DECEMBER 2000

THE MONTHLY NEWSLETTER of the SANTA CRUZ COUNTY AMATEUR RADIO CLUB

SHORT SKIP

SCCARC HOLIDAY BRUNCH

I sure enjoyed our December club meeting, held at lunch on Saturday at the Chaminade. We had a good turnout with 65 people of amature radio age (amateurs aged 8 to 85 were there), and the infant Jarod Rischpater. The food was good and plentiful, and the conversation was better. Nice seeing everybody there!

— 73, Cap KE6AFE

CLUB MEETING FRIDAY JANUARY 19, 7:30P.M.

SHORT SKIP

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A TIME FOR RENEWAL

Time to renew your club membership again. Dues for the 2001 calendar year are payable as of December 1. Regular memberships are $25, memberships for additional family members at the same address are $6 each, and full time students under the age of 18 can become members for $10. We look forward to having you as a member again in the coming year.

Make out your check to: SCCARC

Send it to SCCARC, PO BOX 238, SANTA CRUZ CA 95061-0238

EVENTS

• Livermore Swap Meet - 1st Sunday of each month at Las Positas

• Radiofest 2001 - February 17, 2001, 7:00 AM until 3:00 PM. Sponsored by the Naval Postgraduate School Amateur Radio Club. Center, Ord Military Community (old Fort Ord), 4260 Gigling Road in Seaside. Go to http://k6ly.org/radiofest for additional information.

TRADE or SELL TABLE at JANUARY MEETING

Bring your surplus radio gear to sell or trade. The table will be set up before the club meeting. Put a price on your goodie and have fun trading or selling: mics, connectors, handhelds and related equipment, receivers, transmitters, etc. Let's have fun!
—Dan AA6GD

Twas the night before Christmas
And all through the house
Not a computer was whirring
Not even a mouse
The TV was off and the stereo too
Sam sat in his shack
Wondering what to do.

Now Sam'd been a ham for four score years and three
He'd worked all the states, got his DXCC
He owned the best rigs that money could buy
And there wasn't a mode that he hadn't tried.

"What can I do, oh what could give me a thrill?
I'm kilowatt Sam, I'm the king of the hill!
There's no town I've not worked,
no place I've not logged –
what's the use of me turning my radio on?"

Sam cried out in vain:
For there was no one to hear
His pitiful wails or to feel his despair.
So alone in his shack and with nothing to do
Sam turned on his old tube rig
and it started to glow.

"Well I'll be doggoned, it's working still!"
Sam exclaimed with a start
And he spun round the dial just for a lark
Then he heard a signal so weak he knew it must be
One of those fools working QRPp

Sam could tell by his call that his license was new
And he thought to himself since it was Christmas and all
He'd let this new lid work the King of the Hill.
So he dug his old straight key up out of a drawer
Plugged it in and then gave the new guy a call

"Thanks for the call sir" came back the reply
"My name is Billy and age here is nine
My antenna's outside; just a wire I ran
And the rig here's made from a tuna fish can

Well old Sam when he heard this he was quite amazed
And he vowed he'd send Billy a rig the next day
So on Christmas Sam packed up for him a set
And addressed it to Billy from "that old ham you met"
And with tears in his eyes he wrote Billy a note:

"Dear Billy I thank you for last night's QSO
You've rekindled my love for ham radio
And reminded one vain and puffed up old man
Making friends on the air is really the plan
I trust you'll enjoy this rig I'm sending you
Hope to CU AGN on the air very soon."

— 73, KQ6DV

42 Years Ago... PONG ANYONE?

Friday, Dec. 8, 1958

Willy Higinbotham creates the first video game. Built from an old oscilloscope, it's like a tennis game watched from the side. It predates Pong, the next video game, by 12 years.

The minds of America's youth have never been the same . . . .

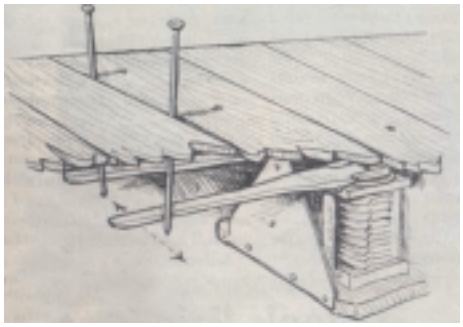
— Ed AA3SJ

Guess What??

