

# The READOUT

Year 15

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September 1993

*The Official Newsletter of the Stanislaus Amateur Radio Association*

## FCC Relaxes Prohibited Communications Rule

**Public service and personal communications with business component now allowed!**

The Federal Communications Commission has been trying for many years to accommodate the steady stream of requests it gets from the amateur community to broaden the scope of amateur personal and public service communications. After two years of Government rule making, this proceeding (PR Docket 92-136) has finally reached the Report and Order stage and new ham communications content guidelines have been enacted into law.

Let's get right to the bottom line! Effective 30 days after publishing in the Federal Register (approximately September 15th) here is what you can - and can not do on the ham bands! But beware that there are some exceptions!

### Specifically Prohibited

1. Music (except incidental space shuttle music).

2. Communications facilitating a criminal act.
3. Messages obscured by codes or ciphers
4. Obscene or indecent words or language
5. False or deceptive messages, signals or identification.
6. Transmissions for compensation.
7. Transmissions for the pecuniary benefit of the station control operator or his or her employer.

### The following exceptions apply to those prohibited

1. Morse code practice and information bulletins (special criteria)
2. Classroom teachers using ham radio in the classroom.

### The following is now permissible—but not on a regular basis

1. Communications which could reasonably be furnished through other radio services.
2. Notices concerning sale or trade of amateur station apparatus; and
3. Retransmissions of Government provided space shuttle, propagation and weather forecast broadcasts.

### What are the changes?

Here are some examples of the old and new Part 97.113 rules which covers prohibited communications.

—**OLD RULE**—No amateur station shall transmit any communications which promotes the business or commercial affairs of any party. If anyone profits financially, it is an illegal transmission.

**NEW RULE**—An amateur may not be paid, direct or indirect, for his voluntarily provided communications.

—**OLD RULE**—Except for emergency communications, the ham bands may not

be used as an alternative to other authorized radio services.

**NEW RULE**—Amateur-to-amateur communications which could reasonably be furnished alternatively through other radio services will now be permitted on the ham bands, although not on a regular basis. This will allow amateurs to legally participate with the Weather Service, police and Fire Department, parks and Forestry Service, and many other local, state and federal agencies.

—**OLD RULE**—Logistical communications including those benefiting sponsors of public gatherings are prohibited. This includes such activities as moving, ordering, supplying and quartering. All communications must be safety related or benefit the public rather than a specific sponsoring organization.

**NEW RULE**—All voluntary amateur communications unless the control operator or his employer profits are permitted unless specifically prohibited. Voluntary logistical communications now allowed.

—**OLD RULE**—Paid teachers may not use amateur communications when they are teaching since this represents transmissions for material compensation.

**NEW RULE**—Classroom Instructors may accept compensation during the period of time when amateur communications are used during their teaching activities.

—**OLD RULE**—Personal communications that financially benefit anyone are prohibited.

**NEW RULE**—Basically any communication that does not financially benefit the amateur operator or his employer are permitted. Amateur operators may still not

See "FCC Rules Change" page 11

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

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# Multiband Antennas

By Ed Humphries, N5RCK

The March 1991 issue of CQ Amateur Radio magazine contains yet another discussion of multiband wire antennas. In his column "Radio FUNDamentals", Bill Orr, W6SAI, writes about the original W4CXX multi-bander with its complex copper tubing matching section. He then goes on to discuss the popular G5RV developed by Varney, which is widely built and commercially available.

Orr points out the deficiencies of the G5RV when built in the original design it delivers reasonable SWR on the 7, 14, and 24 MHz bands, but into a 75 ohm coax feedline that is awkward to load up on modern transceivers; when built with 50 ohm coax the SWR is poor on all bands, but it performs reasonably well when used with a "transmatch" antenna tuner.

The column skips over an intermediate antenna design discussed in the March 1986 issue of Ham Radio. Bill's column back then pointed out that W5ANB, first proved you could successfully modify the G5RV, load it with 50 ohm coax and run without any antenna tuner. But the design (so far) he discusses in both articles is the one by ZS6BKV. Brian Austin used computer modeling to help him design a 5 band tuner-less antenna.

Orr's CQ column reprints the

design using only the dimensions for a 300 ohm matching section (I presume TV flat lead qualifies). In his original column Orr also presented the figures for using 400 (hand made open-wire leads) or 450 ohm (ladder-line) as the matching section. Since 450 ohm ladder-line is somewhat stronger than the commonly available 300 ohm TV lead-in. I'm here giving both sets of figures so you can make your own choice. 90' 3" for 450 ohm matching section or 92' 2" for 300 ohm. The ZS6BKV antenna, 40' for 450 ohm, 36' 9" for 300 ohm.

At the end of the matching section Orr recommends a 1:1 balun; others would say that several loops of coax at the feed-point will do as well to help keep RF off the feedline. The feedline to the transceiver is common 50 ohm coax; RG 58/U is fine for HF for most runs. This antenna should give low SWR on 7, 14, 18, and 24 MHz bands. At 28 MHz the SWR is really only good from 28.5 to 29.0. Tests showed the best SWR curves when the antenna was erected at about 42 feet above ground.

When run as an inverted-V (90 degree) the resonant frequency came down 80 kHz for 14 MHz and 125 kHz for 24 and 28 MHz. The March '86 article printed SWR curves, and the March '91 article printed field patterns for all 5 covered bands.

Courtesy of In the DARC, newsletter of the Dallas, Tx ARC.

## VE Exams in Northern California

Scheduled ARRL Volunteer Examiner test sessions in Northern California. To take a test you must show two means of ID; have the original of your license and a copy of it, if you are licensed; have the original of any CSCE to prove your passing a test before any VE group.

All tests are walk-in unless noted below. Fee is \$5.60 Except for Novices. No-coders welcome.

Fairfield .....	Oct 30 .....	916-662-0801
Glen Ellen ....	Nov 16 .....	707-996-6461
Merced .....	Oct 9 .....	209-383-2166
<b>Modesto .....</b>	<b>Sept 11 .....</b>	<b>209-883-2968</b>
Novato .....	Sept 11 .....	415-883-9789
Oakhurst .....	Sept 11 .....	209-683-8772

Caution: Make sure the license manual you are studying from is current as several question pools have been recently updated.

