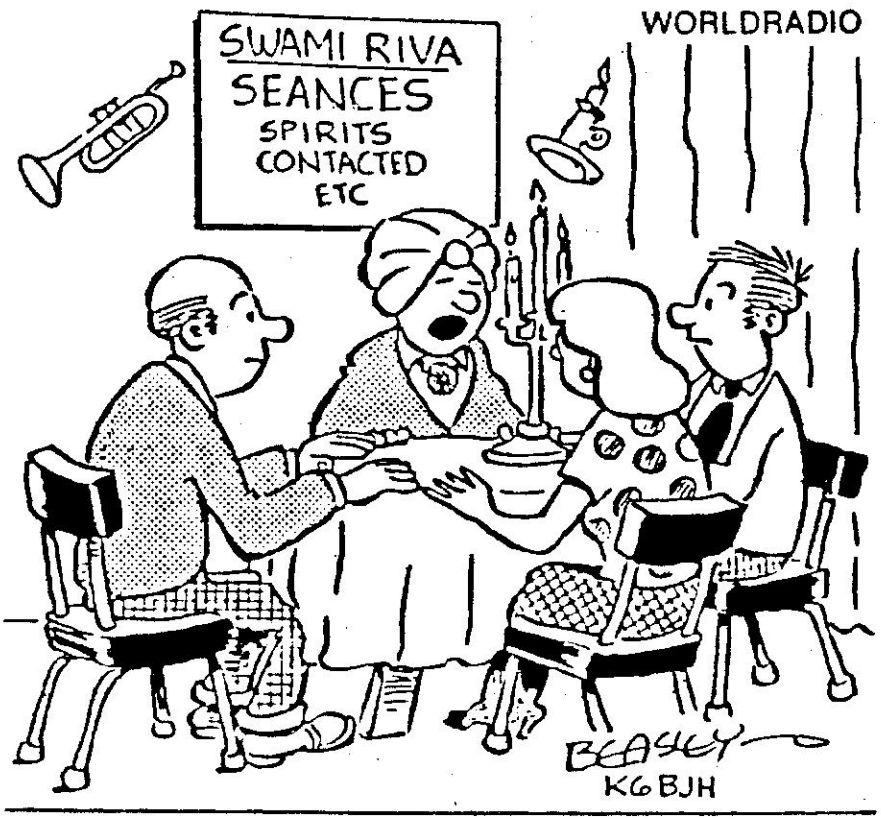
The READOUT

Year 12 Number 7 July 1990



HELLO CQ, HELLO CQ---

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

The READOUT is published monthly by the Stanislaus Amateur Radio Association.

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Thursdays @ 8 p.m. (ExceptHolidays)
2 meters 145.39 MHz WD6EJF
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Contributions to ***The READOUT*** are always welcome and may be submitted to the editor by mail or via packet at N6REB- BBS on 145.79 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

An ARRL affiliated club .

Next SARA
Meeting
July 17,1990
730 pm
County Administration
Building
12th and H Streets
Modesto, CA.
Lower Level Conference Room

Why Did I Become A Ham?

By Frank Massa, N6YHY Part 1

Editor's Note: This is the first of a series of stories involving the author's RFI problems which eventually led to open hostilities with his neighbor who turned him into to the City and the FCC. I'm sure you will find this series most interesting and enlightening.

We moved from San Jose to Modesto in order to buy our first home and provide my family with a better place to live. The daily drive to from Modesto to San Jose is boring, tiring and stressful. Enter ham radio, 2 meters, 220 and a great way to pass the time. After all I tried my old CB radio and all I got was Mexico City on the skip and four letter words on each trip. So, I decided to get my ticket.

I crammed the CW tapes and Novice test guide for two weeks straight during the Christmas holidays. The code test was not easy, but I managed to pass it and the written test. The Technician test was taken two weeks later and aced.

Initially, I only wanted to get on two meters and 220. I was not interested in DX or low-band operation. Then a funny thing happened, on a visit to HRO (Ham Radio Outlet), I was browsing through the equipment on displays from which I selected my two meter mobile gear and my 220 H.T. While checking out the HF gear on display I tuned one of the rigs up on 28,400 MHz and heard hams from Florida then Illinois then New Zealand and Australia. I said to myself, "this is great". I couldn't resist and I bought an Icom 725 and a multi-band dipole.I put up the dipole and listened for six weeks while I aggravated over the arrival of my license. Something was wrong with the dipole though. I could hear great, but the SWR reading was 4-1. February arrived and with it was my Novice license KC6IKQ.

The high SWR reading may have explained my first RFI complaint which came from my wife who announced that she could hear "aliens" when she was on the phone. I also noticed that when I operated on high power, the automatic sprinklers would come.

My career in RFI had begun with a bang after only one week of being a "ham".

"It must be that cheap dipole" I thought.

So, I decided to buy the best antenna (at a moderate price) and buy an antenna tuner as well to play it safe. The day the antenna and tuner arrived I was working Illinois, North Carolina, and Texas. After one week,

I was working Cook and Christmas Islands, Australia and Japan. I thought "this is great...and I'm doing right out of my house!" Then the bubble burst! My next door neighbor called and told my wife Lori, that my new antenna was "blowing out all of his phones".

