

The READOUT

Year 14 Number 11 November 1992

The Official Newsletter of the Stanislaus Amateur Radio Association

First 'Incredible Universe' Store



Fort Worth based Tandy/ Radio Shack, with annual revenues of more than \$4.5 billion, operates some 7,400 small to medium sized consumer electronics and major appliance stores including Radio Shack, McDuff, Video Concepts, The Edge in Electronics and Computer City.

Their latest retailing format is the Incredible Universe megastore which is being billed as the world's biggest electronic supermarket. I mean REALLY big! About 166,000 square feet under one roof; each staffed with 300 employees.

The first one opened in Wilsonville, Oregon, on September 17, prompting a huge traffic tie-up on the highway leading to the new facility. The huge four-acre warehouse-style structure some 17 miles south of Portland holds approximately \$9 million of consumer electronic and major appliances at very reasonable prices

The Incredible Universe concept is to provide the consumer with affordable and fun shopping in a festive, trade show/convention-style atmosphere. There is nothing like it in the country! Its atmosphere is more of a carnival than a store - something

See 'Universe Store' page 5

\$2,000 Fine For Indecent Language

Just when some amateurs thought that the Commission was not interested in pursuing the obscenity and indecency provisions of Section 97.113(d) due to the difficulty in prosecuting such cases comes word that the FCC's Field Operations Bureau has just issued a \$2,000 Notice of Apparent Liability against General Class amateur Allen Burton, KA4URC, of

See 'Fines' page 2

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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 pm.

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.

Technical Report

By LeRoy Campbell, NV6S

As most of you know we had an air conditioner failure last month and it was brought down for repairs. During the time it was off line we had some problems with repeater lock up during the hottest days. Charlie, KJ6GE, called me mid week and let me know that he had the unit repaired. He installed a new fan motor after much difficulty locating one. I was also very saddened to hear of the passing of Charlie's wife and one of our very good members, N6SAH.

On Sunday, 9-27, N6IPH, and I took the air conditioner back up the hill and installed it. It seems to work great. The temporary vent I installed was removed and the floor vent closed off. The box fan we were using while the air conditioner was being repaired had temporarily housed a mouse. Although the critter had managed to find a way through the shroud and grills to get into the building,



he was unable to find a way out. The smell was quite noticeable when we entered the building and was quickly located. Dan disassembled the fan and cleaned it while I worked on the vents.

My thanks to Dan who plans to join the club, for accompanying me on the trip. My special thanks to Charlie for repairing the unit particularly in view of the loss of his wife. Thanks every one for being patient while the system is being improved and repairs are made.

73 LeRoy.

'Fines'

from front page

KA4URC, of Hornbeak, Tennessee.

It is believed to be the first monetary forfeiture ever issued for an over-the-air amateur service speech violation that was not linked to an additional easier to prove offense.

Burton was charged with using obscene and indecent language during an on-air argument on the 20 meter band (14.300 MHz) on June 29, 1992, between the hours of 3:53 and 4:22 p.m. - a time when children might be likely to be listening. Burton was monitored and his transmissions transcribed by FCC engineer Tom Shirley of the FCC's Kingsville, Texas, monitoring station. -W5YI Report

Coax, Shortwave Researcher Dies

A leading researcher and one of the developers of coaxial cable has died at the age of 95. Sixty years ago, Dr. Sergei A. Schelkunoff researched the coaxial cable now commonly used for television transmissions. He was born in Samara, Russia. According to the New York Times, Dr. Schelkunoff also conducted extensive research on shortwave radio, broadband antennas and grounding. -W5YI Report

**Next SARA Meeting
November 17, 1992**

23 CM Band Comes Alive

By Gordon West,
WB6NOA

Looking for some new excitement in amateur radio operating? The 1240-1300 MHz band is wide open, and filling up fast with new repeaters coming on the air. In fact here in Southern California it is the ONLY band left open where repeater assignments are still available.

Factory-made equipment is also plentiful, and relatively inexpensive on this band, too.

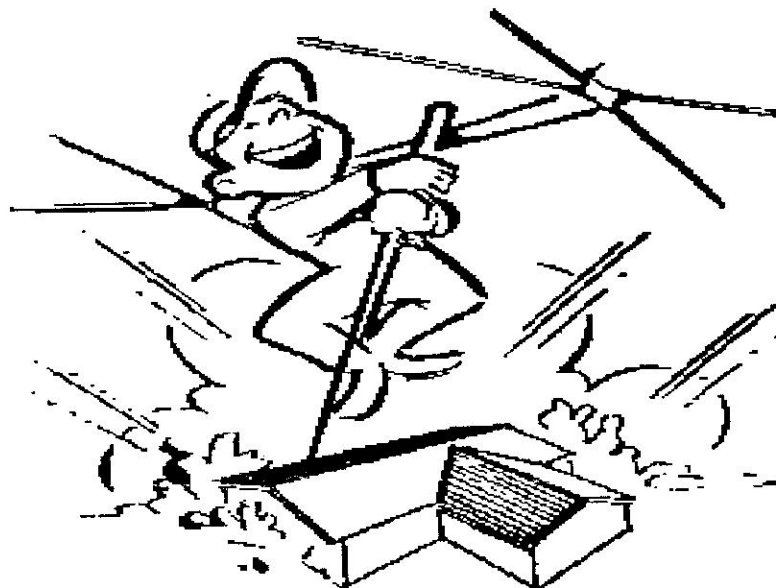
Single-band handheld and mobile units are available, and manufacturers that offer tri-band and multi-band VHF/UHF systems all have plug-in modules for the 23 cm band. About the only thing you can't buy, off the shelf, is a 23 cm amplifier to boost power output beyond 10 watts. But this is not a problem- 10 watts is plenty to work simplex and repeater stations on the 23 cm, 1.2 GHz, band. Any more power output could pose a serious health hazard in a mobile installation.

