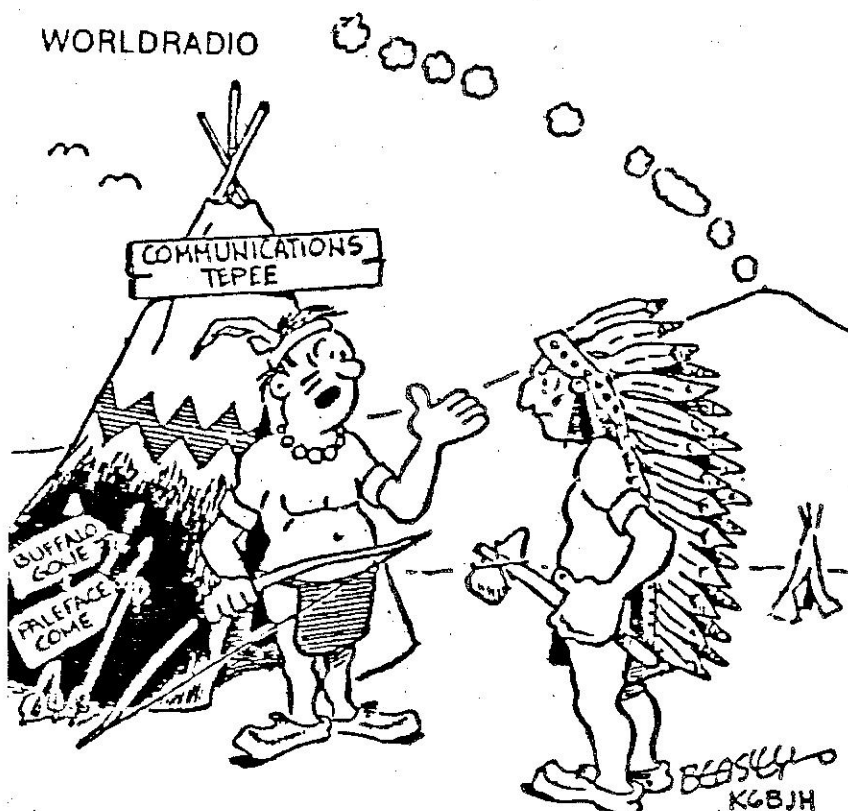


The READOUT

Year 12

Number 12

March 1990



I DON'T KNOW WHAT HE SAY--- I ONLY GOT "NO-CODE" LICENSE!

Stanislaus Amateur Radio Association

P. O. Box 4601 Modesto, Ca. 95352

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1990 SARA Officers

President Phil Hartz W0DFXX
Vice President . . Oliver Borns . . KJ6YZ
Secretary Linda Franklin N6REB
Treasurer Al Dionizio . . N6SAE

SARA VHF Net

Thursdays @ 8 p.m. (Except Holidays)
2 meters 145.39 MHz WD6EJF
220 Band 223.68 MHz WD6EJF

Contributions to **The READOUT** are always welcome and may be submitted to the editor by mail or via packet at WB6V BBS on 145.07 MHz. The deadline for articles is the 15th of the preceding month.

Editor

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

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

**Next SARA
Meeting
March 21, 1990
730 pm
County Administration
Building
12th and H Streets
Modesto, CA.
Lower Level Conference Room**

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High-Tech Drug Smugglers

Satellites, Scanners, Repeaters, Radar Detectors

Drug dealers are investing their illicit money in high-tech electronics to avoid detection, arrest and seizure of assets. These devices run the gamut from hidden microphone detectors to modern day satellites. A pocket-sized hidden microphone detector detects VHF-UHF range body "bugs" (wireless microphones) used by undercover law-enforcement officers putting such officers at additional risk.

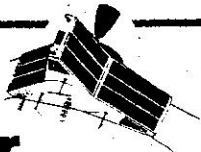
In many cases drug traffickers have better two-way communications than the police. One Mexican organization used 460 Mhz UHF radios with touchtone pads to link to base stations through repeaters and then bring up autopatch connections. This group also used SSB, RTTY and even Packet to further their operations.

