



# CROSSTALK

News Bulletin of the TRW Amateur Radio Club

Member, American Radio Relay League

JANUARY 1984

\*\* FD '71 \*\* FD '73 \*\* FD '75 \*\* FD '76 \*\* WAS \*\* WAC \*\*

Garrett/W6TRW Repeater: 145.32/down 600 (2A-PL) -- UHF: 442.000 in/447.000 out

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## CALENDAR FOR JANUARY AND FEBRUARY

Jan. 28, 8-11 am	Swapmeet.
Jan. 31, noon	Club Meeting, R4-1041. Guest speaker will be George Sanso of Henry Radio, who will demonstrate and discuss RTTY communications. See meeting notes below for more information.
Feb. 14, after work	Executive board meets--all are welcome.
Feb. 25, 8-11 am	Swapmeet.
Feb. 28, noon	Club Meeting.

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## NOTES FROM THE EDITOR

Phyllis Gilmore, KE6TC

This will be my last issue of Crosstalk as editor, at least until I finish my master's degree (hopefully before June). Mel Erb will be filling in as editor in the interim.

I want to thank those of you who have contributed in the past. I hope you'll keep contributing articles and tidbits to Mel. We're fond of original material, especially small technical projects. Please remember, however, that Crosstalk's maximum size is three sheets of paper (or the postage goes up), so be prepared to be edited for length.

Also, Crosstalk cannot reprint articles from any copyrighted publication without written permission. (One such article appears in this issue, and I hope other clubs respect the copyright.)

## CLUB WELCOMES NEW MEMBERS

Don Resor (KB6CVU) and Roy Couzin (W6JET) recently joined ranks with the TRW/ARC. Welcome to the club!

## ITEMS FOR SALE--CHEEEP

Two-meter rig: ICOM 230, with power supply and mobile bracket, \$150. Also, make me an offer for a Tempo One, 10-80 meters, with power supply. Phyllis Gilmore, dial 173, then x3506 (or 714-382-3506).

## HIGHLIGHTS FROM THE W5YI REPORT

The FCC has dropped the no-code proposal, permanently it seems.

WARC has finally been signed into law; see the January 15 W5YI Report (in the club library) for all those extra frequencies you may have heard about.

The Volunteer Testing rules continue to evolve. The latest is that the coordinator, rather than the examiner, has 10 days to get the test results to the FCC.

Something like 277 folks managed to get a two-way with W5LFL on his epic space voyage. I was grateful just to hear him.

## DECEMBER SWAPMEET NOTES

Jim McWilliams, W6RTG

The December Swapmeet was well attended, with 214 sellers at 9 am, and others continuing to arrive.

Bill Dews (K6AWO) and John Keller (N6JLS) provided traffic control and general supervision, along with Walt Pearson (N6DZM), club president. Many thanks to these people for their much-appreciated effort.

A list of Swapmeet volunteers for 1984 is included in this issue. We need nine more volunteers for the latter part of 1984. To keep this popular radio amateur activity going, your help is needed. If you can help, please call Jim McWilliams at x56214.

## MEETING MINUTES

General Meeting, 20 December 1983

Walt Pearson, N6DZM

Twenty-one people attended. President Bill Rodner began the meeting with a discussion of accomplishments. A new Butternut 2MCV-5 antenna has been installed for the 2-meter repeater. Frequency and deviation meters and 2-meter, 220, and 440 hand-held transceivers have been purchased for members' use. An antenna party will be called early in 1984 to complete the new HF antenna installation. Suggestions were made for improving club functions, including speakers for general meetings, increased participation in antenna parties, and additional control of sellers at the swapmeets.

Activities Manager Gary Komatsu said that plans for the 1984 Field Day have already begun. Captains for 40, 20, and 15 meters have been identified, but operators are still needed. Volunteers are also needed for the other bands.

Members described their attempts to communicate with Owen Garriott aboard the last space shuttle flight. For confirmation of contact, send a self-addressed stamped envelope to W5LFL in care of the ARRL; Chris Wachs can give details. Bill Rodner described the space shuttle landing at Edwards AFB, which he attended.

The FCC has dropped the proposed no-code license. They are, however, cutting down on their examination program. The next examination period in the Long Beach area is 6-11 February, with an application deadline of 15 January.

A letter was received from ANSAT thanking the club for the recent donation to the Amateur Satellite program.

Nominations Chairman Bill Dews announced the results of the elections for 1984 club officers. (The new officers are listed on the back page of this issue of Crosstalk, along with their extensions and mailing addresses.) Walt Pearson stated that he will ask all the present appointed staff officers to continue in their respective positions next year. Walt also plans to reactivate a training program in the club.

The door prizes were a bulk tape eraser, LCD quartz stop watch, LCD travel alarm clock, NiCad battery charger, and parts chest.

Executive Board Meeting, 10 January 1984  
John Keller, N6JLS

Attending were Bill Daley, Bill Dews, Fred Garrett, Connie Gilmore, Dave Gilmore, Paul Herbert, Bob Hume, Bill Ivey, John Keller, Jim McWilliams, Walt Pearson, Bill Rodner, and Chris Wachs.