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### 1993 SARA Officers

#### President

Sandra Ingram, KC6TBK, 575.4765

#### Vice President

Elizabeth Eyre, KD6GIW

667-5299

#### Secretary

Ernie Rader, K6UVI 838-2921

#### 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

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 KD6JZZ-BBS on 144.79 MHz, or directly at my PBBS, WA6ZLO-1 on 144.97 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

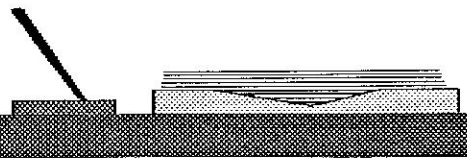
209-523-5880

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.

# FROM THE DESK OF

**Tim Low, N6ZUC**



**I** was just sitting here thinking about.....thinking. I know that sounds a bit strange, but as my Grandpa use to say, "It's amazing what keeps a simple mind occupied." He may have had something there.

I think I do my best thinking when I'm taking my evening walk. It's kind of my time to spend some time with me. Again, I'm sure that sounds a little off the wall to some of you, but I'm also sure that there are a goodly number of you who are just as warped as me, and understand perfectly.

I also do some thinkin' at times when I should be doing something else. Mostly when I'm at work, sitting in front of my computer, feeling put upon, not understanding why I can't get paid to stay home and play Ham radio all day. Employers can be so unreasonable.

By this time I hear you asking, Tim, what has all this got to do with Amateur radio? Well, when I'm walking and thinking, much of what I'm thinking about is Amateur radio. You'd be surprised at some of the things I dream up, (or maybe you wouldn't). All kinds of projects. Granted, somewhere around 99 percent of them will never see the light of day, but once in a while I hit on a good one and follow through.

Not all of what I think about relating to Ham Radio is of a technical nature, in fact a lot of it isn't. For instance last night I was thinking about all the gear I'd like to have. More specifically, the gear I'd like to have, that nobody makes. Or, gear that's made but not quite to suit me.

How come nobody, that I'm aware of anyway, makes an all mode 6 meter mobile rig in the class of the Ranger, Uniden, or Radio shack 10 meter rigs?

Something that would sell in the affordable range, say 250 smacks or so? Something that's all mode, and maybe 25 watts. No reason it can't be done. With all the no-code Techs, I'd think they'd sell. Six meters is a great band, and would give those without HF privileges a good dx band on which to operate. Summertime sporadic E propagation can be incredible.

Once in a while, something I've dreamed up will become a reality. I had thought a long time ago that it sure would be neat if a packet TNC and radio would all be built and put on a plug in card for your computer. Someone's done just that. I just saw an advertisement concerning same, now being made by Motorola. The price was scary, and it only puts out a couple watts, but it's going in the right direction.

Here's another idea concerning packet. Why can't all the radio and TNC manufacturers get together and come up with a universal interface for the connection of TNC's to radios. A simple universal connector on the back of all rigs, and included on all TNC's, so you won't have to go through the hassle of wiring up a new connector for every rig/TNC combination. These could be included on all VHF, UHF AND HF rigs. Very little cost would be incurred by the manufacturers, and we packet freaks sure would be happy. Think of it. One cable to connect any TNC to any rig, and it wouldn't matter what end gets plugged into which side. Maybe it makes too much sense to become a reality.

Although sometimes I'm convinced otherwise, I don't have the market cornered on thinking. Here's one idea I think is great. Someone has come up with a device that detects lightning in your area, and automatically disconnects

your equipment. That's always been one of my fears that one day I'd come home to a smoking heap where my shack used to be. What a relief it would be not having to worry about being caught away from home when an electrical storm hits. What a great product. Somebody was thinking on that one.

I've been thinking a lot lately about the advantages of buying a new 2 meter/70cm rig for the shack. The advantages of course is that I would have one nice, neat, compact unit. I would have dual-band repeater function allowing me to run around the house and yard with the HT and still keep a good signal into the repeater. Of course having one rig with both bands means that if it goes down, I'm off the air on both bands. I already have a good 2 meter rig, so why not go for a separate 70cm box. Ahh ohh, for what the mono band rig costs, I could through in another hundred and get the dual bander. I've been wanting to up the power on the packet machine. I could just move the 50 watt 2 meter rig over there and sell the old Yaesu, hmmm. Well now that I think of it, moving the Kenwood Tm-2550, fully loaded, to packet operation is kind of over kill. I think I'll think on it a while.

Trouble with thinking is it can become addicting. You get one idea, and before you resolve it, along comes another. Now you've got two things to think about. It doesn't stop there, it just keeps gaining momentum. For instance right now I'm thinking it's time to end this and go take a walk. This could put my brain into overload!

Comments? Questions? Suggestions? Drop a note to N6ZUC @ KC6NZN.#SOCA.CA.USA.NA, or write me in care of **The READOUT**.

73 -Tim



# FCC goes after Berkeley Micro Power Broadcaster

The FCC has issued a Notice of Apparent Liability, in the amount of \$20,000, against Stephen Dunifer and his Radio Free Berkeley (California) for allegedly broadcasting without a license. They believe the FCC should provide for low power broadcasting as a first amendment right to free speech.

Dunifer's attorney, Louis Hiken, filed a 13 page response that says the FCC action is "...unwarranted, procedurally flawed, constitutionally invalid, and calls for a forfeiture amount that is grossly disproportionate to the alleged violations and which exceeds the maximum limits set by statute". The response further charges that FCC policies with regards to micro radio broadcasting have failed to keep pace with the rapid proliferation of technological advances in the field of communications.

The FCC's current regulatory scheme completely prohibits micro radio broadcasters and their listeners from accessing the public airwaves. To enforce

this absolute prohibition, the FCC is relying upon regulations which were intended solely for application to large-scale, commercial broadcasters, and which were promulgated long before the advent of technology that makes possible micro radio; indeed, even before the advent of FM broadcasting. The FCC's application of these regulations violates the First Amendment rights of individuals seeking to exercise those rights via methods and mediums that were technologically impossible when the regulations were created.'

Dunifer says "the fundamental problem is that the FCC has not provided procedures by which micro radio broadcasters can become licensed or authorized. Instead, the FCC is applying severe administrative and criminal sanctions, intended for application to large scale operators, to micro radio broadcasters with the goal of completely precluding all such broadcasts."

