which caused over a thousand dollars in damage to his transceiver.

Van Aulen was also fined \$100, placed on two years probation. This matter was handled strictly in local municipal court and the FCC was not involved.



Circa 1934

## San Diego Police Arrest Jammer On Their Frequency

On October 22, 1992, U.S. Magistrate Louisa Porter of San Diego, CA sentenced Roy L. Eyman II, KC6TYR, (Technician Class) also of San Diego, to three years supervised probation and 250 hours of community service for jamming a San Diego Police channel.

In addition, as part of his sentencing, Eyman must deprogram and demodify all of his radio equipment to remove all public safety frequencies. Any public safety frequencies found programmed in his Amateur equipment would constitute a violation of his probation and would subject him to resentencing.

The jamming incident occurred on Sept. 16, 1991 and consisted of broadcasting Beatles' music over the SDPD tactical operations channel. At

the time of the jamming incident a SDPD sergeant who is also an Amateur radio operator, was carrying a hand-held Amateur radio transceiver with a signal strength meter which he used to localize the source of the music.

In a heavy fog, the officer walked up close to the strong signal and heard the music over his Amateur radio hand-held unit as well as hearing it originating from Eyman's vehicle. The sergeant seized Eyman's Amateur radio equipment.

The FCC's San Diego office assisted in the investigation which led to the conviction. The maximum penalty for unlicensed radio operation for a first conviction is a fine of up to \$100,000 or imprisonment of up to one year, or both. *W5YI Report*

## AT&T Lab Discovers Sweet Flavored Chemical

AT&T is reporting a sweet discovery. It's found out the same chemical that gives flavor to cantaloupes and other fruit can replace an ozone-depleting solvent used in making computer chips. The company has started using the chemical (N-Butyl Butyrate) at its largest manufacturing plant in Massachusetts.

Bell Labs engineering supervisor

Jose Ors, says researchers were looking for a substitute chemical that would be bio-degradable. They found it occurring naturally in cantaloupe, peaches, plums and other fruits. It also is sometime added to yogurt to enhance the flavor. Ors says it smells like pineapples or bananas—depending on who smells it.

From Associated Press via the  
SBE Newsletter, Sacramento, CA

## VP Gore In Charge of Telecommunications Policy

The Clinton Administration plans to put Vice President Al Gore in charge of telecommunications policy and a governmental effort to oversee a massive overhaul in the nation's

technological competitiveness, in part through an up-grade of the telecommunications infrastructure. President Clinton also has called for a door-to-door fiber optic system. There is already all sorts of speculation as to who will head up the FCC. *W5YI Report*



# A TV Repairman's Story

By John Myers, WX8G

I was called out to a home near Westlake (Ohio) that had been hit by lightning during a severe storm. It must have been a direct hit, because the TV antenna had vaporized right off the tower. All that was left was the mast-pipe and little bits of hardware where the feedline and rotor cable entered the house—and a hole in the siding two feet in diameter! Yet the house did have lightning rods. The ground rod was about six inches below grade and its hole was back filled with dirt and gravel.

The energy released by that lightning bolt must have equalled a stick of dynamite; not only was all the gravel was blasted out of the hole, gravel had pierced the siding like bullet—in 20 or 30 places.

Inside, the phone line was burned so badly new wire had to be installed—underground, this time. In all my years as a TV repairman, I've seen only one other case as bad as this. I'm sure glad that strike didn't hit my house.

*From the December '92 Alliance (Ohio) ARC Zero Beat, N8LVO Editor via the ARNB.*

## Get Involved....Join ARES

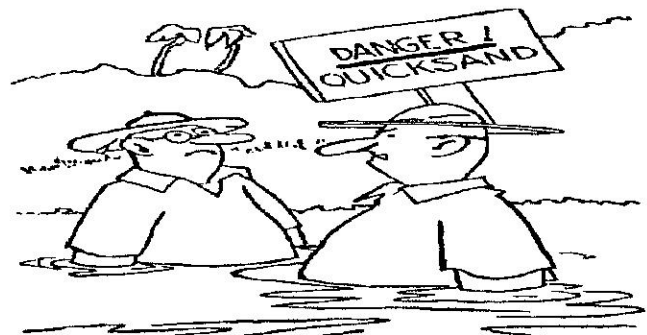
from page 11

You don't have to check into our ARES net (though you might learn something and enjoy yourself too), you don't have to attend meetings and take time from your families for that additional activity, and you don't need to feel obligated to participate in long hours of regimented training. I just need to know who you are, if your willing to help, and what kind of equipment you're willing to use when giving that assistance.

The easiest way for me to know who you are and what you have is for you to fill out this ARES application and mail it to me. My address is 1736 Carignane Way, Escalon, CA., 95320. Thanks a ton, everyone, Ernie, K6UVI.