Vice President Chris Wachs stated that George Sanso (AB6G) of Henry Radiospeak at the January General Meeting on RTTY equipment and technique, with a question and answer session following. Club members are also invited to a hands-on exhibit at the Henry Radio club station, which will take place the following Saturday (Feb. 4) at the Bundy Ave. store.

Secretary John Keller accepted the meeting notes as printed in the December Crosstalk, with the following corrections: In the General Meeting notes, the new Fluke meter is a digital multimeter, not a deviation meter. In the EBM notes, Paul Herbert, not Jim Richardson, purchased the 2MCV-5 two-meter antenna. Jim had suffered some broken ribs in a traffic accident in St. Louis. We are all hoping for a quick recovery, Jim!

Fred Garrett gave the end-of-year financial report. While the balance is less than last year's, many purchases were made this year to upgrade the club station. Installation of these purchases is in progress.

Walt Pearson reported for Activities Chairman Gary Komatsu that Field Day preparations continue. TASMA paperwork was received and will be filled out and returned.

Trustee Bob Hume reported that weather and the holidays have prevented further antenna work on the club station. A request was made for the purchase of new 1984 foreign and domestic Callbooks. The 1983 Callbooks will be doorprizes at the next meeting. The Yaesu VHF transceiver noise blanker is in need of repair. Bill Dews suggested that a new, state-of-the-art replacement be purchased. Chris Wachs, Bob Hume, and Bill Dews will investigate available transceivers and report back at the next EBM. A few additional expenses are required to complete work on the club HF antenna.

LAACARC Delegate Bill Daley reported that a new brochure is being designed for information about amateur radio. The chaos that resulted during the W5LFL

flyovers was a local phenomenon and not typical of the rest of the United States. Plans for Olympic amateur stations have been dropped for the present--reason: no space. Efforts are being made to reinstate the stations. The no-code amateur license category proposal has been dropped by the FCC due to the overwhelmingly negative response. The Volunteer Examiner program has been held up due to the issue of fees.

The Orange County Swapmeet is held at Orange Coast College in Costa Mesa on the second Sunday of the month, at 7 am. Seller fee is \$5.00, proceeds going to the college. Talk-in frequencies are 147.51 simplex and the Catalina repeater, 147.09 (+600).

Emergency Coordinator Dave Gilmore attended a meeting at the El Segundo Police Department. Representatives of TRW, Rockwell, Aerospace, and Hughes attended. Yaesu made a presentation on emergency communications and equipment, including a mobile/portable repeater. One question discussed was what happens to the ham with an HT when the batteries are depleted (about 1 hour). Members of the Emergency Communications Group (ECG) must be patient concerning HT pass renewals, as there is no confirmed emergency coordinator in Security. An ECG is being formed at TRW Capistrano and is being supported by TRW/ARC members at Space Park. Paul Herbert suggested the Saddleback Peak repeater for communications between Capistrano and Space Park, since he can work it on an HT with a rubber duck from his office. Saddleback is 145.22, -600, PL 1A.

Membership Chairman Bill Dews reported that 25 members have renewed for 1984, and there is one new member. Note that you are considered delinquent on Jan. 31, 1984 and lose club stations privileges. Also note that ECG members must be current TRW/ARC members before passes can be renewed. Bill also expressed thanks to Mel Erb for his continuing efforts with incoming TRW/ARC mail. Mel picks up and sorts through the mail and makes sure the important items are directed to the proper members of the Executive Board.

SEA Council Representative Bill Ivey said that there are two candidates for SEA Coordinator, but it is still to be decided how one will be chosen. SEA should have a coordinator by 1 February.

We have 750 blank (no call letter) QSL cards and no W6TRW QSL cards. Our

present card usage is 10 per year. Hopefully, the club station will get more use with OSCAR 10, and the QSL cards will start flowing in both directions. Bill Rodner and Fred Garrett are attempting to find a source of transfers that can be used with any card. Paul Weisz has been too busy to chase down new cards. Paul Herbert has volunteered to give it a try.

Swapmeet Chairman Jim McWilliams states that a list of regular sellers has been generated, which will help identify buyers quickly, to keep the main parking lot free for them. Jim has enough assistants to help out for about 6 months, but still needs to fill out the end of the year. The Mount Wilson Repeater Association has verbally offered to contract and pay for a porta-potty service. Jim has yet to get a confirmation.

Walt Pearson has been attempting to find a training chairman. Jim Cox (K7JAJ), but he could not make the EBM so to agree or disagree.

Chris Wachs suggested that the club purchase a small computer for printing Oscar 10 orbital predictions. Other members offered to provide orbital predictions from their computers for printing in Crosstalk.

Bill Rodner said that the W6TRW repeater's current problems are not due to the new antenna but to water in the coax feedline. Better signal levels were reported in Hermosa Beach and Granada Hills (up about 3 S-units) with the 2MCV-5. The coax will be replaced and the repeater will be tested with the help of K6AHF. A decision to stay with the 2MCV-5 or replace it with another antenna will be addressed at that time. The W6NWP repeater has not been brought up, as the phone line went dead and some heavy equipment was stored right in front of the repeater cabinet, making manual control impossible.

