SCCARA-GRAM

Santa Clara County Amateur Radio Association

Volume 12, Number 4 **April 1996**

President's Prose

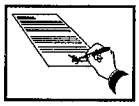
The SCCARA dinner meeting that was held on March 11 was a great success. It was held at the Home Town Buffet on Meridian Avenue in San Jose. The food was excellent and as near as I could tell everyone had a good time. A big thank you is in order for our vice-president Don KK6MX for making all the arrangements. We were not able to have an actual business meeting at the restaurant because we did not have a private room, but we were able to sit at a group of tables that were all close together.

The only business that was discussed was about our 75th anniversary celebration. Al Gaetano W6VZT has arranged for us to have a combination Christmas party, diamond jubilee, in honor of our 75th year as a club at the La Rinconada Country Club. Al is member of the club and he was able to get us a great deal. The dinner will be $25.00 per person which is much less than they usually charge. The price includes everything and we will have a choice of 2 entrees. The date is Tuesday, December 17. There will be more specific information to follow.

As you may know, Doc Gmelin W6ZRJ, is moving away to Los Osos. He had some radio equipment and parts that he saved from being thrown away a long time ago. This is gear that had been used many years ago when SCCARA had a station at the Civic Auditorium. The equipment is in sad shape and is being stored temporarily in my garage. This stuff is part of our club history and needs to be preserved. There was even some talk about our club restoring the radios and setting up a station at the San Jose Historical Museum. SCCARA is certainly a part of San Jose's history. This is something we need to think about and perhaps try to do.

It has come to my attention that not all of our members have renewed their membership for 1996. We are already entering the second quarter of the year and we need to get those renewals in.

Hugh, KD6EFL



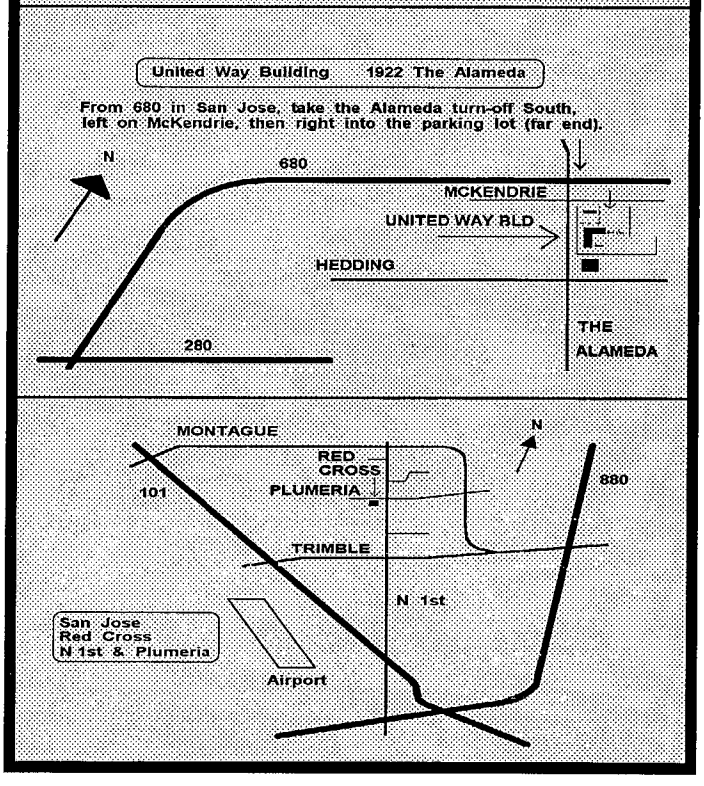
Calendar

4/8 **SCCARA General Meeting**
4/13 **Foothill Flea Market**
4/15 **SCCARA Board Meeting--(San Jose Red Cross, 7:00p, all are welcome)**
5/11 **Foothill Flea Market**
5/13 **SCCARA General Meeting**

Next General Meeting

Day: Monday, April 8, 1996
Time: 7:30 PM
Place: United Way Building
Agenda:

(no info was received from the VP)



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SCCARA was formed as a general interest amateur radio club in 1921 and became a non-profit corporation in 1947. SCCARA is an affiliate and *Special Services Club* of the American Radio Relay League.

The club station, W6UW, is currently out of service.

Articles for the SCCARA-GRAM must be submitted to the editor a week before the last Monday of the month.

OFFICERS and DIRECTORS

President	Hugh Collis, KD6EFL	246-9374
Vice President	Don Apte, KK6MX	629-0725
Secretary	Lloyd DeVaughns, KD6FJI	225-6769
Treasurer	Rex Skiver, N6BUO	263-5277
Station Trustee	Stan Getsla, WA6VJY	275-0735
Director	Clark Murphy, KE6KXO	262-9334
Director	Imre Takacs, KD6MZM	251-9686
Director	George Brady, AB6OZ	729-9012
Director	Don Village, K6PBQ	263-2789
Director	Lou Steirer, WA6QYS	241-7999

STAFF

Editor	Gary Mitchell, WB6YRU	265-2336
Facilities	Don Village, K6PBQ	263-2789
Historian	Jean "Doc" Gmelin, W6ZRJ	973-8583
Mailman	Tony Sanchez, K6MOB	296-6676
Photographer	Bob Keller, KB6OHO	725-1034

COMMITTEES

Repeater	Keith Butts, KN6K	248-3849
Youth Group	George Brady, AB6OZ	729-9012

SCCARA REPEATERS

SCCARA owns and operates two repeaters under the call W6UU:

2 meter:	146.385 +	PL 114.8 (none for basic use)
70 cm:	442.425 +	PL 107.2

Phone patch capability is available with a small subscription fee. The two meter repeater is located in the Mt. Hamilton foothills, Alum Rock area. The 70 cm repeater is located at the Alexian Brothers Hospital, North of 280 and 101.

SCCARA NETS

On our two meter repeater: Mondays at 7:30 PM, (not the second monday--it's our meeting night). Net control: Joe WA6DXP.

