

OCTOBER 2004

THE MONTHLY NEWSLETTER of the SANTA CRUZ COUNTY AMATEUR RADIO CLUB

SHORT SKIP



Almost Free dBs Anyone?

Part 2

Part 1 introduced the concept of trading the speed of communications with Signal to Noise Ratio (SNR) and showed that to achieve significant improvements we need unusually narrow bandwidths. In this part we will consider the results obtainable when using such narrow bandwidths and some practical means to achieving those results.

Among the various sections and subsections within Part 15 are a number of interesting provisions. One permits the use of up to 1 watt of power and a 15-meter long antenna in the low frequency band between 160 - 190 kHz, with no license requirement. You can even pick your own callsign. Another permits similar operation from 510 - 1705 kHz, in the medium frequency band, with 1/10 of a watt and a 3-meter antenna. Experimenters operating under these sections of the rules call themselves LowFERs or MedFERs depending on which band(s) they utilize.

In one test a CW signal at S4 (-103 dBm) could just be copied by ear but a good readable QRSS signal was possible at -123 dBm. In another test a similar 20 dB advantage was achieved using 0.3 milliwatts of RF to cover a distance of 220 km. Communications with such low powers and with antenna efficiencies a tiny fraction of a % of a wavelength (λ around 1 mile) and even 50 miles is an achievement! Receiving equipment is also a tough challenge because of the various high power signals in the LF spectrum.

Although any type of modulation is permitted which will fit in the band, serious experimenters use Morse code or various digital modes for greatest distance

(DX). There are a number of beacons and experimental stations on the air more or less continuously. As you may recall QRS means "send slower" and it is common practice to refer to extremely slow CW as QRSS and the two most used speeds have dot lengths of 3 or 10 seconds.

My main interest is not these extreme conditions but to find out how much advantage can be gained at HF from speeds around 1-2 WPM. One of the key questions to be explored is the extent ionospheric propagation will determine the minimum practical bandwidth. Another question is whether the ability to decode CW by ear gives way to decoding from a visual trace of the signal and if so under what conditions does this occur.

The narrowest crystal filters in receivers are typically not less than 100 Hz and this bandwidth is far greater than the theoretical minimum bandwidth we are aiming at. Take our example of 2 WPM, the 1 Hz filter it requires can not be implemented in hardware and to design such extremely narrow filters we must use software processes commonly known as digital signal processing DSP.

These days a single chip called an Analog to Digital Converter (ADC) can take an analog signal and transform it into a stream of ones and zeros rather similar to the on-off dots in a CW waveform. Collecting a timed sequence of small slices of the analog waveform and giving each slice an encoded number does this. Following this process (called quantization) our information has become a series of numbers that represent the original waveform. Processing these numbers is something computers are very good at doing.

Recall that an Oscilloscope displays the amplitude and timing of a CW signal but tells us nothing about its sidebands. In contrast given the same signal, a spectrum analyzer will display its frequency components and their amplitudes but tell us nothing about their timing. A signal viewed on an OScope is said to be in the time domain while the same signal on a spectrum analyzer is said to be in the frequency domain.

About 200 + years ago the French mathematician Joseph Fourier developed the math showing that any complex signal in the time domain can be transformed to the frequency domain and vice versa. Our CW signal viewed on Oscope and spectrum analyzer displays is a good example of the duality of the time and frequency domains.

To construct filters for our slow speed CW we need to work in the frequency domain. We do so by applying mathematics called Fast Fourier Transforms (FFT) to the digital bit stream we obtained from A-D conversion. Filters of practically any shape and bandwidth can be designed with DSP software doing the math. As there is a lot of number crunching involved we must have the compute power necessary to obtain fast acting filters and we must allocate a sufficient number of bits to handle the signal's dynamic range. Fortunately if we start with information at the audio output of a receiver, the chips in a 16 bit sound card of a personal computer are up to the DSP task.

There are many software programs that use sound cards to process the audio output of a receiver. Some are designed specifically for either sending or receiving QRSS but I have not found a single program that does both. A popular

Continued page 2

CLUB MEETING FRIDAY OCT. 15, 7:30 P.M.



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Free to members.

Santa Cruz County Amateur Radio Club, Inc.

