



# HAM HUM

Published by  
AK-SAR-BEN RADIO CLUB, INC. - Omaha, Nebr. 68101  
Post Office Box 291 - Downtown Station



Vol. XXV  
No. 1

January 1975

## NEXT MEETING

WHEN: FRIDAY - JANUARY 10, 1975

TIME: 7:30 P.M.

WHERE: BRIARDALE FELLOWSHIP HALL  
Countryside Briardale United Church of Christ  
12020 Pacific Street, Omaha  
(This is the same place we held our Christmas party. It will not be our regular meeting place but is available for this month. By February we hope to have all of our problems solved and be able to announce a regular meeting spot.)

PROGRAM: DISCUSSION OF PROPOSED LICENSE RESTRUC-  
TURING  
Panel for the discussion will be Richard (Dick) Pitner, W0FZO, Vice Director, Midwest Division ARRL, and own members Edward C. Eichler, W00BCB, Arthur R. Gaeth, W0FQB, Alan H. McMillan, W0JJK, and Harry C. Snyder, W0NVE.  
HERE IS YOUR OPPORTUNITY TO LEARN WHAT THIS PROPOSAL IS ALL ABOUT.

REFRESHMENTS - EYEBALL QSOs - VISITORS WELCOME

HAPPY NEW YEAR TO ALL!

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**HAM HUM** is the official organ of the Ak-Sar-Ben Radio Club, Inc., of Omaha, Nebraska, mailed monthly to all members and to others upon request.



Next copy deadline: January 24th

**Annual Dues:**  
 Regular member . . . . . \$7.50  
 Regular member and XYL . . . . . 9.00  
 Student member . . . . . 3.50  
 (due and payable each Jan. 1)

Published by  
**AK-SAR-BEN RADIO CLUB, INC.**  
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New member initiation fee . . . . . \$1.00  
**Quarterly for balance of year:**  
 Regular member . . . . . \$2.00  
 Regular member and XYL . . . . . 2.45  
 Student member . . . . . 1.00

## NEWS NOTES

Code and theory classes at Plattsmouth are progressing nicely. The Novice class meets Tuesdays at 7 P.M. under the guidance of Jack, WØODL, at his home.

General and Advanced meets at First Christian Church Wednesdays at 7 P.M. Reverend Gene Mockabee, KØDNV, is the pilot.

\* \* \*

The R.E.I. Radio Club, located at 104 South 31st Avenue, will on January 18, 1975 and the last two Saturdays thereafter hold a communication equipment workshop (even C.B. equipment).

Fees for repairs will be a minimum of \$5.00 and a maximum of \$15.00 plus parts. There may be an additional charge of \$5.00 for service (Technical) manuals if not brought or we are unable to locate.

Saturdays are more or less drop days and when most of the work will

be done; other equipment will also be serviced thru the week.

Preston L. Bush  
 Secretary-Treasurer

\* \* \*

In the Dec. '74 Ham Hum, I have an addition and a possible correction to the 10M Beacon list. K6HMS is also on 29ØØØ; I have 3B8MS as being on 2819Ø. Might see who is right.

Also, there will soon be a new repeater in the area - a repeater on 146.01-146.61 will be located on the UNL Campus, hopefully within 1½ months. We are waiting for Xtals and license to come, so we are at FCC's mercy. This repeater will be open and it is easily accessible from Omaha. We inform you on the call and additional info when available.

73,

Bill Frost, WBØMAH

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## CHRISTMAS MEETING

The annual meeting of our corporation which coincides with the annual Christmas party of our Club took place on December 13th. The main item at the annual meeting is, of course, the election of officers for the coming year. The President and Vice President who served only the last three months of the year were reelected. This is the first time in the history of the Club that the President was reelected, and this was brought about, in case you are not aware of it, by the resignation of Rip, WBØGAJ, who fortunately for him was given a new opportunity with his company which took him back to New Jersey and Pennsylvania.

In addition to the reelection of Mike Wilczynski, WBØBMV, as President and Ed Eichler, WBØBCB, as Vice President, four new members were elected to the Executive Council: Robert A. Conley, WNØLYU; Lowell W. Jackson, WAØJKT; William A. Leatherwood, WAØZUR; and Michael L. McAllister, WBØDXA. Those remaining on the Board are: Patrick Scolla, WBØEGR; Lloyd McElhaney, KØDKM; Harry C. Snyder, WØNVE; and James D. Howard, K5TNP/Ø.