Band Available to All

The 23 cm, 1.2 GHz, band is available for all licensed hams. Novices are "restricted" to 1270-1285 MHz. This is no restriction! This puts Novice operators right on repeaters, amateur television channel 3, the national FM simplex calling frequency, and plenty of elbow room for digital communications. The Technician class operator, either code or no-code, plus all other operators, have the complete band from 1240 to 1300 MHz. (See ARRL band plan)

Open Repeaters Everywhere

There are open repeaters everywhere on 1.2 GHz in Los Angeles and Orange county. The repeater common repeater offset is -12 MHz. But there is also a -20 MHz offset for many repeaters in the states of Washington, Oregon, Rhode Island and a few in Virginia. The



ARRL pocket repeater directory has over 9 pages of 1.2 GHz repeater listings. There are probably twice as many repeaters on the air on 1.2 GHz, not yet found in national repeater directories. Check with your local radio dealer for a more detailed regional list of active systems.

Exceptional Range

You will enjoy exceptional range in 1.2 GHz. Many times, you can talk further with less noise on 1.2 GHz than 2 meters! Yet other times 2 meters will get through loud and clear and you won't hear a thing over the same path on 1.2 GHz. The reason? Foliage attenuation.

A most interesting phenomena occurs on 1.2 GHz when working a mobile station through a repeater, we'll dub it

'shadow effect'. It is most pronounced when operating near big buildings. The incoming signal from a distant repeater may reflect off of a nearby building, and create a an invisible grid of hot spots and shadow areas in a big parking lot by your office.

The division between good reception and no reception is so sharp that just 2 feet will make all the difference in the world. And most interesting, these "hot spots" on 1.2 GHz won't budge an inch. If you were to put chalk marks in your parking stall, and always return to the exactly the same spot with your wheels, chances are your reception would always be the same. But if you're just a few inches one way the other, your reception would be in a shadow area and you won't even trigger the repeater IDer.

Normally, where you hear the 1.2 GHz repeater best in a "hot spot" is where you will have best transmission capabilities through that repeater, too. But this only holds true if the repeater is using a single antenna and a duplexer between the input and output. Some repeaters use a dual antenna system.

You might find it frustrating to hear the repeater well, but have a lousy signal through it because your incoming signal is arriving slightly out of phase on the repeater's input antenna. Pull your car forward by a foot and the repeater fades out on receive, but you can get through it loud and clear. This is a problem associated with repeaters using separate antennas on this band. You will need to drive around until you find a spot that gives you and both transmit and capabilities through that distant repeater.

See '23 CM Band' page 4

23 CM Band

from page 3

Out in the open, 1.2 GHz is has little noise. You may hear a rapid flutter, but these are simply bounces off of nearby building or overhead signs. Antenna requirements are easily accomplished with over 10 different GHz base, mobile and portable-type antennas.

So have YOU tried 1.2 GHz. If you're looking for more room to spread out and a new challenge of microwave propagation, come on up to the 1200 MHz band. It's wide open for exploration, and if you ever wanted to set up your own repeater there is no better time and place, than right now! Come on up to the top band, 1.2 GHz.

Thanks The Intermod, West Coast Amateur Radio Club, Inc.

Brush With Power Line Fatal

A 21 year old Grand Prairie, Texas, man was electrocuted when a radio antenna he was helping to position came in contact with a 7,200-volt power line. Steven R. Harthcock and two friends were on the ground, attempting to "either put up or take down" an antenna when it brushed the power line, said Fire Investigator Lt. Doug Conner. "They gave him CPR for 20 or 25 minutes and they defibrillated him several times," said fire Marshall James Smith.

Harthcock was taken to Dallas/Ft. Worth Medical Center-Grand Prairie, where he was declared dead about a half hour later. His two friends on the ground were also injured. A fourth man, working on the roof when the accident occurred, was not injured said Conner. *Tnx MT*

Getting A License To Operate in Mexico

Getting licensed to operate amateur radio in Mexico certainly is not as easy as operating in Canada! The U.S. has a bilateral treaty arrangement that allows any FCC licensed amateur to instantly operate in Canada by simply appending his/her call sign with the appropriate VE location. (For example: W5YI/VE1.) Note that the VE1 appears after your call sign. There is no paperwork to prepare what-so-ever. The Canadian Convention and has been in effect more than 40 years.

There is a reciprocal licensing arrangement between the U.S. and Mexico, but it is expensive and cumbersome! Supposedly there is a new easy-to-obtain reciprocal licensing arrangement coming, but the Mexican

offices do not seem to know anything about it and the old system still applies.

To operate in Mexico, you must apply to a territorial telecommunications office of which there are fifteen. You also have to pay 211,000 pesos (about \$70) for a six month operating period. Your temporary license may be renewed, but it costs \$70 for each 6 month period. Once approved - and the approval can take anywhere from a couple of days to weeks ...or even months to obtain .

You ID your station with the Mexican prefix and region in which you are operating before your call sign. (For example: XE2/W5YI.) The quickest licensing can be obtained from the Mexican Authority (Delagacion de Comunicaciones y Desarrollo Tecnologico) in Tijuana. Ask for Oscar

-W5YI Report

For Sale

Cushcraft R-5 Vertical \$125.00
Call Gary 522-6957

RoBot Model 800 Keyboard Terminal
Will send ASCII, RTTY, or CW. Can be used as an audio aid for practicing Morse Code or can be plugged into a TV for code instruction.
Manual included. \$125.00. Call
Linda 801-364-7006

VE Tests Coming Up

Nov 14 Sonora 9 am 586-4917

Dec 12 Modesto 9 am 883-2968

For more information on the VE Sessions in this area contact Chet, W6XK, 209-883-2968.

No Cell Phones In Flight

The Federal Communications Commission (FCC) has ruled that cellular phones can be used in aircraft that are on the ground. However, the use of cellular phones while airborne is prohibited.