Post Office Box 238
Santa Cruz, CA 95061-0238

Editor and Publisher
Ron Baldwin, K6EXT
(831) 419-1025

K6EXT@fireclay.com

Columnist: Art Lee, WF6P

Writer: Ron Skelton, W6WO

Distribution: Elaine Pennell, KE6FRA

Free DB's continued

combination is QRS and ARGO. QRS is Rik Strobe's (ON7YD) software for keying a radio to transmit extremely slow CW. ARGO is a receiving tool for displaying slow CW on a waterfall graph. ARGO performs FFT spectral analysis in ways optimized for QRSS. Many of the transoceanic LF amateur records were set using ARGO at the receiving end.

Before jumping to the conclusion that QRSS is for you consider some of the downsides. A filter with a 1Hz bandwidth requires very stable radios and propagation conditions that do not shift the phase/frequency of a signal out of the passband. At 1 WPM a message of 60 words will take an hour and not something to listen to or view, at least not in real-time. This issue has been tackled by using a program called CRUNCH that records the original and plays it back at a faster rate. Other schemes to improve real-time transmission rates have been devised that use two or more tones to represent the dots and dashes.

There is plenty going on in the QRSS arena that is worth considering and the best source of this information is ON7YD's web site. The LCWA Web site is an excellent source of information <www.lwca.org/><http://www.lwca.org/>> For example you'll find lists of active stations in this area and vendors who have kits for sale. Give me a call if you want to go further down this path.

—73 Ron W6WO

Member Profile Mike Doern KM6IKE



Mike is a native of New York State and was a bus driver for many years; he also had his own home repair business until his physical health intervened. His path to HamRadio was via CB where he first gained interest and experience in emergency communications. Getting a license was admittedly a challenge for Mike and he gives full credit to Erick KB6PPQ for his tutoring and encouragement, without which he would not have passed the exam.

Mike provides a great example of the volunteer spirit that underpins our hobby. The long list of Mike's volunteer activities includes 5 years as an Ambulance Corp EMT, communications support for

Seniorama, bike races and Blue Grass music festivals. Mike has assisted in the training process for new bus drivers in the loading and unloading of passengers in wheelchairs and electric scooters. The Club presentation he has enjoyed most was by Ben N6FM on the 911 center.

As a member of the SCCARC Board Mike was instrumental in negotiating our deal with Marie Callenders for the XMAS lunch. What Mike enjoys most is riding trains. Laying in bed of an AMTRACK sleeper chatting to hams en-route is his idea of heaven. Thanks for all you do to uphold the service reputation of our club Mike.

PS Note his unique Brain Plane antenna.
—Ron W6WO

SOLDERING ON-ORBIT

The ham astronauts on the International Space Station have been trying to solder in zero gravity, and the results are intriguing. The NASA website says that the solder, heated, became a molten blob with a droplet of rosin clinging tight to the outside. As the temperature increased, the droplet began to spin, round and round, faster and faster, like a miniature carnival ride. You can see and enjoy the video of this experiment at at: http://science.nasa.gov/headlines/y2004/16aug_solder.htm

—from ARNewsline

Spidercone

I have just discovered that what is now called a "Spidercone" antenna was originally called a "Skelton" Cone. It was described in 73 magazine August 1969. W6EZ has some info on it at <http://home.pacbell.net/serazin/cone.html>. From what I can see of the radiation patterns it would make a pretty fair NVIS antenna with some DX prospects and might be a good option for Field Day as the elements would also act as guys.

I am quite curious to find out its origin. Does anyone have access to the article ?

—73, Ron W6WO

Yasme

by Leon Fletcher

The subjects of last month's article in Short-Skip, "BIG-Time DXers"--W6LG, Lloyd Colvin, and W6QL, Iris Colvin--did much of their worldwide DXing under the Yasme banner.

Yasme is a nonprofit funding organization that helps finance significant hamming projects worldwide.

While the Colvins paid for their own travel expenses, Yasme provided help in handling their QSLing--no small job, since the Colvin's made well over one million contacts.

The word Yasme is based on the Japanese word yasume, meaning "freedom." Yasme came into DXing through Danny Weil.

Danny was born in London, England, in 1918. He was a vagabond who'd been a truck driver, RAF mechanic, watch-maker, mechanical engineer, an aircraft rigger, and--as he put it-- a "questioner of authority."