Dunifer wants to.. "establish a clean and binding legal precedent which

will protect the internationally recognized right of communication between individuals and communities." He said..."despite the most recent actions of the FCC, Free Radio Berkeley will continue its weekly Sunday broadcasts as a community free speech project, from 9 PM to 12 Midnight at 88.1 on the FM band. We will not be silenced by federal agencies who hide behind a facade of serving the public interest to mask their flagrant abuse of regulatory power, public money and resources to defend, promote, and serve private corporate media interests."

Radio Free Berkeley is also making 1 to 5 watt FM broadcast kits available at a cost of \$40 each and they want as many low power broadcasters as possible to go on the air simultaneously. "If only a few operations go on the air, it will be very easy for the Feds to nail people. Consider it a form of electronic civil disobedience or however else you want think about it.

WSYT Report

## Claude Owens, WB6MDN, Silent Key

Longtime area ham, Claude L. Owens, WB6MDN, died August 7, 1993, at Memorial Hospital in Modesto. He was 65. He succumbed to complications following open heart surgery.

Claude was a native of Colorado and lived in Modesto for over 50 years where he owned and operated his own electric sign business for 25 years. He was the treasurer of the Turlock Amateur Radio Club for the last several years and a member the American Radio Relay League and Western Public Service Amateur Radio network.

He is survived by his wife Shirly, WA6QOP, four sons, two step children, two brothers, four sisters and 10 grandchildren. Funeral services and burial was at Lakewood Memorial Park in Hughson. Our condolences to his family.

## Silent Keys....gone, but not forgotten

The two words silent key communicate volumes to radio amateurs. The phrase says a familiar voice or fist will no longer be heard on the air.

The friendly expressions and occasional digs hidden behind that familiar grin will henceforth exist only in memory. But long after the memories fade, events, voice tones, or expressions will bring them back into sharp focus.

Then you will remember the good times shared in club activities—manning a post at a street intersection in the hot sun, creating antennas together, digging tower footings, discovering new computer software and trips to hamfests, club events and meetings.

The void the silent key leaves behind may shrink over time, but it can never be filled. Knowing that, there's nothing left to say except good-bye old friend, and 73.

By Dave Morris, N8EEK. Courtesy of the Sierra Intermountain Emergency RA, Minden, NV

## Overdue Bill

A customer with an overdue electric bill received this notice from his utility company: "We would be delighted if you would pay your bill. You will be delighted if you don't."

### First QSL Card



New SARA member, Lindsey Bertomen, KD6VZE, had his first QSL personally designed for him by his fellow worker Alfred Tyree.





# Editor's Notes

By Bob Pinheiro, WA6ZLO

The latest roster is included with this issue club which appears in **The READOUT** twice a year in, April and September. One new name that did not get to us in time to be placed on the roster is Armand Hagen, KD6MGV, of Modesto. He is a Technician. With Armand our membership stands at 174 for the year.

Welcome to these other new members. Robert Clukey and Gregory Schoroeder. Robert is the father of SARA member Keith Clukey, KC6SMW, and is studying for his license. Gregory is a Stanislaus County Deputy Sheriff assigned to the Custodial Division. He just passed his Technician test in Fairfield and is waiting for his call.

Welcome to Peter Trochez, KD6TZI, of Oakdale and Tom DeGraff, KD6ZAD. Peter is a Novice and Tom a Technician. Tom is in the Air Force and stationed at Lompoc, CA. He has relatives here in Modesto. New member Mal Swan has his new Technician call, KD6YWD.

—I received a packet from Charles McConnell, W6DPD, Pacific Division Director in Fresno. He advised me that the story about him in last month's newsletter that he is not running for reelection is not true. He said he IS running. Sorry Chuck, we relied of information we received that was apparently in error.

—The end of an era! With an emotional last transmission, the U.S. Coast Guard closed down Morse Code operations on 500 kHz on July 31st at 000Z. Coast Guard radiomen and women have been monitoring the 500 kilohertz radio frequency for distress signals since the turn of the century and in 1924 set up its first radio station to monitor the frequency continuously.

The advent of satellite and digital technology have now made Morse code obsolete on the high seas. A misty-eyed Coast Guard radioman tapped out the glowing final good-bye message on 500 kHz:

*"CQ de NMC now closing down continuous*

*watch on 500 kHz and ceasing all Morse code services in the MF band. As we conclude our watch on 500 khz, we wish the maritime community fair winds and following seas. We are proud of our tradition and long standing services on MF which began in 1901 with the revenue Cutter service actively experimenting with wireless as a regular means of communications on land and sea to the first installation aboard Cutter Grant in 1903. Our first distress call from an American ship was received on 10 Dec 1904 by relief lightship 58 at the Nantucket Shoals station. This consisted of the word "help" followed by a request for aid. By act of Congress on 4 may 1910, every passenger ship and other ships carrying 50 persons or more, leaving any port in the U.S. were required to be equipped with radio. Necessity for improvement in apparatus and methods was emphasized when over 1,500 lives were lost in the Titanic disaster of April 1912. Since then, the Coast Guard has faithfully and diligently listened to 500 khz, copying and responding to numerous calls from mariners in need of assistance at sea. We have also provided you with thousands of urgent, safety and navigational warnings and related CW assistance over the years, we now look forward to serving you on the next generation of communications equipment and systems via the global marine distress and safety system (GMDSS). From all Coast Guard Radiomen and Women, we bid you 73. De NMC QRU CL AR SK. . (Dit dit) 2351z Jul 31 1993."*

Ships at sea responded with 'good luck' and a final CW "good bye."

—I would like to welcome Bart Atwood-Ebi, KF6AX, to the newsletter family. Bart will be writing the "Party Line" column each month (see page 10). He recently geared up on packet and is now able to send his column text directly to me. I'm sure you will find Bart's column interesting and informative. Welcome aboard Bart!

—Raincoat Charlie, William P. Irwin, K8CQR, of Debary, Florida, has been fined \$2,000 by the FCC's Vero Beach, FL field office. It's engineers located and iden-

tified him at his residence on July 22, 1993, as being the station previously identified on 20 meters as "Raincoat Charlie." The FCC said "Mr. Irwin's sole purpose for being on the air appeared to many to be to harass and ridicule other amateurs in a particularly vulgar way." Irwin had vowed on the air that the FCC would never find him. A number of amateurs assisted in the investigation.