The FCC was concerned that the extended range of airborne cellular phones would cause interference to local cellular networks. Exactly how the FCC will enforce the ruling is unclear, especially since the Commission has authorized the installation of cellular phones into private aircraft.

Tnx Monitoring Times

Happy Thanksgiving

First 'Incredible Universe' Store

from front page

that you'd expect to see on the strip in Las Vegas. All the ingredients were there ...less the gaming tables and slot machines! There is even a catwalk high above the action to keep track of the action! Even their Incredible Universe logo screams Vegas.

The format, the brain-child of Tandy Chairman John V. Roach, is based on the annual million-square-foot Consumer Electronics Show that highlights the industry's latest consumer electronic products and things still in development.

Tandy simply took products from the nation's top 50 manufacturers, added customer service and the best prices possible. All sales personnel (called 'cast members', customers are 'guests') are salaried; none on commission. They spend 10% of their workday in the Incredible Universe training center keeping abreast of the latest technology. (Tandy even pays their tuition if they take outside training and get good grades.)

Free Membership

Tandy computers keep track of "guests" by requiring that they be members, but it is free. You get issued a laminated ID card and key ring tag containing your very own code which is scanned at the register.

Customer Services

Customer services include an in-house repair shop, while-you-wait (automotive electronics) and in-home installation, delivery, training seminars ...and a financial service center with ATM's linked to local banks. If you don't have money, they'll get it for you ...somehow! They accept all major credit cards ...or they will issue you one of their own.

Key Concept

Key to the Incredible Universe concept is a completely new relationship with product manufacturers. They are actually part of the marketing, merchandise presentation, inventory control, personnel training and after-sale support process. A computer link direct to each provides daily information to facilitate sales forecasting, merchandise delivery and product support.

Grand Opening Week

The grand opening week featured prizes, special buys, and even the opportunity to get your picture taken with a Mr. Spock look-a-like. They have a custom photo developing where you can create a print. And you can make your own personal music video in the Karaoke studio.

Second Store In Texas

The second store of this magnitude will open October 1st in Arlington, Texas, -too late for our deadline. But we did take a pre-opening tour of the new facility and will be there for the media bash the night before. We saw a stack of 12" black and white television sets as big as a house near the cash registers and were told they would all be sold at \$29 to opening day customers. Other Incredible Universe's are scheduled to follow in other demographic-friendly areas around the U.S.

Carries Everything

The Incredible Universe carries everything from home computers (at particularly inexpensive prices) to home-theaters offering the latest in laser-disk technology. In fact, the Oregon store offered four (4) fully functioning big-screen home theaters with continuous free showings of Indiana Jones films. The store also sells 315 kinds of TV sets,

77 VCRs, 60 video camcorders, 340 video games, 45,000 music and movie titles (no rentals), 72 models of cameras, 181 refrigerators, 83 washers and dryers, 48 different computer systems ...and thousands of discounted computer software programs.

For example, they were offering 386/25 personal computers w/color monitor fully loaded with software for \$857.00. Among the customer amenities new to Tandy are a frequent-buyer program, a staffed children play area called Kidz View, lots of hands-on demonstrations, educational seminars, electronically retrievable product information, a photo store, restaurants...even a recycling collection point for cardboard boxes and styrofoam.

Bargin Basement

The ultimate bargain basement demon's, scratch'n'dent, one-of-a-kind, discontinued special buys is called the 'Black Hole'; offbeat 'weird stuff' is sold in The Bazaar.' You can try out video games in the arcade ...and buy them in the Game Shop next door. Kids will drive them nuts!

20 Stores Under One Roof

The Incredible Universe is split up into what appears to be 20 stores under one roof - each opening onto a large rotunda complete with a noisy sound stage and a gigantic Panasonic video wall suspended from the ceiling. The stage is for free shows and exhibitions. Strangely, the largest 'store' is the music and video mart. The signs and sounds of the Universe are controlled by live disc jockeys. The signing is very psychedelic ...a lot hot colors and neon lights. There are hourly contests, prizes, seasonal events

See 'Incredible Store' Page 6

'Universe Store'

From page 5

and test driving of all merchandise.

Conspicuous by its absence was any reference whatsoever to Tandy and Radio Shack. Monster signs; (12 feet square) featured such names as Mitsubishi, Sony, MCA, Nintendo, Panasonic, Sharp, Casio, Hitachi, General Electric, Toshiba.. The Tandy brands (Archer, Realistic, Memorex, GRiD, DuoFone among them) were all there, but they were buried, de-emphasized and treated as more or less off brands. The in-store Radio Shack store had a glitzy neon sign that merely said Accessory Shack.

Posted on the wall at the Incredible Universe is a sign that reads (perhaps with Mr. Spock in mind..."good service isn't alien to our customers." The store is loaded with friendly sales personnel (along the lines of the so-called 'Disneyland culture' outfitted with hand-held computers with which they can write up a purchase with a customer right on the sales floor. The sale is then transmitted immediately, and the item comes spinning down a spiral track to the loading dock in some 90 seconds.

By the second day, the traffic problems had abated (perhaps the result of extensive media coverage), but the parking lot and the store itself were crowded with bargain-hunting consumers.

Local Tandy newspaper coverage of the grand opening celebration stated that the secret of the Incredible Universe, besides incredible low prices, incredible selection, and incredible service, is incredible fun. Tandy appears to have accomplished all four ...at least in the early stages of this venture. It remains to be seen whether the Incredible Universe "fill the store with fun seekers" concept will be viable over the long haul and what effect it will have on the smaller locally owned home-entertainment and computer stores.

-W5YI Report.