In 1951, he bought an old 40-foot sailboat, rebuilt it, named it Yasme, and three years later set sail from his then hometown of Christchurch, England, heading for Gambia, West Africa.

Danny Turns to Hamming

He sailed single-handed. He had no major problems en route to Africa, and planned to continue to sail around the world.

But when he arrived in Tortilla, British Virgin Islands, he recognized the importance of having radio gear aboard. So he laid over in Tortilla for several months, studied hamming, took the tests, and was issued the call VP2VB.

Eventually, Danny continued on his round-the-world cruise. He hammed from nearly all the countries and islands he visited. He held at least 31 different call signs.

His travels were reportedly monitored by more than 100,000 hams. That interest helped spark the establishment of the Yasme Foundation to raise funds for Danny. And that, in turn, inspired the concept of the foundation sponsoring DXpeditions.

Danny died in San Antonio, Texas, in 2003, at age 85.

Yasme Continues

Today, the Yasme Foundation sponsors such projects as providing funds to renovate the club station of the Radio Amateur Society



By Art Lee WF6P

CHATTER

I just returned from 10 days in Citrus Heights and Fair Oaks, near Sacramento, when Ron, K6EXT, called to remind me my column was due. He told me he had just returned from China! I didn't ask if it was a Dxpedition. Our son Bruce had undergone surgery after blowing out his Achilles' tendon on the tennis court. It was a tough surgery and he is in a wheelchair. Makes me want to hang up my tennis racket. While there tending grandchildren, I made my usual neighborhood check for ham antennas. Found one! It was a KD6 with a vertical antenna. He only knew of one other ham in his area. I guess Fresno is a more ham-friendly city as antennas are more plentiful. When there visiting wife Donna's brother Frank, KB6TZA, I count at least one ham antenna every couple of miles.

Due to the family emergency, I missed the last CAKE meeting. I find those meetings both informative and entertaining. But,

of Thailand, help the World Radiosport Team Championships in Slovenia and Finland, and to assist hamming in Albania.

In addition, Yasme offers a plaque to any ham who submits QSL cards documenting contacts with 30 different call signs of Yasme operations or officials. For 60 confirmed contacts, Yasme offers a trophy shaped like Danny's sailboat Yasme. Calls that qualify are listed at <<http://www.yasme.org/YasmeAWD97.html#callsign>><http://www.Yasme.org/YasmeAWD97.html#callsign>.

For more information, see the very detailed book Yasme, the Danny Weil and Colvin Radio Expeditions, commissioned by the Yasme Foundation, published by ARRL in 2003, written by K1TN, James D. Cain.

(In the late 1990s, I was close to signing a contract to write that book, but I had to withdraw because of major surgery.)

we can't be in two places at once. If you get a chance, join the group. The coffee is good and the price is right. The meeting place, Gigi's, also serves a nice breakfast. Thanks, Ron, W6WO, for keeping the meetings going.

Received a landline (actually a cell phone call) from Rich Hanset, KI6EH, and XYL Lee, KC6BML. They were underway aboard their 50 foot yacht Seaweed, en route to Santa Cruz from the Northwest. Rich and Lee wanted me to crew with them after a prospective crewmember was scratched from the crew list due to an injury. It was not easy for me to get to the boat in Washington state, so they came on south by themselves. Shucks, wudda been a fun trip. Their ETA in San Francisco was a week ago. Rich also checked in on the Baja maritime mobile net (7.260 at 0800 PDT) with net control, Terry Parks, N6NUN, in Watsonville. I missed the net that day so didn't get a chance to say hello.

Son Randal, N6UZI, and his mother-in-law were in radio contact using little family service radios (Radio Shack). They were in a three-truck convoy from Ben Lomond, moving her household goods to her new QTH at Clear Lake. The little low-powered radios (FSRs) worked fine and kept them chatting away and from getting separated in heavy traffic. They all carried cell phones, but those little radios served a different purpose.

5th Annual Marina Air Faire

5th annual Marina Air Faire, featuring a lot of good stuff....P-51s, ME-109s, Possible astronauts, WWII fighter Aces, Big NASA display, WWII military Vehicles, Ham Radio Space Station, and other satellite Radio Contacts, lots of Family fun...

Come on down, if you can.

Oct 16, abt 10AM to 4:00PM No admission fee, no parking fees. Probably 7K to 12K attendees.

See: <http://www.marina-airfaire.com/> for more information.