—While it has not been too widely publicized, the Clinton Deficit Reduction Plan recently approved by Congress provides for spectrum auctions. The Government says it will receive more than \$10 billion over the next five years when it sells radio spectrum to the highest bidder to implement new communications services. Just in... Congress has authorized amateur vanity call signs - President Clinton is expected sign legislation approved by the House of Representatives and the U.S. Senate which authorizes the Federal Communications Commission to issue unique amateur station call signs (Vanity Plates) at a cost of \$7.00 per year to the ham radio community!

—ARRL has filed comments in support of FCC PR Docket 93-85 which would (1) hold the originator and first store and forward station in a data message network (packet) accountable for the message content, and (2) the originator of a message should in all cases be held responsible for the content of a message, with the first store and forward operator held responsible for the authentication of the source of the message or the screening of its contents. The ARRL has also filed comments in RM 8280 asking that stations under automatic control be allowed to operate outside the sub-bands proposed in RM 8218 under certain limitations.

—Don't forget PACIFICON '93 coming up next month in Concord.

—The W5YI Report and W6DPD contributed to these notes. 73, Bob

# Step Attenuator for Fox Hunting

By Ken Klotz, WA8IJK

A step attenuator is useful for fox hunting. It allows you to keep the S-meter off full-scale when you get close to the "fox." When fox hunting with professional attenuators having one-dB steps, I found I never needed steps finer than 10-dB and seldom wanted more than 70 dB attenuation.

That observation led to the simple attenuator described here. With just three switches and a few resistors, you can make this attenuator that covers the

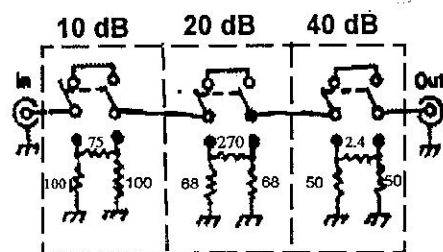


Figure 1: Schematic

range of zero to 70 dB in 10-dB steps.

As shown in Figure 1 schematic, a "pi" attenuator made of three resistors is switched in or out by each of the three switches. With the resistor values shown,

Resistor Values:		
Section	Shunt	Series
10 dB	100 ohms	75 ohms
20 dB	68 ohms	270 ohms
40 dB	50 ohms	2.4 ohms

the first attenuate 10 dB, the second 20 dB and the third 40 dB.

Since attenuations in dB add, you choose the combination for any attenuation you wish. For example, flipping the first and third switches up gives  $10 + 40 = 50$  dB.

Performance at 144 MHz depends on short leads and a minimum of stray coupling. To minimize coupling around the attenuator sections, you need a

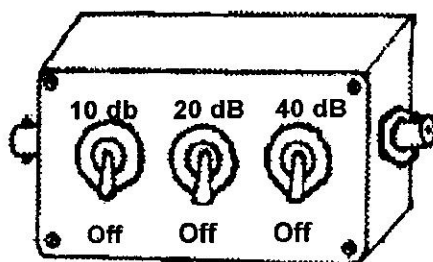


Figure 2: External View

grounded shield between each pair. The shields can be copper foil or copper clad PC material

The housing should be metal. A small metal "Pomona Box" with BNC connectors on each end works fine. Figure 2 shows the outside, using a construction method in which the switches are mounted to the lid. This construction requires long "service loops" to the BNC connectors inside. The service loops can be RG-174 coax, with the shield soldered to lugs on the connectors and to lugs under the outside pair of switches on the panel.

An alternative is to mount the switches through the bottom of the box. That way, the ground path can be continuous and all leads can be short.

A piece of PC board material under the switches (the same size as the bottom of the box) can serve as a continuous ground and the short-lead ground points for the two grounded resistors in each attenuator section. It also provides a place to solder the shields.

Be sure to use star washers under the switches, and use copper foil or two pieces of small braid between each end of the board and lugs under the nearest BNC connector nuts.

Total cost for this handy little gem won't exceed \$10 if you shop wisely. And assuming you have a few tools available, the attenuator shouldn't take you more than an hour to make. You'll be glad you did.

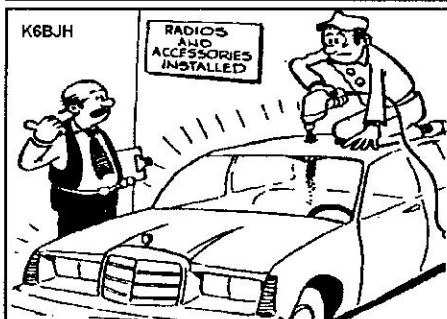
Courtesy of the Toledo (Ohio) Mobile Radio Associations "The Amateur Radio Beacon KB8FXJ Editor via ARNS Bulletin.

## Amateur Service Phone Numbers

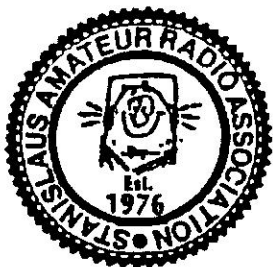
By Pete Kemp, KZ1Z

AEA ..... 206/775-7373  
 Alinco ..... 213/618-8686  
 FAX 213/618-8758  
 Ameritron .. 419/531-3024  
 Azden ..... 404/769-8706  
 FAX: 404/769-7970  
 B&W ..... 215/788-5581  
 Buttenut ... 512/399-7117  
 Cushcraft .. 603/627-7879  
 ETO ..... 719/250-1191  
 FAX 719/260-0395  
 Hy-Gain .... 402/465-7021  
 (rotor parts)  
 ..... 402/465-7022  
 (antenna parts)  
 ..... 800/328-3771  
 (technical assistance)  
 Icom ..... 206/454-7619  
 (service)  
 ..... 206/454-8155  
 (parts)  
 FAX 206/454-1509  
 JRC ..... 212/355-1180  
 Kenwood .... 213/639-7140  
 (service)  
 ..... 213/639-9000  
 (parts)  
 FAX: 213/609-2127  
 MFJ ..... 601/323-5859  
 Ten-Tec .... 615/453-7172  
 Yaesu ..... 213/404-4884  
 (service)  
 ..... 213/404-4847  
 FAX: 213/404-1210

From the Johnson City (TN) ARA newsletter—Ed Ingraham. WX4S Editor—who credits N8EMR's ham BBS via ARNS.