Here's a Challenge

Guess what this has to do with radio communications, send your guess to Ron for publication in the next Short Skip where a correct answer will be printed. The person judged closest to the answer will win the enviable title of "Guess Master" a title which no doubt will be hotly contested in the months ahead.

—W6WO



By Art Lee WF6P

CHATTER

When things go wrong: In Sacramento last month operating out of our daughter's QTH, I kept receiving complaints from friends on nets that my signal was breaking up. "Check your mic," they advised. I was getting out OK on CW but LSB was not good. The antenna seemed clear of obstructions and I would get a good SWR and power out indication each transmission. "You're still cutting out," they kept saying. It was frustrating. My signal kept getting worse so I had to give up. Maybe it was the rain or tree branches on the antenna. Still, I had doubts. Was the trusty Kenwood TS-440S due for a trip to the shop? I hoped not. "Buy a new rig," was another helpful recommendation.

On my most recent trip up I was back on my nets. Same problem. This time, I noticed the old 15 amp Radio Shack power supply was making strange noises when I turned the rocker switch on. That's odd. Like the old joke goes, "It worked when we bought it (in a garage sale)!" Anyway, the rocker switch was not making good contact. If I held the switch in position, it worked. When I took my finger off, there was a hum, then silence, then another hum. Now, the Kenwood would actually shut down. Aha! The problem was solved. Time to tear into the power supply, and perhaps, change the cheap switch.

To stay on the air, I rummaged around in the hall closet and produced a nice Astron 12 amp power supply. It worked well and when I checked in on my nets, they said I had a fine signal. I had to cut my mic gain and power way down so as not to draw too many amps from the under rated power supply. I was still receiving S-9+ signal reports with the power down to about 10 to15 watts. Not exactly QRP, but it does show that low power ain't all that bad!

Here is an email I received from Wayne Thalls, KB6KN: " Back in the thirties when I was in junior high school, I built a one tube (type 30) regenerative receiver, including a home built wood enclosure. Must have been at least a one-foot cube. Probably weighed 20 pounds, with A and B batteries. I then mounted the contraption on the handlebars of my bicycle. Obviously it didn't work while in motion. Just breathing on one of those receivers would change frequency. It did work, after a fashion, when I parked. I am lucky I didn't break my neck while trying to tune the radio and ride the bike. Nowadays they call us nerds and hackers." I replied: "In my 1944-46 radio shop classes in Hayward High School, we built many projects -- no xmitters of course. Each was a more complex receiver until we got up to a 9 tube superheterodyne. I remember how excited I was when I built the first project where I could pick up a signal. It was like magic. I loved those shop classes, even came to school a couple of nights per week to build more stuff. The instructor, Mr. Clarence W. Nelson (CW Nelson no less!), was a strict disciplinarian and tolerated no nonsense. We had Navy training films from the Treasure Island ET school which thrilled me. The really tough part was that he was also my Sunday school teacher. So here I am, memorizing wiring diagrams, trying to learn Morse code and the color code during the week and scriptures on Sundays. He liked me enuff to ask me to take his daughter to a dance. I declined, saying that my car (a model A Ford) was broken down -- which it was. Happily, my turn down of the date with his daughter did not effect my grade. I didn't know it then, but he was a ham. Two decades ago I worked him on 80 meters after I got my General. He was true to form in his 80s. Claimed he remembered me (I'm sure he didn't) but demanded to know if my license class permitted me to be on the General class frequency! Same guy as I remembered him!"

Last month Donna and I received a nice package from Eddy Pollock, W6LC/7. The package contained key rings and QSL cards gathered when he was chief engineer (1989-91) at W1AW in Newington, CT. Eddy had to return to Santa Cruz for health reasons. After the passing away of his parents, Eddy and XYL Marilyn moved to Grants Pass, Oregon, to be near their children and grandchildren. Speaking of W1AW, Leon Fletcher, AA6ZG, operated that station on one of his trips back east (circa 1985). Somewhere in my collection I have his QSL card.

The November club meeting was great. New officers (bless 'em all!)were elected and we had about 50 or 60 members and guests present. I was happy to see Tom and Cathy Morley visiting us. Cathy is a former Maritime Mobile. I worked her a few times while she and Tom were in Mexican waters. She kept their SSB rig when they sold their boat. I promised to help set up an antenna and get her back on the air. Their QTH is near the yacht harbor.

Board Minutes

MINUTES of the BOARD from the SANTA CRUZ COUNTY AMATEUR RADIO CLUB

A regular meeting of the board was called to order at 1830 hours on Friday, November 17, 2000 at Dominican Hospital in Santa Cruz.