#### **SUPPORT YOUR CLUB**

If you can help out with club station modifications (guy line replacement, antenna assembly, and antenna and rotor replacement), let Bob Hume know. He can be reached at 217-3624.

If you want to help out at the swapmeet (and we are only asking for you to help one Saturday a year) please call Jim McWilliams at x56214.

## TRW ARC LIBRARY

George Lee, W6IOW

QST, HR, 73, and Orbit magazines; the ICOM and Kenwood newsletter; the W5YI Report; and Heath catalogs are available to members at the club station in Bldg. 65. We will be subscribing to CQ, for a total of four of the most popular radio magazines, and we hope to have Worldradio available soon. If you're at an offsite, you may send me a written request (to 138-5688), specifying what you'd like to borrow, and I'll send them along (no phone calls, please).

Thanks to those who donated back copies. We now have duplicates (mostly QST). Requests for these will be honored before March 10, on a first come/first served, members first basis.

## ASSESSMENT OF PSYCHOLOGICAL DAMAGE RESULTING FROM THE EXPOSURE TO RADIO FREQUENCY ENERGY

Richard W. Janssen

Churchville, PA

The effect on biological tissue by radio frequency energy is a matter of growing concern. Damage appears to be caused by dielectric heating, a process in which molecules are agitated by the rapidly changing electromagnetic field, producing heat. It is generally agreed that almost all energy in the 1000 to 5000 MHz range is absorbed, e.g. microwave ovens utilize a frequency of 2450 MHz. At frequencies below 200 MHz, RF energy penetrates tissue but for the most part causes little dielectric heating. At frequencies above 15000 MHz the energy can only penetrate a fraction of a millimeter and is discernable on the skin as heat.

Debate continues over what power densities can be considered harmless however. The United States occupational exposure standard is ten milliwatts/cm<sup>2</sup> while that of the Soviet Union is significantly lower, ten microwatts/cm<sup>2</sup>. Psychological and physiological changes have reportedly followed exposure to even these low power densities.

To determine the degree of any psychological changes, I first obtained recordings of representative transmissions in the 0.5 to 750 MHz range. These were subjected to multi-phasic computer analysis, following established psychological probability functions. I expected to observe that lower frequencies, having a lesser tendency to cause dielectric heating, would show lower Psychological Damage Coefficients (PDC). This did not occur. Scattered discrete frequencies in the international short wave and the commercial AM and FM broadcast bands had moderately elevated PDC levels but no elevated levels were noted above a fre-

quency of 110 MHz. Extremely high PDC levels existed for all frequencies in the 26 to 28 MHz range. The moderately elevated levels could be explained after examination of the program content being transmitted. On the international shortwave bands such programs consisted almost entirely of propaganda broadcasts or attempts to jam such. On the AM and FM broadcast bands the programs were of a type known as rock music, consisting of incessant bursts of modulated noise accompanied by unintelligible screaming. Therefore, rather than these moderately elevated PDC levels being a result of dielectric heating, it appears they arise from pre-existing psychological abnormalities in the station personnel and performers.

Since the extremely high PDC levels observed on all frequencies in the 26 to 28 MHz range did not follow the above pattern, a special facility was established where the psychological damage induced by exposure to this range of radio frequencies could be ascertained. A grounded Faraday cage was constructed and a variable output Citizens' Band transceiver utilized as a source of 27 MHz radiation. Mice, rabbits and monkeys were placed in the Faraday cage and subjected to as much as 90 mw/cm<sup>2</sup> for up to three hours. No discernable change in their behavior was observed. Human subjects were then obtained, ranging from a twelve-year-old student to a sixty-one-year-old politician. In these however, power densities of even 0.001 mw/cm<sup>2</sup> caused profound changes. Within seconds of actuating the transceiver all developed a fixed stare, lost short and long term memory and suffered precipitous drops in I.Q. The subjects remained able to follow simple commands but most were unable to remember their names and responded to requests for them with primitive utterances such as "Apeman" and "Big Bad Signal". The first statement made by the subjects after exposure to 27 MHz radiation was usually a garbled "what-cha-handle-good-buddy". The only way to prevent the test subjects from continuing to self-inflict damage was to disconnect the transceiver power supply. Manic/depressive behavior often followed with hyperactivity accompanied by shouts of "stick-a-pin-in-your-coax" and "gonna-use-heat-and-step-on-you". Most of the subjects assumed outwardly normal personalities if removed from the Faraday cage and given counseling but a degree of permanent damage proportional to the intensity and length of exposure did occur. Subsequent exposure to the mere sight of a Citizens' Band transceiver, operating or not, triggered immediate regression.

## CONCLUSION

Radio frequency energy of 26 to 28 MHz causes profound and permanent psychological damage in humans. Governmental authorities should immediately ban usage of this frequency range. ■

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