See "Ham" Page 4

"Ham"

From page 3

He said it was even coming over the stereo speakers and his stereo wasn't even turned on.

I said to myself "this can't be me!"

I knew I had a good ground, my antenna showed a 1-1 SWR reading. At this point, the hunt was on. I call PacBell and they sent out a technician who installed filters outside my neighbor's house at the terminal block. They would not installed them on his phones inside the house because the phones did not belong to PacBell. I also had him put the filter on my own terminal block. I was lulled into a false sense of triumph.

The following weekend I got on 10 meters in the Novice band and shouted my call that I was proud of. My first response was in person from my wife who advised that the neighbor called again and asked if I could stay off the air that day.

Like a cancer, the problem was back again.

I decided to check with all the other neighbors to see if they were getting any telephone or television interference. None was report. Only my immediate neighbor to the south. I asked PacBell to come back and asked them to check the lines one more time. When he arrived, we ran several tests and found both my line and my neighbors to be clear. As far as my phones in the house, I had already fixed them with the help of filters which I ordered by mail.

I demonstrated this both to my neighbor and the PacBell technician while he was there. The PacBell man told my neighbor that all phones are not equipped with RFI protection. It was pointed out to the neighbor that inexpensive phones are particularly susceptible to RFI because they are so cheaply made.

My neighbor position at this point was, however, well taken. He said "Why should I change my phones? I'm not causing the problem." I told the neighbor not to worry that I would clean up the interference on his phones for him. I felt comfortable that I could do it after all, I had fixed mine. That was MAJOR MISTAKE number one!

Next month the saga continues.

WWV Propagation Reports

The National Bureau of Standards time station WWV in Fort Collins, Colorado also transmits propagation reports at 18 minutes past the hour. Understanding the report is relatively simple. Remember that high flux numbers (increasing sunspot numbers) means improved propagation. A second very useful bit of information transmitted by WWV is the K index, a rising K index means magnetic disturbances and poor propagation. It is possible to have high flux numbers and still not hear much DX if the K index is above 2 or 3.

Introduction To Packet Radio

By Ernie Rader, K6UVI, Springfield , Or.

Part 1

Packet radio is the latest major development to hit the world of amateur radio. If you haven't already been caught by the "packet bug", you're probably wondering what it's all about and why so many people are so excited about it. Well, continue reading because you're about to find out.

Packet seems to offer something different from other facets of ham radio. Still, it can be used for everything from a local QSO on two meters with very little power. to a DX contact 2500 miles away--

Packet is perfect for electronic mail, message transmission, emergency communications, or just plain tinkering in the world of digital communication. It presents a new challenge for those tired of the QRM on the low bands or the contesters who don't have time to rag chew. It's a new mode for those already on FM, and it's a better and faster means of message handling for those on RTTY.

Packet is for the rag chewer, the traffic handler, the experimenter and the casual operator. A ham can get involved very easily with a relatively small amount of money.

All one needs is a 2 meter transceiver, a computer or terminal and a TNC. You probably already have the 2 meter rig and a computer of some kind, so all you need to buy is the TNC. Its cost ranges from less than $100.00 used to about $350.00 for one with lots of bells and whistles. This TNC, short for Terminal Node Controller, is a "little black box" that's wired between the computer and the radio. It acts very much like a modem when connecting a computer to the telephone lines. It converts data from your computer into AFSK tones for transmission and changes the tones received by the radio into data for the computer. Wiring the TNC to your radio and computer isn't that hard. Detailed instructions accompany your new TNC.

To give you any idea of how basic a packet station can be, I started with an old Kenwood TR-2500 handheld transceiver running about 1 watt. My TNC is one with the bells and whistles, but mycomputer is just an IBM XT.

With a decent antenna, I can communicate regularly with several ham friends down there in Central California, I've made several new friends on packet here in Oregon, and I even get packets from an attorney down in Lima, Peru! All of this with only one watt of power. By the way, this article is being sent to *The READOUT* by packet, all the way from Springfield, Oregon. Next month we'll talk some more about the specific things that can be done on packet. Oh yes, I get my mail at K6UVI @ N7DXT.OR.USA.NA. For those of you already on packet, drop me a note.

L.A. Jammer Arrested Again!

Ex-WB6JAC Jailed , Equipment Siezed

Richard Burton, 45, Ex-WB6JAC, is once again back in jail for unlicensed Amateur Radio operation in the Los Angeles area. Burton's ticket was revoked in 1981 for malicious interference, failure to use his assigned call sign, use of profane and obscene language, one-way communications nd broadcasting.

Burton refused to go off the air and was cited three more time between November 1981 and April 1982. The FCC, unable to halt Burton's unlicensed operation, had him arrested at his Reseda, Ca. home on April 30, 1982 and a seven count federal indictment was flied against him.

