HAM HUM

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

November 1969

Vol. XIX
No. 11

NEXT MEETING

WHEN: Friday – November 14, 1969

TIME: 8:00 P.M.

WHERE: Red Cross Chapter House–Club Room
39th and Dewey

WHAT: Past Presidents' Night

Latest on the Repeater by
Jim Droege, WØYCP

Refreshments – Eyeball QSOs

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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: November 28th

Published by
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PRESIDENT'S CORNER

Another year has just about gone by and I wonder what happened to all the things I hoped to accomplish. It must be that I move much slower than I used to because there never seems to be time to do the things I want to get done. I guess everyone gets around to feeling this way at times but if you can look back and feel that you have made an earnest effort, it takes some of the sting out of not finishing the job.

One of the hardest jobs of the year is now coming up. This is the job that must be done by the Nominating Committee. Maybe your first thought is that it's real simple to pick a slate of names to go on the ballot. You may even think it would be real nice to have a double slate so it would be more like a regular election. I agree that a double slate would be nice, but where will you come up with that many people who are willing to put in a few hours a year for the good of the group. How many of you all have been asked to serve in the past and then told the Nominating Committee you just didn't have the time? How many have used the excuse "I'm not capable"? If your Committee didn't think you were, they would not have asked. Maybe their judgment of your ability is better than your own.

If you are approached to serve next year say, "Yes, I'll be happy to do my best." If you do this, any criticism of what you do will be undeserved. Also, without a doubt, the one criticizing has been asked to serve and wouldn't. Please give this some serious thought and answer "yes" when you are asked to serve.

73s
Royce E. Johnson, WAØKIL

Incidentally, the response was most heartening to my suggestion that contributions be made toward the operating expense of the repeater. Cash contributions have been receiv[illegible] from ten of our members, totall[illegible], $45.00. These include KØDNE; WØ's EGP, YSX, YZV; and WAØ's DGA, KIL, NCO, NPF, MYF, IIX.

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SILENT KEY

The Ak-Sar-Ben Radio Club mourns the loss of a valuable member. Edmond E. Donze, WØYEV, passed away very suddenly on September 24, 1969 from a heart attack at age 59.

Ed first became interested in amateur radio with his daughter, Barbara, when she became a novice in 1954, at which time they both joined the Ak-Sar-Ben Radio Club. Ed's first general class license was dated November 15, 1954. He served the Club in many ways and was president in 1965. We will miss him as a member.

Ed joined Air Force Mars in January 1961 and was a working member of that organization until the day of his death. He had a variety of jobs, such as net control station, state director, property manager, and was last records manager for both Area 3 and Nebraska. Regardless of title, Ed was always available and did more than his share on every project of either Air Force Mars or Ak-Sar-Ben Radio Club, Inc.

Ed is survived by his XYL Maxine, a daughter, Barbara, a son Fred, and four grandsons. Our deepest sympathy is extended to his family.

We will long remember the call WØYEV.

(Editor's Note: We regret we were able to have only a brief notice of Silent Key in last month's issue of Ham Hum. At the time of Ed's passing the magazine had already gone to press and it was only possible to insert the small notice.)

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FOR SALE

1966 Fisher X-100 Sterephonic-master Control Amplifier, 40 Watt.

Bill Hewitt
7571 Springfield Drive
Omaha, Nebr. 68114
Phone: 391-1829 (evenings)

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WANTED TO BUY

Old Zenith console radio – in fairly good condition – working or not.

Bryce Nelson, WAØTSO
3024 N. 75 Avenue
Omaha, Nebraska 68134
Phone: 391-8580

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OOTC

Chas. W. Boegel, Jr., WØCVU, calls our attention to the Old, Old Timers Club. If you communicated by radio 40 or more years ago over a radio station owned or controlled by you, you are eligible to join. If you are currently licensed, you are eligible for regular membership; if not currently licensed, you are eligible for associate membership. This editor has only 26 years to wait!

You may know of an amateur who has the 40 years. If so, get him to send a QSL card to WØCVU, 1500 Center Point Road N.E., Cedar Rapids, Iowa 52403.