The president, Tom KQ6DV, was in the chair. Also present were the vice president Don KF6KGO; the secretary, Cap KE6AFE; the treasurer, Allen WB6RWU; and the members of the board, Bruce, and Ron W6WO.

The minutes of the board meeting of October 20 were unanimously approved

upon motion of Ron W6WO.

- No treasurer,s report was available.
- No committee reports were available.
- The board discussed the upcoming December club meeting lunch. The restaurant informed us that there would be additional charges for the lunch, a mandatory gratuity and tax on each meal. These fees were in addition to the prices already publicized to the club members.
- Upon motion by Cap, the board authorized an expenditure to cover the additional fees, not to exceed three hundred dollars.
- Further discussion of the lunch, including possible entertainment and logistical preparations followed.

The meeting was adjourned at 1920 hours.

A PORTABLE, NO-SOLDER, NO-TUNER, RESONANT TWIN-LEAD 20M DIPOLE

This article describes construction of a portable dipole for 14.060 MHz that is relatively low loss and does not require an antenna tuner. Dipole construction has been written about so much that you might ask "What can Rich say that's new?". Nothing, really, but I haven't seen this particular antenna described, so it's my duty to do it.

My first attempt at a portable dipole was using 20 AWG speaker wire, with the leads simply pulled apart for the length required for a half wave top and the rest used for the feed line. The simplicity of no connections, no tuner, and minimal bulk was compelling! And it worked (I made contacts)! Jim Duffey's antenna presentation at the 1999 PacifiCon QRP Symposium made me rethink that. The loss in the feed line can be substantial, especially at the higher frequencies, if the choice in feed line is not rationally made. Since a dipole's standard height is a half-wave length, I calculated those losses for 33 feet of coaxial feed line at 14 MHz. RG174 will lose about 1.5 dB in 33 feet, RG58 about 0.5 dB, RG8X about 0.4 dB. RG8 is too bulky for portable use, but has about 0.25 dB loss. For comparison, the ARRL Antenna Book shows 18 AWG zip cord (similar to my speaker wire) to have about 3.8 dB loss per 100 feet at 14 MHz, or around 1.3 dB for that 33 feet length. Note that mini-coax or zip cord has about one dB more loss than RG58. Are you willing to give up that much of your QRP power and your hearing ability? I decided to limit antenna losses in my system to a half dB, which means I draw the line at RG58 or equivalent loss.

It is generally accepted that 300 ohm ribbon feeder has much less loss than RG58, though I can't find it in the ARRL antenna book. Some authors have stated that TV twin lead has similar loss as RG58, which is acceptable to me. A coil of twin-lead is less bulky and lighter than the same length of RG58. These qualities led me to experiment with it. One problem is that its 300 ohm impedance normally requires a tuner or 4:1 balun at the rig end.

But, since I want approximately a half wave length of feed line anyway, I decided to experiment with the concept of making it an exact electrical half-wave long. Any feed line will reflect the impedance of its load at points along the feed line that are multiples of a half wave length. Since a dipole pitched as a flat-top or inverted vee has an impedance of 50 to 70 ohms, a feed line that is an electrical half wave long will also measure 50 to 70 ohms at the transceiver end, eliminating the need for a tuner or 4:1 balun.

To determine the electrical length of a wire, you must adjust for the velocity factor (VF), which is the ratio of the speed of the signal in the wire compared to the speed of light in free space. For twin lead, it is said to be 0.82, meaning that the signal will travel at 0.82 times the speed of light, so it will only go 82% as far in one cycle as one would normally compute using the formula 984/MHz. I put a 50 ohm dummy load on one end of a 49 ft length of twin lead and used an MFJ 259B antenna analyzer to measure the resonant frequency, which was 8.10 MHz. The 2:1 SWR bandwidth measured 7.76 to 8.47 MHz, or about 4.4% +- from 8.10 MHz.

The theoretical 1/2 wave length would be 492/MHz, or 60.7 feet, so the VF is 49/60.7 = 0.81, close to the 0.82 that is published. A 1/2 wave for 14.06 MHz would therefor be 492 x 0.81 / 14.06 or 28.3 feet. I cut a piece that length, soldered a 51 ohm resistor between the leads at one end, and hoisted that end up in the air. I then measured the SWR with the 259B set for 14.060 MHz and found it to be 1:1. I used the above-measured 2:1 bandwidth variation of 4.4% to calculate that the feed line could vary in length between 27.1 and 29.5 feet for a 2:1 maximum SWR.