He was sentenced to eight years imprisonment all of which was suspended except for six months. He was placed on 5 years probation and ordered to perform 1500 hours of community service.

His imprisonment was the first time an Amateur radio operator was sent to prison for violations on the ham bands.

Burton's 5 year probation term ended this past Christmas and it did not take him long to revert to his old ways in late May. He was suspected of ranting on the 2 meter band even though he licensed had been revoked!

After many complaints, the FCC and U.S. Marshals arrested Burton on May 16, 1990 on three felony counts of violation of Title 18 Section 301 and 501 which involves unlicensed radio operation. A search warrant was served on his home from which they recovered a 2M radio.

Burton allegedly made on-the-air threats against the judge, attorney Joe Merdler, N6AHU, and the FCC engineer-in-charge of the Long Beach office, Larry Guy. Reportedly, when Burton was arrested, he was throwing knives at a dartboard which contained a picture of the judge as its bullseye.

Burton refused to enter a plea at his arraignment and the public defender was appointed to represent him. His bail was set a $10,000 and he remains jailed in Los Angeles.

For Sale

From the estate of N6SAF as a package deal for $300 and you take it down and haul it away. Contact Charlie, KJ6GE, 209 537-5205. No phone calls between 2200 and 0800 hrs please. -Butternut Beam HF5B (Butterfly) -Dipole 80 thru 10 meters. -1 Channel Master rotor with control box. -1 30 ft. telescoping mast -1 40 ft. telescoping mast -All the coax and guy wires.

CQ...CQ 80 Meters

By Paul Gardner, N4NXM

From The READOUT Archives 1984

It was early afternoon when my brand new Novice license arrived in the mail. Pulling it out of the envelope, I reached for the phone and dialed Len's number. In the next room, a transceiver and keyer I had purchased at our local hamfest just after passing the exam, waited patiently. Tuning in QSO's every night made me very eager to get on the air. My "Elmer", Len Waechter, WD4KKV, came right over to help me set up the new rig and hook up a good antenna.

Of course, there was one slight problem, the covenants for our spiffy suburban subdivision restricted installation of outside "broadcast type" antennas. Len and I took a good look at the situation and after discussing the various schemes, we finally decided to install a dipole concealed in the attic. I cautioned Len not to tell my neighbors!

My attic was hot and sweaty and full of fluffy pink insulation that itched so much I almost quit. Unfortunately, there were lots of other wires up there. But we finally got the job done and I was very pleased when we checked the SWR and found it to be 1.2 to I.0 on 40 meters. As for 80 meters, that was another matter. When I transmitted on 80 the reflected power rattled the wiring strung inside my walls. Consequently, we decided that I would use only the higher frequencies.

We tuned up the rig and made some calls, everything seemed to be working fine. After several solid QSO's, Len was satisfied and said goodnight. He missed the big panic that ensued later! A few minutes into the 10 O' Clock News, my XYL turned off the TV and went to bed. I locked up the house, set the burglar alarm and then slipped quietly into the den for one last look at my new pride and joy. Ready for one last spin across the band, I slipped on the headset, quickly tuned up and found nothing but heavy QRN on the band. I'd never heard so much noise!

Then, just as I was about to pull the plug, my curiosity got the best of me. I dialed back down to 80 meters. Lo 'nd behold, someone was sending CQI A clear and easy signal at a nice and easy pace! Suddenly, transformed into and expert radio operator, I confidently answered the CQ.

Immediately, RF energy bristled the hair on my arms, and I had the queasy feeling that something had somehow gone wrong. A moment later, my XYL burst into the room and pulled the headset off my head screaming, " What are you doing?? You've set off the burglar alarm and that siren will wake up the whole neighborhood!" She was right!

I dashed into the hallway to disarm the security box, but it was too late. The doorbell was already ringing, and someone was pounding on the front door. I ran down the hall and

See 'CQ' Page 18

Home Found For Club Station

Downey High School *By, Phil Hartz, WD0FFX*

For the past three years, SARA has worked toward a goal of having our own HF station up and running on the air. Two things have stood in the way of this occurring. One was the lack of equipment and the other was the lack of a suitable site. As time played on, the funds for the equipment began to materialize and soon was purchased along with a tower and complete antenna system.The search for a suitable site began and an agreement was reached with the Modesto City Schools and Thomas Downey High School. The site for our clubs HF station will be in the old KDHS 92.5 FM radio station located just off of room #51. Along with the radio station, SARA will have access to room #51 for classroom facilities, restroom facilities in an adjoining staff room and the existing tower structure and coax. Access to the room will begin July 1, 1990. Only one set of keys will be issued to the club. As part of the agreement the following stipulations apply:

1. SARA and its' members will have access to the agreed upon facilities during the hours of 7 am to 11 pm Monday through Friday, excluding school hours unless a declared emergency exists.

2. One person in SARA will be responsible for the keys to the site.

3. There will be a phone line access for the radio room.

4. SARA will assist in every way possible in establishing an Amateur Radio club on campus within the student body, which will have a shared interest in the HF station.