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NEW MEMBERS ADDITIONS TO ROSTER

John A. Cook, KØWVF
3419 Mason Street
Omaha, Nebraska 68105
Phone: 345-5513

Harold F. Layher, WAØPCC
8409 North 31st Street
Omaha, Nebraska 68112
Phone: 455-0311

Robert G. Serlet, WNØZPW
3601 North 67th Avenue
Omaha, Nebraska 68104
Phone: 553-0469

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FOR SALE

Model 465 21B Curtis-Mathes color console TV, oil finish walnut cabinet, large frosted tube.

Dick L. Eilers, WØYZV
Home phone: 391-2255

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OCTOBER MEETING

The last meeting of the Ak-Sar-Ben Radio Club, Inc. was held on October 10th at the Red Cross Chapter House. Bob Lefholtz gave a very interesting and informative talk and presented films on the procedures to be followed in the event of a severe electric shock.

All present at the meeting were truly engrossed with this timely and worthwhile program. After a discussion period, Bob had two lifelike models for our use in practicing the mouth to mouth resuscitation method of artificial respiration.

Bob kindly consented to wrap up his talk with an article for Ham Hum for which we are further indebted.

Meeting adjourned and refreshments and eyeball QSO's followed.

Bob Lefholtz' article follows.

"Historians of the future will probably say that the strategic interference in the return of an electric current to ground has marked man's achievement in electricity. When this interference has not been too strategic and man himself has been the conductor, the result has been injury or death." (From Life Insurance In The Shack, George J. Nichols, M.D.)

There are certain factors that influence the effect of electric shock in the human body. Voltage, body resistance, and duration of contact determine the current that will flow through the body. The path the current takes through the body is important.

The amount of current to give various sensations or injury is as follows:

.2	to	.3 ma	Tap
.75	ma		Pinch
1.0	ma		Grip
5.0	to	15.0 ma	Unpleasant stimulation
15.0	to	19.0 ma	Stimulation and paralysis
25.0	ma	up	May cause permanent damage to nerves and blood vessels.
70.0	to	90.0 ma	May cause death.

The effects of electric shock on the human body are: ventricular fibrillation, paralysis of the respiratory system, burns and heat.

Ventricular fibrillation may be caused by currents as low as 75 ma when they pass through the heart area and interfere with the tiny electric currents that cause the rhythmic contractions of the heart muscle and result in haphazard and chaotic contractions of the heart muscle.

Higher currents cause a violent contraction of all the muscles including the heart muscle. When the shocking current is removed the tendency of the heart muscle is to resume beating, particularly if the rescuer knows and applies the principles of mouth to mouth artificial respiration.

Burning at the point of contact reduces the resistance of the contact which causes more current to flow and increases the damage.

Heating of the tissue due to the passage of the current may cause irreversible damage to muscles, blood vessels, nerves and body organs.

How to prevent electric shock:

INSPECT–your equipment, your tools, your wiring.

INSULATE–yourself from grounded objects, energized equipment and conductors, and equipment and conductors that may become energized.

ISOLATE–by providing guards that will prevent accidental or unintentional contact with equipment and conductors.

The only first aid available to the rescuer for treatment of electric shock is artificial respiration. This can best be learned by taking American Red Cross First Aid Training.

ARTIFICIAL RESPIRATION
"Head Tilt Method"

1. Clear Air Passages

Lift Neck

In an unconscious person, the tongue usually drops back and blocks the air passage. Lift the neck high enough to let the head drop back as the first step in clearing the air passage.

Extend Head

Head should then be tilted into maximum extension (as far as it will go). Push jaw upward from below with one hand. Push top of the head back toward the shoulders with other hand. Air passages will be cleared when chin is pointing almost straight up.

2. Inflate Lungs

Open your mouth wide. Place it over mouth of victim. Hold victims nose or lean your cheek against it to prevent air leakage. Blow deeply until chest rises. With an infant use only small puffs of air. Remove mouth and take your next breath while victim is exhaling. Repeat 10-12 times per minute for adult and 20 times for a child. Remove excess air from stomach with light pressure.

