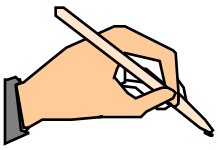
CQ Chatter

Volume B2•Issue #3 **Wood County Amateur Radio Club** **AUGUST 1999**
P. O. Box 534,Bowling Green, OH 43402 **http://bravais.bgsu.edu/~boughton/wcarc.html**
President-WA8CWD, Larry Reitz **Vice President-WB8NQW, Bob Willman**
Secretary-AA8XS, John Lagger **Treasurer-N1RB, Bob Boughton**

A Note from the Editor

The 34th annual WCARC Hamarama was held on July 11th. The turnout was moderate, perhaps a little bit less than last year's. In spite of the fact that the inside tables were sold for the same price as the outside trunk spaces, the number of reserved tables was less than 30. Apparently because of the good weather, the trunk spaces were pretty well filled, but not quite as well as last year. The decline in attendance at hamfests is not just a local phenomenon. We have heard that the Toledo, Findlay and other prominent hamfests have suffered a declining attendance in the past few years.



A friend of mine, who is a member of the Conneaut, OH club gave me a bit of shocking news the other day. His club has decided to drop its annual hamfest on account of declining interest. I had had the pleasure of attending their event about 5 years ago. My guess is that at that time it was about twice as big as the Hamarama, with 2 large buildings filled with vendor tables and an extensive trunk sales area. The sentiment in that club is evidently one of "it's not worth the effort". Their event this year registered a loss and so the decision to stop holding it.

A hamfest represents a delicate economic balance between expenses for prizes, rent and publicity vs. income from ticket, table and trunk space sales. In the case of WCARC, assuming some "sugar daddy" doesn't come along, it is the only means we have to gain income for the Club. Our routine and extraordinary expenses incurred in running the repeaters, renting the telephone line, maintaining Club equipment and insuring it, all must be covered by the income from this one event. It is therefore important that we find the right economic formula to keep the Hamarama vital and profitable. The Executive Committee has a tough job on its hands. 73 de Bob

WCARC Weekly Net:
Tuesdays at 2130
147.18 & 444.475 MHz

Club Meeting:
Monday, August 9th
Social Hour @ 1900
Fairgrounds Club Room

FCC Enforcement Log

The FCC enforcement arm, under the direction of Riley Hollingsworth, K4ZDH, has stumbled upon another scam that some amateurs have been engaged in. The deal is to apply for multiple club licenses as trustee and to take up desirable vanity call signs. Hollingsworth has been concentrating on curbing this abuse during the past few weeks. A summary of some of the enforcement actions taken by his office are listed below:

Steven K. Nace, KN5H, of Chandler, AZ, has been forced to relinquish 4 club station calls.

William T. Shipley, N4WS, of Cookeville, TN, has been forced to relinquish at least 6 club station calls.

Richard L. Whiten, WB2OTK, of Easley, SC, has had his license revoked after telling the FCC that he would not comply with a 4 month ban on HF operation and wanted to get out of amateur radio. His original citation was for "profanity, obscenity, broadcasting extreme racial slurs, deliberate interference, and failure to properly identify". He subsequently said the request was a mistake and that some "hacker" had used his e-mail address to send the spurious message. Stay tuned for further details!

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Emergency Training Exercise Held

The emergency training exercise that had been postponed from earlier in the spring was held on Saturday, July 24th. The scenario included an accident between a school bus and a tanker containing liquid pesticide. Both Wood County and Fostoria Hospitals were involved in victim reception and treatment. It is unfortunate but we only had a turnout of 5 hams for the event, so it goes without saying that we were not able to train for all the functions that were intended. The link between the net control in West Milgrove and the two hospitals was excellent and information was passed in a timely manner. The idea of having hams ride "shotgun" in the EMS vehicles could not be attempted because of a lack of personnel.