5. Only licensed and authorized amateur radio operators shall operate the station as per FCC rules and regulations.

6. Any member accessing the site will check in with the main office, during office hours, or with custodial staff, when present, on arrival. I.D. and license may be requested. 7. Licensed club(s) members under the age of 18 years will be accompanied by a responsible adult.

8. SARA will maintain adequate liability coverage to cover the use of these facilities.

9. SARA will be responsible for the maintenance of the station and classroom facilities when used to include cleaning.

10. Courtesy will be maintained at all times by the club(s) members and their guests. 11. The facilities use permit will be good for a one year period and renewed annually, based on performance and need. The current permit will expire June 30, 1991.

A lot of work and discussion went into this agreement over a long period of time. The people that were responsible for its' completion include: From Modesto City Schools James E. Burnis, Deputy Superintendent Business Services; Scott Ousdahl, Director of Facilities & Construction; Signe Swanson,

See "Club Station" Page 10

Northern California VHF/UHF Packet Bandplan

The following frequency allocations have been established for Packet Radio in Northern California by the Northern California Packet Association (NCPA).

Please keep this list handy for reference and use those frequencies allocated to the mode you are using.

Effective February 4, 1990

2 Meter Band:

144.91-Keyboard to keyboard
144.93-Bulletin Board Services BBS
144.95-DX spotting networks
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
145.71-9600 Baud Rate
145.73-BBS
145.75-TCP/IP
145.77-DX spotting network
145.79-BBS
146.58-DX spotting network

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220 Band:

223.42-Node uplink
223.52- Node uplink
223.54-Node uplink
223.56-Keyboard to keyboard
223.58-Node uplink
223.60-Node uplink

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440 Band:

441.50-BBS
433.05-TCP/IP
433.15-Netrom Backbone
433.25-DX Spotting Net Backbone
433.31-Backbone
433.33-Backbone
455.35-Backbone

Texas Tower Restrictions

The FCC has told the City of Bedford, Texas, that it must reasonably accommodate Amateur Radio, but the City is not quite sure what that means. The Bedford Planning and Zoning Commission has approved a compromise ordinance which limits towers to 55 feet. Amateur radio operators are insisting that

See 'Texas Towers' Next Page

Dazzling New Multi-Million Dollar Electronic Exhibit At Smithsonian

A dazzling new exhibit at the Smithsonian Institution museum in Washington, D.C. is a "must see" if your ever in the nation's capitol. It traces the information revolution from Samuel F.B. Morse's first primitive telegraph to the modern day computer. The new display opened May 16th and marked the first time that the Smithsonian has let private corporations provide sponsorship funds.

The corporate sponsors for this display include such giants as IBM, AT&T, Unisys and Xerox who put up the bankroll for the multi-million dollar tab for the largest and most expensive exhibition ever presented at the Smithsonian. The museum director said the Smithsonian was forced to rely on private support because Congressional budget cuts had left the museum without federal funds new exhibits.

The display, which covers 14,000 square feet, has been five years in the making. The show includes 78 computers, 43 video monitors, 52 laser microdisc players, 20 'touch screen' displays and 24 bar code scanners.

Visitors begin with a view of Morse's original 1832 telegraph...and exit through a hands-on-state-of-the-art chamber of wonders. The exhibits includes a working 2-ton robot once used at a General Motors plant in Delaware. Viewers can even tap out SOS in a recreation of the Titanic's radio room...and talk over the same telephone once used by Alexander Graham Bell.

Museum officials said the exhibit will be constantly updated to reflect technological advances. *-W5YI Report*

Texas Towers
From Page 9

65 foot towers are needed to accommodate their hobby. In Gainsville, Texas, city commissioners are set to enact a 90 day moratorium on the construction of Amateur radio antenna towers. Local hams are concerned that the moratorium may become permanent ban. The city says it only wishes to protect the health, safety and welfare of its citizens.

Club Station
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Facilities Use Clerk; Joe Gregori, Principal, Downey High School; Anthony Pokorny, Assistant Principal at Downey; Merle Maxwell, N6YLN, Supervisor of Maintenance and David Grout, N6YHZ, locksmith. From SARA Hart Bush, N6TIV and myself. That is the agreement in a nutshell. If anyone has questions or desires any additional information, contact me by packet at N6REB-2 on 145.39 or at 544-8515. We're there folks! Now let's make it work! 73, Phil

Editor's Notes

By Bob Pinheiro, WA6ZLO

Our membership continues to grow with the addition of new members and the return of an old one. Welcome back Okie Clark, K6SJV, Forest Grove, Or. We hadn't heard from Okie in a long time and it was good to get his renewal and find out that he is doing well. A warm welcome to Ken Geppert, Sr. KC6KIX, of El Dorado and Linda Kritcher, KC6KOS, of Tracy. Both are Technicians. This brings our membership to 162 for the year and growing.

• On Page 3 of this issue we begin a series of stories on the woes of Frank Massa, N6YHY. Frank is a newcomer to Amateur radio that has had enough trouble to last a lifetime. The trouble has come in the form of RFI (radio frequency interference) with his neighbor. The neighbor subsequently turned him into the City of Ceres who cited him and then the FCC whose investigating him. The SARA TVI/RFI committee got involved in this also. You don't want to miss this series.