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MIDWEST DIVISION DIRECTOR

Now is the time for all good members of the Midwest Division ARRL to vote. You have received your ballot for Midwest Director through the mail. Information regarding the two candidates appears on the reverse side of the ballot. Sumner H. Foster, WØGQ, is the incumbent and is running for reelection; and C. W. Wade, WØINH, has been nominated. It is now up to you, the member, to make your selection. Don't let others do it for you!

In previous elections whether in our Division or any other Division, the percentage of voting members has been quite small. Inasmuch as this is the time members have the opportunity to select their representatives and inasmuch as these representatives do constitute your entire communication path to our organization, you should not pass up this opportunity. The manner in which the League operates for these elections is outlined in the Election Circular enclosed with the Ballot. Note particularly the Ballot Instructions.

There is no election for Vice Director as only one member was nominated. He has, therefore, been declared Vice Director. He is Ralph V. Anderson, KØNL. Congratulations, Ralph! We'll await the outcome of the voting for congratulating the Director.

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Age is creeping up on a man when the gleam in his eyes comes from the sun's reflection on his bifocals.

de Signal Report, Florida

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WOMEN ——————— SHOCK ! !

This notice is for WIVES of HAM RADIO OPERATORS.

Would *you* know what to do if *your* OM was ever to get an electric shock? Would YOU know how to give ARTIFICAL RESPIRATION?

At our last meeting we had a very interesting movie, demonstration, and discussion on electric shock and lifesaving techniques by Mr. Bob Lefholtz, Chairman Disaster Services, Red Cross. Mr. Lefholtz has agreed to demonstrate the proper procedures for artificial respiration at a special meeting for XYLs, providing a sufficient number are interested.

Let's see if we can get enough XYLs together to hold such a meeting. After all, the LIFE YOU SAVE may be that of your OM (or even some other member of your family).

Call Sharlene Anderson for details and to arrange a date.

Sharlene, XYL of KØDNE
Phone evenings: 551-0630

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OFFICIAL BULLETIN NR 240 FROM ARRL HEADQUARTERS NEWINGTON CONN SEPTEMBER 24 1969 TO ALL RADIO AMATEURS BT

The FCC adopted an order on September 24 modifying Docket 15928 to provide that all Extra Class c.w. bands will remain at 25 kHz, and the 6 meter assignment will remain unchanged. However, all previously scheduled additional phone band restrictions go into effect on November 22 AR

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STATE FAIR – 1969

The Lincoln Amateur Radio Club, Inc. went to the State Fair. They handled an amateur radio booth for 24 hours a day for 7 days. We commend them on their operation of KØNEB at the Nebraska State Fair!

Russ Ritzman, WAØLGR, as chairman, gathered four TR-44 rotors; three 10-foot tripods with rotor mounts; 1000 foot of 8 conductor rotor cable; 1000 foot of RG-8/U coax cable; 3 element 10 meter beam; 3 element 15 meter beam; 4 element wide spaced 20 meter beam; 2 element 40 meter beam; 40 meter dipole for novice; 80 meter dipole with baluns and lightning arresters. And with the use of Galaxy GT-550 rigs and linears, five high powered stations were established plus the novice station.

When the log books were closed at the end of the Fair, the total showed there were 40 operators from Lincoln and several other towns, some with considerable time on the air. For example, one ham worked 9 shifts (8 hours); one worked 8 shifts; three worked 7; five worked 6; three took a week's vacation so they could spend most of their time at the station.

What did they do? They worked 110 countries, all 50 United States, all Canadian provinces; and handled 608 messages which, incidentally, were all on their way when the station closed down. There were 2695 contacts of which 1000 were DX, and the largest number for one band were made on 20 meters. 1500 QSL cards have been sent out.