The next exercise is the Simulated Emergency Test, which is a nationwide exercise sponsored by the ARRL Field Organization. The SET is scheduled for October 2-3rd. If you would like to participate in SET, mark down the date in your calendar! ■

Brain Teasers

This month ushers in a new column that will contain questions from the Extra Class VEC pool on specific topics. This month, the topic is op amps. See how well you can do! The answers will appear in next month's CQ Chatter.

1. What is an operational amplifier?

A. A high-gain, direct-coupled differential amplifier whose characteristics are determined by components external to the amplifier

B. A high-gain, direct-coupled audio amplifier whose characteristics are determined by components external to the amplifier

C. An amplifier used to increase the average output of frequency- modulated amateur signals to the legal limit

D. A program subroutine that calculates the gain of an RF amplifier

WCARC Net Control Roster

Net meets every Tuesday at 2130

Jul 27	WD8ICP
Aug 3	KB8QEW
Aug 10	N1RB
Aug 17	N8QMV
Aug 24	WD8ICP
Aug 31	KB8QEW
Sep 7	N1RB

Pagers Available

A quantity of voice pagers is available to members of RACES/ARES at a small fraction of the original cost. The estimated total cost of the pager with crystals is $35.00. This is a one-time charge and there is no monthly service fee. The pagers have been purchased and were recrystalled, so they should be available soon. If you would like to be alerted to local emergency situations quickly, a pager fills the need ideally, and is a really good deal cost-wise. One of the objectives stated by the WCARC President, Larry Reitz, is to have all Wood County RACES/ARES participants equipped with pagers so that quick call ups can be made in time of emergency. For further information, please contact Larry, WA8CWD, at (419) 837-2202. ■

Hamarama Prize Winners

The grand prize winners at the 1999 Hamarama are listed below:

1st Prize of $300 - Ruth Hasselman, KC8EKT

2nd Prize of $100 - Ruth Hasselman, KC8EKT

3rd Prize of $50 - Jerry O'Reilly of Toledo

4th Prize of $50 - Jim Ryan, WA8SCT

Ruth graciously contributed her prize winnings to the Club treasury. She and her OM, Larry, N8VNT, were voted into life membership as a token of appreciation by the Club.

August Contests

The full contest line-up for the month of August includes the following:

July 31- Aug 1 *1800 to 0359 and 1400 to 2359 UTC*
80 to 10m **Georgia QSO Party - all modes**

July 31 - Aug 1 *1600 to 2359 UTC* 160 to 10m
W/VE Islands Contest - all modes

Aug 1 *0001 to 2000 UTC* 80 to 10m
Romania DX Contest - all modes

Aug 7-8 *1800 to 0600 UTC* 160 to 10m
NA QSO Party - CW only

Aug 7-8 *1800 to 1800 UTC* 220MHz up
ARRL UHF Contest - all modes

Aug 14-15 *0000 to 2359 UTC* 80 to 10m
European DX CW 'Test - CW only

Aug 14-15 *1600 to 2359 UTC* 80 to 10m
MD -DC QSO Party - all modes
0400 to 1600 off

Aug 21-22 *0000 to 2359 UTC* 160 to 10m
S E Asia Net Test **SSB**

Aug 21-22 *1200 to 1200 UTC* 160 to 10m
Keyman's Test **CW**

Aug 21-23 *2000 to 0200 UTC 0700 to 1300 off*
160 to 2m
New Jersey QSO Party **all modes**

Aug 21-22 *1800 to 0600 UTC* 160 to 10m
NA QSO Party **SSB**

Aug 28-29 *1200 to 1200 UTC* 160 to 10m
TOEC Field Test **CW**

Aug 28-29 *1600 to 2200 UTC* 160 on up
Hawaii QSO Party **all modes**

Sep 4-5 *0000 to 2359 UTC* 160 to 10m
All Asia SSB **SSB**

Sep 4-5 *1200 to 1200 UTC* 80 to 10m
Bulgaria DX Test **CW**

Sep 5 *0000 to 0400 UTC* 80 to 20m
NA Sprint **CW**

Sep 5-6 *2300 to 0300 UTC* 160 to 6m
MI QRP Sprint **CW**

Hamfest Calendar

July 31 Huntington, IN *no details*
Contact Ray, KC9DZ, (219) 786-0057.