UTC TIME CONVERSION TO PACIFIC TIME				
UTC	PDT		PST	
0000	1700	5 P.M.	1600	4 P.M.
0100	1800	6 P.M.	1700	5 P.M.
0200	1900	7 P.M.	1800	6 P.M.
0300	2000	8 P.M.	1900	7 P.M.
0400	2100	9 P.M.	2000	8 P.M.
0500	2200	10 P.M.	2100	9 P.M.
0600	2300	11 P.M.	2200	10 P.M.
0700	MIDNIGHT	MIDNIGHT	2300	11 P.M.
0800	0100	1 A.M.	MIDNIGHT	MIDNIGHT
0900	0200	2 A.M.	0100	1 A.M.
1000	0300	3 A.M.	0200	2 A.M.
1100	0400	4 A.M.	0300	3 A.M.
1200	0500	5 A.M.	0400	4 A.M.
1300	0600	6 A.M.	0500	5 A.M.
1400	0700	7 A.M.	0600	6 A.M.
1500	0800	8 A.M.	0700	7 A.M.
1600	0900	9 A.M.	0800	8 A.M.
1700	1000	10 A.M.	0900	9 A.M.
1800	1100	11 A.M.	1000	10 A.M.
1900	NOON	NOON	1100	11 A.M.
2000	1300	1 P.M.	NOON	NOON
2100	1400	2 P.M.	1300	1 P.M.
2200	1500	3 P.M.	1400	2 P.M.
2300	1600	4 P.M.	1500	3 P.M.

Produced by Bob Pinheiro, WA6ZLO (c) Copyright 1993



You're standing on my foot Mortimer!

# ARRL Pacific Division Update

By Charles P. McConnell, W6DPD, Fresno, Ca.  
Director of the Pacific Division

The ARRL will petition the FCC for specific segments where automatic control of digital stations will be permitted: 3.620-3.635 MHz, 7.100-7.105 MHz, 10.140-10.150 MHz, 14.095-14.0995 MHz, 14.1005-14.112 MHz, 18.105-18.110 MHz, 21.090-21.100 MHz, 24.925-24.930 MHz, and 28.120-28.189 MHz.

The Board asked the Digital Committee to continue its study of how additional data operations can be accommodated in the HF bands while protecting Amateurs using other modes pursuing other Amateur interests and to report to the Board in July.

The Board abandoned further consideration of a change in the name of the of the ARRL.

---

## 'Communication Trailer'

From front page

MOD's dad's business. All they did was to pick up our trailer while I drove out from under it. Without that assistance, I feel certain it would still remain where it was.

I still have the video that was played at the meeting for those who might want to see it. I suggest that I keep it and use it for comparison when we complete the restoration.

Next month in *The READOUT* we will have pictures and complete information on what materials and expertise we will need to repair it.

We are storing the trailer at N6UGH's ranch where we hope to complete most of the repairs.

More next month. 73's, Ernie.

The Board reaffirmed its position that International Morse Code proficiency must remain a requirement for licenses conveying privileges below 30 MHz, as currently specified in International Radio Regulations.

The League will seek formal recognition of the role of Amateur Radio as a national resource in disasters and for technical progress in electronics. The Tampa (FL) Local Area Network will host the 12th ARRL Conference on digital Communications on Sept. 11, 1993 in the Tampa Bay Area. Look for the full story of the Board meeting in the March 1993 QST.

NASA, AMSAT and ARRL announce the following frequencies will be used for SAREX in 1993. The downlink (from the shuttle) is 145.55 MHz. Voice uplink frequencies will be 144.91, 144.93, 144.94, 144.97 and 144.99 MHz. Remember to listen to both uplink and downlink frequencies before you transmit. SAREX Packet frequencies will be 145.55 MHz down-

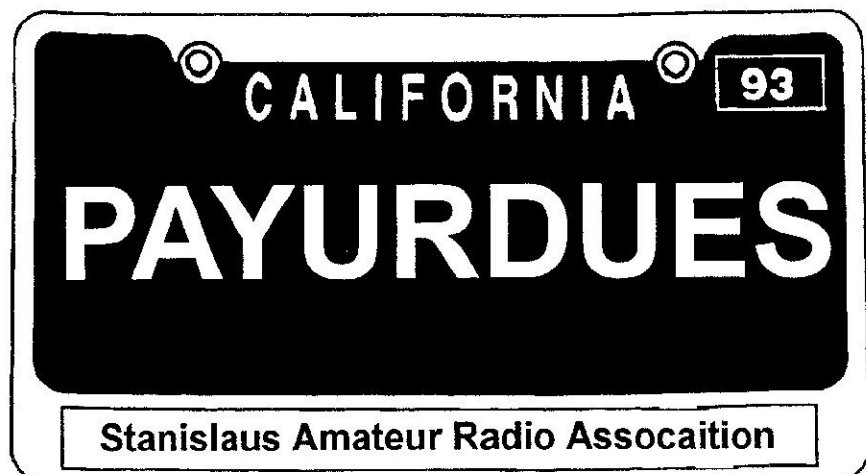
link and the uplink will be 144.49 MHz.