• Some new repeaters are on the air in the area. KI6AG/R is the first Modesto repeater in the 23 centimeter band. The owner, Randy Anderson, is operating the system low level at this time with plans to move it to Mt. Oso in the future. The frequency is 1291.8 MHz (-). Jim Clark, WA6NSK, Sugar Pine (4500 ft), has a 220 machine in operation from his home on 224.36 MHz (222.76 MHz input). It is linked to WD6BPK on 224.08 in Tracy and has a two meter input on 147.54 MHz.

• Speaking of new things, more cable services are on the way. Along with other entertainers, county stalwart Willie Nelson is launching "The Cowboy Channel". The "Talk TV Network" will deliver nine 2-hour talk shows daily and the "Senior American Network" will be a 24-hour interactive cable network for the over the hill gang (50+). All three networks are due to be launch in January 1991.

• Radio Shack is trying to eliminate their "low-end" image as a retailer of cheap electronics and parts. The nation's largest consumer electronics retailer has launched a publicity campaign hoping to position itself as "American's Technology Store."

• Pirate radio stations are a constant source of irritation for the FCC. Recently the FCC has stepped up their enforcement in this area and increased the fines for those apprehended. However, the ingenuity of the scofflaws sometimes presents a challenge to the Commission. Take for example WNTU, calling himself "The Nation's Underground" who was tracked down in the Baltimore area. Joseph A. Della Barba was operating the station from his car. His big mistake was the frequency that he decided to use. 25,000 kHz. Of course, that is the frequency the National Institute for Standards and Technology use. Their call is WWV/WWVH. WWV transmits from Fort Collins, Colorado and WWVH from Hawaii. Della Barba was fined $1,000.

• The FCC has given formal approval to

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Earthquake Predictions ?

Via ULF Detection

Stanford scientists have accidently discovered a phenomenon that may provide an "early warning" system for major earthquakes. While performing experiments in the ULF (Ultra Low Frequency) band which was described as "electromagnetic emissions lower in frequency than the lowest note the human ear can hear", the scientists captured data several months previous to and during the recent San Francisco earthquake which has led to the "early warning" theory.

The experiments were designed to work with communications systems supporting secret communications with submarines. ULF receivers had been moved to the isolated Santa Cruz Mountains near the epicenter of the earthquake in an attempt to avoid electromagnetic noise at that frequency band.

The ULF band is used for submarine communications because it has the ability to radiate directly through the ocean and the Earth itself. The emissions offer a window in which to view the interior of the Earth.

Three hours prior to the earthquake the noise floor increased dramatically again and remained high through the event itself. The data had not been analyzed until recently. One theory expressed is that the "pre-quake" emissions are the source of agitation in animals who seem to "sense" oncoming earthquakes. Animals are known detectors of electromagnetic radiation.

The Stanford scientist interviewed was quite excited about the findings and indicated that more studies during earth movements of 7 (Richter) or greater would be needed to verify the data. *-Thanks KA6DRN*

'Editor's Notes '

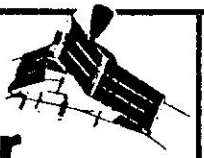
From Page 11

GTE Airfones. This systems allows passengers to make calls from airliners while in flight. The testing stage began in 1984 and has progressed to over 1,260 planes being equipped with the phones which operate on 454.675-454.975 MHz going up to the planes from the ground, and 459.675-975 MHz coming down.

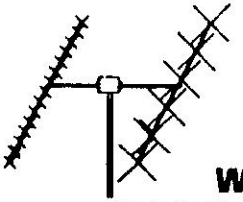
• We leave you this month with a chuckle or two sent to us by Ernie, K6UVI, in Springfield, Oregon. "Chicken soup is good for everything, except the chicken." And, "A quick way to get back on your feet is miss two car payments." 73, Bob.

Did You Know...

In the United States, FM channels between 88.1 and 91.9 MHz are set aside for the exclusive use of non-commercial stations, and religious stations, as well as those operated by non-profit foundations.



Amateur Satellites



WB5ZDP
Keith Berglund

From World Radio

When it rains it pours!

In April six new OSCARS were blasted into orbit. With the exception of OSCAR-15 acting a little "funny," all are doing well.

On February 7, the National Space Development Agency of Japan (NASDA) launched a Japan Amateur Spacecraft-1B (JAS-1B), now known as Fuji-OSCAR-20 (FO-20).

FO 20 is a Mode-J satellite with two transponders on board. As you recall, on Mode-J you uplink (transmit) on 2M and downlink (receive) on 435 MHz. The first transmponder on FO-20 is an ordinary analog transponder with a passband of 100 kHz. This transponder is used for SSB,CW, RTTY, etc. The uplink passband is 145.900 to 146.000 MHz, while the downlink frequencies are 435.800 to 435.900 MHz. The beacon on this Mode JA transponder (Mode J-Analog) can be found on 435.795 MHz.