After the election attention was called to the members who are going off the Board and thanks was evidenced for their services. Special appreciation was given to Charles Kelly, WAØUZX, for his three-year stint as Treasurer of the Club. It was also recognized that without the help of his XYL Marjorie, who is also a WNØKHO, he couldn't have done as well as he did.

January 1975

Time was also set aside for the discussion of "Operation Christmas" or whatever it may have been called. Hugh Tinley, KØGHK, arranged with Club members and various organizations around town in order to provide phone calls for senior citizens or those in hospitals to their loved ones. Assignments to make these calls were accepted by various members. Hopefully you all read of this operation in the World Herald. It was in both the morning and evening editions on Monday, December 16th.

Also discussed was "Operation Santa Claus" which would be handled on the repeater and hopefully more information on this operation will appear elsewhere in this issue.

During the business meeting movies were shown to the kids following which they were presented with crackerjack and small gifts.

After the business meeting we had two drawings - one for the exchange of members' presents and the other for the Club door prizes.

Following the exchange we had cakes brought by the ladies of the Board members, sometimes known as XYLs, with coffee and ice cream and the eyeball QSO which follows is probably still the most interesting part of the Christmas meeting.

\*\*\*\*\*

Lady: "How much are those chickens?"

Butcher: "A dollar and a half, ma'am."

Lady: "Did you raise them yourself?"

Butcher: "Yes, they were \$1.25 yesterday."

*The Oklahoma Mason*

\*\*\*\*\*

## BOARD MEETING

This editor was privileged to attend the first meeting of the 1975 Board of Trustees. The first order of business was the selection of William A. Leatherwood, WAØZUR, as Secretary of the Club and Robert A. Conley, WNØLYU, as Treasurer.

The Board discussed the many facets of the Club such as meeting programs, meeting places, and various activities for the year.

Regarding meeting places, the Briardale Fellowship Hall where we held our Christmas meeting seemed to be quite satisfactory and particularly solved the problem of the ground floor entrance. At the time of this writing we have not had clearance for use of the Hall for our January meeting; however, meeting place will appear on the front page of this issue.

Programs have been committed for February and March. Tentatively they are as follows: February - discussion on aviation avionics; and March - the Club auction. If any of our readers have suggestions as to possible programs, please send them to Program Committee, P. O. Box 291, Omaha, Nebraska 68101.

A committee was formed with Ed Eichler, WBØBCB, as chairman, the other members to be selected and announced later. Purpose of this committee is to study the proposed FCC licensing changes with the dual purpose of educating our members regarding the new proposal and gathering from our members their thoughts and suggestions so hopefully a statement of opinion of the combined thinking of our Club

members can be prepared and submitted to ARRL.

Elsewhere in this issue is a guest editorial entitled "Organizations - Who Needs Them?" If you have not already read it, please do so. Ed's committee goes along with this editorial in that it gives an early evidence of your officers' interest in all Club activities; and whereas this Club is operated by a clique composed of the "doers," in the same manner as any other organization, the Board is interested in involving as many of you as possible in the various functions. And whereas this new Committee is only one evidence of the Board's desire to improve our Club, I observed from the rest of the discussions that your leaders for 1975 will, as it says in the guest editorial, be very active including aggressive, innovative, dynamic, etc. and with your help, each of you individually, 1975 will be a good year.

Happy New Year to you all!

Dick, WØYZV

P.S. If you have any comments on the new licensing proposal, feel free to send them to Ed, WBØBCB.

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### Via Ed Eichler, WBØBCB

Most of us amateurs are aware that the FCC has finally reacted to some 35 individual rulemaking petitions which have accumulated over a period of several years. The new docket 207 incorporates these petitions into FCC proposed restructuring amateur radio in licensing classification, frequencies, power output, types of emission

permissible per license class, examination procedure, etc. No doubt this is the second most sweeping proposal since incentive licensing.

In January every amateur radio magazine will publish the new docket 282 and editorialize the pros and cons of the specific elements. The FCC has given at least six months to mull over the text. This should be adequate time to place the proposal into perspective with individual amateurs, amateur operations, and the growth of amateur radio itself.

As a Club we should read the text in full, discuss each element, and at the appropriate time submit our study to ARRL and FCC.

\*\*\*\*\*

Minds are like parachutes. They only function when they are open.