On ten meters, 28.385 MHz USB, Thursdays at 8:00 PM. Net control: Wally KA6YMD.

Visitors welcome to join in on the SCCARA nets.

IMPORTANT TELEPHONE NUMBERS

SCCARA HOTLINE:	249-6909
ARRL LICENSE (VEC) HOTLINE:	984-8353

Treasurer's Treatise

Let me first say that SCCARA is in excellent financial shape, even though 1995 wasn't that great for the SCCARA's treasury. We have a balance in all accounts of just over $17,000. We are down close to $2,300 compared to the same time last year. There are several reasons for this. The first and main reason is that we usually do more business at our annual hosting of the Foothill Flea market. The weather didn't cooperate as most of you know and we only made about half of what we made in a normal year. We made $1800 in 1995 compared to $3400 in 1994. Not only did we not make as much money, but we were nearly washed away by a river that ran right through our concession booth. Another reason we were down from last year was that we only took in $1700 in total dues compared to $2600 last year. Also in 1994, we had a monthly income from the flea market which we didn't have last year. Our expense for our monthly meeting room at the United Way went up from $75 a month to $109.50 a month. Newsletter expenses also went up slightly.

So, in a nutshell, higher expenses and less income caused a significant loss in 1995, but hopefully we can make up a lot of that in this year's flea market, which will be in June this year--weather willing.

Cash Flow Report 1/1/95 Through 3/18/95

Category Description	Amount
INFLOWS, DUES:	
ANNUAL DUES	710.00
BADGE INCOME	12.00
FIRST CLASS	21.50
REPEATER AUTOPATCH	195.00
DUES - Other	10.00
TOTAL DUES	948.50
RAFFLE INCOME	49.00
Inflows - Other	11.65
TOTAL INFLOWS	1,009.15
OUTFLOWS	
MEETING ROOM RENT	184.50
NEWSLETTER:	
BULK MAIL + STAMPS	136.62
PRINTING	194.85
SUPPLIES	200.40
TOTAL NEWSLETTER	531.87
OTHER EXPENSES	268.25
PRIZES	52.91
RENT	90.00
Outflows - Other	28.24
TOTAL OUTFLOWS	1,155.77
OVERALL TOTAL	-146.62

Net Worth Report as of 3/18/96

Accounts	Balance
003-011379 CHK	1,356.57
003-011379 SAV	3,513.56
003-032375 CHK	611.84
003-032375 SAV	11,523.89
TOTAL ASSETS	17,005.86
LIABILITIES	0.00
TOTAL NET WORTH	17,005.86

Rex, N6BUO, Treasurer

Meeting Minutes

General Meeting, March 11, 1996

This was a dinner meeting held at the Home Town Buffet in San Jose. All seemed to agree the food was good and the price was right; however, the accommodations were not conducive to the holding of a meeting. For all intents and purposes, no "formal" meeting was conducted. No minutes were submitted.

-- Gary WB6YRU, Editor

Board Meeting, Feb. 26, 1996

7:30 p.m. Meeting called to order by President Hugh

Present:

Pres.	Hugh, KD6EFL	Gary, WB6YRU
	Doug, WN6U	Rex, N6BOU
	Lou, WA6QYS	Clark, KE6KXO
	Doc, W6ZRJ	Al, W6VZT
	Stan, WA6VJY	Don, KO6HH
	Don, K6PBQ	Dan, WM6M
	Lloyd, KD6FJI	

Treasures report: Rex, N6BOU,

New Business:
Don, K06HH, made a motion to allow use of SCCARA trailer and tower for the World Radiosport Team Championships. Motion passed. The trailer needs new decals. The purchase of new lettering to reletter the trailer is authorized.

Stan, WA6VJY, Regarding the radio room. The Red Cross wants the club to hold a class at the Red Cross on a regular basis as a condition of occupying the radio room. That would be about once a quarter. Preparation of Radio room is coming along. The Red Cross will allow antennas on roof. They will allow us to have a tower. There is a concern about security which must be addressed. People will be required to be checked out on equipment prior to being allowed to use it. There is a skid on roof now where the cables for the radios will pass through. On this skid will be a box to prevent water from leaking through roof.

Dan, WM6M, is the Field Day Chairman. Mt. Madonna has been reserved per Stan, WA6VJY.

Doc, W6ZRJ, brought up the subject of the 75th anniversary of SCCARA. Al, W6VZT, talked about having a Christmas party for the 75th anniversary of SCCARA. Al, W6VZT, can get The La Rinconada Country Club @ $25 per person.
Special event station: SCCARA is planing to have a special event station and the tentative date is in August.

Doc, W6ZRJ, has some old equipment that dates back many years and Doc wants to donate it to SCCARA. Hugh, who has seen it, says that we should grab it and keep it as SCCARA history.

Lou, WA6QYS, The Foothill Flea Market now charges $15 per space. SCCARA will host in June. There will be portable toilets. All sellers must register as commercial sellers and collect tax or a hobbyist and not collect tax.

Motion to adjourn by Don K6PBQ
9:20 P.M. meeting adjourned.

Board Meeting, March 18, 1996

Present:

Pres, Hugh, KD6EFL	Dir. George, AB6OZ
Dir. Don, K6PBQ	Dir. Imre, KD6MZM
Sec. Lloyd, KD6FJI	Dir. Lou, WA6QSY
Editor Gary, WB6YRU	Tres. Rex, N6BOU
Keith, KN6K	Bob, N6PCQ.

7:20 p.m. Meeting called to order by Pres. Hugh, KD6EFL.

Repeater Report: Keith, KN6K, reports that the city has the agreement which will allow SCCARA to occupy the city vault. All that is needed is for them to sign it. Because of time considerations, Keith wants to resign from the Repeater Committee.

George, AB6OZ, reports that at Independence High School, a few individuals have donated some equipment. Some of the equipment is usable and there is a lot of "as is," which

means that it may be going to flea market.