It would be interesting to know the man-hours spent in planning, assembling, building, raising money, etc. in connection with this project. Also, no mention was made of any local assistance by Lincoln and Nebraska hams in getting the 608 messages on the way by close of station time. Many stations and nets received this traffic. In the Lincoln Log credit is given for contributions to Hy-Gain, Galaxy, Nebraskaland Foundation, State Fair Board, Weaver Potato Chip Co., Leuck Radio, Hoerner Waldorf Corp., Capitol Engraving Co., and World Radio.

After all this, we repeat – congratulations to the Lincoln Amateur Radio Club!

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The cannibal chief poked his prisoner and asked, "What was your job, boy, before we captured you?"

"I was the editor."

"Well, you're in for a promotion. Soon you'll be editor in chief."

de Ham Monitor, Ks.

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OFFICIAL BULLETIN NR 242 FROM ARRL HEADQUARTERS NEWINGTON CONN OCTOBER 9 1969 TO ALL RADIO AMATEURS BT

Hams throughout the United States have expressed interest in seeing that immigrants who have taken out first papers toward citizenship be permitted to apply for amateur licenses. S-1466 is the number of a bill co-sponsored by 22 Senators currently under consideration which would permit this. The many radio amateurs wishing to support S-1466 have also indicated their unawareness of the channels to follow. Full information along this line appears on page 74 of July QST AR

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OFFICIAL BULLETIN NR 241 FROM ARRL HEADQUARTERS NEWINGTON CONN SEPT 27 1969 TO ALL RADIO AMATEURS BT

The ARRL Executive Committee met today to examine nominating petitions filed by members for League Directors and Vice Directors. By reason of nomination of but one eligible candidate the following were declared elected, the Canadian Division Director Noel B. Eaton VE3CJ, Dakota Division Director Charles G. Compton WØBUO and Pacific Division Director J. A. Gmelin W6ZRJ. Also declared elected was Canadian Vice Director George Spencer VE2MS, Midwest Division Vice Director Ralph V. Anderson KØNL and Pacific Division Vice Director Hugh Cassi(WA6AUD. Wherever the Committee found valid petitions naming more than a single candidate for these offices and the candidates meeting the requirements as to League membership and freedom from any commercial radio connection, ballots were ordered mailed to full members concerned covering contested offices. Such candidates by Division are:

Atlantic for Director,	Blodgett W2UTH, Crossley W3YA, Hippisley K2KIR, McConaghy W3EPC, Mercado W3FBF, Wojtkiewicz W3GJY.
Atlantic for Vice Director,	Bieberman W3KT, Breiner W3ZRQ, Nadley W3MQ, Smith WA2KND, Van Dyke W3HK.
Dakota for Vice Director,	Maus WØMBD, Shima WØPAN.
Delta for Director,	Arnold W4WHN, Matthews W5VAE, Phillips K4RCT, Raymond W5NJD.
Delta for Vice Director,	Cassen W4WBK, Sanders WB4ANX.
Great Lakes for Director,	Michel W8WC, Nathanson W8DQL, Rippe W8HDB.
Great Lakes for Vice Director,	Gibbemeyer WA8PRR, Russell W8BU, Skutt W8FSZ, Zimmerman K4FU.
Midwest for Director,	Foster WØGQ, Wade WØINH.
Southeastern for Director,	Hamel K4SJH, Jones W4BTM, Strieter W4DQS.
Southeastern for Vice Director,	Bolvin W4LVV, Price W4DQD.

As soon as ballot returns have been counted in late November, results of all these elections will be given in a further bulletin from this station AR

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OFFICIAL BULLETIN NR 238 FROM ARRL HEADQUARTERS NEWINGTON CONN SEPTEMBER 11 1969 TO ALL RADIO AMATEURS BT