SARA Minutes

By Ernie Rader, K6UVI, Secretary

The regular monthly SARA meeting was called to order at 7:30 PM on October 20th, 1992 by President Jim Hertel, N6KMR. 24 members and guests signed the sign-in sheet while we all introduced ourselves. Secretary Ernie, K6UVI, thanked all who participated in the ADA bike-a-thon and the Riverbank Wine and Cheese Walktoberfest. It was moved and seconded to approve last month's minutes as presented in *The READOUT*. The treasurer's report was presented as follows:

General Fund:
Beginning Balance: \$1,491.73
Deposits: 155.34
Expenses: 425.77
Ending Balance: \$1,221.30
General Account Expenses:
Telephone: \$15.52 & \$14.71
(August and September)

The READOUT: \$88.80 & \$88.80
August and September)

Equipment:
Expenses for NV6S \$58.20
Air Conditioner Repair \$96.48
Miscellaneous: \$63.26
TOTAL: \$425.77

Education Fund:
Beginning Balance: \$189.35
Deposits: 0
Expenses: 0
Ending Balance: \$189.35

Vice President Sandy, KC6TBK, introduced and welcomed Jim Clark, WA6NSK as the guest speaker for the evening.

Jim spoke on ham operators and how to conduct themselves when providing communication assistance during disasters. He provided a pamphlet entitled "An Amateur Radio Operators Checklist To An Emergency Assign-

ment", and his presentation was very thorough.

Old business followed as Bob, WA6ZLO reported that he's tried to contact the paging people with PacTel, but has had no response. All of the education materials have been returned intact, and Sandy responded to a query about the library. We aren't accepting magazines any older than two years. We've also heard nothing from The Manteca Amateur Radio Club about a closer working relationship.

Under new business, Sandy suggested that the teaching duties for the radio classes be divided among those who might want to present specific topics only. A question was raised about whether AI, N6SAE might consider helping with the teaching duties, and we learned that Dave, KJ6DL would help as long as the classes were held in Oakdale. Dobbie, KC6TVG will contact him.

ZLO asked about whether the club was going to increase the dues next year and it was moved and seconded to keep them the same. A nominating committee needs to be put together, and Liz, KD6GIW volunteered to chair it.

ZLO asked about the club station, and we learned that LeRoy, NV6S and Oliver, N6YHZ both have keys. It was noted that the area is under a 72 hour Class A alert due to a predicted earth quake, and there was a short discussion about what kind of emergency operations the club would conduct should this take place.

The meeting was adjourned at 9:18 PM. Respectfully submitted, Ernie, K6UVI.

HAM GEAR FOR JUST PENNIES? SURE....



CONSIGNMENT SHOP NOW OPEN IN MODESTO

Bring your gear for sale and check out the bargains in the valleys newest HAM STORE. USED HAM GEAR is sold on 15% consignment. Check out what is available here before you spend \$\$\$\$\$ for new gear somewhere else. Pickup some extra money by selling off some of that gear gathering dust around the shack. New equipment comes and goes every week, check it out.

Some of the gear that was on the self as of 10/21/92:

Kenwood TS-520S w/AT-200 Ant Tuner, Mic, Key, Load, Spare Final, Keyer, Manuals
Kenwood TH-31AT 220 Mhz. Synthesized HandiTalkie w/charger
Yeasu FT-404R 450 MHz HandiTalkie, 6 freq., 5 watts
Telex / Hy-Gain 103BA-S 3 element 10 Meter Beam w/balun
Yeasu 757AT Antenna Tuner Unit w/manual
220 MHz 60 Watt Mobile Amplifier, Specialty Comm model 1.3M10-60L
AR-2 Antenna Rotor, w/control box
Yeasu G-500A Elevation Rotator w/control box and manual
10 Meter Mobile Rig, Realistic HTX-100 like new w/box, manual, accessories
Cellular telephones, CB rig, Video Cameras, VCRs, Stereo Sets, Computer Software, Hard Drives,
Computer boards of various types, computer UPS, many different power supplies, copy machine,
Auto-ranging VOM, Oscilloscopes, & many other interesting items, gadgets, and gizwitches.

ASTRE SYSTEMS INC., 1046 RENO AVE, MODESTO, CA 95351
OPEN EVERY SATURDAY 9 AM TO 5 PM.

Consignment shop in Modesto.

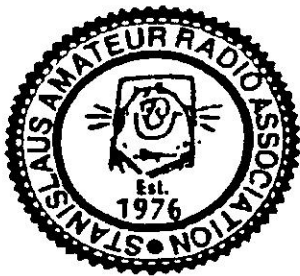
by George F. Ledoux, K1TKJ

Well the consignment shop got off to a slow start but is picking up speed fast. The first week, prior to the READOUT advertisement in last months issue, we had about six casual lookers. On the Saturday that last months READOUT came out, we had folks waiting at the door when we arrived. Last week, 10/17/92 we had about 50 people come through both buying and selling.

Everyone that has come to the shop has said that they are glad that we have a Ham Shop in Modesto. Remember that it is no fun to go to a swap meet if there are only two items on the table. The consignment shop will be fun to attend and will induce **only if you support it**. Now don't worry, we aren't suggesting that you have to come down to buy something. Everyone has something that they would like to sell or otherwise exchange for something else. SARA has over 175 members, if everyone of the members brought just one thing to sell, we would have over 175 things to look at. WOW, what fun that would be.

Let me explain how the consignment shop works. You bring in some useless bit of junk that you have gathering dust around the shack. You tell us how much you want to sell it for. Then we place your priceless, one of a kind, just back from the factory, completely realigned, brand new, state of the art electronic equipment on the shelf for all others to admire and dream about. When it sells, and it probably will in 5 or 10 minutes, we pay you the price that you asked for, less 15%. Because all of the items on sale are not ours, we can not bargain on the price. So if the tag says \$50 we can not, and will not, accept \$49.50. You can be sure that we will do our best to sell your items at the price you have set and not a cent less. We have a section for Ham Radio Equipment, Computers, and Software, TV Video/Stereo Equipment, and items of a "technical" interest. No clothes, glassware, kids toys or the like. If you are interested in it as a HAM then probably so are we. My philosophy is to sell things at the lowest prices possible so as to promote the rapid turn over of items. People come back to places they find bargains at.