Service

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Thursday, 28 Nov. 74

Dear Dick,

Just a short note to say HI to you and the Club through Ham Hum. Miss Ak-Sar-Ben RC and the gang and am wishing we were with you all. Two meter activity in the New York area is wild, as it is near Philadelphia where we are relocating. One machine on top of another and some very fine hardware indeed with PL, SAT, TB, WO, --- your name it!

Made it to Omaha for the Thanksgiving holidays and had a couple of nice QSOs with the ol' buddies on .94. See you next round! Merry Christmas to all!

73,

Rip, WBØGAJ

\*\*\*\*\*

## ARRL SERVICE

We quote an exchange of letters, sent to us by Charles Michel, KØQVL, which is self-explanatory other than the fact we should also recognize and compliment Ellen White, W1YL, and her gang at ARRL for this volunteer work.

American Radio Relay League  
225 Main Street  
Newington, Connecticut 06111

This is to say thanks for making QST Magazine available to the blind or visually impaired thru cassette tapes. I was injured and use these to keep informed of happenings inside my hobby.

Also, I was injured in early 1972 and I have used amateur radio as an active part of my daily living and mental therapy along with the companionship that comes with our hobby. I usually operate on two meter FM for reasons of convenience but I shall expand my operating habits.

So again I thank ARRL for the availability of this service.

Yours truly, 73

Charlie Michel, KØQVL

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Dear Charlie:

Thanks for your nice note. Several of us Hq. hams record QST at home, as a volunteer project, and it is very nice to hear from you fellows that you appreciate the service.

Best ham wishes to you in 1975. 73!

Ellen White, W1YL

Deputy Communications Mgr.

ARRL

\*\*\*\*\*

## 1975 BOARD OF TRUSTEES

President	Marion (Mike) Wilczynski, WBØBMV	(1975)
Vice President	Edward C. Eichler, WBØBCB	(1975)
Past President	Vernard (Rip) Riportella, WBØGAJ	(1975)
<u>Executive Council</u>		
Treasurer	Robert A. Conley, WNØLYU	(1975-76)
	James D. Howard, K5TNP/Ø	(1975)
	Lowell W. Jackson, WAØHKT	(1975-76)
Secretary	William A. Leatherwood, WAØZUR	(1975-76)
	Michael L. McAllister	(1975-76)
	Lloyd McElhaney, KØDKM	(1975)
	Patrick Scolla, WBØEGR	(1975)
	Harry C. Snyder, WØNVE	(1975)

## PAST PRESIDENTS OF THE CLUB

1945	Nels Peter Nelson, W7RCF (Ex-WØYDC)
1946	John F. Leeder, WØUFD
1947	Arthur R. Gaeth, WØFQB
1948	Herbert D. Curry, WØQXR
1949	Elmer N. Stein, Ex-WØAVM
1950	Dr. Leon Becker, W6AID (Ex-WØBBX)
1951	Earle E. Olson, WØJKE
1952	John W. Orr, WØPHW
1953	Rev. R. J. Strange, WØQHG
1954	Frank W. Cooper, W3NV (Ex-WØIOS)
1955	Arthur E. Stadler, W9KHD (Ex-WØQMD)
1956	Dick L. Eilers, WØYZV
1957	Curtis D. Hicks, KØAMM
*1958	Edward Gutmann, WØCQX
1959	David A. Hollander, W6COJ (Ex-WØCJW)
1960	Max N. McKinney, WØYVV
1961	John A. Droescher, KØKWB
1962	Royal M. Enders, KØLYO
1963	Joseph F. Berounsky, KØQDB
1964	Louis A. Cutler, WØVLI
*1965	Edmond E. Donze, WØYEV
1966	Byron J. Smith, Sr., WAØICK
1967	Ervan D. Heinz, WAØEEM
1968	Robert C. Lockwood, WAØDHU
1969	Royce E. Johnson, WAØKIL
1970	Harold E. McClenahan, Jr., WAØDGA
1971	James C. Droege, WØYCP
1972	Edward F. Askew, WAØRDZ
1973	Russell A. Minks, WAØVEE
1974	Vernard Riportella, WBØGAJ

\*Deceased

## GUEST EDITORIAL

### ORGANIZATIONS— WHO NEEDS THEM?

By Don, WAØPBQ

People give many reasons for not joining voluntary organizations such as radio clubs. Some of the reasons I hear used for not joining a group such as H.A.R.C., A.R.R.L., or similar organizations bother me. It is of course, each person's privilege to make his or her own decision about joining any hobby club or organization. No law says he must, and let's keep it that way. But let's take a look at some of these reasons.