The National Industry Advisory Committee is assisting FCC in developing a report on the effect on communications as a direct result of Hurricane Camille. The Amateur Radio Subcommittee of NIAC has been asked to query amateurs on certain matters. All amateurs who took part in the Camille operation as amateurs are asked to respond to the following questions: 1. Was your community affected? 2. Who is your AREC EC and/or RACES RO? 3. What local or state agency or agencies do you serve normally and were they served or contacted during Camille? 4. Which federal agencies were served by you or your emergency group, if any? 5. Was operation tied in with any amateur system or organization other than AREC, NTS or RACES? Which? 6. Name types of communications capabilities at your station. Which were used during Camille? Which failed if any and when restored? 7. Indicate times of outage and restoration of commercial power, if any. 8. Indicate your stations emergency power source, if any, and was it used? 9. What hours did your station operate? 10. Describe briefly any damage suffered by your station. 11. Any suggestions as result of your perience in Camille? 12. Briefly uescribe or summarize any unusual emergency operations during Hurricane Camille. All amateurs who participated are asked to answer the above questions or write ARRL Headquarters for printed copy of questions. Please submit your answers to Chairman, Amateur Radio Subcommittee, National Industry Advisory Committee, c/o ARRL, 225 Main Street, Newington, Connecticut 06111 AR

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NOTICE: TRY 2 METERS AND THE REPEATER

By William Paul Snyder

Why not get on 2 meters? It is easy to get on. You can get a handie-talkie for as little as $50.00. Besides, you don't have to fiddle around with tuning. Instead of tuning, you pop in a crystal.

You have a choice of 31 two-meter FM channels, 6 kc. apart. Channel 1 is 146.04 mc., Channel 2 is 146.10 kc., and Channel 31 is 147.90 kc. Our repeater is on Channel 6 – 146.34 mc. for receiving you, and Channel 16 – 146.94 mc. for repeating. In Omaha we have some use of the repeater, but there is A LOT OF OPEN TIME ON THE REPEATER. Like during the morning and in the afternoon, there is a lot of open time. Even in the evening! In fact, the repeater should be used more!

The Omaha repeater is OPEN TO ALL HAMS, even if you're from outstate, Canada and even Russia. Please note that you must be at least a technician to run on the 146-147 mc. band area.

So everybody get on 2 meters and the repeater (WØEQU) and have a ball. Besides, we can open new channels in Omaha and use the repeater more.

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October 25, 1969

Ham Hum
Ak-Sar-Ben Radio Club
Omaha, Nebr.

Hi:

October 5th, at Benkelman, Nebr. fifteen amateurs and families, and other guests, attended the Dundy County watermelon feed, hosted by WAØCBJ, Ed Stitt.

Cool weather reduced the attendance, and the picnic was held in the American Legion Hall. Ed loaded everyone with watermelons to take home, hoping they would be enjoyed during warmer weather, when the Indians come back for Indian Summer.

Ed, WAØCBJ, will again NCS the 160 meter net on the top end of 160, 0130 GMT; also, several amateurs have been getting together early mornings on the top end, including a mobile from Arizona, W8ULD/7/m, and WB6KIO/m, Calif. W7HTL, Vernal, Utah, also regular, morning and night.

The Nebraska CW nets are joining the Kansas CW nets on 3610; better coverage, stronger membership is hoped for.

The kiddies had been unimpressed, hearing their folks visit with others on Ham Radio. But, when their Grandma was invited to visit, via Ham Radio from another town, the kiddies were surprised. "How did Grandma get in the box?"

73,
Dayton, WØVEA

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A baby-sitter is a teenager who comes in to act like an adult while the parents go out and act like teenagers.

de Ham Monitor, Ks.

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OFFICIAL BULLETIN NR 243 FROM ARRL HEADQUARTERS NEWINGTON CONN OCTOBER 16 1969 TO ALL RADIO AMATEURS BT

Concurrent with the October shift to standard time throughout the country, W1AW will resume its Fall Winter schedule. Code practice will take place at 0030, 0230 and 1400 GMT, which converts to 4:30 pm PST, 6:30 pm PST and 6:00 am PST. November QST will note expanded W1AW operating time as well as the first morning qualifying run, scheduled for December 10. The full W1AW schedule is available upon request of ARRL, 225 Main Street, Newington, Connecticut 06111. An addressed stamped envelope will help to speed a copy to you AR

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It's All How You Look At It!