The second transponder is a digital packet store and forward mailbox. The protocol is AX.25, however, the modulation formati is Phase Shift Keying (PSK) and is, unfortunately, not compatible with regular terrestrial packet. A PSK modem can be purchased, though. The beacon for Mode-JD can be heard on 435.910 MHz.

An RS-10 QSO

Well, it's time to do it. Over the past several months we've covered quite a lot of material on Mode-A operation. We've discussed orbits, uplinks, downlinks, equipment, antennas and computer tracking. But now, as the advertisement says, "Just Do It!" What I want you to do beg, borrow or otherwise appropriate the equipment necessary to make at least on Mode-A QSO. Go over to a friend's house and combine equipment, or perhaps borrow an all mode 2M rig from the guy across town. Just Do It! You don't have to have a permanent satellite station. Set up the equipment with jumper wires and temporary omni antennas if necessary. Just Do It!

I made my first several satellite QSO's Field Day style. On the receive side I used a 10M dipole tied between two trees into a Kenwood R-599D. On the transmit side, I used an IC-245 and 10W into a hand-held, hand pointed 4-element yagi taped to a broom pole (the broom was still attached!). As the satellite came overhead, I just pointed the 2M antenna for best receive signal out of the receiver.

(Attention first time satellite QSO makers: If this column has inspired you enough to make at least one satellite QSO, send me a short account of what hap-

See 'Satellites' Page 14

pened and I'll see if we can get it reprinted here. Eeverybody loves a "how I got started" story.)

Mode-A QSO preparations

In recent months RS-10 has been turned on and RS-11 seems to be dormant. Both satellites are actually bolted to another Russian navigation satellite called Cosmos-1860.

A chart showing the uplink and downlink frequencies of RS-10 can be found in the illustration. This type of transponder is a linear and non-inverting. This means whatever you transmit to the transponder will be repeated. If you transmit USB on 2M, you will hear yourself on 10M USB. CW= CW, RTTY= RTTY, etc.

Another way to look at the RS-10 transponder is that it is a "linear translator." In other words, it hears what you send it on 2M, subtracts 116.5 MHz from it and then retransmits it. So, for example, if yhou were to transmit on 145.870 MHz you could reasonably expect to hear yourself on 29.370 MHz (145.870 - 116.5 = 29.370).

A good way to use this information is to place this "translation constrant" into the memory of a small hand-held calculator. If you are looking at your 10M VFO you can ADD the constant to the reported 10M frequency and immediately determine where to tune 2M VFO. If you are looking at your 2M VFO. If you are looking at your 2M VFO, the constant can be subtracted to determine the expected 10M downlink frequency.

Equipment

The first step is take inventory of what you have and then determine what you need. Here is a check list.

-29 MHz receiver
-29 MHz antenna (dipole, yagi, etc.)
-2M SSB/CW transmitter
-2M amplifier (25 to 100 watts, depending on the TX antenna .
-Computer printout of the satellite pass to be worked.
-Straight key
-Headphones

When you've finally assembled all of the necessary equipment, the next step is to determine when the bird will be over your QTH. The best way to do this is with a computer (see March 1990 Worldradio). With you longitude and latitude entered into the program and a reasonably up to date set of orbital elements, you can get an accurate schedule of when the satellite will be in view.

For your first attempts, try to work a pass that has a maximum elevation of higher than 30 degrees above your horizon. This will ensure that the satellite will be in view for a reasonable length of time and that the downlink signal will be easy to hear.

The Mode-A QSO

When you've assembled all of the equipment and picked he pass in which you want to participate, it's time to watch the ol' WWV clock and wait. Tune your receiver one or two

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Satellites
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kHz higher than the beacon frequency (29.357 for RS-10) and listen.

The reason that you listen above the real beacon frequency is because of the doppler shift. Because the satellite is traveling toward you at three miles per second, the radio waves are compressed and appear as a slightly higher frequency.

What you'll hear first is the CW telemetry of the beacon (see April 1990 Worldradio). If you have time, copy a frame or two of telemetry. Now tune up into the 10M passband and listen to a few QSO's. The phone QSO's will be in the upper 1/3 of the passband, CW in the lower 1/3 and mixed SSB/CW in the middle 1/3.

When you think that you've gto the hang of things, it's time to talk to yourself. I suggest beginning with CW, using a straight-key. pick a place low in the passband that is unoccupied. With your calculator or the illustrated chart, determine where to place the 2M VFO. Start out by sending a few dit dit dits, whicle carefully tuning your receive VFO + or - three or four kHz. DO NOT widely swish your transmit VFO up and down the band! When you hear your own downlink, congratulations! You're talking through an orbiting Amateur satellite. It's that simple!

After sending dits for 10 or 15 seconds, you'll notice that the tone of the CW note drifts steadily lower and lower. Again, this is due to the doppler shift and not your receiver drifting. While in QSO with someone, the standard is to correct for doppler buy tuning your receiver alone. This prevents the QSOs from colliding into each other.

Now it's time to make a QSO. My advice is call CQ and let a more experienced satelliter find you.

