

NOVEMBER 1999

THE MONTHLY NEWSLETTER of the SANTA CRUZ COUNTY AMATEUR RADIO CLUB

SHORT SKIP

COMMON MODE INTERFERENCE

Part 1. The problem

At one time or another most Radio Amateurs have to address cases of RF Interference. So-called Common-Mode currents are a prevalent mechanism that results in RFI and the property we call Inductance Reactance is the key to dealing with them. According to the ARRL handbook Common-Mode Chokes may be the best-kept secret in ham radio.

Here is a brief recap on some basic concepts. Closed loops of magnetic flux surrounding a conductor is the way science explains the magnetic effects we observe when an electrical current flows. An electromotive force (EMF) is needed to create this flux by overcoming a force that tends to impede any rise in current. This "back EMF" is induced in the conductor by the build-up of magnetic flux. Conversely as magnetic flux collapses the induced EMF tends to keep the current flowing. Induced EMFs thus oppose or react against any changes in current flow.

The magnitude of inductive reactance is determined by the rate-of-change of current and the amount of magnetic flux linkages that develop. The higher the rate-of-change of current the higher the reactance. A coil creates more inductive reactance than a straight wire by increasing the number of flux-conductor linkages for a given current. By winding

a coil on material with magnetic properties even more flux is created and hence more inductive reactance results.

Let's consider the specific case of interference with a TV set connected to a cable company's coax cable. The cable system acts as a large antenna so it's no wonder that it picks up our transmissions. In a well-shielded coax cable equal and opposite (differential) currents carrying the TV signal flow in the center conductor and on the inside of the shield. On the other hand RF energy from an outside source such as a radio transmitter links with the coax and due to the skin effect causes a current to flow only on the outside surface of the shield.

Unlike the TV signal the closed circuit that permits an RFI current to flow is not via the center conductor but via a path to ground at the TV set. The name given to currents that flow via the ground in this way is Common-Mode. These currents produce RFI and to reduce them we must insert inductive reactance in their path without affecting the TV signal. By inserting inductive reactance in the outer shield we will "choke" this common-mode RFI current but not the internal differential TV signal currents.

The outer conductor of the coax is nominally at ground potential at the TV set so common-mode currents would

BE SURE TO VOTE

This year's nominating committee consisted of Dave Harbaugh W6TUW as chair. Those serving with Dave that helped to round up a good group of candidates are Carol Marconett KD6ZXL and Misty Murphy KF6YRL. (And thanks to these candidates for allowing themselves to be found).

Voting will take place at our November meeting. There is space for write-in candidates, so who knows, maybe there will be a big grassroots campaign the last minute. If you can't attend the meeting be sure to send in your ballot to the club post office box so it will be received by 5:00 P.M. Friday November 19. Sorry, we don't have internet voting yet.

The ballots will be counted, and the winners announced. It is still too early to make predictions for the outcome of the race for president and the V.P.

tend to flow to ground and avoid mixing with the TV signal. If no mixing occurred we would not need a common-mode choke at all. As we all know low impedance RF grounds are essentially non-existent and in practice an imperfect ground at the TV set always provides the means to mix both wanted and unwanted signals.

Good grounds and common-mode chokes together are tools to defeat RFI. In the second part of this article I will describe ways to construct and apply common-mode chokes.

— 73 de Ron W6WO

Continued next month.

CHRISTMAS BRUNCH

Again this year our Christmas Brunch will be held at the Holiday Inn on Saturday December 11. Mark your calendar. See your club officers for ticket info.

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

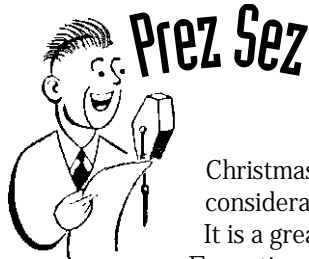
SHORT SKIP

Published 12 times per year.
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
(408) 427-0565
K6EXT@fireclay.com

Columnist
Art Lee, WF6P
Production and Distribution
Dave Harbaugh, W6TUW



The End-is near. At lease for my term as President of the Club. I would like to again thank everyone that has helped out. It has ben a good team and a good year for SCCARC. My best wishes to the new Board and Officers who will take office at our Christmas brunch. The number of new ham has slowed considerably. Please encourage your friends to join the ranks. It is a great hobby with many ways that we can participate. Every time a work a new country or meet a new friend on the air, I am glad that a fiend a mind encouraged me back to 1958 to get my ticket. Hope to see you at the next meeting.

73's W6FKD

"BUZZ SAWS" ABOUND ON HF

"The HF buzz saw is dead; long live the HF buzz saw!" That might be the cry from the crowd these days as various buzzing intruders have been showing up with some regularity on HF. Sometimes, though, it's hard to distinguish one intruder from the other on the basis of anecdotal reports from amateurs.