When the boss hired a shapely new secretary, everyone expected his wife to explode. Instead, she said, "I'm delighted. Henry won't *dare* come home late for dinner anymore."

Signal Report

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Then there was the little boy who strayed away from his father at the fairground and cried to the policeman that he was lost. "What's your father like?" asked the policeman, and the boy replied, "Beer and women." (W7SPB)

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IT WAS A ROUGH SUMMER

Anyone for Wind---Rain---Tornado---Hurricane---Flood? Who would ever think that water in an underground river at Bellevue and Norwalk would overflow---that dam at Mansfield---12 inches of rain over the whole northern part of the state---160 knot wind at Gulfport and Biloxi---12 foot tide on an 8 foot beach! What did you do about any of the above? Were you the one that asked the *only* station on Kelly Island to leave his station and wade thru the mud and rain looking for a camper driving a yellow Camaro (no license): this in spite of the report that there were "NO CASUALTIES ON KELLY ISLAND." Did you tell your neighbor that you could send traffic into Mississippi to find out how Aunt Susie's half-sister's second cousin twice removed made out in the storm? Did you get on the air and break any Net handling storm emergency traffic and tell them that you had health and welfare traffic? Or did you, as a good operator should, listen and listen and listen and not say a word until Net Control asked if there was a station for OHIO traffic? Did you listen to the rapid-fire manner that the traffic stations (and MARS) pushed the traffic through and the fumbling that was the mark of the operator that wanted to help but had never practiced on any of the regular Nets? This operator heard a W7 in Oregon spend 15 minutes breaking a station on 14320 to see if there was any traffic for him from Gulfport. The Net was doing ONLY hospital and medical traffic. A station in Chicago asked a "mobile in Gulfport (the only station on the air from there) for a fone patch. This within five minutes after the Mobile told about one phone line working from the town to the airport and that he had to drive 75 miles north for a tank of gasoline and drink of water.

Sure, we know you want to help, and can. But please, LISTEN, LISTEN, LISTEN. Wait for NCS to ask for someone from your area. DO NOT, repeat DO NOT originate traffic INTO an affected area unless you are an *official* Red Cross Station. DO join AREC or one of the Traffic Nets and prepare yourself for the operation. Get into MARS if you don't want to handle HAM traffic. Look at 3972.5 at 1030 and 1845 daily, SSB, or 3580 at 1830 for CW. You don't like 75? Try 14320 or 14330.

If, and ONLY IF we have a disaster in the Dayton area like we did in Kettering last Spring, you should suggest that people let their loved ones know they are alright. There are numbered messages for that purpose like ARL 1, or 3, or 4. These are the same in MARS and say all that is necessary quickly without long tie-ups. If you take the traffic and are not an EXPERIENCED traffic man, get it to one of the regulars on the Nets. It will stand a better chance of getting delivered than if you listen for a station or call CQ Podunk and give your message to just anyone.

de DARA

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Historians tell us about the past and economists predict the future. Only the present is confusing.

de Signal Report, Florida

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BASIC REGULATED POWER SUPPLIES

By W6HHC

This month's article will be a scan of several types of regulated power supplies using semiconductor devices (transistors or diodes). These power supplies are used primarily in low voltage applications (0–50V) although with proper selection of components, can be made for higher voltages (50V–300V). The use of regulated supplies is essential in obtaining good performance from voltage sensitive circuits, such as oscillators or measurement circuits. The heart of these modern power supplies is the zener diode.

The Zener Diode

The zener diode is a specially built type of diode to be used as a voltage reference. The zener diode is very similar to the old voltage regulator tubes, except that while they normally regulated at around 100 VDC, th zener diode can be produced to regulate from 5 VDC – 100 VDC. Most common zeners are between (6 VDC and 15 VDC).

In an earlier article, I described how a diode conducts in the "forward bias" direction to produce a 0.6 VDC voltage drop and that it would not conduct in the "reverse bias" direction. Well, a zener diode conducts like normal in the "forward bias" direction but it also conducts in the reverse direction and there it produces a voltage drop equal to its "zener voltage rating," Vz.

