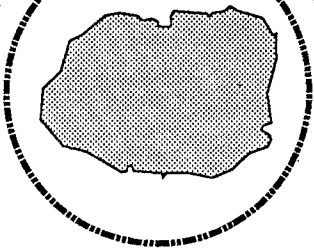


Kauai Amateur Radio Club



Serving the Ham Radio Operators and the People of Kauai

Kauai Amateur Radio Club

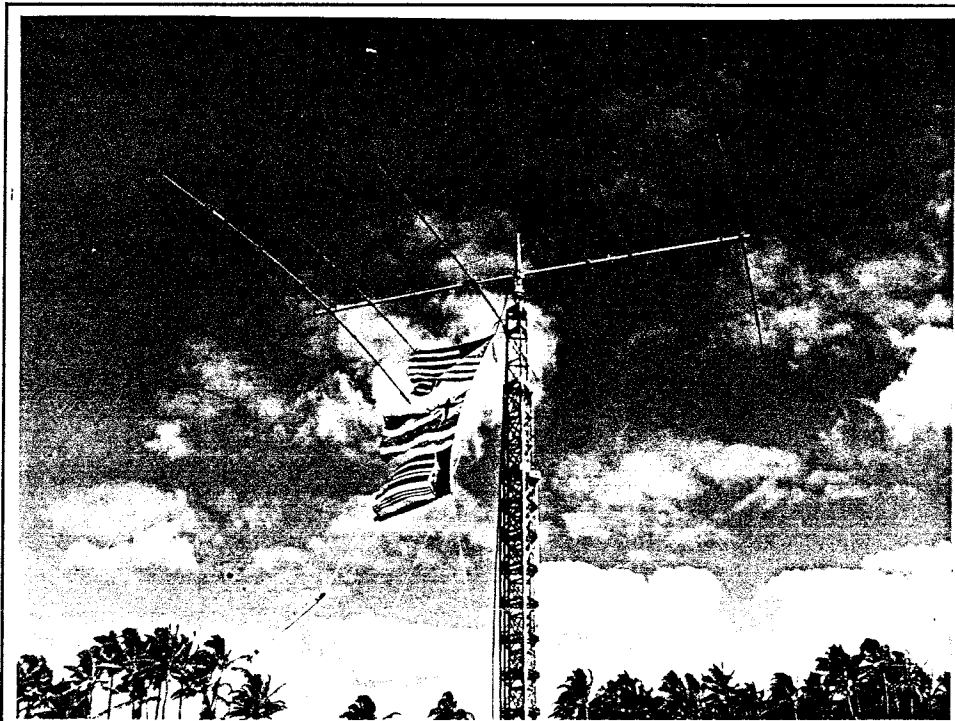
NEWS

Volume 1, Number 6.....July, 1988

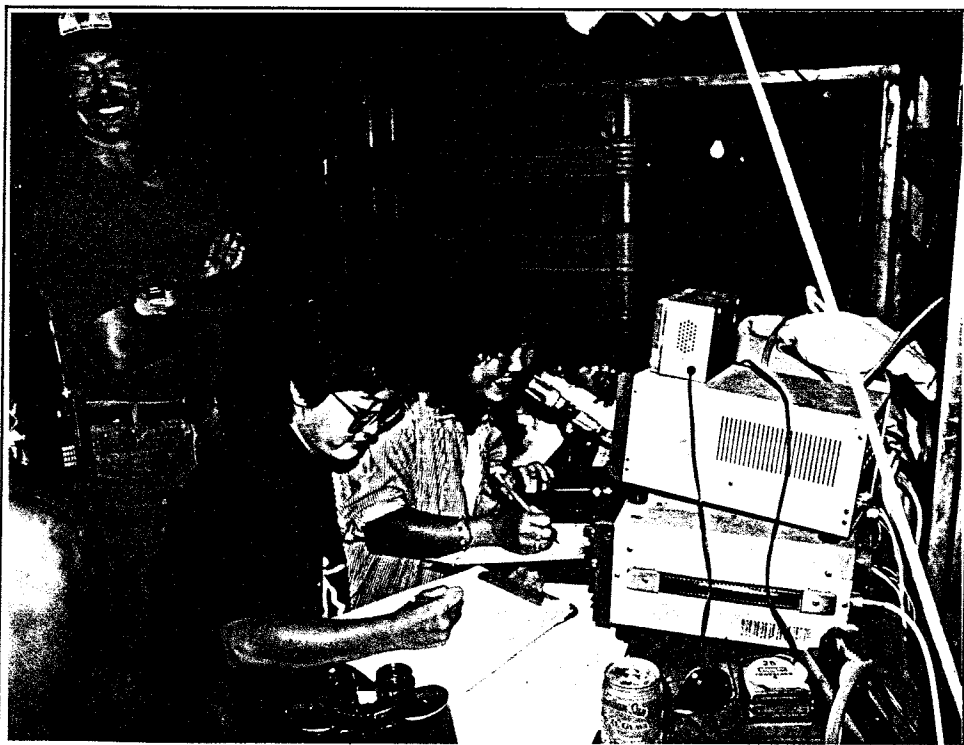
Super Fun Field Day!