Pres, Hugh, KD6EFL, said that the 75th anniversary Christmas Party will be held at the La Rinconada Country Club in Los Gatos. The Date is December 17, 1996. Hugh also noted that last Tuesday, Doc, W6ZRJ, turned over some "Stuff" to him. This "Stuff" consisted of some antique radio gear and misc items.

Treasure, Rex, N6BOU, reports that there is $17,500 in various bank accounts. The renewals are running about two-thirds of last years renewal rate.

Gary, WB6YRU, editor's report; Wants ideas to get people to write articles. The club will give a year subscription to World Radio for the best article published in the SCCARA-GRAM each month.

Lou, WA6QYS, Station Update: There was a meeting here, at the Red Cross, last Wednesday. There was a discussion of what type of antenna tower we could put up. There was no final decision made at this meeting.

Don, K6PBQ, 75 anniversary. SCCARA will have a Special Event Station in August. The date is tentatively set for the 3rd Saturday. Bob, N6PCQ, suggested that we put in something about SCCARA's 75th anniversary in our Field Day QSL replies.

Lou, WA6QYS, said that SCCARA will host the June Foothill Flea Market.

Don, K6PBQ, will write a letter and sent it to ARRL, CQ, World Radio, 73 Magazine to announce our 75th Anniversary Special Events Station.

8:28 p.m. Meeting adjourned.

Lloyd, KD6FJI, Secretary

Flea Market - June 8

SCCARA is sponsoring the June edition of the Foothill College amateur radio flea market. This year I predict clear skies and balmy weather. We don't need rain on our flea market day three years in a row! This event is the major annual fund raiser for our club. It is work intensive but many hands make light the load.

Some of the many duties are:

1. Registering vendors at the gate.
2. Serving coffee and donuts by moonlight.
3. Grilling hot dogs.
4. Snagging sodas from the ice tubs.
5. Making coffee.
6. Minding the till.
7. Clean up after the event.

Shifts are a short two hours and begin at 0500.

Shift A 0500-0700
Shift B 0700-0900
Shift C 0900-1100
Shift D 1100-1300

Please give me a call at 408 241-7999 so I can put a schedule together.

Thanks, Lou WA6QYS

Repeater Report

At the March board meeting, Keith KN6K, Repeater Committee Chair, announced that he wishes to resign from the Repeater Committee. Anyone who is interested in heading up the Repeater Committee should contact Keith or the President, Hugh KD6EFL.

-- Gary WB6YRU, Editor

Introduction To Packet Radio

by
Larry Kenney, WB9LOZ
Part 11

COMMANDS USED ON THE PACKET NODE NETWORK - continued from Part 10

ROUTES: The ROUTES command (abbreviated as R) will give you a list of the direct routes to other nodes from the node you're using. The direct routes are the ones where the node can connect directly to the other node. The quality of each route is shown along with the obsolescence count. (See the NODES command in part 10 for an explanation of obsolescence count.) Any route marked with an exclamation point (!) means that the route values have been entered manually by the owner of the node and it usually means that the route is not reliable for regular use.

USERS: The USERS command (abbreviated as U) will show you the call signs of all the stations now using the node that you're connected to. There are five descriptions used by the node to describe how users are connected:

1. UPLINK: The station indicated is connected directly to the node.

2. DOWNLINK: The node has made a connection from the first station to the second station. Example: DOWNLINK (K9AT-15 N6UWK) would mean that the node connected to N6UWK at the request of K9AT.

3. CIRCUIT: Indicates that the station indicated has connected FROM another node when the node and user call sign are on the left of the <--> and indicates that the station has connected TO another node if node is on the right of the <-->. If you see dashes between the arrows, the circuit is in use. If you see < ~ ~ >, the connection is in progress. The alias and call of any other nodes being used are shown prior to the user's call sign. Examples: Circuit (SFW:W6PW-1 WA6DDM) <--> AA6ZV would mean that WA6DDM is using this node, that he connected to it from the SFW node and is now connected to AA6ZV. N6PGH <--> Circuit (DIA:WB6SDS-2 N6PGH) would mean that N6PGH connected direct to this node and has connected to the DIA node. Circuit (SSF2:KA6EYH-2 KK6SD) < ~ ~ > (AMCYN:WZ6X-2) indicates that KK6SD has connected to the node you're using from the SSF2 node and is now attempting to connect to the AMCYN node.

4. CQ: See "CQ command" below.

5. HOST: The user is connected directly from the node terminal. This is seen when the owner of the node is a user or the BBS associated with the node is using it to forward messages.

CQ: The CQ command is used both for calling CQ and for replying to the CQ of another station. The command is available only in the latest versions of NET/ROM and TheNet. Enter a ? when connected to a node to see if it's available there. The CQ command is used to transmit a short text message from a node and is also used to enable stations that receive the transmission to connect to the station that originated it. The command is entered as: CQ textmessage. The optional "textmessage" can be any information up to 77 characters long including spaces and punctuation. In response to a CQ command, the node transmits the specified textmessage in "unproto" mode, using the call sign of the originating user as the source and "CQ" as the destination. As with all node transmissions, the SSID will be translated; that is, the SSID will be 15-N, where N is the SSID of the original call sign. WB9LOZ-0 would become WB9LOZ-15, WB9LOZ-1 would become WB9LOZ-14, etc.

Here is an example of how the node CQ command is used: If station W6XYZ-3 connects to a node and issues the command: "CQ Anybody around tonight?", the node would then transmit: "W6XYZ-12>CQ:Anybody around tonight?" After making the transmission in response to the CQ command, the node arms a mechanism to permit other stations to reply to the CQ. A station wishing to reply may do so simply by connecting to the originating call sign shown in the CQ transmission (W6XYZ-12 in the example above). Note here that you connect to the station using the translated SSID. A CQ command remains armed to accept replies for 15 minutes, or until the originating user issues another command or disconnects from the node.