Traffickers are using facsimile machines (FAX), computers, two-way radios with scramblers, pagers, scanners and even spectrum analyzers to monitor HF,VHF and UHF law enforcement frequencies. Some groups have equipped their drug smuggling

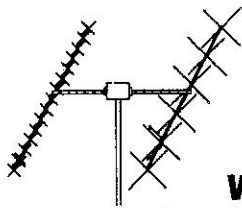
aircraft with radar detection equipment and night vision devices to avoid detection. Illegal frequencies, many in the Amateur bands, are used for communications. Many times smugglers will use a duplex repeater system whereby they transmit on one frequency and receive on another frequency.

A group in northern Mexico placed repeaters in the southern desert of Arizona which allow them to maintain radio contact with a ship in the Gulf of California. The infamous Medellin, Columbia drug cartel has reportedly conspired to import satellite communications equipment. According to a report in the San Francisco Examiner, drug agents discovered yet another ingenious way of smuggling drugs into this country. The new technique involved liquefying the drug and saturating the pages of books. The books then passed through U.S. Customs checkpoints undetected and the smugglers then soaked the pages in a chemical to extract the heroin.

Important Notice: Please examine the mailing label on the back page of your newsletter. If it says "1989" or "Complimentary", it means that your membership in SARA has lapsed. Please send in your dues to the Club's post office box today. Also, please remember that the dues have increased \$1.00 to \$21.00 this year. At this time of the year we are building our 1990 membership, we have some extra copies of The READOUT. If you have a friend that might like to receive a copy of The READOUT, please let the editor know. Also, some of you may receive more than one copy of The READOUT this month. The extra copy is to give away, hopefully to a prospective new member.



Amateur Satellites



WB5ZDP
Keith Berglund

Part 2 of a series from WorldRadio.

As an AMSAT area coordinator, I set up the AMSAT booth at many of the area conventions. The booths are usually well attended and I am asked a ton of questions about AMSAT and the Amateur satellite program.

One thing that a lot of folks say (as if almost embarrassed) is that they would like to get involved in satellites, but they don't know much about it. I tell them, hey, that's OK.

You don't just buy a packet radio controller and start typing, or you don't immediately check into an 80M traffic net and start sending. There are things that you must learn about any side of this hobby and satellites are no exception.

Helping people get started in satellites is the main reason for this column.

There are a lot of people and reams of literature out there that will tell you all about the advanced aspects of satellites communications. This column, however, will hopefully show you that anybody can use and enjoy the birds. Just as you don't have to be a mechanical engineer to drive a car, you don't have to be an astrophysicist to work the world through Amateur satellites.

While you reading this, tune to 145.825 MHz on any 2M radio or scanner and you'll probably hear a pass of OSCAR-11 (Orbiting Satellite Carrying Amateur Radio). It comes over your QTH five or six times a day for about 15 minutes per pass.

What you'll hear is the growling sound of telemetry. On Wednesday UTC of each week, they turn on the Digi-talker. Instead of telemetry a digitized voice is heard. At this time you won't get much out of it except the knowledge that you're actually receiving a signal from space.

How are satellites launched?

Good question. To date all Amateur satellites have been launched as secondary payloads. That is, they are launched on a "space available basis." It seems that rockets are designed for a certain payload (for example 10,000 pounds). If the primary payload weighs 9,500 pounds, then it is easier to add the extra 500 pounds than to redesign the booster. If no secondary payload is available, then they just add lead weight until the 10,000 pounds is achieved. What a waste!

That's where Amateur Radio satellites find their ride. The Amateur satellite must submit proof that it will not harm the primary load, otherwise the ride is almost free. The orbit of the primary payload is pretty much the orbit of the Amateur spacecraft.

See Satellites Page 5

Satellites

From Page 4

OSCARs 10 and 13 fired a small rocket motor to modify the initial orbit, but all previous and many future Amateur spacecraft have no source of propulsion of their own. We're not crying, though. Any orbit is appreciated and can be made useful.

Satellite orbits

There are three major types of orbits that Amateur satellites are placed in. In 1961 OSCAR-1 was launched into a low altitude polar orbit. Even though it did not have a transponder, it did have a beacon on 2M.

Low altitude satellites that do not have communications transponders are known as "Phase I" satellites (see Figure 1). Because Amateur Radio operators naturally wanted to talk, the next generation of low Earth orbit satellites (Phase II satellites) had transponders.

OSCAR-10 was the first Phase III satellite. Phase III birds have highly elliptical orbits with the highest part of their orbits (apogee) at greater than 22,000 miles high. The main advantage of this is that the satellite will be in view for eight to 10 hours a day.