Sunny skies on the sandy shores of Wailua Bay saw KARC sweating to get the tower up and wires connected for Field Day. The solar upset announced the day before had us all apprehensive, especially as the morning wore on and QSO's just were not coming through. It was peck and jump until 3:00 PM when bands broke open and it was off to the races in the horse trailer. Of the 33+ hams who came through, 15 were brave enough to take the mike or do logging as pile-ups took its toll on the crews. As the sun began to set, the families started bringing dinner and soon the inner soul was satisfied. During the late hours the YLs took over the station and began racking up more pages at a very fast clip. They just wanted us to know that they were also proficient and could work calls with the best of us. From the



The U.S., Hawaii and ARRL flags fly from the KARC tower.



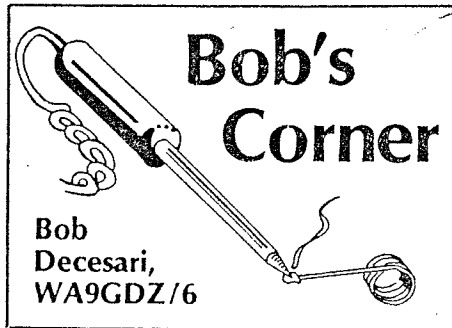
YL's try their hand at Field Day.

far side of the bay, one could see our tower with the three flags, drawing visitors from the hotel and even a ham from Japan. We were able to work packet, satellite and copy the message from WIAW. Over 900 contacts were made but best was the fun and fellowship shared. Thanks to KH6DLW, Ryoko and his crew for a very excellent Field Day. The only regret was that we were not allowed to camp as in the past and we hope we can revive this in the future. Start planning to join us next year for 24 hours of fun and fellowship!

Kauai ARC
Meeting
July 11, 1988
7:30 p.m.
Kapaa CD Center

NOTE: Last month's meeting brought a request for some tech data on building a DF antenna with attenuation to prepare us for the next FOX HUNT. Thanks to **WORLD RADIO**, we have this article from the June, 1988 issue. First one in the club to build a working model will get a very special prize...

Editor



Simple DF loop antenna for different frequencies

Recently, I had occasion to design and build a small direction-finding loop for 49 MHz for a commercial application. It occurred to me that this antenna might be of interest to 6M (50-54 MHz) enthusiasts for DF work, and possibly for other frequencies in the HF or VHF spectrum as well.

A little research into the matter revealed ample data on the subject in both the ARRL Handbook and their antenna book. Furthermore, I had filed away a small article written by Jim Harding, K3DRJ, in a past issue of *Worldradio*, on a similar DF loop for 2M! This was all I needed to go ahead and build one of these units for evaluation. The results were as predicted, and this information should be useful for anyone wanting to build a hand-held DF loop for 2M through about 21 MHz.

As stated, the best sources for information on this subject are the ARRL publications. As can be seen from the illustrations, a piece of RG-58 coax cable is used as the pickup element. What is critical is the loop length with relation to the operating frequency.

Specifically, it is recommended that the loop does not exceed .08-wavelength in length. Too long a loop is detrimental to the direction-finding performance of the antenna, and too short a loop effectively does not allow reception of the signal. The recommended .08-wavelength seems to be a good compromise of these two undesirable parameters.

Note that a cut in the coax braid is placed at the loop center. This allows shielding of the signal's electric wave component but not its magnetic wave component. Without the cut, the antenna just won't work! Also of extreme importance for proper operation is the need for a metal enclosure to

shield the tuning capacitor and internal wiring from the signal wavefront. If these components are not shielded, there will be severe degradation in the direction-finding operation.

The design illustrated here is the simplest version of the DF loop possible. Since it is fed directly by 50Ω unbalanced coax, there is slight skewing of the null off the perpendicular axis of the loop. I have chosen to live with it in the interest of simplicity. However, for the purist, a differential capacitor connected from each end of the loop to the chassis will correct the skewing effect. An alternate way would be to use a coaxial balun, as K3DRJ did.

Mechanically, I assembled the circuit inside a small LMB aluminum box. I used BNC chassis mount connectors on either side of the box to interface with the actual loop. The reason I did it this way is two-fold. First, since it is virtually impossible to make a good solder joint to aluminum, the connector affords good mechanical contact of the coax braid to the chassis. Second, with removable connectors, I can put virtually any loop cut for different frequencies on the box that I choose, provided it is in range of the tuning capacitor for the desired frequency.