Any station connected to a node may determine if there are any stations awaiting a reply to a CQ by issuing a USERS command. An armed CQ channel appears in the USERS display as: (Circuit, Host, or Uplink) < ~ ~ > CQ(usercall). The station may reply to such a pending CQ by issuing a CONNECT to the user call sign specified in the CQ(...) portion of the USERS display--it is not necessary for the station to disconnect from the node and reconnect.

Here's what a typical transmission would look like, (italic is entered by user):
cmd: *C W6PW-1*
cmd: *** Connected to W6PW-1
USERS
{SFW:W6PW-1} NET/ROM 1.3 (669)
Uplink(K9AT)
Circuit(LAS:K7WS-1 W1XYZ) < ~ ~ > CQ(W1XYZ-15)
Uplink(WB6QVU) <--> Circuit(SFBBS:W6PW-3 WB6QVU)
CONNECT W1XYZ-15
{SFW:W6PW-1} Connected to W1XYZ
Hello! This is George in San Francisco
Hi George! Thanks for answering my CQ. etc.

Users of the CQ command are cautioned to be patient in waiting for a response. Remember, your CQ will remain armed for 15 minutes and will be visible to any user who issues a USERS command at the node during that time. Wait a few minutes before issuing another CQ to give other stations a chance to reply to your first one! Don't be surprised, however, if you don't receive a response. For some unknown reason, I've found that very few users take advantage of the feature. When you connect to a distant node, the CQ command is a great way to start a QSO with a station in that area, but more users need to be made aware of the CQ feature before it will become very useful.

BBS: The BBS command (which cannot be abbreviated) is available on nodes using the G8BPQ software and having an associated packet bulletin board system. Entering BBS will connect you to the associated BBS.

IDENT: The IDENT command (abbreviated as I) found on NET/ROM nodes will give you the identification of the node you're using.

INFO: The INFO command (abbreviated as I) found on TheNet nodes will give you information about the node, usually the alias, call sign and location. G8BPQ nodes will give you the identification of the node and a list of the commands available.

MHEARD: The MHEARD command (abbreviated as M) found on TheNet and G8BPQ nodes will give you a list of stations heard by the node. If the node has more than one port, you must specify which port you want the listing for by entering a space after the M and then the port number. Examples: M 1 will give you a list for port 1 and M 2 will give you a list for port 2.

PARMS: The PARMS (Parameters) command (abbreviated as P) found on NET/ROM and TheNet nodes is for the owner's use in determining how his station is working. It will give you a list of the node's parameters.

PORTS: The PORTS command (abbreviated as P) found on G8GPQ nodes will list the frequencies of all ports available.

BYE: The BYE command (abbreviated as B) is available on TheNet and G8BPQ nodes. It's used for disconnecting from the node. If the node has other software, you must disconnect using the D command in your TNC.

?: Entering a ? will give you a list of the commands available on the node.

Remember, when you are connected to a network of nodes, any commands you send will be directed to the last node you are connected to.

Packet Pieces

Downloaded from the packet network:

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Date: 24 Nov 95 04:47
From: AA2AD@KB2OBB
To: TEKTIP@ALLUS
Subject: SIGNAL GENERATOR DISCUSSION

TEKTIP.5 - Signal Generators

After one more article on test equipment pieces, we will be armed with a knowledge of component testing and test equipment, and will be ready to discuss some more general troubleshooting procedures.

THEORY
The purpose of a signal generator is to create an appropriate signal to be injected into a given circuit so that the circuit will function in a stable, predictable, and measurable manner. Definitions of signal generator types yield insight into how they are used:

AUDIO signal generators output signals in the audio spectrum. They may generally be tuned over a wide frequency range, from a few Hz (cycles per second) to 100 KHz or higher, and set for a wide range of amplitude, from a few millivolts to a few volts. Many can be switched to generate either a sine wave or a square wave. Sine waves are most useful to determine whether a circuit is not able to amplify the full dynamic range of a signal (seen as a flat-topping, or "clipping" of the wave form on a scope), while square wave distortion (rounded corners or ringing) gives some indication of a circuit's frequency response.

RF signal generators cover some portion of the RF band. The used surplus and garden variety can typically be tuned from 50 KHz to 500 MHz; units ranging into the GHz range are also common. Some units designed for special applications are set at a fixed frequency and modulation, such as the traditional 10.7 MHz IF frequency. Most older generic RF signal generators have a built-in fixed-frequency audio oscillator to provide amplitude modulation (AM) on the signal, as well as an input which allow the tech to use his (her) own external source of modulation. If you intend to do FM troubleshooting, you should look for a signal generator which provides FM modulation. It may cost you an extra hundred dollars, but you will find that an AM-only generator has very limited usefulness in FM applications. Just as some specialized units are set to a fixed frequency, some units, such as television video bar generators, have fixed modulation characteristics.

SWEEP generators are a fascinating variation of audio and RF signal generators. The frequency of the generator is "swept" up the band in one direction at a linear rate and constant amplitude between lower and upper boundary frequencies, almost as if the tuning knob was being manually rotated from frequency "A" to frequency "B", then instantly jumping back to "A" and starting over again. This generator output is applied to the input of the circuit under scrutiny. A second output of the sweep generator consists of a sawtooth signal exactly corresponding to the sweep pattern. This sawtooth is applied to the horizontal input of an oscilloscope (see TEKTIP.4), while the 'scope's vertical input is connected to the circuit's output. The resulting graph on the scope represents the frequency response of the circuit!

FUNCTION generators are specialized in that they produce outputs of very specific wave forms. The shape of the wave may be set to sine, sawtooth, or square, while the amplitude and duration of the pulse and the duration of the time between pulses is also adjustable. Function generators are useful while working with digital circuits.

APPLICATION
It is possible to spend quite a bit of money on a signal generator, but a very serviceable audio unit can be constructed for a few dollars worth of parts. There is a free 60 Hz. signal source anywhere where there is

electrical wiring which can be injected into an audio circuit as easily as holding one lead of a capacitor in your fingers and touching the other lead to the circuit. A certain amount of amplitude control can be had by moistening your fingers (without licking lead residue from solder, please), and/or squeezing the leads more tightly. Try it, but, as always, BE CAREFUL and KNOW WHERE YOU ARE PUTTING YOUR FINGERS.