Aug 1 Angola, IN *no details*
Contact Bill, WD9DSN, (219) 475-5897.

Aug 1 Portage ARC *8am - 4pm*
Portage County Fairgrounds, Randolph, OH (S.R. 44, 4 mi S of I-76). Contact Joanne, KJ3O, (330) 274-8240.

Aug 7 Voice of Aladdin ARC *8am - 3pm*
Aladdin Shrine Temple, 3850 Stelzer Rd., Columbus, OH. Contact James, KB8KPJ, (614) 846-7790.

Aug 15 Cascades ARS *8am*
Jackson, MI, Community College, 2111 Emmons Rd. Contact Dennis, KC8IJZ, (517) 522-4058.

Aug 21 Hoosier Lakes RC *8am - 2pm*
Kosciusko Co. Fairgrounds, Warsaw, IN. Contact Loren, WB9OST, (219) 858-9374.

Aug 22 Gennessee County RC *8am - 1pm*
Shiawassee Co. Fairgrounds, 2900 Hibbard Rd., Corunna, MI. Contact Rosemary, N8UHY, (517) 288-4145.

Sep 12 Findlay RC *8am - 3pm*
Hancock Co. Fairgrounds, Findlay, OH. Contact Bill, N8ET, (419) 423-3402.

HF Rig For Sale

ICOM 725 all mode rig for sale
very good condition
contact: Earl (800) 716-4599
pager: (419) 444-8686

2. What would be the characteristics of the ideal op-amp?

A. Zero input impedance, infinite output impedance, infinite gain, flat frequency response
B. Infinite input impedance, zero output impedance, infinite gain, flat frequency response
C. Zero input impedance, zero output impedance, infinite gain, flat frequency response
D. Infinite input impedance, infinite output impedance, infinite gain, flat frequency response

3. What determines the gain of a closed-loop op-amp circuit?

A. The external feedback network
B. The collector-to-base capacitance of the PNP stage
C. The power supply voltage
D. The PNP collector load

4. What is meant by the term op-amp input-offset voltage?

A. The output voltage of the op-amp minus its input voltage
B. The difference between the output voltage of the op-amp and the input voltage required in the following stage
C. The potential between the amplifier input terminals of the op-amp in a closed-loop condition
D. The potential between the amplifier input terminals of the op-amp in an open-loop condition

5. What is the input impedance of a theoretically ideal op-amp?
A. 100 ohms
B. 1000 ohms
C. Very low
D. Very high

6. What is the output impedance of a theoretically ideal op-amp?
A. Very low
B. Very high
C. 100 ohms
D. 1000 ohms

7. In the figure below, what is the schematic symbol for an operational amplifier?
A. 1 **B.** 3 **C.** 5 **D.** 6

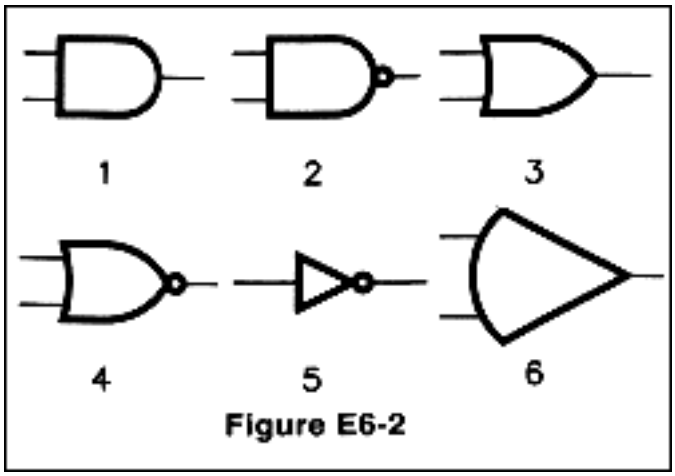


Figure E6-2

Dean W. Manley, KH6B, Hilo, HI, was asked to show proof of the existence of the 21 different club call signs that he holds.