"The organization is run by a little clique." Unfortunately, this is usually true, whether one speaks of the H.A.R.C., A.R.R.L., or many other organizations. That clique is made up of those who attend meetings regularly, accept appointments to various responsibilities, volunteer for jobs which need doing, suggest ways to keep things active, and generally show their support. In any club or voluntary organization I know of, all one has to do to become part of the "inner circle" is to act interested and be willing to contribute ideas, time and talent.

"They just don't do anything for the members," or — "They don't really represent the members' wishes and interests." "They" is that clique that run things. If these statements are true, it is usually because of the lack of ideas and suggestions from the members. If you feel your group isn't doing anything, perhaps you should ask yourself what contributions you have made recently. How many

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projects or activities have you suggested? When did you last offer to help? My wonderful idea may leave you cold, and vice versa. Lack of action on one of your ideas is not a very good excuse for not offering any more.

"The leaders just are not very active (or aggressive, innovative, dynamic, etc.)" If this is really true, then it is time for a change in leadership. Most volunteer organizations have well defined procedures for regular elections of leaders. If the leadership is, in fact, failing, one can correct the situation by getting different people elected.

I could go on and on. I guess the main point is that it is not very fair to knock any organization — whether it be A.R.R.L., H.A.R.C., your church, civic club, or any other, unless you are willing to put out the effort to make it better.

(HARC, Kansas City)  
via Florida Skip  
\*\*\*\*\*

## RECENT CONTRIBUTORS

### Repeater Fund

John A. Cook, KØWVF  
Chester L. Doll, KØPTG  
Donald H. Filbert, KØAJO  
Frederick Fischer, Jr., WØEGP  
James D. Howard, K5TNP/Ø  
William A. Leatherwood, WAØZUR  
M. Eugene Mockabee, KØDNV

### Autopatch Fund

Donald H. Filbert, KØAJO

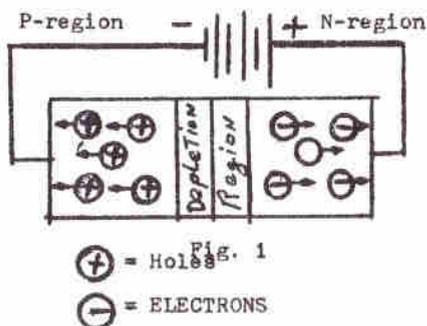
Many thanks!

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# ZENER DIODES AND WHY THEY WORK

By - WA6WYD

The Reversed Biased Diode: A diode is reversed biased when the negative terminal of a battery is connected to the P-region of the diode and the other terminal is connected to the N-region, as shown in Fig. 1.



WHY, with reverse bias, there is no conduction by majority carriers. Fig. 1 shows that the holes in the P-region and the free electrons in the N-region move away from the junction under the attraction of the opposite charges provided by the battery. The result is to greatly widen the depletion region.

Because holes and free electrons combine in the junction region, the number of holes and free electrons are much less near the border line than in the rest of the crystal. For this reason the region near the junction between the N- and P- materials is called the Depletion Region.

A continuous current through the diode requires the continuous movement of charge carriers across the diode from one battery terminal to the other. Since both the Holes and Free Electrons charge carriers in Fig. 1 tend

to move away from the depletion region, the charges shown do not move through the depletion region. Hence there is no current flow.

## REVERSE CURRENT FLOW BY MAJORITY CARRIERS.

The charge carriers in Fig. 1, are the majority carriers.

Doped semiconductor materials also have a few minority carriers, which are not shown in Fig. 1. The minority carriers in the P-region are Free Electrons and in the N-region are HOLES.

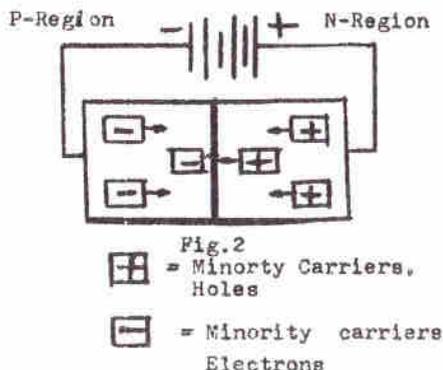


Fig. 2 - A reverse biased diode has a leakage current consisting of the minority carriers.