"You've got the wrong car. The antenna goes on that old VW beetle!"



# SARA Minutes

By Ernie Rader, K6UVI, Secretary

The regular monthly *SARA* meeting was called to order by Vice President Liz, KD6GIW, at 7:35 PM on August 17th, 1993. President Sandy, KC6TBK was unable to attend. Ernie, K6UVI brought in the *SARA* communications trailer for everyone to see earlier, which explains why things began a little late.

Interim treasurer, Ernie, displayed a complete computer generated reconciliation for the treasurer's report from the beginning of the year, and with only two very minor errors the books were reported to be in excellent shape. Treasurer's reports follows:

Opening Account Balance: ..... \$2,189.08  
Expenses:

Bob Pinheiro Toner Cartridge ..... \$59.00  
Harold Johnson, trailer repairs ..... \$30.00  
U. S. Postmaster for Permit #5 ..... \$100  
Budget Copy for **READOUT** ..... \$72.39  
Pacific Bell for Autopatch ..... \$14.37  
Debit Memo; incorrect addition on former deposit ..... \$1.00  
Balance adjustment for incorrect payment entry for duplexers ..... \$7.00  
Ernie Rader for communications trailer reimbursement ..... \$115.96  
LeRoy Campbell for gas ..... \$12.00  
Ernie Rader for communications trailer reimbursement ..... \$13.06  
Total -\$424.78

#### Deposits:

Dues from new members - - - - - \$169.55  
Balance: ..... \$1,933.85

It was moved and seconded to accept the interim treasurer's report. It was also moved and seconded to accept the minutes as printed in **The READOUT**.

Secretary Ernie read portions of correspondence both received and sent in response, and Vice President Liz had no report.

LeRoy, NV6S reported on the two trips he and several of his helpers took to the repeater site, and reported that the new 440/2 meter antenna and duplexer for the repeater sight was in hand. It will be installed at the next available opportunity.

He also reported that the intermod on the .39 machine is getting progressively worse and suggested the installation of a PL Decoder/Controller. This would easily allow those without PL encoding in their radios to access the repeater, and this code would be freely passed around to members and non-members alike. Dave, WA6GUO agreed that this would be the best immediate fix, but suggested that we still look for the source of our interference and see if there isn't a way to cure it. Dez, W6BMA reminded everyone that just because we have PL decoding on the repeater, that doesn't mean the interference will be eliminated. Once the machine is opened up by someone with an encoder, the interference will still be there during conversations. It was moved and seconded to authorize LeRoy to spend up to \$250.00 for this new controller and install it when it arrives.

Ernie asked the membership about their desires for continued restoration on the communication trailer. He reported on a conversation with Carl, KD6JHE where it was learned that it would take about 40 yards of carpeting to do the inside, floor and walls, and would cost about \$400.00. If we wanted just the floor done, it would be about \$150.00. It was decided that since there are other priorities right now, and we don't want to drain the treasury down to nothing, we would wait until another fund raiser took place, and use the proceeds from that to continue the restoration. Jim, N6KMR is to take the trailer to his home where a new 3/8" particle board floor is to be installed soon. We'll use it like it is for now.

Jim, N6UGH reported that he has a line on either a 3 or 5 KW generator the club can purchase for about \$200.00, and suggested after about two weeks, Ernie go out and see how it runs. He also offered 8 gallons of black paint to paint the trailer. There was quite a bit of discussion about whether to paint the trailer black, and it was moved and seconded to let Liz make

the decision as to what colors to paint it. She said paint it white with black trim.

Nominations for treasurer were opened, but no one would submit a name. Ernie agreed to take the position until the end of the year, when Bob, KC6TVE said he'd be willing to take over. He received the greatest of thanks from the secretary.

Bob reminded us that the Riverbank Wine and Cheese festival is to take place on October 10th, and that he'd be on the phone asking for volunteers. Break between 8:16 and 8:28.

Ernie reported that Bart, KF6AX has taken the position of net manager again, and that all the nets will be run according to schedule in the future. Liz suggested that next meeting someone should be prepared to put together a nominating committee for next year's officers.

The raffle for a very nice 2 meter/440 home brew base station antenna was won by Bill, KC6VWO, and Steve Crabtree, who was present at the meeting was thanked for his donation of the communication trailer. Moved and seconded to adjourn the meeting at 8:34.

Respectfully submitted, Ernie, K6UVI, Club Secretary.





## Technical Tip

Ima Lidd wants to put up a ground mounted quarter-wave antenna for 20 meters. He had picked up some information listening on the bands, but the thought he would do some reading and consult with his Elmer before proceeding. He had read ads for vertical claiming that no radials were required. His Elmer told him to read about the efficiency of vertical and then decide for himself whether or not radials were needed.

Ima went to the book and began to read about vertical antennas. He really opened his eyes when he read that the efficiency of vertical was less than 100 percent. But when he stopped and thought about it, he realized that this was true because he had never heard of a quarter wave vertical having any gain. What really surprised him was that the efficiency could be as low as 20 percent with three six foot ground rods. This means that if his transmitter puts out 100 watts to the antenna system, he is losing 80 watts. Where he wondered, are the 80 watts going?

Reading the book he learned that they were being lost in the earth. The 1/4 wave antenna relies on the ground for the other quarter wave and the RF actually flows through the ground with the current concentrated near the base of the antenna. He found the formula for calculating the efficiency of his vertical antenna. It stated simply that the efficiency was equal to (R-rad) divided by the (R-ant) plus (R-gnd) plus (R rad) where:

(R rad)= Radiation resistance of the antenna.

(R ant)= D. C. resistance of the antenna and the feed line.

(R gnd)= Resistance of the earth.

The formula looks like this;

$$\text{Efficiency} = \frac{(R \text{ rad})}{(R \text{ ant}) + (R \text{ gnd}) + R \text{ rad}}$$

Example calculations -

**First case:** 3 six foot ground rods at base.  
R rad= 36 ohms. (Half that of a 1/2 wave.

R ant= 1 ohm. (Feed line, connectors and antenna)

R gnd= 100 ohms. (IR losses in the earth)

Solving the formula we get an efficiency of .26 or 26 percent which means 100 watts to the antenna, 26 watts radiated and 74 watts IR losses in the earth and the antenna system.