Start out by calling CQ as you would on HF. When you find yourself drifting, remember to retune your transmitter only. With the satellite only in view 10 or 20 minutes, QSO's seem to be almost contest style.

On SSB the procedure is much the same. In order to find your own downlink, Place your 10M VFO on an unoccupied spot and then place your 2M VFO on the calculated uplink frequency. Fine tune by saying "helllo, helllo" a few times, while tuning your receive VFO.

On SSB, I strongly urge you to use headphones, because the sound coming cout of the reciever will feedback into the transmitter microphne and cause quite a feedback. This is exactly the same as placing a microphone too close to a loudspeaker of a public address system.

Next time

With the launch of OSCAR-20, we now have 10 active Amateur satellites (UO-11, AO-13, RS-10/11, UO-14, UO-15, AO-16, DO-17, WO-18, LO-19 and FO-20). Next time we'll cover what each of these satellites does and where to hear them. Keep those cards and letters coming. Thanks N2FZ and KB6WKY. See you on RS-10.

Come Fly With Me

Amateur Radio At 33,000 Ft.

By NT7Y

One of the fringe benefits of my job as an Air Traffic Controller is the opportunity to fly, as a guest of the airlines, in the cockpit to observe flight procedures. It amazes me to see the close cooperation of the skilled individuals who are united to make such flights routine matters. I take pride in being a small part of the total picture.

In recent years, I have had the opportunity to make numerous flights between our west coast and points in the Pacific. Within the continental United States, airlines normally communicate air-to-ground on VHF just below the Amateur 2 meter band. However, overseas, HF SSB is used. Routinely, an airliner departing from the U.S. for overseas is handled by VHF radio and radar coverage out to approximately 200 miles. From there all communications are all handled on HF SSB. On a flight from Los Angeles to Hawaii there is about 4 hours when all communications is HF, mostly around 13,280 kHz USB.

Most aircraft that fly overseas will be equipped with two complete and separate SSB transceivers which consist of digital readouts and automatic antenna tuners with the audio wired directly into the cockpit speakers of the flight crew.

After several flights and becoming accustomed to the SSB operation, I began to think very seriously about the possibility of using the spare transceiver for working aeronautical mobile on the ham bands while in flight. At first, I dispelled such notions as possible violations of cockpit etiquette.

I found out that it was not a violation and on a recent flight to Los Angeles from Hawaii I decided to ask the Captain for permission to operate in the Amateur band. The Captain gave the OK and in a matter of minutes I was tuned up on 14,222 MHz H1DXA net which I normally check into when I'm home.

After checking in I found myself enjoying the next 3 hours operating aeronautical mobile from 36,000 feet over the Pacific. I made contact with 25 states and 15 countries from New Zealand to Rotuma. The main thing I noticed is the absence of QRM and the clarity with which I heard everyone.

After signing off I found that the whole crew had been monitoring the QSO's on their headsets and were fascinated by the capability of their equipment. The co-pilot especially wanted a list of some of the frequencies hams use so that he could listen on future crossings.

Who knows? Maybe we'll have a crew of ham radio operators in the making.

Thanks ARNS via Hangtown ARC

SARA Minutes

By Linda Franklin, N6REB
Club Secretary
June 19, 1990

The June 19,1990 meeting was called to order at 7:30 p.m. by President Phil,WD0FFX. Introductions were made by 31 members and guests. Two guests were introduced, Seth Stone who is an organizer for the annual Bikeathon for the American Cancer Society and Tom Hora from the Livermore office of the FCC, who was also the evenings guest speaker.

Seth Stone spoke briefly about the "Hotter Than Hades 100" bikeathon scheduled for July 22. The need was expressed for at least 8 or 9 volunteers to help out with communications the days activities.

The floor was then turned over to Tom Hora of the FCC who then gave a brief summary of his beginnings with the FCC and also explained the functions of the Livermore monitoring station, it's area coverage and type of equipment used.

In regards to RFI, he said the FCC doesn't take sides, but rather looks at it as a 'No Fault' problem. Questions were put forth on the Communicator class license, intentional interference, bootlegging calls, jamming, PRB-1 and city council complaints, RFI in telephones, illegal use of Amateur frequencies by hang gliders, 10 meter interference by CB'ers and the proposal of waivers for the 13 and 20 wpm code for the handicapped. WD0FFX thanked Mr. Hora for his time and expertise in relating information to those present.

A break was then taken and when the meeting resumed, a motion by Bob,WA6ZLO was made to accept the minutes as printed in The READOUT. Steve, N6EKV seconded the motion and it carried.

Al,N6SAE gave the following Treasures report: The General Fund Account balance as of May 15,1990 was $1,459.97. There were 6 debits totaling $197.09 leaving a balance of $1,262.88. There were 5 credits totaling $166.50 which brought the balance to $1,429.38 to date. The Fund Raiser Account balance as of May 15,1990 was $701.55 with 5 credits totaling $546.00, bringing the balance to $1,247.55 to date. A motion to accept the Treasurers report was made by Joe,KB6YYT and seconded by Charlie,KJ6GE, and the motion was carried.