Admittedly, for HF frequencies, the RG-58 loop becomes a little wobbly, but it is still operational. Perhaps a stiffer cable would work better mechanically at the lower frequencies.

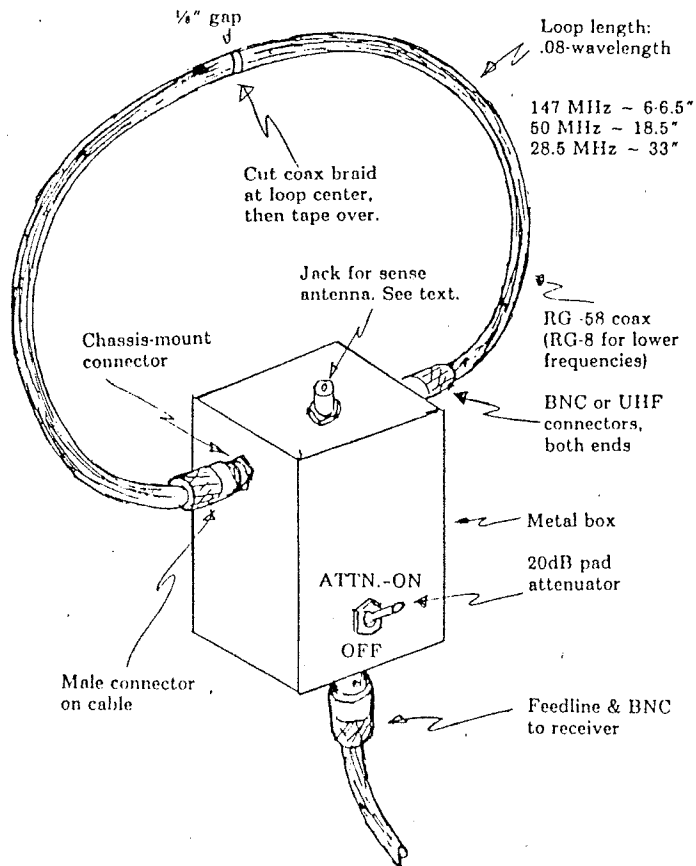


Figure 1 — Simple hand-held DF loop antenna

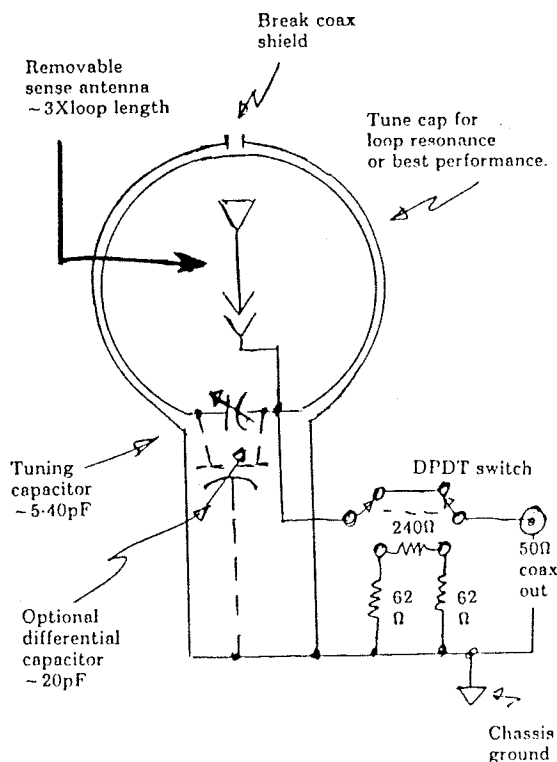
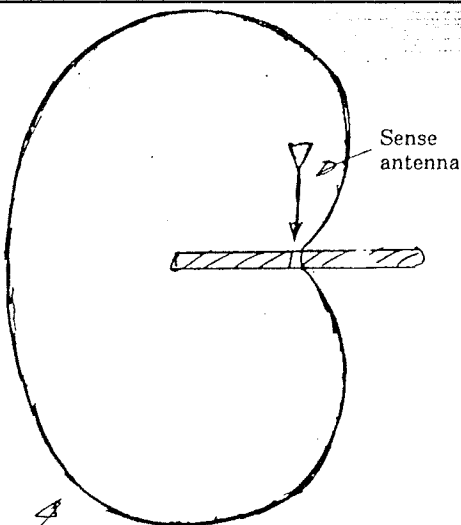


Figure 2 — Loop DF schematic

One innovation of my design is the incorporation of a 20dB attenuation pad for DF work on stronger signals. Actually, 20dB attenuation is sometimes not enough when a very sensitive receiver is used. Ideally, the receiver should have a manual gain control for close-in DF operations. However, I have found the 20dB quite useful and would strongly recommend its inclusion into the circuit. A standard DPDT toggle is used to mount the pad resistors. The attenuator assembly should also be mounted as close as possible to the output connector in order for the attenuator to work properly.