The purpose of any signal generator is to supply to a given circuit a signal to which mimics the signal which that circuit would process under normal operating conditions. Connection to the circuit is normally simple and arbitrary a series capacitor isolates the generator from any dc voltage present in the circuit. If you have a schematic diagram of the circuit, it should be fairly easy to identify a good place to inject the signal, but nothing will be damaged by a little bit of trial and error. An oscilloscope is the technically correct way to view the results of your signal injection, but often nothing more complicated than listening to the speaker tells the technician what he needs to know.

A subsequent TEKTIP will more completely address the question of where and what to measure. Generally, the first test is to see if a signal injected into the input of a circuit stage comes out the other end. Make sure that your injected signal is appropriate in frequency, amplitude, and type of modulation. A 'scope can be used to determine if the stage in question does have output and if it is amplifying or otherwise processing the signal as it should. If one side of a sine wave is clipped, perhaps half of a push-pull is not working. More esoteric techniques may call for using the signal generator to substitute for a circuit, such as a local mixer oscillator or a VFO.

Electronic servicing is 90% patience, observation, and common sense: only 10% is sophisticated engineering knowledge.

73, Peter (AA2AD@KB2OBB.#WNY.NY.USA.NOAM)

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Date: 21 Oct 95 20:07
From: AA6KC@WB6WFH
To: INFO@ALLUS
Subject: Superconducting Antenna

I caught this one floating around the Internet (rec.radio.amateur.misc and rec.radio.amateur.antenna) recently and thought it should be shared with all packeteers. This was originally posted to the Internet by Sandy, WA6BXH/7J1ABV of Portland, Oregon. It's pretty technical, but there is great reward in following the design logic carefully. Enjoy!

Superconducting Antenna

I recently received a letter from an old friend, Joe Speroni AH0A/7J1AAA, who has been living and working in Japan for many years. He is also the author of the well-known MORSE ACADEMY software for teaching Morse Code. Anyway, it was such an exciting letter that I thought it would be of interest to other readers.

Dear Sandy:

I have been working on a series of articles on Japanese amateur radio, but there is something so exciting I just have to take a break and tell you about it.

It all started with the work that Ed Coan (AH6MI/7J1AAE) did on antenna pattern plotting using his personal computer. The circular, and even backward antenna patterns of some of our local TIARA club members brought home the point that what a good station needs is a good antenna. Ed's antenna looks great and the results verify it. He works regular schedules into Colorado and Maine, just like sunspots don't mean anything. My mini-beam just could not compare.

Well, I got to thinking about what we apartment dwellers could do and realized that space is THE problem. How do you fit a full-sized beam on a balcony? Loading coils are the answer and the problem at the same time--the antenna radiation resistance drops as reactance is substituted for length. High current loops develop and the power is dissipated in the antenna instead of being radiated. If only the antenna didn't dissipate the power. Hmmmmmm....let's see, P=E*E*R; if R were zero then.....

From my work, I have some contacts in research groups over at Tokyo University. Better yet, I knew a Japanese ham who is a graduate student there. The thought running through my head was to build a super-conducting antenna. This requires cryogenics, i.e. temperatures around minus 279 degrees Centigrade. I was able get the university folks interested in the project and we built a 10 meter dipole test silicon wafer. They put together a lot of serial coils on the wafer and by "re-work" on the wafer, they were able to connect them so we had a super-conducting dipole. I took my TS-930 transceiver down to the lab for the first tests, but before we could test it, actual measurements showed it was resonant on 3126 kHz.

It seems that the normal equations for inductance don't work with super-conducting materials--you need a lot fewer turns to get the same results than at normal temperatures. Many measurements and trials later, we had a ten meter resonant wafer. This time we put a pair of 40 element beams on each wafer and stacked 4 wafers in the same assembly. That made a 320 element array on 10 meters in less than a half-foot (15 cm) cube.

The first test didn't go too well. I connected my old TS-930 to the super-conducting wafer antenna and tuned it for 10 meters. At room temperature, we couldn't hear anything. Using a heat pump, the lab technicians started lowering the antenna's temperature toward the super-conducting region. I was really impressed by how small the equipment is, and started thinking it might all fit in the shack. Just then, the TS-930 froze solid, which had a negative effect on its operating characteristics. This wouldn't be so easy after all; the coax connection would need some study.

We reworked the wafers to put inductive coupling on them, but I could find no way to efficiently couple to it from the conducting ceramic material that passed RF but not heat. Probably, something that Kyocera invented just for this use. I sent the TS-930 over to the ham shop in Akihabara and asked them to touch it up for me. Suzuki-san (service manager at the ham shop) asked exactly how the paint had been peeled off around the coax connector--lightning maybe? No, I assured him--just low temperature exposure, without saying how low the temperatures were. The project had to stay secret and besides, Suzuki-san can repair anything.

Since it looked like it might be a while before the TS-930 would be repaired, I brought out my TS-940. I had already placed an order for the Yaesu FT-1000 anyway. After verifying that in the super-conducting range the antenna was resonant on 10 meters, we connected the TS-940. The ceramic material worked and the rig operated well even as we began the cooling cycle. The band seemed dead even with the antenna at -150 degrees C. It took another 10 minutes to get to the super-conducting range--then the TS-940 blew up. It seems our antenna had a bit more gain than the TS-940 front-end could take. Later, with 100 dB of attenuation, measurements showed 5 volts coming out of the coax. A little hard to believe, but then what do I know about cryogenic LSI antenna technology?

The TS-940 was also returned to Suzuki-san, but this time he frowned a bit--the front-end board did look like it had been hit by lightning. Not to worry, Suzuki-san can repair anything.