Oliver,KJ6YZ then called for volunteers to help with the Bikeathon. He also said volunteers were very much needed to help in the Fireworks booths for the fund raiser account.

Phil,WD0FFX read a letter from the Memorial Hospital to SARA for a donation to the Memorial Hospital foundation. A motion was made by Frank,N6YHY that the club donate $25. The motion was seconded by Joe,KB6YYT but the motion failed.

N6SAE reported the clubs ARRL radio equipment insurance is due July 1,1990. Bob, WA6ZLO made a motion to increase the insurance limit on the clubs radio equipment to

See Next Page

'CQ'
From Page 7

yanked the door open. There in the darkness stood my neighbor from across the street, shivering in his bathrobe, with a shotgun under his arm. "Need some help?" he asked with a sagacious grin.

Just then, a sheriff's car whipped around the corner and screeched to a halt, blue lights flashing. A uniformed deputy jumped out, drew his revolver, and cautiously advanced toward us. He glanced around to sum up the situation.

Satisfied there was no real threat, he holstered his weapon and confronted me with his hands on his hips and a sneer on his face. Needless to say, I had lots of explaining to do.

It became even more embarrassing as I rambled on and on. An endless stream of neighbors filed over from the sidewalk to see what was going on.

Around midnight, I signed the last investigative form and answered all the questions from my well-meaning neighbors when I closed the front door. Somewhat depressed, I snuck back to the den and just stood there for a moment.

As I reached over to turn out the lamp, you can bet that I wasn't about to answer that plaintive "CQ" chirping loudly from the headphones on 80 meters.

...de WorldRadio

Area V.E. Exams

7-14	Stockton	11:30 am	916 662-0801
7-14	Jackson	9 am	209 295-7947
8-4	Stockton	11:30 am	408 255-9000
8-11	Concord	1:30 pm	408 255-9000
8-18	Porterville	930 am	408 255-9000
9-1	Visalia	9 am	209 734-9516
9-6	Modesto	6:30 pm	209 883-2968
9-8	Sacramento	9 am	916 483-3293
9-22	Merced	9 am	209 383-2166

Minutes
From Page 17

$10,000.00 to cover all new HF equipment purchased for the club station. Steve,N6EKV seconded the motion and the motion was carried.

WD0FFX reported the Amateur classes are doing well with a good turnout, and that the club station at Downey High school has been approved, he just hadn't received a formal word as yet.

In regards to the Raffle, Al,N6SAE reported the tickets, money and stubs must be mailed back in time for him to receive them no later than June 29,1990.

A Field Day site had been acquired and those who were interested in setting up a station were to contact Dave,KJ6DL or Charlie,KJ6GE.

The Meeting was adjourned at 9:48 p.m. Respectfully submitted by Secretary, N6REB.

Computer Depreciation

Loss Due To Technology Advances

How much is my used computer worth?

Technology and deterioration are the two primary factors affecting the value of something. An increase in technology makes older items less desireable and newer items more powerful for the same (or even less) money. Deterioration (wear and tear) reduces the life expectancy of the item.

Let's consider two examples: a car and a computer system. There is a lot of potential mechanical deterioration in a car and not much in a computer. The reverse is true for technology increases. Cars change very little from year to year, but computers change a lot. Let's compare a 1985 purchase of a car and a computer system for $10,000 each. The $10,000 car has lost about 50% of its original value and is now worth about $5,000.

The primary factor in its drop in value is deterioration. The $10,000 computer system has lost 85% and is only worth about $1500. It's really only lost about 15% due to deterioration- it could easily last many years longer than the car. But, it has lost about 60% due to technology increase.

You can get a lot more computer for today's $10,000 than you could five years old.

Heathkit Demise

Heathkit, as we have known it, continues to move away from the kit building business. Since Heath was purchased several years ago by Zenith, the company has consistently moved away from hobby merchandise market in favor of the more lucrative business to business market. Accordingly, Heath-Zenith has closed several of it Heathkit Electronic Centers around the county. The company still offers a line of Amateur Radio equipment, but most of it is now commercial made with less and less kits offered.

Did You Know

The basic unit of electromotive force (EMF) is the volt. The volt was named in honor of Allesandr Giuseppe Antonio Anastasio Volta (1745-1827). This Italian physicist invented the electric battery.

-- Calendar - -

July 17, 1990	*SARA Monthly Meeting*	*730 pm*
Aug. 21, 1990	*SARA Monthly Meeting*	*730 pm*
Sept. 18, 1990	*SARA Monthly Meeting*	*730 pm*
Oct. 12-14	*Pacific Division Convention*	*3 days*
	LeBaron Hotel, San Jose	
Oct. 16, 1990	*SARA Monthly Meeting*	*730 pm*
Nov. 20, 1990	*SARA Monthly Meeting*	*730 pm*
Dec. 18, 1990	*SARA Monthly Meeting*	*730 pm*

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
P.O. Box 4601
Modesto, CA. 95352

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