—73, DX, de Pat, AA6EG
aa6eg@hotmail.com

Burrowing Owls and 80M

What do Burrowing Owls and 80-meter transmitters have in common? They are both targets of hams who like to do radio direction finding. Newsline's Joe Moell KO0V tells us more:

There's lots happening in the world of radio direction finding this summer. More young Burrowing Owls are leaving their nests in western Florida, so hams in that state who aren't busy with hurricane communications are by their receivers, listening for the radio tag signals to see where these critters will go. If you can help, please join them at www.homingin.com.

Also, a 21-member delegation of ARDF Team USA competitors, trainers, jurors, and family members went to the Czech Republic and the World Championships of radio foxhunting, September 7th through the 12th. These World ARDF Championships take place every two years. USA's 2004 team members were OMs and YLs ranging in age from 19 to 62. Among them was Jay Thompson W6JAY, Newsline's Young Ham of the Year for 2003 and recent winner of the ARRL Hiram Percy Maxim Award. Each competed once on 80 meters and once on two meters, looking for three, four or five transmitters, depending on age and gender category.

USA began attending the World Championships in 1998, but European and former Soviet countries have been holding ARDF events for over 30 years. So it's no surprise that they dominated in the final standings. Nine of these nations garnered all of the individual and team medals. The total medal count was led by Czech, Russia, and Ukraine with 34, 28 and 26 respectively.

USA, Australia, and Great Britain were among the 19 nations that won no medals. But we're getting better every year. Two Team USA members had top-ten individual finishes in their categories. Nadia Scharlau of Cary, NC took 6th place out of 22 on two meters. She might have won a medal on 80 meters, but the battery fell out of her receiver and she had to find the last fox transmitter with just the bearings that she already had on her map, losing about ten minutes. Bob Cooley KF6VSE, age 62, of Pleasanton, CA placed 9th out of 34 on his two-meter run.

All of our team members earned their spots by taking medals in the USA National Championships. This year's were in California in June, and a site is already being sought for the national championships in 2005, 2006 and beyond. As USA's ARDF Coordinator, I would like to hear from you if your club is interested in putting on the championships.

You can read all about the ARDF championships, Team USA, and volunteer wildlife tracking -- and find out how to get involved -- at the usual place, www.homingin.com. That's homing in, as one word, www.homingin.com.

—from ARNewsline



ECOM COURSE OFFERED

Cap Pennell, AE6AFE, has recently completed the ARRL Emergency Communications Course EC002 Level II in what must be near a record time of two and a half days.

Allen Fugelseth, WB6RWU, has recently completed the ARRL Emergency Communications Course EC003 Level III. He was a little slower at eight days.

They have by now gotten their \$45.00 registration fees refunded because they successfully completed the courses within the allotted time of eight weeks. These courses are sponsored by United Technologies Corp. United Technologies Corp. has contracted to sponsor these courses for one more year, which will end at the end of 2005. The ARRL administers these classes. If anyone has questions, CAP and Allen would be willing to answer them. Checkout the classes at: <http://www.arrl.org/cce/>

These courses are excellent training for ARES volunteers. We strongly encourage every ARES volunteer to take these courses.

—73, Allen WB6RWU

The Derek Baylis

While working on installing a PA/Hydrophone system on the Derek Baylis, the beautiful Monterey Bay Aquarium Sailing/Research ship, I was again shown how small the ham/sailing world is. There, also tied up, at the Monterey Pier, was the Cordell Explorer, the research vessel of Cordell Expeditions,

<http://www.cordell.org>, founded by Bob Schmieder, KK6EK of Peter I, Heard Island, and other Super-DXpedition fame. No one appeared around, but after lunch, there was Bob, preparing to do some Research off Point Sur. Many smiles, chats and handshakes later, Bob, KK6EK, the skipper, had to depart to SF, and eventually return to Pt Sur Area for his research. Small world

The Derek Baylis is the most beautiful sailing (Ketch) I have ever seen. A 65 ft

ARES Photos

We want to issue new or updated ARES ID cards to all those who are registered for ARES in Santa Cruz County. I plan to take pictures of ARES volunteers this month and issue the new cards by October 23 at our SET. I will attempt to bring my little digital camera to the SCCARC meeting October 15, and the SLVARES meeting October 20 to take your picture for the new ARES ID card. If I haven't recently taken your picture with my camera on a tripod, please attend one or more of these meetings so I can. Or contact me.