**Second case:-** Added 6 radials to system.

The R rad and R ant remain the same but the R gnd comes down to approximately 40 ohms.

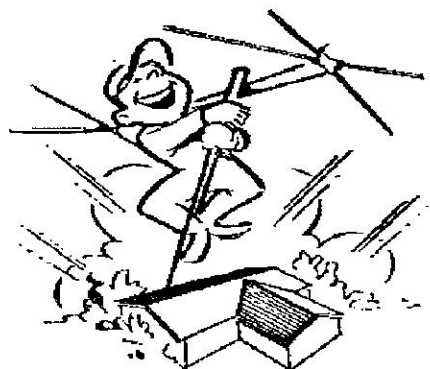
Solving the formula now yields 47 percent. Now we are radiating 53 watts. Still not great but twice as much as before. It would take 120 radials to get the ground losses down to around 5 ohms. This would result in an efficiency of 85 percent or so. These figures are fairly typical of our type of earth. Variations will occur for different locations.

Remember, these values represent a quarter wave ground mounted vertical antenna. Although many radials result in higher efficiency there is one disadvantage. The Q of the antenna gets better and better as radials are added (a good thing), but the band width is reduced. But then a dummy load has a very nice band width. The purpose of the radials is to reduce ground losses. In the absence of radials, antenna currents flow through the earth.

Ima now knew that the best place for radials would be above the ground because the more current they intercepted the less that would get to earth. A good installation would find the radials at about 10 feet off the ground. The next best place would be on the surface. Burying them in the ground would be the least desirable place as the currents would then have to go through the ground to get to them.

Ima Lidd now knew what his Elmer meant when he told him to do the efficiency calculations and then make up his mind whether or not his vertical antenna would need a radial system. He remembered hearing someone say a vertical antenna radiates equally poorly in all directions. He asked Elmer why use a vertical at all. Elmer told him that they have a lower angle of radiation which helps work DX on certain paths and that they don't take up much real estate.

Courtesy of W3OK Corral Newsletter  
Delaware-Lehigh Amateur Radio Club, Inc.



# Quarter Wave Vertical Antennas

By William Van Horn, K3CP

# News briefs

## In the World of Electronics

### FCC Enforcement Action

The Detroit office of the FCC issued a NAL (Notice of Apparent Liability) for \$18,000 to Ronald E. Roop of Wapakoneta, Ohio, for illegal operation, malicious interference and refusal to allow inspection of his station. (An NAL for monetary forfeiture, is an FCC warning of an imminent administrative fine. When investigating interference to the Allen County, Ohio Sheriff's Department radio system, FCC inspectors identified signals on 154.83 MHz coming from Roop's truck. Roop is the Police Chief of Uniopolis, Ohio!

The Philadelphia FCC office has cited Leonard F. Shaner, Jr., of Pottstown, Pennsylvania, for maliciously interfering with a local ham repeater on 147.81 MHz. Shaner, who is unlicensed, was originally fined \$10,000. The NAL was later reduced to \$2,000 since it was his first offense.

Shaner said he has never made transmissions with his Radio Shack 2-meter hand-held transceiver and only uses the radio to listen to repeaters. Shaner, said he wants to become a ham operator, "...but the questions are very hard." He believes that other CB operators who later passed their no-code Technician license requirements and became members of the Pottstown Area Repeater Association turned him in.

Engineers from the FCC's Philadelphia office visited Shaner's residence and made test transmissions from his installation which also included an external antenna. The NAL followed about a month later. Shaner said he no longer has the 2-meter radio since one of his CB friends "borrowed it" to use and then turned it in to the local police station.

The FCC also is looking into possibility that he might be involved in the illegal jamming of the 150 MHz Fire Radio Service. Shaner said he has placed the entire matter in the hands of his attorney.

• The Los Angeles FCC office cited the Beverly Hills School District for oper-

ating an illegal station; the school received a NAL for \$8,000.

### Exposure Regulations

Radio and television broadcasters are very concerned about the new FCC proposed radiation exposure regulations. The April 1993 NPRM establishes two exposure standards: one for "controlled environments" (for workers) and the other for "uncontrolled environments" - usually the public. The public area guidelines are five times more stringent than controlled environments. Low powered hand-held devices are affected as well as high powered broadcast transmitters. If adopted, many of the nation's broadcasters will have to take corrective action to reduce public exposure.

The FCC is even proposing to require additional information concerning "environmental impact" on all license renewals. So far, there seems to be little impact on the amateur service, but it could happen! Comments closed Aug. 13.

### Big Blue moves on Microsoft

IBM is poised to take advantage of Microsoft's problems with their MS-DOS 6.0 operating system. "Big Blue" just introduced a new PC-DOS 6.1 with improved (they say) data compression technology and memory management. Many MS-DOS 6.0 users say they have experienced lost and corrupted data with the Double Space data compression utility.

Microsoft's CEO, Bill Gates believes that cable companies are in the best position to compete on the Clinton administration's digital information super highway. He is talking with cable companies about forming an alliance to provide multimedia and interactive products for future digital systems. In short, Microsoft wants to set the standard for interactive TV.

And a three year investigation of Microsoft's sales practices by the Federal Trade Commission concluded that they did not violate antitrust laws.

### Dell Computers suffering

Another shining star that isn't shining so well lately is Dell Computer! Their

failed notebook strategy caused an \$80 million inventory markdown. Dell stock sank to a low of \$14 - down from nearly \$50 last year! Their 100 % growth rate is now down to 55%.

### ARRL seeks support for Phase 3D

The ARRL has sent out a massive mailing to members asking for their financial support of AMSAT's Phase 3D Amateur Satellite Project. The Phase 3D satellite will utilize amateur bands from 10 meters to 10.5 GHz (3 centimeters) and weigh nearly 900 pounds. Once in orbit, Phase 3D will not require sophisticated tracking. The satellite highly elliptical orbit means that it will rise rapidly in the sky and will appear to hang, almost stationary, for several hours at about the same time every other day - perfect for making schedules with simple equipment, even while mobile!"

### Jamming on 20 Meters

Recent attempts at jamming DXpeditions on 20 meters appears to be the work of the same group of licensed (and unlicensed) malcontents who have taken over the Los Angeles 147.435 MHz repeater. Over the past few weeks, a beacon-like transmitter has been popping up in the DX portion of twenty meters, usually right on top of some major DX operation.