The next evolutionary step in the Amateur space program will be to place an OSCAR into geostationary orbit. I believe that Phase IV will revolutionize Amateur Radio as we now know it. Imagine 24 hours a day communications with no regard for the ionosphere. Since the satellite will not change places in the sky, the antennas can be "welded" into place. In

other words no tracking will be required.

With a series of three Phase IV satellites and some 2M gateways, world wide communications will be possible anytime using your handle-talkie. More of this subject in future columns.

A final thought on Amateur on Amateur satellite phases. Just because the latest satellite launched (OSCAR-13) is a Phase III type satellite and AMSAT is busy designing a Phase IV geostationary satellite, does not mean that Phase I and II satellites are obsolete. A shining example of this are the new

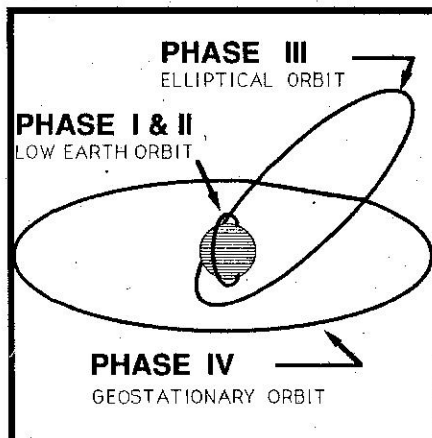


Figure 1. Amateur satellite orbits and phases

microsats. All are low earth satellites. Some of the birds have only telemetry beacons and digitized voice transmitters (Phase I) and others have at least one transponder (Phase

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Satellites

From Page 5

II). One of the best birds for the beginner is a Phase II satellite called RS-10/11. AMSAT-DL in Germany is busy designing Phase III-D (the fourth Phase III satellite), which should be launched in two or three years.

Area of coverage

Last month we established that a satellite was just a repeater. To illustrate the point, I often draw comparisons to your typical local 2M repeater. There is an input (uplink) and an output (Downlink) and the repeater has an area of coverage. In satellite lingo we call this the "satellite footprint."

As you know, on your local 2M repeater the higher the repeater, the better the coverage. Most

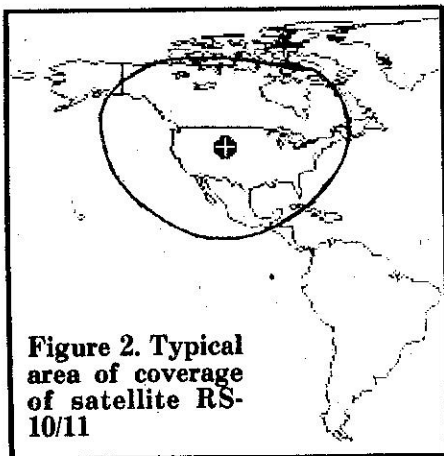


Figure 2. Typical area of coverage of satellite RS-10/11

of the time VHF and UHF communications are limited to line of sight. It is therefore better to place the repeater as high as possible if you want to maximize coverage. Usually you'll find repeaters located on commercial broadcast towers, tall buildings or in some areas on mountain tops.

Amateur Radio satellites take this one step further. Imagine the coverage of a repeater up 500 miles (such as satellite RS-10/11). Then imagine the coverage of a repeater up 22,000 miles (as with OSCAR-13).

Through OSCAR-13 communication is possible with virtually half the world at a time. Figure 2 illustrates a typical area of coverage of satellite RS-10/11. If any two stations are within the area of coverage of repeater, they can communicate with each other. It is not uncommon to have QSOs with stations hundreds of miles apart at the same time! One thing to keep in mind is that the area of coverage of this repeater moves.

Information sources

The way that I find out about the latest happenings in Amateur satellites is via the AMSAT BBS located in Dallas, TX. The BBS can be reached at 214/394-7438 (2400, 1200, 300 baud (N-8, 1), accessible 24 hours a day seven days a week. The BBS is run by the Dallas Remote Imaging Group headed by Dr. Jeff Wallach, N5ITU.

Next Month

Next month we'll talk about some of the Amateur spacecraft now in orbit and a little about the transponders on them. Good Luck! and we will see you on the birds.