For more information on these meetings, visit <http://ares.santa-cruz.ca.us> and scroll down to "Meetings" and then on down to "Clubs".

Thanks.

—73, Cap KE6AFE

ARES Sign-up Online

If you are a ham living in Santa Cruz County and you are willing to assist during emergencies, please register for ARES online by filling out the ARES

Registration Form at <http://ares.santa-cruz.ca.us> if you haven't already done so.

Fifty three Santa Cruz County hams have already registered for ARES online since the end of August. Have you?

Thanks.

—73, Cap KE6AFE, DEC

research vessel, chartered by the Monterey Bay aquarium, built in Watsonville (Wylie Cats). It has no usual mast rigging, just two beautiful carbon fiber masts. Extremely fast, eventually I expect we will install some ham equipment aboard. It is available for charter as a Science Research Vessel.

The Baylis berths at the Monterey Coast Guard Marina, and also in Santa Cruz Harbor.

Check it out on the web:

http://www.wyliecat.com/yachts/models/wyliecat_65.html

http://www.baycrossings.com/Archives/2003/09_October/derek_m_baylis_sails_sf.htm

<http://www.santa-cruz.com/archive/2003/May/01/local/stories/04local.htm>

—73, Pat AA6EG

N6IJ PRO-67C Yagi Installation



SCCARC members Cris KG6DOZ, (above) Bob K6XX, and Eric WA6HQ (right) help install a new antenna at the N6IJ club site in Marina.



SPACE STATION

On Saturday, Sept. 11, Mike Fincke (KE5AIT) became the first crewmember of the International Space Station to talk to all 7 continents using amateur radio when he talked with Palmer Research Station (KC4AAC). Mike spoke with Chuck Kimball (NONHJ) and a packed radio room during the 8 degree maximum pass. Kimball commented "I think the contact caught the interest of most everyone here, and raised everyone's spirits a bit." Fincke and Kimball compared and contrasted life in the two stations, discussed time zone differences and the experiments involving fluids that Fincke was working with for "Saturday Science".

Fincke is believed to be only the third astronaut to accomplish this feat. The last such occurrence occurred in 1992 aboard STS-45 when David Leesma and Kathryn Sullivan also talked to Palmer Station to complete their continent contact list. Fincke will be finishing his tour in the middle of October when Expedition 10 Astronaut Leroy Chiao (KE5BRW) and Cosmonaut Salizhan Sharipov will come aboard.

Courtesy of AMSAT-NA

A NEW ALTITUDE RECORD BY SIMSAT 1B

Pat Kilroy, N8PK, reports a new altitude record of over 112,900 feet was set by the SimSat-1B mission when it flew last week. Pat says that while the VHF telemetry failed early in the flight there are numerous clues as to why and the group is piecing the puzzle to help improve for future operations.

The Simulated Satellite or SimSat project is an education and outreach activity being developed by N8PK at the NASA Goddard Space Flight Center. A SimSat spacecraft uses a small high-altitude weather balloon platform to fly experiments designed and built by students to near-space altitudes. In this case, a tiny CricketSat transmitter on UHF was also on board as a last minute hitchhiker. Powered by a standard 9 Volt alkaline battery and producing under 20 milliwatts, it operated all the way through splashdown and saved the day for tracking the flight. More information and the part ham radio plays is on line at www.patkilroy.com/simsat on the World Wide Web. (N8PK)—from ARNewsline

PACIFICON 2004

PACIFICON 2004 will be on October 15, 16, and 17th. - At the San Ramon Marriott - 2600 Bishop Drive, San Ramon, CA 94583

<http://www.pacificon.org/>

Schedule of Events

Friday - October 15th ----

7:00 am to 5:00 pm Registration Desk Open
8:00 am to 5:00 pm Antenna Seminar
9:00 am to 12:00 pm Volunteer Counsel Forum
7:30 pm to 8:30 pm Public Service DVD Demo
7:30 pm to 9:00 pm MDARC Monthly Meeting

Saturday - October 16th ----

6:00 am to 5:00 pm Registration Desk Open
6:45 am to 8:00 am Breakfast Keynote
8:15 am to 5:00 pm FORUMS
9:00 am to 5:00 pm Exhibit Hall Open
9:00 am to 5:00 pm Special Events Station
9:00 am to 12:00 pm VE Testing