So far, the jamming transmitter(s) have posed no problem for DXers trying to snare a rare contact. Rumors are that the bootleg retransmission is in retaliation for the jailing last October of Richard Burton, the former WB6JAC! Burton is currently serving a seven month sentence at the federal correctional institute at Terminal Island after being convicted FOR THE THIRD TIME of operating a radio transmitter without a license. Many .435ers blame the DX community and subsequent imprisonment a decade ago.

The bootleg operation also may include more than one transmitter location since it's signal level and direction seems to vary from day to day. This would mean that more than one individual is involved, and would constitute conspiracy to violate federal law, a much more serious offense. Source W5YI Report & Packet bulletins.



**I**t's good to be back as *SARA* Net Coordinator. I'm glad I have the job again, and so is Cameron (HJG) who rang me via landline after last Thursday's Net (August 12th). We are on the best of terms and we spent most of our half hour or so discussing aspects of the wonderland of computing.

The perils of DOS-6's BACKSPACE were mentioned briefly in a recent **READOUT**. BACKSPACE should run properly provided that one does not ask it to do the impossible and compress beyond its capabilities. 3 to 1 is probably

the absolute upper limit, according to Cameron, who successfully compressed his hard drive and almost doubled its capacity, and this is confirmed by my reading. "Bit Map" (BMP) files pack, so to speak, or compress the best, in fact, computer artists will benefit from compression more than most users.

Typical compression is on the order of about 5/3 to 1, ie. a 100000 byte file can be compressed to about 66,667 bytes. Cameron suggests that one does not attempt to compress Norton utilities.

Hmmmm... If I were to compress my hard disk, I could probably get close to 200 MB on it! One may also compress a floppy, and when I try it on a disposable copy of one of mine, I will report the results.

My goals for *SARA* Net are simple. I want the Net to be an interesting experience for all, and to that end, I am transmitting NEWSLINE shortly after roll call. I am also looking around Packet BBSs for interesting items to pass along.

I want the net to be as streamlined as possible and to this end, I present two simple working rules. The first is this: If you are a *SARA* member and not currently on roll call, contact me, Bart,

KF6AX, either a bit before or after Net on Thursday evenings. I will make myself available, Thursdays, from about 7:30 through 9:00 PM on 39 for this purpose, or just to chat, or whatever, and I do operate on the repeater at other times, usually during "off peak" hours.

The second ground rule is this: to stay on roll call it is enough to check in once in any four week period. Someone who checked into net, say, last Thursday, need only show up again by the second week in September to be maintained on roll call.

The order of events during *SARA* net, at least to me, is a matter of setting priorities with but one simple criterion. The agenda of our on the air club meetings begins with the items that are (or seem) to be of interest to most of those who attend via radio and descend to the more specific, limited interest items. I am thinking out this order, but have already made one permanent, I hope, change in the order, based on this rule. NEWSLINE now appears before Swap Shop.

I welcome input on this and can be reached at 309 Bodem St. Modesto, CA 95350-6106 or @ KD6JZZ-2 BBS.

## Amateur Radio Call Signs

As of the first of July 1993

Radio -----	Gp. "A" .....	Gp. "B" .....	Gp. "C" .....	Gp. "D" .....
District -----	Extra .....	Advan. ....	Tech/Gen .....	Novice .....
Ø -----	AAØOE .....	KGØHD .....	NØXRX .....	KBØWZ .....
1 -----	AA1GV .....	KD1PZ .....	N1PRM .....	KB1AZO .....
2 -----	AA20Q .....	KF2QE .....	N2VRQ .....	KB2QKK .....
3 -----	AA3FD .....	KE3JF .....	N9PQT .....	KB3AWR .....
4 -----	AD4GZ .....	KQ4YF .....	(***) .....	KE4DMW .....
5 -----	AB5OK .....	KJ5NZ .....	(***) .....	KC5BPS .....
6 -----	AB6UR .....	KN6OB .....	(***) .....	KD6YUR .....
7 -----	AA7XE .....	KI7OU .....	(***) .....	KB7NCK .....
8 -----	AA8LT .....	KG8CL .....	N8ZPJ .....	KB8PCH .....
9 -----	AA9HR .....	KFGQI .....	N9UFS .....	KB91SZ .....
N.Mariana Is. -	AH8T .....	AH8AN .....	KH8CA .....	WH8AAX .....
Guam -----	NH2R .....	AH2CT .....	KH2HB .....	WH2ANG .....
Johnston Is. ---	AH3D .....	AH3AD .....	KHSAG .....	WH9AAG .....
Midway Is. -----	-----	AH4AA .....	KH4AG .....	WH4AAH .....
Kure Is. -----	-----	-----	KH7AA .....	-----
Amer. Samoa --	AH8H .....	AH8AF .....	KH8AX .....	WH8ABB .....
Wake W. Peale	AH9C .....	AH9AD .....	KH9AE .....	WH8AAI .....
Alaska -----	(***) .....	AL7PD .....	WL7LZ .....	WL7CHE .....
Virgin Is. -----	WP2A .....	KP2CC .....	NP2GN .....	WP2AHU .....
Puerto Rico ----	(***) .....	KP4VL .....	(***) .....	WP4MEH .....

\* = All 2x1 "W" prefix call signs have been issued.

\*\* = All Group "A" call signs have been assigned

\*\*\* = Group "C" call signs have now run out in these areas.

[Source: FCC Licensing Facility, Gettysburg, PA]

## In flight cellular phones prohibited

Use of a cellular phone while in flight is prohibited by FCC rules. The rule, 22.911 (a) (1) of Title 47 Part 2 of the code of Federal Regulations, states that cellular telephones shall not be operated in airplanes, balloons or any other aircraft capable of airborne operation while airborne. Once the aircraft is airborne, all cellular telephones on board such vehicles must be turned off. The term 'airborne' means the aircraft is not touching the ground.

Cellular telephones may be installed in aircraft, but can only be used when the aircraft is on the ground and the use of cellular telephones while the aircraft is on the ground is subject to FAA regulations.

Courtesy of SBE Newsletter  
Chapter 43, Sacramento, CA.