My new FT-1000 arrived just in time to be able to continue the experiments. We built a QSK attenuator to protect the receiver and with the LSI wafer antenna still inside the lab, decided to try to make a contact on 10 meters. Boy, what a shock when we got it working. The first thing we heard was a couple of W2's talking locally on 10 meters and that was with 80 dB of attenuation. We had the antenna array on a rotatable mount; I moved it about 1 degree and the W2's disappeared. What beam width. We tuned them in again, and they were just about to sign off, so we thought we would try to work them. The rig was tuned up at 50 watts on a dummy load; we switched in the wafer antenna and gave N2BA a call. The noise was unbelievable--an ionized ray shot out from the antenna and hit the wall of the building. Before we knocked a hole in the band, we took out a piece of the lab wall. Ever wonder what an antenna pattern looks like in three dimensions? There was a small round hole in the wall of the lab--about 1 cm in circumference.

We cut power quickly. N2BA came back on frequency a few minutes later and said he was using his back-up rig; something had taken his main rig off the air. For some reason, the station he was talking to never came back, and so we decided not to transmit again until we knew for sure what was going on.

As near as we can tell, the antenna array has 120 dB gain over a dipole, but with a beam width of 0.75 degrees using the 60 dB points. With 50 watts output, the effective radiated power is 55 quadrillion watts at the center of the beam (5.5 with 13 zeroes). As soon as the University realized what we had built, the entire project was taken away from us and turned over to the Japanese Self-Defense Forces (military). Amateur radio "tinkering" has contributed to something, but I am not exactly sure what. I haven't the slightest idea what was in those wafers or how to explain how to build another set. But what I'd give to use a smaller set in the next CQ World Wide Contest.

Do you think someone may be interested in this idea for Star Wars/SDI?

A few months later, the University contacted all of us and asked just how close we had been to the antenna when operating. As best as I can figure, we were in the null behind the array. From what has been said so far, it looks like a secondary use for our antenna may be as a mass sterilizer, but confirmation will have to await the results of the medical tests. If our antenna ever hits the market, it looks like remote operation would be desirable.

As I am writing this, I have been informed that Suzuki-san can't fix everything after all. He's written off the 930 and 940, and I just found out that before the university terminated the project, they tried one more time with my FT-1000, but without the 100 dB attenuator to protect the receiver. It's front-end now matches the 930's and it looks like it will be a while before I am on the air again. Maybe Yaesu will announce some new models soon.

Best 73, Joe Speroni AH0A/7J1AAA, ex-Chief Engineer-TIARA, 1 April 1995

Need Help?

Amateurs have a long history of helping each other. An experienced amateur who helps another is traditionally called an "Elmer." If you have a question or problem, you are encouraged to ask one of SCCARA's Elmers. Below is a list of topics including who to contact for each.

If you consider yourself to be reasonably competent in at least one area of amateur radio and would be willing help others, please ask the club secretary for an Elmer survey form and fill it out.

Antennas, feed-lines, tuners:
WB6EMR, AC6FU, K6PBQ, W6PHF, K6RQ, WB6YRU
Lightning protection, grounding: W6PHF, WB6YRU
Station set-up, equipment: AC6FU, K6PBQ, W6PHF, K6RQ
TVI/RFI: W6PHF, WB6YRU
Homebrew projects, construction: AC6FU, KD6FJI, W6PHF, WB6YRU
Computers: KB6NP; IBM PC: WN6U, WB6YRU
Packet Network (BBS, forwarding): WB6YRU
Other digital modes (AMTOR, RTTY): WN6U
Code operating and installations:
WB6EMR, AC6FU, K6PBQ, W6PHF, K6RQ
Contesting & techniques: W6PHF, K6RQ
DX (long distance/propagation): W6PHF, WB6MER, K6RQ
Emergency operating/preparedness: W6PHF, WA6QYS
FM (VHF/UHF, repeaters): W6PHF, WA6VJY
HF operating techniques (SSB, CW):
WB6EMR, AC6FU, K6PBQ, W6PHF, K6RQ
Mobile operating: W6PHF, K6RQ, WN6U
NTS & traffic handling: W6PHF
QRP (HF low power, all modes): W6PHF, WN6U
TEN-TEN (10 M only): AC6FU
Classes/license upgrading: W6ACW, AC6FU, W6PHF
Legal/FCC rules: WB6YRU
SCCARA (club inner workings):
KO6HH, K6PBQ, WA6VJY, WB6YRU, WA6QYS
Math applications: AC6FU
Children's Discovery Museum, volunteer operator: K6PBQ

W6ACW, Ed Hajny, (408) 739-6105

WB6EMR, James D. Armstrong, Jr.,
day: (408) 995-0621, evening & msg: (408) 945-1202

KD6FJI, Lloyd DeVaughns,
day: (408) 299-8933, evening: (408) 225-6769
packet: home BBS KB6MER

AC6FU, Jack L. Ruckman, (408) 379-4846

KO6HH, Don Hayden, (408) 867-4643
packet: home BBS NOARY

KB6NP, Jon Dutra, day & msg (408) 428-2058
evening (408) 867-8654
packet: home BBS NOARY
internet: jad@aol.com

K6PBQ, Don Village, (408) 263-2789

W6PHF, David Palmer, (415) 948-9527

WA6QYS, Lou Steirer, (408) 241-7999
packet: home BBS NOARY

K6RQ, Frank Glass, (408) 356-1026

WN6U, Doug Eaton, (408) 377-3736
packet: home BBS NOARY
internet: deaton1@1x.netcom.com

WA6VJY, Stan Getsla, day: (408) 738-2888 x5929,
evening & msg: (408) 275-0735

WB6YRU, Gary Mitchell, msg (408) 265-2336
also (408) 269-2924
packet: home BBS NOARY

Dues are Past Due

According to the roster, these people have not renewed their membership. If you HAVE renewed AND your call sign is listed below, please see the Secretary, Lloyd KD6FJI.