FCC Proposes No-Code License

Communicator Class Privileges Above 30 MHz

On February 8, 1990, the FCC is proposed to amend its rules by establishing a codeless class of Amateur operator license to be called the Communicator Class. The Communicator Class would be incorporated into a simplified licensing structure containing four ascending steps: 1) Communicator 2) General, 3) Advanced, and 4) Amateur Extra Classes. Current Technician and Novice Class operator licenses would be grandfathered indefinitely, with no new licenses issued for those license classes but existing licenses could be modified or renewed.

The codeless operator class license would satisfy three major objectives. The first objective is to offer an entry level license for all persons who find telegraphy a barrier to pursuing the purpose of the Amateur service. The second objective is to design a codeless license that can easily be implemented into the current licensing process. The third objective is to avoid any negative effect upon current licensees, the volunteer examiners who administer Amateur examinations, or the Commission's workload.

The Amateur service exists for the purpose of self-training, inter-communication and investigations to be carried out by duly authorized persons interested in radio technique solely with a personal aim, and without financial gain.

Presently, individuals seeking a license to operate an Amateur station must prove that

they can send correctly by hand and receive correctly by ear, text in Morse code signals. The new proposed Communicator Class operator license would not require knowledge of Morse code telegraphy mes-

' Licensees Would Not Be Allowed To Operate 2 And 6 Meters.'

sages for operation above 30 MHz. Privileges for the Communicator Class would include all emission types. The Communicator Class license would replace two existing beginner operator classes and would simplify the Amateur operator license structure. The Commission would require applicants for the license to pass a 60 question written examination. The new question pool would be comprised of the questions from the two pools currently used in the Novice and Technician license examinations as well as the addition of new questions. The proposed transmitter power for the Communicator Class would be 200 watts PEP and the licensee's station would be eligible for a Group D call sign.

Communicator Class control operators would not be permitted to transmit on the 2 and 6 meter VHF bands and the

See Communicator Page 8

Communicator

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HF bands. The Commission is requesting comments on the effect of excluding Communicator Class licensees from the two VHF bands. Comments are also requested on the desirability of including the opportunity for Communicator Class licensees to experience on-the-air telegraphy operation on the HF bands. Additionally, a Communicator Class licensee who passes or receives credit for a telegraphy examination would be authorized the privileges of the Technician Class. The Commission is requesting comments on all aspects of this proposal. According to the ARRL, this proposal is not what the ARRL had in mind for a no-code class of license. It is not clear what the FCC had in mind with this proposal and further evaluation will be needed.

N6SAF SILENT KEY

With regret we record the passing of SARA member William N. Reynolds, N6SAF. He was 68 and retired at the time of his death on January 26th in Ceres. Condolences to his family.

One More Time!

Frequency Chart Corrections

There is an old adage that goes something like this, "If at first you don't succeed...try try again!". We have tried once to correct a couple of errors on the Frequency Chart that appeared in the January newsletter and we still didn't get it right.

So, as they say, "the third time is charm". We'll see! Again thanks to Chet, W6XK, who keeps us honest. Please make the following corrections:

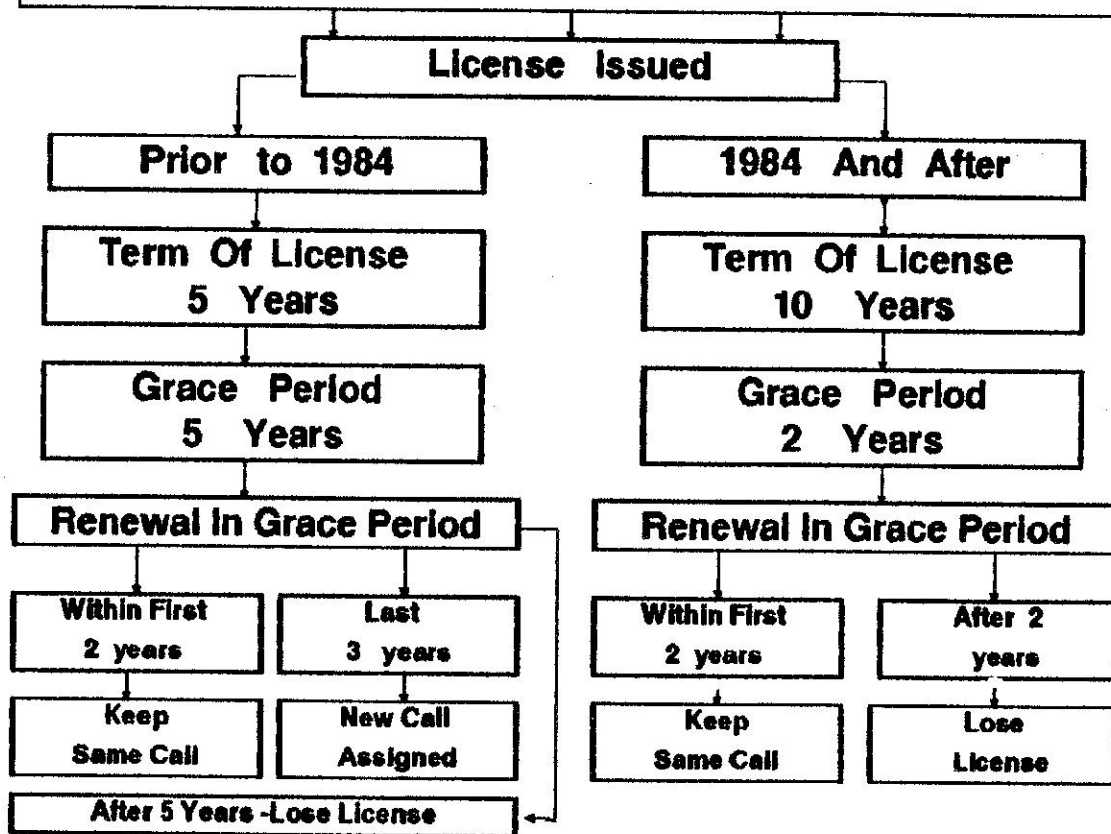
20 Meters: CW/Phone/Image portion should read: 14,150 to 14,350 kHz for Extra (E), 14,175 to 14,350 kHz for Advanced (A), 14,250 to 14,350 kHz for General (G).

10 Meters: CW/Phone/Image portion should read: 28,300 to 28,500 kHz for Novice (N) and Technician (T) and 28,300 to 28,700 kHz for E, A, and G.

WB6V BBS Moves To 144.97

The WB6V Packet BBS has moved from 145.07 to 144.97 MHz as of February 25, 1990. According to Ed, WB6V, the move was made to streamline the forwarding messages to W6FGC at Twain Harte which is also on 144.97. In addition, .07 was getting pretty crowded slowing down exchanges considerably. No decision has been made at this time concerning whether or not to move the SARA digi from .07 to .97 to provide a path to the BBS.

U.S. Amateur License Renewal



- **HOW TO RENEW:** Complete an FCC form 610 and mail it with a copy of your current license to: FCC P.O. Box 1020 Gettysburg, PA. 17326
- 610 forms are available from the FCC or SARA. Include an SASE.
- If you file before your license expires, you may continue to operate until your renewed license arrives. You may not operate if you send it in after it expires.
- You may apply for renewal anytime during the term of the license, but the FCC suggests waiting until 90 days before it expires.
- If you change address, you must notify the FCC on a 610 form. The FCC will make the change and automatically renew your license for another 10 years from that date.
- There are no fees imposed for Amateur Licenses!

Editor's Notes

By Bob Pinheiro, WA6ZLO

Congratulations to Dave Grout, KC8IKR, and Merle Maxwell, KC8---, both of whom upgraded to Technicians in February. Both are graduates of the recent SARA license class taught by Phil, WDOFFX. Congratulations to Gordon, WA6AFR, who upgraded to Extra and has a new call..AA8TQ. New calls have arrived for Frank Massa, KC8IKQ, and Kurt Dahdah who upgraded to Advanced. Kurt's new call is KC1TH. As required by the bylaws, those of you that have not paid your dues have been dropped from the roster. As of the end of February our membership stood at 124. So, there are several that have not renewed. Please examine the mailing label on the back page to see if you are one of those who has not sent in your dues. If the label says "1989" or "Complimentary" your name has been dropped. So, please send in your dues today.

DX fever got the best of at least 240 U.S. Amateurs in connection with the rare Bouvet Island DXpedition that began in December. The operation marked by massive pileups, QRM and out of band operation, prompted the FCC to issue over 240 notices of violation to Amateur stations for transmitting phone emissions on frequencies not authorized in violation of §97.305(c) which partitions the HF bands. The notice of violation do not carry a monetary fine. However, a \$2,000 Notice of Apparent Liability for forfeiture would come if a station was cited a second time for the same violation. There

was over 40,000 contacts made with Bouvet Island during the 2 1/2 weeks they were on the air.