## FCC Rules Change

From front page

tify other amateurs of the availability for sale or trade of ham gear on the bands as long as it is not a regular occurrence.

—**OLD RULE** No station shall transmit music on the ham bands.

**NEW RULE** Music is still prohibited, but incidental music between a space shuttle and the earth will be allowed.

—**OLD RULE** Other than space shuttle communications, amateur stations may not retransmit radio signals from other radio services.

**NEW RULE** Propagation and weather forecasts originating from U.S. Government may now also be occasionally retransmitted to amateur operators. The key word is "occasionally."

There were no changes to the rule which allows amateur operators to be paid for transmitting Morse code practice and information bulletins. The guidelines still require at least 40 hours of telegraphy and information bulletins to be transmitted on at least six ham bands between 160 and 10 meters. A schedule of frequencies and times must be published 30 days in advance.

Broadcasting to the public, program production and news gathering on the ham bands remains prohibited unless an emergency exists and no other communications facilities are available.

There were no changes to Section §97.111, Authorized transmissions, §97.115 Third Party Communications or §97.117 International Communications. The only change was a general relaxation of §97.113 Prohibited communications.

WSYI Report

## Foot 'n Fanny contest at PACIFICON '93

Always a big hit at PACIFICON, you will again have a chance to demonstrate your CW ability using your foot and/or your fanny. Special prizes will be awarded to those who can flawlessly send 'Mississippi' and other easy words. Look for this event at the swap meet and inside the hotel as well.



## SARA Technical Report

By LeRoy Cambell  
NV6S

Progress has been made on the technical front although it doesn't always show. The new 440 antenna has arrived. It is a dual band antenna and will not only replace the 440 antenna but will replace the antenna for the backup repeater on two meters. These items are waiting for a trip up the hill for installation.

The club has agreed to activate the PL on the two meter machine. This will be coupled with a touch tone over-ride that will put the repeater into carrier access mode for about ten minutes and can be reactivated at will by any member or non-member with knowledge of the code.

My current plans are to have the code be \*5 to deactivate the PL and #5 to

activate it. As stated, it will automatically revert to PL mode in about ten minutes unless the code is given again. The purpose of the PL is to limit the intermod interference on the hill, not to restrict repeater usage. We will continue to search for the intermod as time permits and hopefully will catch it acting up when we are there with equipment to track it down.

Most of the guy wires have been changed on the tower and they have not helped with the intermod. One remains to be changed and we will do that with an insulated guy wire since we have to take it over an energized electrical circuit. I hope to have the antenna and PL installed within the next couple weeks.

I have been informed that painting my house takes priority over the repeater. Although I have argued at length with my wife on this point she seems to have gotten the last word. Bear with me through the painting chores. Thanks to all who have helped out and thanks to the club for being patient with my time schedule. 73 to all, LeRoy.

## Hold the Phone on 800 and 900 Numbers

Think twice before dialing that 800 or 900 telephone number. You may end up paying for what you thought was a free call and your number could be recorded in a database sold to telemarketers!

The California public Utilities Commission wants Consumers to know that some companies listing 800 or 900 numbers are now using Automatic Number Identification (ANI) which is approved by the Federal Communications Commission. When you dial their number, ANI equipment automatically adds your number to their customer database. And companies are not required to tell you if they have ANI.

Companies with ANI can then use your telephone number to get your address, income level, items purchased and similar information from other marketing databases. Or they can sell your number to telemarketer who will soon be pitching you on their products and services.

Never assume that an 800 or 900 number is a free call! If the number uses ANI, you may reach a recording advising that you will be called back collect. Or

you may be told to call a 900 number. In either case, the call could be billed to you!

If a person answers an 800 or 900 number, advise that you do not want your number, name or address kept in his or her company records. Make it clear that you do not want this information rented or sold to other companies. You may also advise that you do not want the company to solicit future business from you.

To complain about a company using ANI, you may contact the Federal Communications Commission, 2025 M Street NW, Washington, D.C. 20544.

If you suspect that your name is on a direct marketing list and want it removed, write:

Telephone Preference Service  
c/o Direct Marketing Association  
P.O. Box 9008  
Farmingdale, NY 11735

Courtesy of the Volcano Telephone Co. and the Sierra News, newsletter of the Sierra Intermountain Emergency Radio Association, Minden, NV.



# Calendar

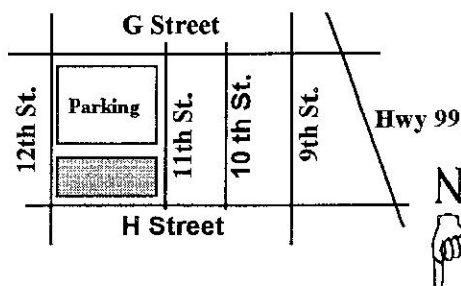
Sept. 5 ..... Livermore Swap Meet ..... 7 AM -12 PM  
 Sept 11 ..... Foothill Swap Meet ..... All Day  
 Sept 11 ..... VE Testing in Modesto ..... 9 AM  
 Sept 17-19 ..... ARRL SW Div. Convention ..... 3 days  
 ..... Holiday Inn on the Beach, Ventura  
 Sept. 21 ..... SARA Monthly Meeting ..... 730 PM  
 Sept. 25 ..... Amador ARC Hamfest ..... All Day  
 ..... Senior Center in Jackson  
 Sept. 26 ..... River City ARC Swap Meet ..... All Day  
 ..... Sacramento  
 Oct. 9 ..... VE Testing in Merced ..... 9 AM  
 Oct. 19 ..... SARA Monthly Meeting ..... 730 PM  
 Oct. 22-24 ..... Pacificon '93 Convention ..... 3 days  
 ..... Hilton Hotel in Concord, CA.  
 Nov 16 ..... SARA Monthly Meeting ..... 730 PM

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.

SARA repeaters on Mt. Oso at 3,300 feet 145.39(-) MHz, 224.14 (-) MHz, 440.225 (+) MHz PL 136.5 Hz  
 KA-Node Digipeater 144.91 MHz Ten Meter Digipeater 28,440 kHz

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

Address Correction Requested



SARA Meeting Location  
 1100 H Street, Modesto, CA  
 Lower Level Conference Room.  
 730 pm third Tuesday of each month.

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**Next SARA Meeting is September 21, 1993 at 730 pm & You're Invited!**