Recent reports of the so-called 125-Hz "buzz saw" intruder on the 80-meter band are a case in point. The intruder--heard primarily in the US northeast--had plagued amateurs as well as an aeronautical weather station just below 80. In the wake of protests from amateurs and coordination between the ARRL and Radio Amateurs of Canada, the transmissions--determined to come from two HF surface wave radar facilities in Newfoundland--moved off the amateur band. The signal has not been heard on 80 meters since early October.

IARU Region 2 Monitoring System Coordinator Martin Potter, VE3OAT, credited ARRL and RAC assistance in getting the HFSWR systems moved off the amateur bands. The HF surface wave radar sites in Newfoundland are a joint project of Canada's Department of National Defence and Canadian industry. Canadian officials see the technology as playing a role in maintaining Canada's territorial sovereignty as well as for search-and-rescue operations and to assist in combating illegal immigration and drug smuggling.

Responding to the initial "buzz saw" reports, amateurs in the US and elsewhere alerted the ARRL Monitoring System to a plethora of signals they claimed were the now-infamous intruder. It's now clear, however, that a similar mystery visitor on 40 meters is not coming from the Newfoundland HFSWR facilities. "Although a number of additional reports of buzz-like interference were received from the western USA and elsewhere, none could be confirmed as due to the same signal," Potter said. The signal has been widely reported in Region 1.

ARRL member Dave Bowker, K1FK, in extreme northern Maine was the first to report--and graph--both the "original" 80-meter buzz saw as well as the more-recent 40-meter signal. "Although it sounds similar, it has three distinctly different characteristics," he said. The signal's sidebands extend 7 kHz either side and "it is a frequency hopper, moving randomly in time and frequency steps."

Steve Yates, AA5TB, in Fort Worth, Texas, also has monitored, graphed and recorded the 40-meter signal, and his observations are consistent with Bowker's. "The transmissions would jump frequencies every few minutes but not at regular intervals," he says. He reports measuring the different transmission center frequencies at about 7020, 7040, 7050, 7070, 7080 and 7090 kHz, and believes the signals came from the same transmitter. Yates has posted information about this and other intruders at <http://home.swbell.net/aa5tb/>.

The IARU Region 2 Monitoring System now refers to the 40-meter intruder as an "unusual jammer," but concedes, "If the signal is truly a jammer, it is not clear who or what the target is." Potter says the signal is modulated by strong harmonics of 50 Hz and 100 Hz and seems to be associated with a "wobble" or "bubble" jammer on the same frequencies.

Another "buzzer" on 3795 kHz has been reported to the ARRL Monitoring System from hams in various parts of the US including Rich Chatelain, K7ZV, in California, and Bill Avery, K6GNX, in Nevada. Both agree that the signal appears to be coming from somewhere along the Utah-Nevada border. "It transmits for 80 seconds every five minutes. It is approximately 20 kHz wide," Avery said.

Potter says the 3795 kHz signal is worthy of further investigation.

Additional reports and observations are welcome to ARRL Monitoring System Administrator Tom Hogerty, KC1J, thogerty@arrl.org.

Recycle It!



Trade or Sell Table

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

For Sale: 75' new Belden 9913 \$50.00

For Free: 50+' of .5 inch 75 ohm hardline

George/W3AB 831-775-1847 or w3ab@arrl.net

I am looking for a 66 to 130 MHz Pentium mother board with the CPU chip installed. It would be great if it had two EIDE ports on the board. I am working on a small computer system for my son to do homework on and computer projects from school.

Bob Wiser, KD6FXQ bobwiser@aol.com

For sale a Telex hy-gain TH5/MK2 10-15-20 meter beam. \$100. 831/423-0575

Bruce W6FKD



By Art Lee WF6P

CHATTER

I have been very spotty with my nightly schedule with my cw pal, Marsha Messer, AB7RJ, up in Washington. She, a hard working gal, has to be up and rolling at 0400 to open the restaurant where she works. She has been promoted to shift manager and doesn't get home till late in the day. IF she gets to take a nap, we can pound brass for an hour or so. If exhaustion takes over, she hits the hay early and our 2000 sked is kaput. Although she has a grueling work schedule, I try to console her by telling her that, "after all, somebody has to pay taxes!"

I was quite honored this month. Monitoring Times offered me a chance to do a monthly column for their VHF/UHF section. Wow! What a nice offer. Both

Leon Fletcher, AA6ZG, and I have written for them in the past, even appearing in the same issue on at least one occasion. But, doing the research for a topic I am really not versed in sounded like not really that much fun. I replied to the editor that I just didn't want to take that project on and had to pass (she wanted 1800 words of technical details). I feel more comfortable writing about the joys of ham radio. Along those lines, Cruising World Magazine will be publishing my "Maritime Mobile Nets" piece sometime in the next few months. In it, I describe (what else?) the advantages of HF radio at sea.