Because of the minority carriers, a semiconductor will conduct a small current when reverse biased. In Fig. 2 above, you will see that from the point of view of the minority carriers, the diode is forward biased, and consequently conduction by the minority carriers occurs the same way as by the majority carriers.

Fortunately, the fact that there are few minority carriers limits the reverse current to a small amount.

## REVERSE BREAKDOWN VOLTAGE AND AVALANCHE CURRENT.

Increasing the reverse voltage across a diode increases the number of minority carriers, because the extra voltage provides extra energy for breaking covalent bonds, so that the effect is resistance of the diode decreases, with an increase in reverse voltage.

The newly formed charge carriers help break more bonds, so that the effect is cumulative. The result is a very rapid increase in reverse current AFTER a certain voltage is reached.

After a certain voltage is reached, this is called the breakdown voltage or avalanche current. Good use is made of both in the next topic...

## ZENER DIODES:

Good use can be made of other properties of a diode besides its ability

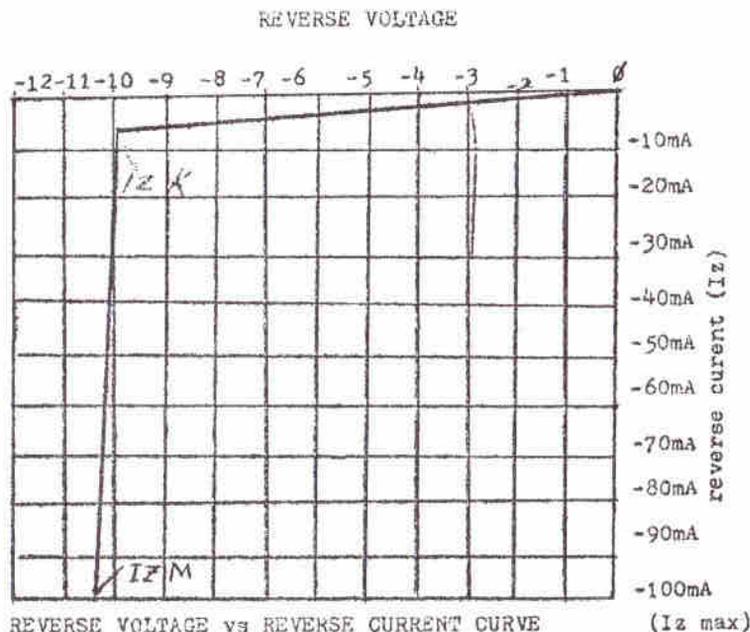
to rectify. Today, diodes are used as switches, amplifiers, capacitors, voltage regulators, transducers, and for many other purposes not even remotely connected with Rectification.

The important special uses for Diodes will be discussed in this article.

Zener Diodes, also called Avalanche Diodes or Silicon Regulators, are most commonly used as voltage regulators and voltage limiters.

They make use of the reverse breakdown voltage and avalanche current, principles discussed in the last topic. Zener Diodes are specifically designed for sudden breakdown when the designed reverse voltage is reached...

A curve showing reverse current vs reverse bias voltage for a typical Zener Diode is graphed in Fig. 3. A forward bias need not be considered, because



Zener Diodes are not normally used with forward biasing.

The curve shows that the reverse current is close to ZERO until the reverse bias voltage reaches 10 volts. When this voltage is reached, the Zener breaks down and becomes a conductor for any voltage after breakdown.

This would be a 10 volt Zener Diode. Like anything else you buy, they have a tolerance of plus or minus. It could be anything between 12 and 8 depending on the tolerance.

NEVER use a Zener Diode without a series resistor. That is a MUST.

de Keyer  
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### NEBRASKA QCWA NET

For those amateurs who may be interested and qualified for membership in the Nebraska Chapter of the Quarter Century Wireless Association, by reason of having been a licensed amateur twenty-five years ago, be advised that a Nebraska QCWA Net meets every Saturday, 3980 Mh., at 9 A.M.

Beginning January 4, 1975, the Nebraska QCWA Net will meet every SATURDAY on 3980 Mh. at 9 a.m. CST, instead of Sundays, with several new NCS's.