The new FUJI-OSCAR 20 bird is up. Japanese Amateur satellite JAS-1B lifted off on February 7 from Tanegashima Space Center in Japan. This bird also carries a packet store-and-forward global mailbox which packeteers can use to send messages around the globe. Packet will also be in space when the SAREX (Shuttle Amateur Radio Experiment) shuttle missions go up in May and again in November. Astronaut, WA4SIR, Ron Parise, has been cleared to work Amateur voice and packet during the mission in May and Lt. Col Ken Cameron, KB5AWP, has been authorized to do so during the shuttle going up in November of this year.

The club has a few subscriptions to World-Radio magazine left for sale at a tremendous savings. The price is only \$5.00 which is a \$7.00 savings. Contact the treasurer.

The Kings Amateur Radio Club in Hanford, will conduct a Swap Meet on Saturday March 31, 1990 at the Hanford Fraternal Hall on 10th ave. The meet starts at 9 am and goes to 3 pm. Talkin on 147.33, 145.11 (LL in Hanford) or 443.70 MHz. Everybody is welcome.

Again, if you have not paid your dues, do it today. Mail your check to the club's post office box and thanks. 73 Bob.

Engineer's Report

By Leroy Campbell, NV6S

In January, Bill, W6AFS, called me and informed me that our 220 repeater was somehow getting into the IF of the digital repeater used by the Department of the Interior at the 220 site. This repeater is located only about five feet from our transmitter.

On Tuesday, Jan. 20, Al N6SAE and I went to the 220 site to attempt to solve that problem. I did some cleaning up of the wiring and added some grounding to the 220 repeater. During the time we were there the COR (Carrier Operated Relay) circuit on the 220 repeater died. I brought it down for repairs and found a shorted disc capacitor and a bad transistor in the COR circuit.

Bill, W6OHP came over and we checked the repeater out on a spectrum analyzer. It checked out clean and Charlie, KJ6GE and I took the repeater back to Oso and installed it. We soon discovered there was a problem in the linking logic circuitry. I brought the linking units home for repairs. While we were there we reinstalled the tone circuit in the 2M machine. We also found the Station Master antenna had blown in the wind and become lodged behind one of the tower guy wires.

I climbed the tower and freed the antenna but we will have to find a better solution in the future. The source of the noise riding the squelch tail of the 220 repeater has been

See Engineer's Report Page 15

Digital Radio News

By Ed Rodrigues, KB6DRN

If you have a spare \$14,000 plus, you can own the world's fastest portable PC or what Opus Systems calls a "Personal Mainframe". The altered NEC portable was modified with a RISC/OPUS board containing a Motorola 88000 RISC processor.

RISC processors perform several instructions per clock cycle while the "PC NORM" would be several clock cycles per inst. The Opus machine takes advantage of this power in order to run with "SUPERSCALAR" speed. The RISC technology allows users to run on UNIX-based software however, the downside is the fact that very little applications software is available for the RISC/UNIX oriented machine at present.

The machine which performs 17-21 million instructions second can also run IBM-PC compatible programs via a 80386SX processor. Typical performance from a NON-RISC machine would be 5 million instructions per second. Opus has also put the hi-speed RISC board in several desktop and deskside systems.

The availability of this computing power should make an impact in the Amateur Radio world presumably once the price has downsized by a considerable factor.

Source: San Francisco Chronicle/Business Section "Technology"

Tune In The SARA Net Thursday
Nights 8 pm 145.39/223.68

SARA Minutes

By Linda Franklin, N6REB

Club Secretary

2-21-90

The February 20, 1990 meeting was called to order at 7:30 pm by President Phil, WD0FFX. Introductions were made by 18 members and guests. Secretary N6REB read the minutes of the last meeting. A motion was made to accept the minutes as read, the motion was seconded and carried.

Treasurer Al, N6SAE reported the beginning balance as of Jan. 17, 1990 was \$1,833.96. Income from dues mainly was \$715, with expenses of \$302.23 for the usual items of club expense, Postage, Phone, P.O. box, etc. Balance of the general fund as of Jan. 20, 1990 stands at \$2,246.73. The Fund raiser account total remains at \$132.55 with the revenues from the monthly meeting raffles to be added as they occur. A motion was made to accept the Treasurer's report, seconded and carried.