If the STS 55 mission is delayed and coincides with the ARRL International DX Contest on March 6-7, 1993 the following voice frequencies will be used. The downlink will be 145.55 MHz and the uplinks will be 144.47 and 144.49 MHz.

ARRL membership in the Pacific Division grew 3.65% in 1992 to a grand total of 10,701. Thanks to all who recruit ARRL members, especially affiliated clubs.

Remember, that you can join and renew your ARRL dues through your affiliated club and your club receives a commission (\$2 for renewal and \$5 for a new member) on the transaction.

The Mount Diablo ARC will again sponsor the ARRL Pacific Division in 1993. The dates are October 22-24, 1993 at the Hilton Hotel In Concord, Admission is anticipated to be \$3 in advance and \$5 at the door.



# This Is Your Last Chance To Renew !

## 1993 Membership Dues Schedule

Full Membership .....	23.00
Associate (Unlicensed Applicant) .....	12.00
Student (Upto Sophomore in college) .....	12.00
Family (Head of Household) .....	23.00
Next two members living in same home .....	12.00 ea
Out of Area .....	11.00
(More than 150 miles from Modesto )	

The **SARA** membership year runs from January 1st through December 31st of each year. The dues rates are reviewed each year and adjusted, if necessary, based on the general financial health of the club treasury and anticipated expenses vs. the estimated number of members. As we have often stated, running a club is just like running a small business. We must **Do it NOW!** have the income to pay our bills. The biggest part of your dues goes to support of this newsletter followed by liability insurance, equipment insurance and maintenance. You will not be billed separately for membership dues. Your only notice will appear here in **The READOUT**.



Please examine the membership dues schedule appearing on this page and then prepare your check or money order and **ALONG WITH THE MEMBERSHIP FORM** below, mail them to the club's post office box listed below. Make your checks or money orders payable to **SARA**. Also, please note the ZIP code asks for your full 9 digit code. The post Office will be requiring all 9 numbers starting in 1993. If you don't know yours. call the post office an they will give it to you. Remember to include the completed membership form with your payment. Thank You for your support!



## 1993 Stanislaus Amateur Radio Association . Inc.

P.O. Box 4601, Modesto, Ca. 95352

Membership Application

<input type="checkbox"/> Renewal	<input type="checkbox"/> New Membership	Date _____
Name _____		Call _____
Address _____		Member of ARRL? _____
City _____	State _____	Zip + 4 _____
Home Phone _____		
Business Address _____		Bus. Phone _____
Occupation _____		Year first licensed? _____
Class of License: [ Novice ]   [ Technician ]   [ Tech-Plus ]   [ General ]   [ Advanced ]   [ Extra ]		

Make checks or money orders payable to **SARA** and mail to **SARA PO Box 4601, Modesto, CA. 95352**




# Calendar

Feb 13.....VE Testing in Merced ..... 900 A.M.  
 Feb 16.....SARA Monthly Meeting ... 730 P.M.  
 Mar 13.....VE Testing in Modesto .... 900 A.M.  
 Mar 16.....SARA Monthly Meeting ... 730 P.M.  
 Apr 16-18 DX Convention ..... 2 Days  
             Holiday Inn Visalia  
 Apr 20 .....SARA Monthly Meeting ... 730 P.M.  
 May 8 .....VE Testing in Turlock ..... 900 A.M.  
 May 18 .....SARA Monthly Meeting ... 730 P.M.  
 Jun 12.....VE Testing in Modesto .... 900 A.M.  
 Oct. 22-24 .Pacificon '93 Convention 3 days  
             Concord, CA.

SARA meet 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 6affiliated club and is also affiliated with the Stanislaus County and City of Modesto RACES programs.

Salli's  
**Budget Copy Center**  
 High Speed Copying  
 Public FAX Machine  
 Laminating  
 Spiral & Velo Binding  
 Business Cards  
 Resumes-Typesetting  
 Tel 529-5395  
 FAX 529-6366  
 912 13th Street  
 Downtown  
 Modesto, Ca.  
 Open  
 M-F 8-5



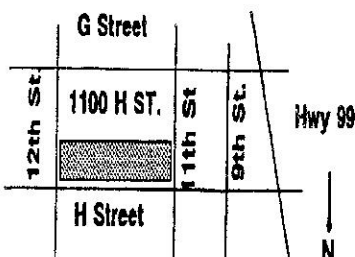
**This is your last newsletter if you have not  
 paid your 1993 dues. Please don't let it happen!**

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



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

**Address Correction Requested**



**SARA Meeting Location**  
 1100 H Street, Modesto, CA  
 Lower Level Conference Room.

## Have You Paid Your Dues?

**TO:**

**Next SARA Meeting is February 16, 1993 at 730 pm & You're Invited!**