Thanks to all the brave souls who ventured out into the wilderness to find Reno Ave during the last few weeks. Here are some detailed directions to help you find the place. If you are on the 99 freeway, you would take the Kansas Ave off ramp. Turn West (away from 9th street) and go toward Emerald Ave. There is a stop sign there now but a traffic light is being installed. Stay on Kansas and continue west on Kansas past Emerald, past Lone Palm, the next street is Reno Ave. You can only turn right. After the stop sign at the intersection of Reno and Franzia Ct., bear right on Reno. The first building on your right is the Reno Convalescent Hospital, then there is a house, then there is our driveway! Look for the blue and white sign indicating # 1046, notice ASTRE SYSTEMS is in unit E & F. You must go down the driveway to the building in the rear, altogether about 500 feet back from Reno Ave. Now that wasn't to hard was it? Reno terminates one end on Woodland Ave and the other on Kansas. It runs parallel to and just to the east of Carpenter Rd. The hours are 9 am to 5 pm on SATURDAYS ONLY. However, other hours can be arranged by appointment. If the consignment shop is as popular as it seems it may be, then we will consider additional hours and days. Remember, it can only exist with your support.



Editor's Notes

By Bob Pinheiro, WA6ZLO

Our membership has grown in leaps and bounds lately and I'm not sure that I have mentioned all the new members. So, just in case I haven't, here is a big welcome to the following new members of **SARA**. Jim Balzer, N7CBF, Modesto. Jim is a General. Brooks Rushing, KD6ISC, Turlock in a new Technician and Des (Desmond) Johnson, W6BMA, of Galt. Des is an Extra.

Carl Jenkins, KD6CGB, Oakdale, Technician. Charles Herrington, KD6DTR, Technician. Bob Alderson, KD6FFY of Turlock, a Technician. George Roderick, KD6FGD, Technician. Jack Steinert, WB6IDT, Advanced. Larry Hill, KD6IRY, Technician. Paul Tidwell, KD6KAC, Technician. Abdon Correa, N6KMC, Technician. John Walter, KC6KSN, Riverbank, General. Gary Edwards, KD6KXP, Technician. Seth Sinclair, KD6KZU, Turlock, Technician. Kent Stromberg, KC6MBQ, Ripon, General. Stephen Neff, KC6VBV, Technician. Dennis Forer, KC6WXX, Extra. Marion Riley, KC6YDA, Technician.

With all these additions over the last few months, our membership now stands at 182, well within our goal of 200. As you can readily see, the Technician class license is the most popular which is substantiated by FCC statistics. The Technician class license is the fastest growing ham level license and the rate at which the class is expanding is astounding. 25% more Techs than just a year ago... and the number of Techs has more than doubled in the last five years!

The Amateur Service grew by

48,431 licensees during the past year and 36,980 of them were Technicians. The codeless license is directly responsible for the dynamic increase.

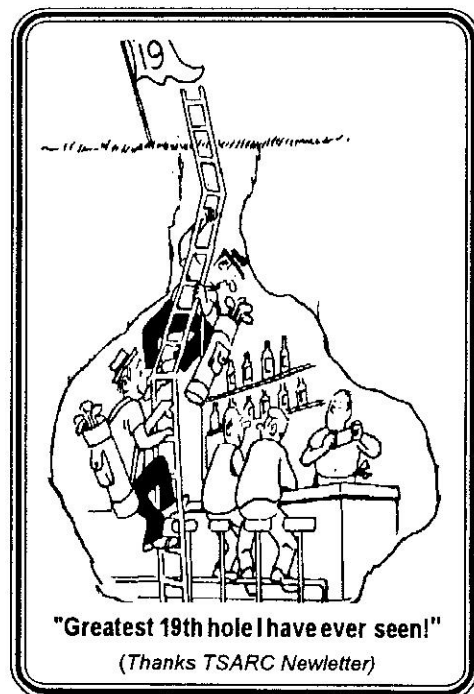
It is interesting to note the number of Technicians increased by an average of 3.8% a year between 1982 and 1987, 11.2% annually between 1988 and 1990, and jumped to the annual rate of 21.8% a year after the adoption of the codeless Tech Class. It can be said that dropping the code from the Tech Class has had the impact of increasing the number of ham radio operators by nearly 10% a year. If current growth rate continues, there will be a half a million Technician Class amateurs within five years...and possibly more than all other classes combined!

Got a letter in the mail from Frank, W6MMH, informing me he has moved to Yuma, Arizona, permanently. He was going back and forth from his Escalon home until deciding for the warmer clime. Best of luck Frank, and enjoy your retirement.

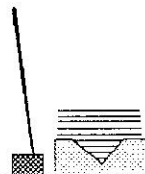
I'm excited about a series starting next month written by Tim Johnson, N8QXL, of Modesto, concerning his running battle with the local cable company and his neighbors over RF interference. Tim has accepted my offer to tell his story and from what I have seen of his writing, you are sure to find it interesting and enlightening. The story starts next month. Also, next month Ernie, K6UVI, will tell us about the outstanding Pacifcon Hamfest held in Concord last month. Ernie said it was an outstanding presentation and he will have the details next

month. Speaking of articles in *The READOUT*, I hope you enjoy the monthly column of Tim Low, N6ZUC. Tim's articles are timely, well written and informative. Tim, formerly of Modesto, now lives in Escondido. He is an electronics engineer with many years of experience which he has been sharing with us. If you get a chance, drop him a note or a packet and let him know you appreciate his efforts.