Steve, N6EKV introduced his friend Milt McKeuen the Sea Scout Master in Modesto. Milt presented a means for the club to bring in revenue by participating in the sales of fireworks. SARA would not put up anything except manpower and time in selling the fireworks. The profits would be pro rated for the percentage of time put in the booth. Pre Sales net 30% of the profits.

There are two booths, one located in the K-Mart parking lot in Turlock, and the other between Pep Boys and the Acapulco Restaurant on McHenry Ave. Modesto. Basically, the more persons and more time put into the booth brings in more funds for the club. Phil, WD0FFX

thanked Mr. McKeuen for presenting the information to the club and that the idea would be presented to all the membership to see what their response will be.

The Vice President Oliver, KJ6YZ spoke about the goal for membership of 200, and encouraged members to invite friends and relatives (young and not so young) to attend club meetings to spark their interest in Ham Radio. Everyone was encouraged to participate in Field Day June 23 and 24 this year. Lou, N6LRB mentioned since a Novice station wasn't set up for last years event, that it might be a good idea to see that one was set up for operation this year.

Oliver also brought up the continued endeavor to upgrade the repeater and equipment, fundraisers, and Dinner-Dance. As an alternative to the dinner-dance, a picnic at a nice park with the members and their families. To make it more interesting, it was agreed there would be a minimum of three prizes for this years raffle. Those who win a small prize will be re-entered for a chance at the main prize.

Steve, N6EKV reported the source of the interference on the link has been found to be

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Minutes

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a low level repeater just north of Sacramento. NARC did not know we were still using our pair so they authorized a low level repeater up north of us.

We can't hear them, but unfortunately Mt. Oso is up so high, they are riding in on our squelch tail. NARC is working to find either them or us another pair, also there's a couple of other options to eliminate that and we're working on that now.

The crackling sound on the 2M repeater was found to be the Station Master antenna (side-mounted on the tower) touching one of the guy wires when the high winds blew. The 220 link to the 2 meter machine is up and running again and hopefully things will continue to work well.

WDOFFX brought to attention that recently a party has been trying to access the code to the autopatch. They haven't called on it yet and don't seem to have the code to bring it down. LeRoy, NV6S is now working on the touch tone to change the code, and only full paid up licensed members holding Technician class and up will be allowed to have the access code.

Phil also reported that the sale of the club

tower has a temporary hold on it until we can work out a few things with Downey High School regarding allowing SARA to use the school's old FM radio station classroom for our club station site.

A break was taken at 8:25 pm and the meeting was resumed at 8:40 pm. Nine subscriptions were available to World Radio through the club for \$5 each. Al, N6SAE has the subscription cards for those interested.

The No Code license proposal by the FCC was discussed, and for those who have any comments they wish to make, should send them directly to the FCC. It is suggested you send eight copies as they will be distributed to the eight commissioners on the matter. Also send a couple of copies to the ARRL to let them know your feelings on the proposal. The deadline for sending in your comments is August 1990.

The interest of the citizens band REACT organization to be involved with Hams in emergency situations was mentioned, and Phil said we would probably be approached on the matter in the future. The evenings raffle was held with Tony, WA6KOI winning a good supply of pens, pencils, erasers and various goodies for all his CW and packet activities. The meeting was adjourned at 9:05 pm. Respectfully submitted by Secretary N6REB.

Next SARA Meeting
March 21, 1990 730 pm

2 Meter Packet Bandplan

For Northern California

By Chet, W6XK

The Northern California Packet Association (NCPA) voted to establish a new band plan for packet radio operation on 2 meters last July. This "gentlemen's agreement" separated bulletin board (BBS) operations from keyboard-to-keyboard-type (ragchew) QSOs. Additional spectrum was provided for specialized packet operations.

The objective of this re-alignment was to alleviate frequency congestion, therefore, increasing the speed at which messages can be exchanged between packet stations. The suggested band plan is as follows:

- 144.91 keyboard-to-keyboard
- 144.93 BBS
- 144.95 DXPSN
- 144.97 BBS
- 144.99 BBS
- 145.01 keyboard-to-keyboard
- 145.03 keyboard-to-keyboard
- 145.05 keyboard-to-keyboard
- 145.07 BBS
- 145.09 BBS
- 145.71 Digital experimental
- 145.73 9600 baud TAPR compat .
- 145.75 TCP/IP
- 145.77 BBS
- 145.79 BBS

With the daily appearance of new packet stations, it is important that all operators recognize the necessity of efficiently utilizing the frequencies that are available to all packet operations on two meters.