Officers of the Nebraska Chapter QCWA for 1975 are: President, WØGEQ; Vice-President, WØDMQ; Secretary, WØFQB; Treasurer, WØVYX. Board of Directors: WØLEF, WØMYT, WØWKP, WØWRY and WØMW. Anyone having a license 25 years ago is eligible for membership which now totals over 6,000, with 53 in the Nebraska Chapter.

Art R. Gaeth, WØFQB  
Secretary  
\*\*\*\*\*

### NEW MEMBERS ADDITIONS TO ROSTER

Ann Etta Crenshaw  
XYL of WØYWD  
10922 Prairie Village Drive  
Omaha, Nebraska 68144  
Phone: 393-8535

William R. Forbis, Jr., WBØIKL  
650 South 69th Street  
Omaha, Nebraska 68106  
Phone: 556-9916

Robert C. (Bob) Jones  
132 Bellevue Blvd., South  
Bellevue, Nebraska 68005  
Phone: 291-1590

Douglas E. Ramsey, WNØNYG  
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Omaha, Nebraska 68104  
Phone: 571-7541

Jill Ramsey, WNØNYH  
XYL of WØSBZ  
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Omaha, Nebraska 68134  
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Franz A. Wille, WØQFY  
7117 Wood Lane Drive  
LaVista, Nebraska 68128  
Phone: 331-6053

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A man entered a delicatessen  
pointed a gun and said: "Give me all  
your money."

Replied the owner: "To take out?"  
Have You Heard?

\*\*\*\*\*

Small son: "Daddy, if I had been born in China would I be Chinese born?"

"Yes, son."

"If I had been born in France, would I be French born?"

"Yes, son."

"Then, if I had been born in an airplane just halfway across the ocean, what would I have been?"

"Just airborne, son."

Scottish Rite News

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Two friends were discussing foods, specifically eggs. The first woman commented that the last dozen eggs she bought were brown eggs, then she asked her friend whether she preferred brown or white eggs.

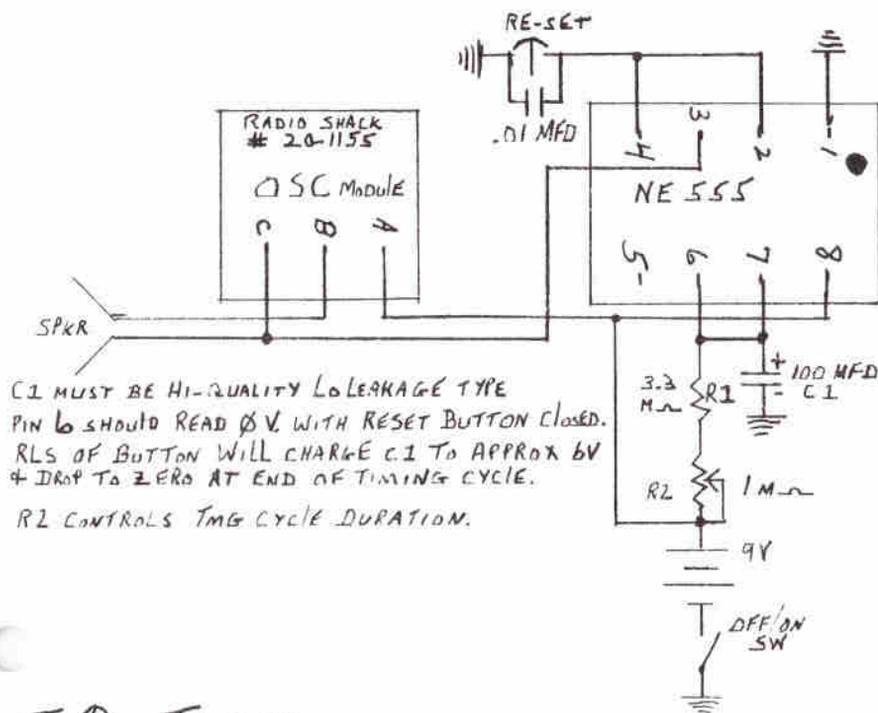
"Oh, it doesn't matter," her friend answered. "I don't eat the shells, anyway."

Sunshine Magazine

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Lynn (WAØODH) would like to share below ckt with Ham Hum members. It's drawn to scale for half page printing.

TNX - Don (WBØDRS)



C1 MUST BE HI-QUALITY LOW LEAKAGE TYPE  
 PIN 6 SHOULD READ 0.5V WITH RESET BUTTON CLOSED.  
 RLS OF BUTTON WILL CHARGE C1 TO APPROX 6V  
 & DROP TO ZERO AT END OF TIMING CYCLE.  
 R2 CONTROLS TIMG CYCLE DURATION.