In closing, you may have notice a bit of a change in this months newsletter. Blame it on a new desktop publishing program, Pagemaker 4.0. After mastering Ventura 3.1, I decided to see if I could master Pagemaker. With much help from Jim, KB5FB, and lots of trial and error practice, I have managed to learn enough to produce this newsletter with Pagemaker. It's a super program if you are into something like this. 73, and Happy Thanksgiving. Bob.



FROM THE DESK OF



Here in the San Diego area, on Thursday nights, on one of the local club 2 meter repeaters, we have what is called the Ham Help Net. This is a very popular gathering place for Ham's with technical problems and solutions. For those needing the benefit of technical expertise, there are some very knowledgeable people who hang out there, always willing to help a guy (or gal), out with problems dealing with all areas of amateur radio electronics. From time to time, some real interesting subjects are raised, and some rather, shall we say "warm", discussions engaged.

So it was a few weeks ago when a concerned participant broached the subject of human exposure to non-ionizing radio frequency radiation. In regular guy terms that means how close can I get to my antenna, before my gizzard starts to simmer?

Seems he was in the process of constructing new digs, shack included, and was anxious about how far his new all band vertical should be from his operating position. This in light of several "stories" he had read recently about the dangers involved in being in proximity to sources of RF. A good question, and a bunch of rotten answers.

One of the problems involved in Journalism is that general assignment reporters are sometimes assigned to write about subjects with which they have no basic knowledge. They rely on the findings, facts and figures of some so called expert they've dug up some-

place. There is also a bit of sensationalism thrown in from time to time for good measure, and so I think it is with this subject. Granted, the facts are not completely in yet, and won't be for quite some time I'd say. In the mean time, there is going to be growing concern in regards to this subject.

The best thing you as a user of Radio Frequency radiating device's can do, is to gain all the knowledge you can on the subject. Both to put your own mind at ease, and to be armed in case some neighbor claims your 220 operation is causing his asparagus to mutate. Could happen, and remember, there are a lot of lawyers out there looking for work.

Some history is in order here. In 1982 the American National Standards Institute, here on out referred to as A.N.S.I., developed standard ANSIC95.1-1982. This in response to concerns raised by consumer groups and regulatory agencies. This standard was officially adopted by the F.C.C. in 1986. Part of any environmental impact study required for the purpose of constructing or modifying any station operating under parts 5,25,73 or 74 of the commissions rules, must include a determination of the possibility of human exposure to the non-ionizing radiation generated at that site. That licensee must show, with reasonable accuracy, where the "RF" will exceed the standard, and what steps you as the license holder will take to prevent exposure by the general public, and by employees.

What does the standard say? Basically it states that the radiated energy should not exceed 144 joules per kilogram over the entire body mass, time averaged over a six minute period. Beyond this barrier you would be at risk of adverse effects from RF energy.

This limit then becomes frequency dependent. The higher you go in frequency, the lower the power density you can be exposed to, without exceeding the A.N.S.I. standard. For instance in the Amateur 160 meter band, you are ok

unless you are exposed to a level exceeding 100 milliwatts per centimeter squared for more than six minutes. At a kilowatt, roughly, without breaking out the calculator, hunting up the correct chart, or renting some expensive equipment to measure it with, you would be ok if you were at least 6 meters (19 feet) away from your quarter wave vertical on 160 meters. Remember, this is at 1000 watts.

As you rise in frequency, the limit in power density decreases. Assuming the same power level and antenna type. Meaning you must remain at an even farther distance. (See fig. 1 for these limits, and to see just where your favorite band falls.) Even in the VHF and UHF bands, you would have to be running a fair amount of power, and be awfully verbose, (long winded), to exceed the power density and time limitations. I do admit however to being witness to a dissertation or two that lasted well past the six minute allotment.

300 Khz to 3 Mhz.....	100 mW per
(cm squared)	
3 to 30 Mhz	900/
(freq. squared)	
30 to 300 Mhz.....	1 mW per
(cm squared)	
300 to 1500 Mhz.....	freq./300
1500 to 100000 Mhz.....	5 mW per
(cm squared)	

figure 1.

Two other things of note, though probably not effecting Amateur Radio as a rule, is that the combined effects of all sources of RF radiation in a given area must be taken into consideration. In other words you must add the combined power densities of all transmitters likely to be operating at the same time to come up with the true figure. This could be important to shared repeater sites. Also, as the power density rises, the time of exposure is decreased. Remember it is time averaged over a 6 minute period. If you were

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Connecticut Ham Operator Convicted In Civil Suit Filed by Local AM Broadcast Station

In an unprecedented Superior court judgment, a Milford, Connecticut AM radio station recently won a civil suit against ham radio operator it claims pirated its frequency. However, absent from the proceedings, was the FCC, which was not able to devote enough manpower to catch the pirate, a Boston field office spokesman said.

On Aug. 4, the Superior Court in Milford, however, was sufficiently convinced by evidence gathered by the station that it found Paul Matar guilty of interfering in business relations, and slandering WFIF-AM, a religious-format station.

Over \$12,000 in damages were awarded to the religious station, which claimed Matar called its staff "born-

again scum," and "thieves" over the airwaves. Despite the judgment, the station said the broadcasts have continued. The suit covered a period from January 1990 through August 1991.

Testimony by station staff and other witnesses maintained that the pirate would come on the air on WFIF's 1500 kHz frequency after the AM daytimer signed off. The unauthorized broadcasts made slanderous statements about the religious station, its staff and advertisers, the station charged. Matar denied the allegations and plans to appeal the decision, claiming he did not violate Section 301 of the Communications Act despite the fact that engineers from WICC AM/WEBE-FM in Bridgeport, Conn., were able to trace the signal to Matar by using a field strength meter.

The FCC hoped to catch the pirate during operation when FCC field inspectors made visits to the area on other matters but the effort was unsuccessful.