Now comes the fun part. With another length of twin lead, I cut the web between the wires, creating 17 ft legs, and left 28.3 feet of feed line. I hung it, tested, and trimmed the legs until the 259B measured 1:1 SWR. The leg length turned out to be 16.75 feet. (NOTE: the VF determined above only applies to the feed line portion of the antenna) There is no soldering and no special connections at the antenna feed point. I left the ends of the legs an inch longer to have something to tie to for hanging. I reinforced the antenna end of the uncut twin lead with a nylon pull tie, with another pull tie looped through it to tie a string to it for using as an inverted vee. When hung as an inverted vee at a height of 28 feet, the 1.2:1 SWR bandwidth measured from 14.000 to 14.130 MHz. To connect the feed line to the transceiver, I use a binding post-BNC adaptor that is available from Ocean State.

I used Radio Shack 22 AWG twin lead that was available in 50 ft rolls. I haven't seen it lately, but I'm sure its equivalent is available somewhere. To have no solder connections, you need at least 45 feet. When I cut the twin lead to make the legs, I just cut the "web" down the middle and didn't try to cut it out from between the wires. It helps make the whole thing roll up into a coil, and the legs don't tangle when it's unrolled, since they're a little stiff. This antenna can be scaled up or down for other frequencies also. An even lower loss version can be made with 20 AWG 300 ohm "window" line, though the VF of that line may be different and should be measured before construction.

Wait, you say - "After all that talk about having it a half wave up, you only have it up 28 feet." I carry a 6 ft RG58 jumper to get it higher if the right branch is available. Since impedance at the feed point is 50 to 70 ohms, 50 ohm coax can be used to extend the feed line. I have used it in the field a few times as an inverted vee, at various heights and leg angles, and used an SWR meter to double check its consistency in different situations. SWR never exceeded 1.5:1, so I feel safe leaving the tuner home. For backpacking, I leave the SWR meter home too!

And there's a bonus: As long as you use the balanced feed line (or extend it with balanced line), it CAN be used as a multi-band antenna, with a tuner, from 10 to 40 meters. I quote John Heyes G3BDQ from "Practical Wire Antennas" page 18: "Even when the top of the doublet antenna is a quarter-wavelength long, the antenna will still be an effective radiator." Heyes used an antenna with a 30 ft top length about 25 ft off the ground on 7 MHz and received consistently good reports from all Europe and even the USA (from England). It will not perform as well at 7 MHz as at 14 MHz, however, though 14 through 28 MHz should be excellent.

My shack 20 meter antenna is an inverted vee up 26 feet and I've made QRP contacts to New York, Florida and Alaska, and I expect equal or better performance from this one. I think it's a winner.

— Rich KF6QKI

ARLS025 AO-40 Beacon Goes Silent

AMSAT reports there's a problem aboard AO-40. The Amateur Radio satellite has not been heard from since December 13. AMSAT says the AO-40 development team is looking into the problem, but it might not have any answers until December 16. That's when the onboard computer is expected to automatically reset itself and, it's hoped, restart the beacon transmission.

AMSAT-NA President Robin Haighton, VE3FRH, said the problem may or may not be related to earlier difficulties getting AO-40's 400-Newton motor to fire properly. Ground controllers adjusted the satellite's orbit earlier this week, but as a result of fuel-valve problems, AO-40 ended up in a higher-than-planned orbit.

AMSAT reports that 2-meter telemetry transmissions from AO-40 stopped early Wednesday, December 13, while work on the 400-Newton propulsion system was in progress. ''A lot of people are putting their heads together," Haighton said, but until the telemetry transmission reappears, not much will be known. ''It's very frustrating," he said.

AMSAT says onboard software events set to occur Saturday afternoon are programmed to start a spacecraft emergency routine called ''command-assist" that attempts to re-establish communication. Once communication is re-established, AMSAT says, ground controllers will have their best chance to recover any evidence of the incident that made the telemetry transmissions stop.