Leonard Martin, KC5WHN, Houston, TX, was cited for unlicensed operation on 27.535 MHz, 27.545 MHz and 27.370 MHz, and for refusing an FCC request to inspect his station. His license has been canceled.

Victor A. Misek, W1WCR, Hudson, NH, has been asked to explain his starting up of a net right on top of existing amateur QSOs already in progress. Still under investigation.

Eric B. Shuler, KF6BMG, Newark, CA, was granted a limited 1-year probationary license because he had previously been using a local repeater before he became licensed.

Denis B. Munier, KC7E, Rolling Hills Estates, CA, was asked to justify at least 12 club call signs that he is listed as trustee for.

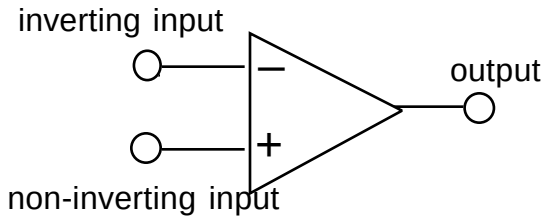
James H. Roach, KD6VWK, San Juan Capistrano, CA, was asked to provide justification for the over 15 club call signs that he holds. ■

Op-Amps - What are they and how do they work?

The operational amplifier is a very important integrated circuit element in many analog applications. The concept goes way back to the 1950s when the first op-amps were constructed using vacuum tubes. The basic idea is to construct an amplifier that can perform simple mathematical operations on an input signal. The main feature of the op-amp is the use of negative or degenerative feedback to provide stability in an amplifier that has very high gain. The addition of a feedback loop allows one to control the properties of the amplifier by using different components in the feedback loop.

The first IC op-amp was the Fairchild µ741, which appeared in 1969. Obviously, a lot of progress has been made since that time, but the basic operational principles remain the same. In this series we will try to go over some simple op-amp applications and at the same time try to understand the basic analysis techniques for op-amp circuits.

First, let's get some basic terminology. The op-amp symbol is a "lazy" triangle, and for analysis purposes we focus on three terminals: the inverting input (–), the non-inverting input (+), and the output. All voltages are measured relative to the power supply common rail (ground) which is established when the dc bias supply is connected to the chip. The old 741 required a bipolar supply of up to +/– 15 V. Today there are op-amps that operate on a single polarity supply.



We assume that the op-amp is properly biased and consider the relation between the inputs and the outputs. The gain of the op-amp running without any feedback network in place is called the open loop gain. It is typically a very large number (like 20,000 or higher). The output voltage of the op-amp is equal to the open loop gain (let's call it G) times the difference between the voltage at the non-inverting input and the voltage at the inverting input. You might think, gosh, I can really amplify a weak signal this way! Unfortunately, the op-amp can never be used this way because (as with any very high gain amplifier) the gain is not stable.

Rather, what we do to gain stability is to take a sample of the output voltage and feed it back to the inverting input. So, if the output voltage were to suddenly increase a bit, a fraction of this increase would be subtracted at the input and then amplified, giving a smaller output.

If the output voltage were to suddenly decrease a bit, less of the output voltage than usual would be subtracted at the input, giving a larger output after amplification. In this way the negative feedback serves to stabilize the gain of the op-amp. In fact, the beauty of the op-amp is that the gain characteristics of the amplifier can be completely controlled using circuit elements external to the amplifier itself - - they can therefore be easily changed.

next week - some simple circuits ■

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