The pattern of the antenna is illustrated in *Figure 3A*. Note that the nulls are obtained off the perpendicular axis of the antenna. A "sense" antenna may also be incorporated to change the pattern to look something like *Figure 3B*. My experience has



Antenna pattern
Figure 3B — Loop with sense antenna

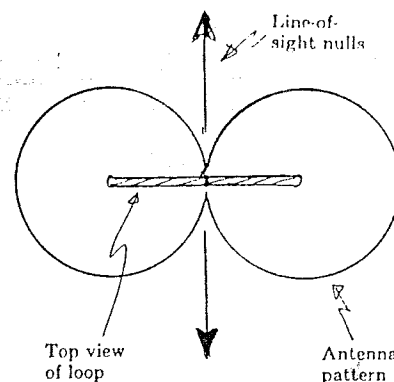


Figure 3A — Basic loop pattern

proved that the null off the loop with the sense antenna is too broad to be of use for drawing a line-of-sight to the transmitter. However, it does function to inform which way the transmitted signal is coming from. I made my sense antenna removable so that the better null of the basic loop could be used for line-of-sight determination.

JUNE MINUTES 6/6/88

Meeting was called to order at 1953 HST by KH6DLW, Ryoko and introductions were made. The minutes were accepted as published and our treasurer reported \$927.47 on the books from 53 paid up members and 33 repeater donors for the year. Also reported that \$201.00 had been spent earlier to send the 82 repeater back for frequency change.

There were no special announcements. 112 cards had come in through the club. We had requests on our award requirements from South America. ARES/RACES reported by KH6S that we owe the County \$1.00 per month rent for the space occupied by the Hanalei Repeater since 2/87. Moved and seconded that the bill be paid for 87-88. VHF/UHF told of the 82 machine being sent back for new crystals since this would be the best method as the one we were locking up with was not going to change frequency. EDUCATION side will see a CW rig out on loan for the summer and plans for a tower next year at Waimea High. VE group reported on results of the 5/14 exam as published in newsletter. The US Post Office in Lihue has changed outgoing schedule so news deadline is a day earlier.

OLD BUSINESS: Telephone line to 82 site at Wilcox has been disconnected so we have to negotiate and get a memorandum of agreement covering the repeater and the use of a phone line. **FOX HUNT** report given with a request for antenna designs suitable to work a hunt. **SHIRT SCREENING** saw 8 members running a batch out. **FIELD DAY** final details given by KH6DLW with start time at 0800 HST. KH6F-Gemi is assistant boss, KH6ZT-Al as electrical engineer and KH6JJC-Juan electrician. NH6JC-Mitch will be power plant operator and KH6JPT-Ron as the fuel man. The Dept. of Health will supply a 10KW generator and we will operate as 2 Alpha Pacific. No novice station as we lack operators. No camping allowed but we can sleep in vans and cars. **HANALEI REPEATER** antenna construction still is held up by Public Works. KH6DXO-George will follow up.

NEW BUSINESS: Mt. Kahili Repeater on 92 is getting noisy and dropping in power. We have not checked for many months so will ask Ron Crown, KH6JI if he can assist. May require a trek to the ridge site by a group of volunteers. VHF net control will be KH6FK, Sonny and WH6AVA, Sean as alternate.

Respectfully submitted,
Patty Kaliher, NH6AO
Secretary

Other Meetings for the Year ...

- August 1 Kalaheo Center
- September 12 Lihue CD
- October 3 Kapaa CD
- November 14 Kalaheo Center

VHF Net Control for July is NH6PO, Sean Romero and alternate is AH6JC, Richard Nagoshi, two new guys. Join in with them at 8:00 PM HST on Mondays.

Upcoming Operating Events ...

- July 9-10 IARU HF World Championship
- July 23 WIAW Qualifying Run
- August 2 West Coast Qualifying Run
- August 6-7 UHF Contest
- August 14, 23 WIAW Qualifying Run
- September 9-10 ARRL National Convention (Portland, Oregon)

Jon Starr Resigns as Section Manager

Due to the death of his father and the sudden need for Jon to run the family business in New York, Jon has submitted his resignation to ARRL as Pacific Section Manager. Assistant SM is AH6GQ, Helen who will also be moving back with Jon, so the top two positions crucial to our ARRL Section will become vacant. Our condolences to Jon, Helen and the family.