ID TIMER

— DE WAØODH

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## TECH TALK

### MICROPHONE GAIN and DEVIATION

They are different! All modern transceivers have deviation controls. In almost all cases, this adjustment controls the modulation limiter or clipper. In other words, your radio has a clipper or limiter to keep your frequency deviation within a set tolerance no matter how loud you talk. An FM receiver has a certain frequency bandpass that determines its modulation acceptance.

WR9ABY likes to see signals with peak deviation between 5 and 7 KHz. Signals that are narrower do not produce enough deviation to properly recover the audio in the signal, and a wider signal recovers too much audio which drives the repeater transmitter into limiting (the repeater transmitter has deviation limiting, too) causing distortion of the signal through the repeater. In addition, a wider than normal signal produces sidebands outside the passband of the repeater receiver causing the power in the remaining sidebands (in the passband) to be reduced. Remember that the total signal power in FM is always the same, and worse, these sidebands produce harmonic distortion at the discriminator which forces the receiver squelch closed causing what you hear as clamping or chopping on deviation peaks.

The deviation limiting is usually the last stage in the audio section of your transceiver. This means that the deviation control also controls the microphone gain which leads to the confusion about the difference between the two.

Microphone gain is the level at which you are driving the limiter or clipper. This normally is not readily adjustable because most transceivers (if they are designed right) have the mic gain preset to just barely clip the limiter at normal speech levels. Some transceivers have simple jumpers or resistor changes which will adjust mic gain if it is incorrectly set.

Any combination of improperly adjusted mic gain or deviation produces bad signals, but the two most common types are:

*"Low mic gain with deviation adjusted high to compensate."* Deviation adjusted high makes your average deviation into the repeater seem okay, but the limiter is set for much higher than the required 7 KHz. This means that voice peaks will be overdeviated causing squelch clamping. Turn your deviation down and try a new mic.

*"Deviation okay, but mic gain too high"* - I call this the SBE-144 effect, although there are lots of rigs guilty of this fault. The audio is constantly driving the limiter too hard. Background noise is high, and the audio peaks are incredibly distorted. Maybe the solution to this is a gain adjustment at the mic preamp to hold the level down. Why don't you try it?

Low deviation and low mic gain are hard to tell apart unless you can hear limiter distortion on the signal meaning low deviation. Be careful though you don't tell somebody that he is noisy when the real problem is low audio and/or deviation. Listen to the level of the squelch tail or check your receiver volume control setting.

## FREQUENCY

The other common problem causing audio distortion, weak signal, and squelch clamping is frequency adjustment. An off-frequency signal sounds distorted, clamps, and gets extremely noisy and quiet rapidly when mobile. Most transceivers will hold 200 Hz tolerance very easily, and under no circumstances should you be more than 1 KHz off. This corresponds to 146.159 to 146.161 on a counter. If you can't get within that or stay there, something is wrong with the crystal or your rig. With all the counters around town (including the one in the window of Spectronics) there is no excuse for being off frequency. When was the last time you checked? Remember to announce your test if you are radiating a signal into an antenna.

Maybe it's time to recheck your rig. The other operators may be putting up with an inferior signal from you that you can easily correct - give them a break. NO NO - not "break break" . . . . .

BDS

de Squelch Tale

Ed note: This is an excellent article on FM and should be most helpful; we'll try to get more of the articles in this series and present them in Ham Hum. - WØWRT.

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It costs more now to amuse a child than it used to cost to educate his father.

Service

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## "DITTO" IT AIN'T WHAT YOU DO

"An excellent plumber," observed John W. Gardner, former HEW Secretary, "is definitely more admirable than an incompetent philosopher. The society which scorns excellence in plumbing because plumbing is a humble activity and tolerates shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water."

In brief, "It ain't what you do; it's how you do it."

No matter what your job may be, the doing counts. And the doing it in a superior manner counts most of all. For the man who does his job to the best of his ability - no matter what he does - has reason to be proud of his accomplishments.

The excellent plumbers along with the excellent nurses, housekeepers, secretaries or cooks know that the work would never be finished without them.

Management knows their importance.

Each worker should be proud to be important for his efforts in getting the work done.