Packet In Space

WA4SIR May 9th

The Shuttle Amateur Radio Experiment (SAREX)- is drawing closer. Astronaut Dr. Ron Parise, WA4SIR, is scheduled to take Amateur 2 meter equipment with him on his 10 day STS-35 shuttle mission scheduled for May 9th, 1990. NASA has cleared him to operate both voice and packet on the ham bands. His flight will coincide with the Dayton HamVention.

The (SAREX-2) packet radio station underwent extensive testing at the Marshall Space Flight Center in Huntsville, AL in February according AMSAT Area Coordinator Ed Stluka (W4QAU).

This special packet radio station flying on STS-35 will give each packet radio amateur who connects to WA4SIR a QSO number confirming their contact. When the connecting station sends their QSL card in with this contact number, they will receive back a beautiful QSL card commemorating this HAM IN SPACE shuttle flight.

The SAREX-2 packet radio station consist

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SAREX

From Page 14

of a Motorola 2M FM H/T with 5 watts output, a Heathkit HK-21 TNC-2, and a GRID laptop computer that has a 40 MB hard disk drive to store the calls of all the stations connecting to WA4SIR during the nine day mission.

The specially written software which will be running the SAREX-2 packet station is designed to allow for completely unattended operation and logging of the calls of all connecting stations. It will also prevent duplicate QSO numbers being sent!

Although no digipeating will be allowed through SAREX-2, connecting to this packet station will be like any terrestrial packet contact. Just use your TNC along with your 2m transceiver, and everything else is the same.

After you have connected and received your QSL number from WA4SIR, on subsequent orbits you can watch for the SAREX-2 message beacons being sent periodically. The message beacons will contain information about the flight of STS-35 and other interesting items.

Look for more information about the SAREX-2 mission in AMSAT News Service (ANS) bulletins and on AMSAT HF/VHF nets in the next couple of months.

Recruit A New Member!

Engineer's Report

From Page 13

located coming from a newly sanctioned repeater in Fairfield.

I contacted the UHF coordinator and he informed me that he was unaware of our sanction on that frequency and had assigned another repeater. He apologized and says he can find another frequency for us to use if the problem gets out of hand. On February 15th, we went to the hill Ed, WB6V, went along to assist. At the two meter site we installed a stand off to keep the top of the antenna from getting into the guy wires. This should have solved a noise problem when the wind blows.

We worked on the courtesy tone circuit and have the problem with noise being generated there solved. The fix required raising the impedance of the inverter for the trigger on the courtesy tone circuit. We ran into ole Murphy when we reinstalled the linking equipment at the 220 site. After much trouble shooting and several headaches we finally located a shorted barrier strip that was causing the 220 repeater to stay keyed when the link equipment was in line.

As a side note we found snow on the top of the mountain although it was only a trace. The road is getting rougher with each new storm and is in need of some grading. I expect little will happen until the rainy season is over.

Once again I thank Ed for his help and I thank the members for being patient. 73 LeRoy.

-- Calendar --

Mar. 20, 1990	SARA Monthly Meeting	730 p.m
April 17, 1990	SARA Monthly Meeting	730 p.m
May 15, 1990.....	SARA Monthly Meeting	730 p.m
June 7, 1990	VE Exams in Modesto	630 pm
June 19, 1990	SARA Monthly Meeting	730 p.m
June 23-24	1990 Field Day.....	24 Hrs.
July 17, 1990	SARA Monthly Meeting	730 p.m
Aug. 21, 1990.....	SARA Monthly Meeting	730 p.m
Aug. 21, 1990.....	SARA Monthly Meeting	730 p.m.
Sept. 18, 1990.....	SARA Monthly Meeting	730 p.m.
Oct. 16, 1990.....	SARA Monthly Meeting	730 p.m.
Nov. 20, 1990	SARA Monthly Meeting	730 p.m

SARA meets the third Tuesday of each month (except holidays) at the Stanislaus County Administration Building at 12th and H streets in downtown Modesto. The meetings are held in the lower-level conference room starting at 730 p.m. Visitors and interested parties are welcome.

Stanislaus Amateur Radio Association
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