In August 1991, the station again sent a letter to the FCC requesting action as the violations were continuing. On August 8, 1991, the Commission finally sent a letter to Matar requesting that he "cease and desist" broadcasting if he was doing so. In the letter, Matar did not respond to the letter and the illegal broadcasts continued.

Now attorneys for the station are asking for a contempt charge against Matar including monetary fines and a period of incarceration." If the Superior Court again rules in WFIF-AM's favor, Matar could very well be the first person to face imprisonment for conviction of piracy by a state court. -Thanks Radio World

Technician Class Believe It, Or Fastest Growing Not! It's True

It is certainly no secret that the Technician Class is the fastest growing ham level. What is news is the rate in which it is expanding! There are 25% more Techs than just a year ago - and the number of Techs has more than doubled in the last five years! The Amateur Service grew by 48,431 licensees during the past year; 36,980 (or 76.4%) of them were Technicians.

It is interesting to note that the number of Technicians increased by an average of 3.8% a year between 1982 and 1987, 11.29% annually between 1988 and 1990, and jumped to the annual rate of 21.8% a year after the adoption of the Codeless Tech Class. It can be said that dropping the code from the Tech Class has had the impact of increasing the number of ham radio operators by nearly 10% a year. W5YI Report

A woman whose car rolled over in a Southern California freeway accident was attacked by a nude man who climbed into the vehicle and tried to rape her while she was strapped in by her seat belt, officials said.

"This is an extremely unusual case. I don't know if I've ever seen anything like it," said Los Angeles County Sheriff's Deputy Benita Hinojos. The woman was able to free herself from her (seat belt) restraints and fend off her attacker with an umbrella, the deputy said.

Within seconds of receiving the call, sheriff's deputies arrived and found the naked man retrieving his clothes from bushes near the car." The suspect, Mark Harp, 24, of Bellflower, was being held on \$30,000 bail. The 22-year-old woman from Buena Park, was not injured seriously and declined medical treatment.

Tnxs Associated Press

ARRL Membership Growing

League membership is showing a gain. The June report indicated 161,068 members, up from 158,133 in January.

Last VE Exam This Year

The last VE exam this year will be December 12, 1992 in Modesto at 9 am at the Chrysler School on Conant Ave. For more information contact Chet at 883-2968.

This test is sponsored by the Tri-Valley VE Team. If you hold an Advanced or Extra class license and would like to be a volunteer examiner, contact Chet, W6XK, at 883-2968.

Those Darn Dee Bee's

By George F. Ledoux, K1TKJ

Have you ever needed to know what the power gain of an antenna was? The spec. says 8dbi. Now just what does that mean? What about that mobile amp on 220 MHz that has 13db gain? Well here is a little trick that you can use to get just about any "db" number reduced to a ratio without a calculator. Let me say upfront for the purists among us that these numbers are not accurate to the fourth decimal point, but they are close enough for our work.

Every time you add 3db to something you are saying that it is twice as powerful as it was before. For instance, if a "gain" antenna has 3db gain over a dipole, it has the performance of a dipole with twice as much power applied

to it. So you could operate the gain antenna with 10 watts and sound as good as if you operated a dipole with 20 watts. Exactly the same results would occur if the gain antenna had 6 kilowatts and the dipole had 12 kilowatts. The amount of the power in watts is not relevant to this discussion, only the RATIO between them. 3db is TWICE as much, or HALF as much if we are speaking of 3db LOSS. We have a RATIO of "two" whether we are speaking of gain or loss. If we had an amplifier with 3db gain, then it would double the output power that came into the input. What about an amplifier with 6db gain? Well we have already seen that 3db doubles the power, if we add another 3db, we double it again. So, 6db means four

times as much. $3\text{db} + 3\text{db} = 6\text{db}$ is the same as $2 \text{ times } 2 = 4$. If we add another 3db to the 6db will it double again? Of course, now our 6db amp gain is 9db, so amplifier gain has gone to $2 \text{ times } 2$, is 4 , $2 \text{ times } 2 = 8 \text{ times}$.

OK, so now you see how every time you add 3db it doubles but what about large numbers like 60db for example? Fortunately there is a very simple way to do these. In all of the following examples we are talking about power ratios, voltage ratios are different but we will get to that later. 10db is a ratio of 10 times, 20db is a ratio of 100 times, 30db is a ratio of 1,000 times, 40db is a ratio of 10,000 times.

Do you see the pattern here? 20db is 100 times. 100 has 2 zeros (20). 30db

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come up with the true figure. This could be important to shared repeater sites. Also, as the power density rises, the time of exposure is decreased. Remember it is time averaged over a 6 minute period. If you were to be exposed to twice the standard, that's ok, as long as you are only exposed for half the time, or three minutes.

Many local communities have adopted their own rules, and their own corresponding RFR limits. In some cases these limits are one tenth the A.N.S.I. limits. The F.C.C. is now taking under advisement, and has opened a filing window on comments proposing to reduce the A.N.S.I. limitations. A bill now pending before the U.S. house of representatives (HR 3953), would authorize

a ten year study into the effects of electromagnetic radiation, including radio waves, and its effects on the public.

As I see it, there are a lot of problems with trying to set a blanket standard. I have seen studies of the effects of RFR on the human body where it is claimed the greatest damage is done in the joints, i.e. the wrists, ankles ect.. Also it seems according to some of these studies, that the greater the body mass, the more energy that person is able to absorb. Should we have one standard for two year olds, and another for men 6'5", weighing 280 lbs? The very nature of RF is that it is very condition oriented. It behaves differently depending on factors such as moisture content in the soil. Factors such as condition of transmission line, objects reradiating in the area, and a whole host of others.