(Credit Lost)

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If your safety belt is too tight it is time to resume dieting.

Service

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# HAM HUM SWAP

FOR SALE: 60 CC two cycle 3-speed Bridgestone mini bike - \$160;  
Globe Scout model 65, good condx. - \$15.00;  
BC-348Q mint condx. with built-in AC supply - \$30.00;  
Johnson Viking II, good condx. - \$45.00.

John Hughes, WNØMTS  
Phone: 397-7271

WANTED: 304 TL Tube.

Paul G. Taylor, 2030 North 68th Street,  
Omaha, Ne. Phone: 553-2020

FOR SALE: Heath Station/System

Rcvr SB-301 w/400 Hz filter, 2 and 6 meter Xverters . . . . \$190.00  
Xmtr SB-401 (less Xtal pack) . . . . . \$190.00  
Spkr SB-600 . . . . . \$ 12.00  
Monitor Scope SB-610 (wired for 3395 IF)\* . . . . . \$ 55.00  
Scanalyser SB-620 (wired for 3395 IF)\* . . . . . \$ 85.00  
Station Console SB-630 . . . . . \$ 55.00

\*with Mod-Kits for other IF's

All in excellent condx: Elec, mech, appear.

Assembled, calibrated and maintained professionally. All with manuals. Total pkg: \$560. Will split units for asking price shown.

339-2162 Rip, WBØGAJ

FOR SALE

OR TRADE: Motorola TLD 1470-A 7 channel car telephone (152-158 MHz) less control head. Has not been modified.

Charlie Hicks, WNØLJP  
Phone: 298-8154, Plattsmouth

FOR SALE: HT-220 Motorola Handitalkie with remote microphone, with case and rubber duckie antenna. Price \$200.00.

Contact Gregg Dehaan  
Phone: 455-2466

FOR SALE: Used AM 12V car radios-working. \$2.00 each.

Glenn Pollock, WAØFMY  
Phone: 571-6230

FOR SALE: From the Estate of WØFNB.  
Swan 250 with AC Power Supply.

Phone: 339-8308

FOR SALE: Knight T-150A transmitter, \$60.00;  
Johnson T-R switch, \$15.00;  
Heath Sixer HW29A with 12 volt supply GP11, \$30.00.

Skip Walter, WØOYW  
3317 Starr Street  
Lincoln, NE 68503  
Home: (402) 466-3074  
Office: (402) 472-3374

FOR SALE: Two AMPREX tubes 7203-1/SD655 with sockets and chimneys  
(new condition). Need money for DRAKE amplifier.

Charlie, KØQVL  
8720 Charles St., Omaha  
Phone: 391-3782

FOR SALE: 19" open relay rack - \$25.00  
RCA VTVM - \$20.00  
2 - Corner horn spkr. enclosure  
1 - Bass reflex spkr. enclosure - \$15.00 each  
Used 7" reel tapes - 60¢ each or ten for \$5.00  
Matched pr. 12" triaxial electrovice spkrs. - \$60.00

Nat Perry, WØOCZ  
(Omaha) 339-6432

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## AMSAT & OSCAR'S

Six satellites, dubbed OSCAR'S (Orbiting Satellites Carrying Amateur Radio) have been launched since 1961. The first four were launched by the USAF as Secondary (piggy-back) payloads where extra payload space was available, and the most recent two OSCAR'S were launched by NASA through similar arrangements.

The AMSAT-OSCAR 6 satellite most recent and advanced mission of Oscar series was launched in Oct. 1972 by NASA and is still in operation. Over 1,500 radio operators in 70 countries and all 50 states have been using AMSAT-OSCAR 6 for amateur com. with voice, telegraphy,

slow-scan TV and fax. Functioning as an educational tool for training in schools the AMSAT-OSCAR 6 is also demonstrating its usefulness for "bush" and emergency com. and a medical data exchange.

Membership in AMSAT is open to all radio amateurs and other interested persons, on an individual member basis, or as part of a group interested in becoming a Member Society. Further info may be secured from Radio Amateur Satellite Corp., P.O. Box 27, Washington, D.C. (S.W.P. NETBUL)

de Florida Skip

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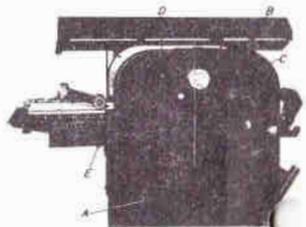
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