My XYL Donna, AB6XJ, and I enjoyed a fine breakfast with the members of the Quarter Century Wireless Club last week. They meet in Watsonville at the Country Waffles Cafe on a monthly basis. Although we are not eligible for membership (too young) they welcomed us anyway. Bill Lawrence, KB6QAQ, was there as well as a room full of familiar faces. Wayne Thalls is Secretary and editor of their Bulletin. He missed the meeting because he was giving a talk to the SVECS in Santa Clara and, as we all know, busy people can be in only one

place at a time! (Three weeks before, Wayne was interviewed on Channel 46 at 0700 in Salinas on the topic of Genealogy. Wayne's XYL Rosemary, went along and bought Wayne's breakfast.) We sat with Dave Harbaugh, W6TUW, Ralph Evans, W6ENE, and Gene Bokemeier, KD6DSB. Ralph (always the nice guy) kept Donna's and my coffee cups filled with steaming hot coffee as we listened to guest speaker George Fisk, K6TAM, telling us about HF packet programs (APRS) using mapping techniques. Very interesting. As stated in the October issue of The Bulletin, "APRS is the Amateur Packet Reporting System and a fascinating combination of technologies hams have adapted for this unique application."

For those of you who missed the article in the Santa Cruz Sentinel recently, our own Mary Duffield, WA6KFA (Keep Floating Always) was honored on United Nations Day. She, a long-time UNICEF volunteer, will have her portrait hung in the United Nations building in New York next year to commemorate the Year of the Older Person.

OFFICIAL BALLOT for OFFICERS and The BOARD of DIRECTORS

- PRESIDENT:** Tom Johnson KQ6DV

- VICE PRESIDENT:** Don Henneuse KF6KGO

- SECRETARY:** Cap Pennell KE6AFE

- TREASURER:** Al Fugelseth WB6RWU

BOARD OF DIRECTORS:

- Vote for 4 Directors
- Ron Skelton W6WO
 Lauren Hardy KC6TPW
 Bruce Hawkins AC6DN
 Bill Walters W6PAD

Either mail this ballot to Santa Cruz County Amateur Radi Club, Post Office Box 238, Santa Cruz, CA 95061-0238 or bring it to the club meeting on Nov.19. Mailed ballots MUST be received at the P.O. Box by 5 P.M. Nov. 19,1999.

SCCARC Officers - 1999

President	Bruce Wade	W6FKD	423-0575
Vice President	Cap Pennell	KE6AFE	429-1290
Secretary	Don Hennese	KF6KGO	437-1486
Treasurer	Allen Fugelseth	WB6RWU	475-8846
Board	George Badger	W3AB	476-5363
	Bruce Hawkins	AC6DN	
	Gene Bokmeier	KD6DSB	688-6703
	Tom Ginsberg	K6TG	479-1471
	Lauren Hardy	KC6TPW	462-0247
K6BJ Trustee	Royce Krilanovich	AC6Z	475-4798

MONTEREY BAY ACTIVITY

K6BJ / KI6EH (Linked) • SCCARC Net Monday 7:30 PM 146.79- /147.945-
146.79- /147.945- • SC ARES Net Monday 8:30 PM 146.835-
(PL 94.8) • Watsonville ARES Net Thursday 8:30 PM 147.945-

K6BJ / UHF
440.925 (PL 123)

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
• Newslite (Ham News) Broadcast Wednesday 8:30 PM

WR6AOK (Felton) • SLVRC Net Thursday 7:30 PM
147.12+ (PL 94.8) • SLV ARES Net Monday 7:30 PM
N6IYA • Newslite (Ham News) Broadcast Sunday 9:00 PM
440.850+ (PL 94.8) (Linked)

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

Santa Cruz ARES	Tuesday	Nov. 9
SCCARC Meeting	Friday	Nov. 19
Short Skip Deadline	Friday	Nov. 25
Club Brunch	Saturday	Dec. 11
SCCARC Meeting	Friday	Jan. 21

Visit the SCCARC Website at

- www.fireclay.com/k6bj

NEW! – CLUB E-MAIL: k6bj@arrl.net MONTHLY MEETINGS

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

NET CONTROL SCHEDULE (Subject to Change)

11/8	Allen WB6RWU
11/15	Phil KE6UWH
11/22	Jeff KF6BKG
11/29	Tom K6TG
12/6	Allen WB6RWU
12/13	Phil KE6UWH



SHORT SKIP

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

Forwarding and Address Correction Requested

Next Meeting Nov. 19

Club Brunch Dec. 11

FIRST CLASS