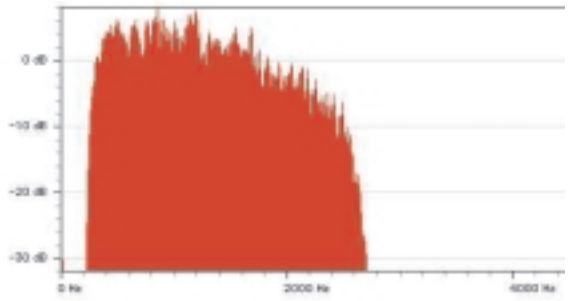
Monitors around the world are listening for any signal from AO-40 on the 146.898 MHz beacon frequency.

WORLDPARK BASE ANTARCTIC – ZL5BA

HF Noise Filtering

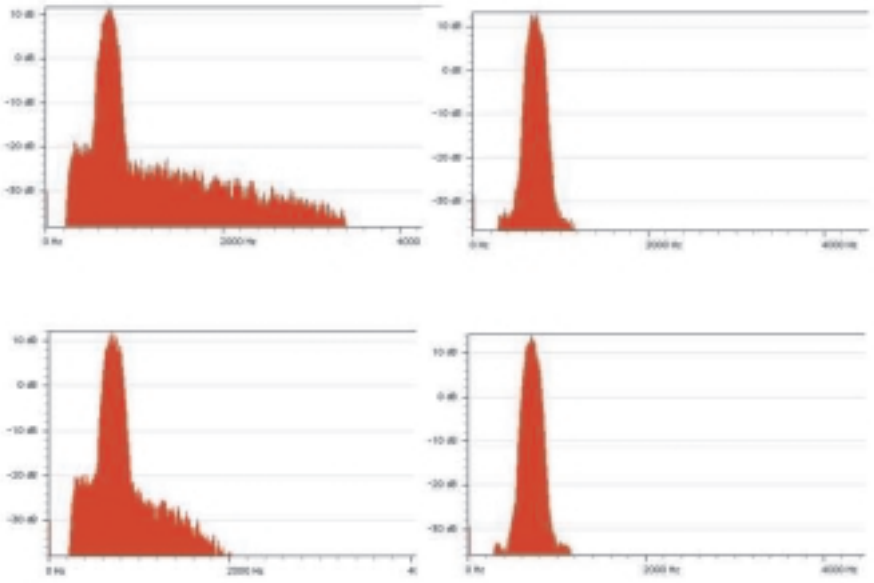
My Ten-Tec Omni transceiver has several filtering and DSP functions so I wanted to see how these performed with typical HF noise. Here are some spectral diagrams of the audio output of the receiver using a Macintosh sound analyzer called Amadeus. Similar programs available for the MS platform include CoolEdit and Analyzer 2000

The first picture is with a 2.4 KHz SSB filter without DSP noise reduction



My principal interest is CW so I normally operate with 250 kHz XTAL filtering in the receiver IF. In the receiver there is a Low Pass filter with a gentle roll-off that I set at 800 Hz. There is also a DSP noise reduction feature that uses an algorithm that enhances the signal to noise ratio of CW signals.

The following pictures show the effects of the 250 Hz filter, LPF and DSP NR



Audio spectra of typical HF noise taken with 250 Hz Xtal filter. Top to bottom as follows
No low pass filter no DSP noise reduction — 800 Hz Low pass filter and DSP noise reduction
800 Hz low pass filter no DSP noise reduction — No 800 Hz low pass filter with DSP noise reduction

A couple of points can be made. Most of the noise is eliminated by the Xtal filters and the LPF operates as one might expect by rolling off high frequency noise. The DSP NR feature substantially cuts noise above and below the center frequency of the XTAL filters. One might question the value of reducing noise that is already 30 dB down as these pictures indicate. What you see here however are pictures that are smoothed or averaged, the raw noise spectrum is much more spikey. The adaptive algorithm is designed to enhance the signal in the presence of raw noise and it does this in a form of noise cancellation relative to a signal. In practice this leads to a better copy than the picture might suggest. Ten-Tec declined to tell me much more about their algorithm.

From related work that Dave KO6RS and I are doing it is clear that given enough compute power (way beyond state of the art ham radios) it is possible to get a couple of dB improvement in SNR. 2 dB SNR improvement at the noise level makes all the difference between no copy and Q5.

— W6WO

Bad News from FCC

The FCC has denied an ARRL Petition for Reconsideration calling on the Commission to declare that PRB-1 applies to amateurs living in areas governed by CC&Rs or condominium regulations just as it does to hams regulated solely by local zoning laws. The FCC Order also seeks to "amplify" the definition of the oft-cited "reasonable accommodation" phrase in PRB-1 with respect to local land use and zoning.