KD6ATU K6BQN N6BUO WA6BYB W6CF N6CMJ N6YLM K6DEZ KB6DLB WA6DXP K6EJF KE6EOC KE6EOD KE6EOI K8ERL KD6FJI KE6FQV KE6FUG KE6GDA WA6HET AC6HG KD6HNL KN6K KD6KGI W7KPA KB6LCJ KB6LFZ KB6LUC AE6M WM6M AC6MH K6MOB KK6MX WA6MYU KE6NBP KE6OJS KB6NP WB6ODL KA6HTP KE6OKK AA6ON WB6ORU KE6OUN KD6PBH N6PCQ KO6PH W6PHF WA9PUR KD6PWK AA6QE N6QIO N6QVG KE6QKJ KD6QVO WA6QYS K6RQ KC6SOC KD6SV KC6TDK KA6TGE KE6TKM KD6TOC N6TYI WN6U WA6UWF KE6UZO WE6V WA6VJY KC6VPZ KE6WHE WA6WST WO6X N6XME KA6YMD KD6QEI WA6YRU WB6YRU N6YWZ N6ZEX KD6ZJJ W6ZM KD6ZUC K6ZYY

Newsletter Notes

At the last board meeting, it was suggested that we offer a certificate for a one-year subscription to *World Radio* for the best article submitted to each issue of the *SCCARA-GRAM*. Evidently, the club has acquired a number of these coupons and this strikes me as an excellent way to use them.

Here's the deal: Each month, articles on a topic even remotely related to amateur radio submitted for the *SCCARA-GRAM* will qualify. Only club members are eligible. This does NOT apply to regular columns (e.g. my column here, the President's Prose, ARRL Update) nor to notices. The author of the best article per issue will get a coupon for a one-year subscription to *World Radio*. If there is only one in any given issue, then that person gets it! For more than one article, we'll have a vote at the following meeting. This should be informative and fun!

Articles may be submitted to the editor via packet (WB6YRU@NOARY), e-mail (wb6yru@arasmith.com), hand delivered on an IBM PC disk (ASCII DOS text only and no formatting please), or paper (least preferred). If you have any questions, please don't hesitate to ask.

So... dust off that key board and have at it!

73, Gary WB6YRU, editor

ARRL Pacific Division Update

February 1996

ARRL Files for Modification of PRB-1

The ARRL wants the FCC to take additional steps to compel state and local governments to make reasonable accommodation for Amateur Radio under PRB-1 and apply the least restrictive means to regulate amateur antennas and activity. In a Petition for Rule Making filed February 7, 1996, the League calls on the FCC to amend Section 97.15(e) to say that any state or local ordinances restricting ham radio antennas to heights below 70 feet would be presumed unreasonable, unless the state or local authority could show its restrictions support a clearly defined health, safety, or aesthetic objective. State and local governments also could not impose substantial application costs on amateur service licensees.

The League also wants the FCC to acknowledge that it has an interest in the effective performance of Amateur Radio stations in areas regulated by deed restrictions or restrictive covenants rather than by local zoning ordinances.

The League says clarifying the preemption policy (PRB-1) would help guide municipalities to enact provisions that make fair accommodation for amateurs and avoid highly divisive litigation between hams and localities.

See April QST p. 16 for more details.

Vanity Call Sign Forms Available

FCC 610-V - Amateur Station Vanity Call Sign Request - is now available, but the FCC is not yet accepting completed forms for filing. The FCC announced a further delay in opening dates for the first vanity call sign filing gate until sometime in mid-1996. More details can be found in April QST, p. 82. See also p. 85 of April QST for a related story on how to get assistance proving that you had a specific call in the past.

FCC Reports on Electromagnetic Fields

The FCC has issued a new report of RF field measurements at Amateur Radio stations and will use it to help decide how to implement newly revised guidelines for human exposure to RF energy.

The report, FCC/OET ASD-9601, is available from the National Technical Information Service, 800-553-6847, purchase number PB-96-145016.

See April QST p. 83 for more details and additional ordering information.

ARRL Files to Protect 76-77 GHz

The ARRL says "NO" to limiting the 76-77 GHz band to vehicle radar systems. In comments on an FCC Notice of Proposed Rule Making to temporarily remove hams from the band, the League tells the FCC to maintain existing ham allocations from 75.5 to 81 GHz to spur development of short-range high-speed data links.

Automobile manufacturers differed on the issue of continued Amateur Radio use of the 76-77 GHz band. Ford Motor Company opposes continued use of the band by hams. General Motors says that vehicle radar systems would not be adversely affected by continued amateur use of the band. Japanese auto makers don't want to use these frequencies at all. They say they prefer 60-61 GHz for these systems instead. Thanks, Newsline.

Latest News on 1996 Telecom Act

In DC Currents on pages 15-16 of April QST is a summary of the provisions of the new Telecommunications Act of 1996 with comments on applicability in the Amateur Radio Service.

Related to this matter, FCC Chairman Reed Hundt says that telecommunications laws cannot be effectively overhauled and enforced without more money from Congress. Hundt apparently faces an uphill battle in Congress.

Amateur Exam Question Pool Dispute

As has been widely reported in the amateur press, the ARRL has called for creation of a new VEC Question Pool Committee (QPC) as the result of a disagreement between the ARRL and the National Council of VECs on the makeup and operation of the present QPC. A description of the issues involved is much too lengthy to include in this Update. However, a detailed discussion of the matter can be found on p. 101 of April QST.

FCC to "Improve Commission Processes"

FCC Docket 96-17, a Notice of Inquiry, has just been issued. It appears that the thrust of this NOI seems to reinforce the message that the FCC wants to change from being a regulatory and enforcement organization to becoming an "auditor" and "mediator" in matters ranging from license issuance, privatizing the RFI and TVI problem resolution, to some private means of rule enforcement and other undefined areas. The ARRL Washington Team is on top of this matter.

Preemptive Order on Small TV Dishes

FCC Docket 96-78 has just been released. Although details are not at hand yet, it appears to consist of a preemption order, similar to PRB-1, stating that owners may

not be prevented from erecting small dishes required to receive Direct Broadcast TV signals. More details to come.