In my nearly 20 years of exposure to

RF radiation, both at AM & FM broadcast sites, and Amateur Radio, I can't say I've ever known anyone who has suffered from the effects of RFR, and I've had some pretty severe RF burns. It seems to me that we are getting a little carried away with trying to protect each other from things we don't understand. This fear is far more destructive to a society than the minimal damage that might be caused by exposure to RF. When a man spends his whole life working on energized antennas, lives to be a ripe old age, with no more problems than any other human being his age, then I think that's pretty strong evidence that we may have gone a bit overboard in trying protect ourselves from things unknown. It looks like big brother, with his army of do gooders is out to protect us, whether we like it or not. Think about

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has a ratio of 1,000 times, 1,000 has 3 zeros (30). So does 60db have 6 zeros? Yes, 60db is 1,000,000 times ratio. Here is a little chart to help in conceptualizing this.

db = ratio
 10 = 10 X
 20 = 100 X
 30 = 1000 X
 40 = 10000 X
 50 = 100000 X
 60 = 1000000 X
 70 = 10000000 X

So, 60db is a ratio of one million, (6 zeros).

Does that mean that 63db is two million? Yes, 60db is times one million, add 3db to make it 63db and now you double it to two million. Then 66db is 4 million, and 69db is 8 million, and 70db is ten million, (7 zeros). Well that's fairly easy if we are talking about numbers that can be divided by 3 easily or are multiples of ten, but what about some other numbers?

Well, remember how I said that 3db is double OR half depending on how you looked at it? That means that if 10db is times 10, then 10db minus 3db, or 7db, would be times 5 right? Right. And 5db minus 3db is 2db, so 2db is half of 5db or two and one half times. You can use this method of adding 3db and doubling or subtracting 3db and halving any number. 20db is X 100, so 17db is X 50. 40db is X 10,000, therefore 37db is X 5,000. Do you see the pattern here?

By starting at 3 you can get the following db ratios very easily. 3, 6, 9, 10. Now if we subtract 3 from the numbers starting at 10 we can get 10, 7, 4, 1. That only leaves us with 2, 5, and 8 to figure out. But what if we started at 20db and reduced the ratio by 3db then we would have:
 20db=100, 17db=50, 14db=25,

11db=12.5, 8db=6.25, 5db=3.125, 2db=1.5625. Now we have them all.

Lets look at a table and see what they all look like.

db	Ratio	Exact numbers
0	0	0
1db	1.25	1.258925412
2db	1.5625	1.584893192
3db	2.00	1.995262315
4db	2.50	2.511886431
5db	3.125	3.162277660
6db	4.00	3.981071705
7db	5.00	5.011872336
8db	6.25	6.309573445
9db	8.00	7.943282347
10db	10.00	10.00000000
11db	12.50	12.58925412
12db	15.625	15.84893192
13db	20.00	19.95262315
14db	25.00	25.11886431
15db	31.25	31.62277660
16db	40.00	39.81071705
17db	50.00	50.11872336
18db	62.50	63.09573445
19db	80.00	79.43282347
20db	100.00	100.0000000

Notice that when we change the number in the "db" column by 3db, the value in the ratio changes by a factor of 2. Twice as much if we add 3db or half as much if we subtract 3db. You can use this "trick" to mentally obtain any "db" value.

All of these ratios are valid for power only, voltage ratios are a little different. It takes 20db to increase the voltage by a factor of ten. It takes 6db to double the voltage. 3db for power, 6db for voltage. You can use the same method for voltage, just use 6db instead of 3db to double or halve the ratio. Also notice that the difference between the first ten numbers and the second ten numbers is only where the decimal point is. This pattern is repeated every decade. i.e., 6db & 16db have the exact same digits, only the decimal point is different.

So, if you can learn how to get the first ten numbers, you can get any number.

For those folks with a calculator the formulas are:

In calculations of power:

$$db = 10 \text{ Log}^{10} P$$

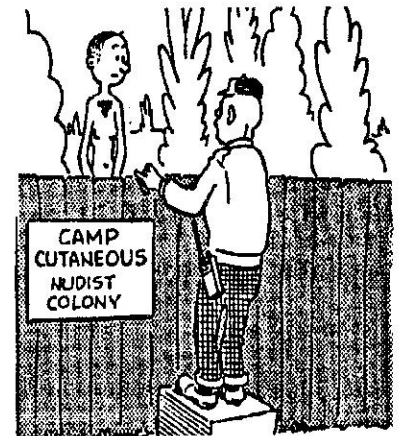
P = power output divided by power input.

In calculations of voltage:

$$db = 20 \text{ Log}^{10} V$$

V= voltage output divided by voltage input .

So , the answer to my first question is that 8db is an equivalent power multiplication of 6.25 and my 13db gain amplifier increases power by a factor of 20. Next time we'll talk about antenna gain, what it is, how you get it, and what does it really mean. K1TKJ



Tnx WorldRadio and Beazley K6BJH

You wouldn't happen to have a few extra AA Dry Cells on you?

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it. Gather the facts as best you can. Then write to the Commission and your congressman, and tell them enough is enough.

Questions? Comments? Observations? Ideas? Write me in care of **The READOUT**, or at N6ZUC @ KC6NZN. #SOCA. USA. NA via packet. 73 -Tim



Calendar

Nov. 17 SARA Monthly Meeting 730 pm
 Dec. 16 SARA Monthly Meeting 730 pm
 Election of 1993 Club Officers
 Jan 3 Livemore Swap Meet 7a-12pm
 Las Positas College
 Jan 16 WINTERFEST 93 8a-1pm
 Monterey Peninsula College Armory
 Jan 19 SARA Monthly Meeting 730 pm
 Mar 16 SARA Monthly Meeting 730 pm
 April 16-18 .. DX Convention 2 Days
 Holiday Inn, Visalia

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 ARRL affiliated club and is also affiliated with the Stanislaus County and City of Modesto RACES.

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Next SARA Meeting is November 17, 1992: 730 pm & You're Invited