The FCC Order said the League failed to demonstrate any "significant change in the underlying rationale of the PRB-1 decision" that would necessitate revisiting the issue.

"The Order provides some additional clarification on the extent of PRB-1 preemption, but it falls short of providing the relief that ARRL was seeking," said ARRL Executive Vice President David Sumner, K1ZZ. Because Deputy Wireless Telecommunications Bureau Chief Kathleen O'Brien Ham issued the November 13 Order under what's known as "delegated authority," the ARRL was mulling whether to submit an application for review by the full Commission.

Sumner said the ARRL believes the issue is "critically important." He said the League continues to gather additional information and to plan on how to present its arguments more persuasively before the FCC.

The FCC Order said that even if the Commission does have authority to address CC&Rs within the context of Amateur Radio facilities, "this alone does not necessarily warrant revisiting the exclusion of CC&Rs" from PRB-1. The ARRL has argued that the FCC has Congressional authority to prohibit restrictive covenants that could keep property owners and even renters from installing antennas to receive TV, satellite and similar signals. The same principle, the ARRL asserts, applies to Amateur Radio.

The FCC Order says, however, that ham antennas are not like over-the-air reception device antennas, "which are very limited in size in residential areas." Regardless of the extent of the FCC's discretion with respect to CC&Rs generally, "we are not persuaded by ARRL's arguments that it is appropriate at this time to consider exercising such discretion with respect to amateur station antenna preemption," the Order said.

The FCC Order is at http://www.arrl.org/announce/regulatory/rm8763.html.

SCCARC Officers - 2001

President	Tom Johnson	KQ6DV	464-3120
Vice President	Richard Trebbien	KG6AXD	426-0169
Secretary	Cap Pennell	KE6AFE	429-1290
Treasurer	Elaine Pennell	KE6FRA	429-1290
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	Mike Doern	KF6UXB	477-1161
	Ron Skelton	W6WO	477-1021
K6BJ Trustee	Royce Krilanovich	AC6Z	475-4798

MONTEREY BAY ACTIVITY

K6BJ / KI6EH (Linked) /147.945-	• SCCARC Net Monday 7:30 PM 146.79- /147.945- 146.79-
K6BJ / UHF	• SCCARC Net Monday 8:30 PM440.925 (PL 123)
	• SC ARES Net Monday 8:30 PM 146.835-(PL 94.8)
	• Watsonville ARES Net Thursday 8:30 PM 147.945-
K6LY (Monterey)	• Monterey ARES Net Wednesday 7:30 PM
146.97- (PL 94.8)	• NPSARC Net Wednesday 8:00 PM
444.700+ (PL 123)	• Monterey Bay Traffic Net Nightly 9:00 PM
(Linked)	• Monterey Bay Swap Net Wednesday 8:15 PM
	• Newsline (Ham News) Broadcast Wednesday 8:30 PM
N6IYA (Felton)	• SLVRC Net Thursday 7:30 PM
146.745- (PL 94.8)	• SLV ARES Net Monday 7:30 PM
	• Newsline (Ham News) Broadcast Sunday 9:00 PM

6 Meter Local Net 52.8 MHz (PL-114.8) Sunday 8:00 PM
SCCARC 10 Meter Net 28.308 MHz USB Monday 7:00 PM
Mont. Bay Chapter 191 QCWA :Tuesday, 7:30PM, AA6T repeater, 146.700-(NO PL).

SCCARC Calendar of Events

SCCARC Board Meeting 6:30	Friday	Jan. 19
SCCARC Meeting	Friday	Jan 19
SHORT SKIP deadline	Tuesday	Jan 2
Santa Cruz ARES	Tuesday	Jan 9
SCCARC Meeting	Friday	Feb 16

MONTHLY MEETINGS

The SCCARC Meets at 7:30 PM, on the THIRD FRIDAY of the each month (except December). Meeting are at Dominican Hospital, 1515 Soquel Drive, Santa Cruz.

Visit the SCCARC Website at -

www.k6bj.org

NEW! — CLUB E-MAIL: yourcall@k6bj.org

NET CONTROL SCHEDULE

(Subject to Change)

12/18	Allen	WB6RWU
12/25	Merry Xmas!	
1/1/01	Happy New Year!	
1/8	Phil	KE6UWH
1/15	Ron	W6WO
1/22	Dave	W6TUW

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P.O. BOX 238
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Next Meeting Jan 19th

First Class