7:00 pm Banquet Dinner
MIDNIGHT Wouff-Hong Ceremony

Sunday - October 17th ----

6:00 am to 12:00 pm Swap Meet - New Day!
7:00 am to noon Registration Desk Opens
8:00 am T-Hunt (beginner)
9:00 am T-Hunt (advanced)
9:00 am to 1:00 pm Exhibit Hall Open
9:00 am to 1:00 pm Special Events Station
9:00 am to 12:00 pm VE Testing
9:30 am to 1:00 pm FORUMS
1:00 pm ARRL Forum

SCCARC Board - 2004

President	Vic Linderholm	AE6ID	476-5567
Vice President	Scott King	AH6KL	688-2296
Secretary	Cap Pennell	KE6AFE	429-1290
Treasurer	Elaine Pennell	KE6FRA	429-1290
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	Chris Angelos	KG6DOZ	688-3562
	Mike Doern	KM6IKE	477-1161
	David Shoaf	KG6IRW	462-4605
	Rich Wadsworth	KF6QKI	722-7005
K6BJ Trustee	Royce Krilanovich	AC6Z	475-4798

MONTEREY BAY ACTIVITY

SCCARC Repeaters: K6BJ 146.790- PL 94.8 Santa Cruz (linked w/Watsonville full time)
 K16EH 147.945- PL 94.8 Watsonville (linked w/Santa Cruz full time)
 K6BJ 440.925+ PL 123.0 Santa Cruz
 • SCCARC Net Monday 7:30 PM 146.79- /147.945- /440.925+ linked
 • SCCARC 10 Meter Net 28.308 MHz USB Monday 7:00 PM

SLVARC Repeater WR6AOK 147.120+ PL 94.8 Ben Lomond
 • SLVARC Net Thursday 7:30 PM

LPRC Repeater WR6ABD 146.640-(PL 162.2)
 • LPRC Net Tuesday 8:00 PM

NPSARC Repeater K6LY 146.97- PL 94.8 Naval Post Graduate School, Monterey
 • NPSARC Net Wednesday at 8 PM on K6LY/R

6 Meter Local Net 52.8 MHz (PL-114.8) Sunday 8:00 PM
 ARES Nets • SC ARES Tuesday 7:15 PM K6BJ 146.790-(PL 94.8)
 • SLV ARES Tuesday 7:00 PM W6JWS 146.745-(PL 94.8) & WR6AOK 147.120+(PL 94.8) on alternate Tuesdays
 • South County ARES Tuesday 7:15 PM K6RMW 147.00+ (PL 94.8)
 • LP ARES Tuesday 7:15 PM AE6KE 146.385- (PL 98.4) & AB6VS 440550+ (PL 94.8) linked
 • SC County ARES Tuesday 7:30 PM 146.79-/ 147.945-/ 440.925+/ 147.180+ (all PL 94.8) (linked)
 • Monterey ARES Net Wednesday 7:30 PM K6LY 146.970- (PL 94.9)

FOR MORE INFO SEE: <http://www.k6bj.org/freq.html>

SCCARC Calendar of Events

SCCARC Board Meeting 6:30	Friday	Oct 15
SCCARC Meeting	Friday	Oct 15
Pacificom	Sat-Sun	Oct 16-17
ARES SET	Saturday	Oct 23
Short Skip Deadline	Monday	Nov 8
SCCARC Meeting	Friday	Nov 19

MONTHLY MEETINGS.

The SCCARC Meets at 7:30 PM, on the THIRD FRIDAY of the each month (except December). Meetings are at Dominican Hospital, 1555 Soquel Drive, Santa Cruz.

SCCARC Website at - www.k6bj.org

CLUB E-MAIL: yourcall@k6bj.org

NET CONTROL SCHEDULE (Subject to Change)

10/11	Ron W6WO
10/18	Phil KE6UWH
10/25	Tom K6TG
11/1	Allen WB6RWU
11/8	Joseph KG6NRI
11/15	Ron W6WO



SANTA CRUZ COUNTY AMATEUR RADIO CLUB
 P.O. BOX 238
 SANTA CRUZ, CA 95061-0238

SCCARC Meeting: Oct 15, 7:30PM

First Class