NI6T Wins ARNS Top Honors

The Amateur Radio News Service (ARNS) has just announced that Garry Shapiro, NI6T, editor of the Northern California DX Club's monthly bulletin, *The DXer*, has received top honors in the annual ARNS competition. Only 11 bulletins nationwide received the coveted "Superior" award in the competition. Congratulations, Garry!

Hams Help Heart Attack Victim

A group of Boy Scouts that included several Pacific Division hams lived up to the Scouts' motto, "Be Prepared." As a result, the victim of a heart attack is alive to talk about his ordeal.

It all happened during a wilderness outing last August. Dave Smith of Saratoga, California and his wife Janet were accompanying their younger son and other scouts on an eight-day backpacking trip into California's Yosemite high country when Dave Smith experienced chest pain one day into the outing. Scoutmaster Paul Wesling, KM6LH, (also of the Tandem ARC) took Smith's vital signs and used ham radio to relay the information to the Yosemite emergency response staff. Smith was rescued and transported by helicopter to Yosemite Valley and then to Modesto, California, where doctors determined he'd suffered a mild heart attack.

Wesling says that ham radio is a standard part of his troop's outings. Both Wesling and Eagle Scout Rajeev Goel, KD6MXV, had VHF hand-held radios along for the trip. As a result of their experience, Dave and Janet Smith are making plans to take one of the troop's Amateur Radio licensing classes. This way, they to will always be prepared. Thanks, Newsline.

Vice Director W6CF on DXCC Committee

ARRL President Rod Stafford, KB6ZV, has named Vice Director Jim Maxwell, W6CF, to the DXCC 2000 committee. The committee is to make recommendations for the future of the DXCC program as we approach the year 2000. Jim was selected for his interest and background in DX. Congratulations, Jim! Other members of the committee are N4MM (Chair), K5UR, W4RA, W0CP, VE3HO, N7NG, W5KNE, K8CH, and K5FUV.

Stafford Appoints WRC-99 Committee

ARRL President Stafford has announced the makeup of the ARRL's WRC-99 Committee. This committee is charged with developing policy recommendations related to structural changes in international amateur radio regulations that are expected to be considered at the 1999 World Radio Conference. Members of the committee are K0TO (Chair), K4VX, WA2DHF, WA6WZO, K1ZZ, W7AGQ, K1GW, KC6ZEC, and K0PP.

Antennas, Towers, and Ordinances

The negotiations over these ordinances continue in Fresno and Sonoma counties. The Napa County matter seems to be resolved favorably for the hams, through the efforts of Bruce Butler, W6OSP, who lead the team effort of a number of Napa hams.

There is an indication that Contra Costa County will join in this effort to try to regulate cellular towers (unfortunately, we get caught up in the discussions).

Please forward copies of all antenna, tower and related ordinances to Phil Kane, N6SP, who is collecting this data for the Pacific Division. Phil can be reached at PO Box 280192, San Francisco CA 94128-0192, phone (415) 369-7373, or e-mail commlaw@netcom.com.

Scholarships and Awards

There are many awards and scholarships covering a wide range of situations available to licensed Amateurs. Organizations will be announcing their dates for applications for their 1996 scholarships. Watch QST and other amateur radio publications for details.

Coming Events

- Livermore Swap Meet - 1st Sunday of each month at Las Positas College in Livermore, CA, 7 AM to Noon, all year. Talk in 147.045 from west, 145.35 from the east. Contact Noel Anklam, KC6QZK, (510) 447-3857 eves.
- Foothill Flea Market - 2nd Saturday of each month from March to September at Foothill College, Los Altos CA.
- International DX Convention will be held in Visalia at the Airport Holiday Inn, April 19-21, 1996. Contact Don Bostrom, N6IC, (H) (818) 784-2590 or (W) (310) 334-8717 for details.
- The Valley of the Moon Amateur Radio Club, WB6DWY, is holding its annual ARRL Hamfest Sunday, April 21, 1996, from 8 AM to 3 PM at the Sonoma Veteran's Memorial Building, 126 First Street West, in Sonoma. Talk-in will be on 145.35-, PL 88.5. For more information call Darrel, WD6BOR, at 707-996-4494.

Brad Wyatt, K6WR
Director, ARRL Pacific Division

18400 Overlook Rd. #5
Los Gatos CA 95030-5850
(408) 395-2501 (voice & fax)

Packet: K6WR @ N0ARY.#NOCAL.CA.USA.NOAM
Internet: k6wr@arrl.org

S.C.C.A.R.A. Membership Form for 1996

(Fill in name and address if there is no mailing label below; make corrections if the label is incorrect)

Name: _____ Call: _____ Class: E A G T+ T N

Address: _____ Licensed since (yr): _____

City: _____ State: _____ Zip: _ _ _ _ _ - _ _ _ _

Telephone: ( ) _____

☐ New Member
☐ Renewal

☐ I'm also an ARRL member

For family memberships (at the same address), please list other name(s) and call(s):

_____

Annual membership dues are payable at the first of the year and expire the following December 31. New members joining on or after July 1, pay half the membership dues (and half auto-patch fee).

Annual Membership dues: ☐ Individual $15 ☐ Family $20 ☐ Student (under 18) $5 _____

I want _____ *SCCARA* badges @ $3 ea. Badge name & call: _____ .... _____

Please send the repeater Auto-Dial codes (no charge, circle): ..... Yes
Please send the repeater Auto-Patch codes (includes Auto-Dial), $10.00 ..... _____
WE MUST BE ABLE TO VERIFY YOUR AMATEUR LICENSE
BEFORE ANY REPEATER CODES WILL BE SENT TOTAL: _____

Give this completed form (or copy) with payment to the Secretary or Treasurer at any meeting or mail to the return address below:

== PLEASE DO NOT TEAR/CUT ========== PLEASE DO NOT TEAR/CUT ==

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AMATEUR RADIO ASSOCIATION

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