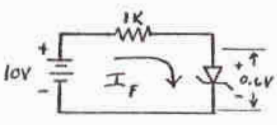

FIG. 1A

ZENER DIODE CONNECTED IN "FORWARD BIAS" DIRECTION

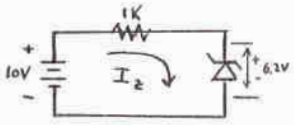

FIG. 1B

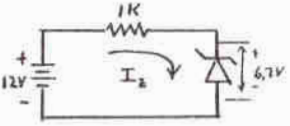

FIG. 1C

ZENER DIODES CONNECTED AS REGULATORS

Figure 1 shows the two ways to use a zener diode. The circuits in Figure 1B and 1C allow you to produce a constant 6.2 VDC reference voltage, whether the power supply is 12 VDC or changes to 10 VDC. Manufacturers always tell you how much power you can dissipate in a zener diode, so make sure you design your circuits carefully so as to not damage them with heat. A simple (although not as good) zener diode can be made by just connecting many regular diodes in seri Remember, each forward biased silicon diode produces a 0.6 VDC voltage drop. So to produce a 6 volt zener substitute, connect ten diodes in series.

Zener Regulator

The circuit in Figure 2 shows how to build a simple and cheap power supply regulator.

Here are some rules for determining the value of the series resistor, R.

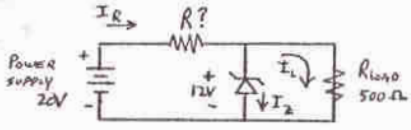

FIGURE 2

RULES FOR CALCULATING R

1) DETERMINE THE ZENER VOLTAGE (V_Z) YOU WANT.
2) DETERMINE HOW MUCH CURRENT THE LOAD WILL DRAIN (I_{LOAD}).
3) DETERMINE HOW MUCH CURRENT (I_Z) YOU CAN SAFELY PUT INTO THE ZENER. ($P_Z = V_Z \cdot I_Z$)
4) $I_R = I_L + I_Z$

$$R = \frac{V_{P.S.} - V_Z}{I_R}$$

1) Vz = 12VDC
2) Rl = 500 , Il = 12VDC = 2 ma
3) Iz = 10 ma (Pz = 12V x 10 ma = 120 mw)
4) Ir = 10 ma + 24 ma = 34 ma

$$R = \frac{20V - 12V}{34\ ma} = 250\Omega$$

IMPORTANT NOTES:

A) The zener diode will only regulate as long as the power supply voltage is greater than Vz.

B) Remember to calculate the highest voltage you might expect coming from the power supply into the zener regulator. Then calculate the current into the zener, Iz, and make sure this current will not produce too much power.

C) If you disconnect the load from the zener regulator, all of the load current (I_{load}) will go into the zener diode; make sure that the zener power rating can take this additional current.

Transistorized Regulator

Either of the transistorized regulators shown in Figure 3 can be used to produce a constant voltage source. Again the heart of the regulators is the zener diode. However, in these circuits the majority of the power will be dissipated in the transistor. Higher power transistors can be bought and they are easier to heat sink than many zeners.

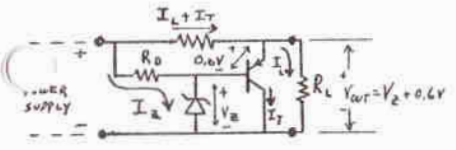

FIGURE 3

Choose R_0 to give a safe zener current (Iz) from the unregulated power supply voltage. Then determine the power dissipations in the transistor for the given load current.

de "RF"
Orange County
Amateur Radio Club

****

The Q of a Resonant Circuit by WA2NPD

For the Tech. or General License, most of us memorized that $Q = X_L/R$ and that was that. But how many of us really understand the significance of Q, often referred to as the quality factor? Quality of what and why?

To get maximum selectivity from the resonant circuit (tuning circuit) of a receiver, it is necessary to obtain the largest possible current at the desired frequency with respect to the currents (signals) from nearby stations. (A similar case can be presented for signal generation, but we will stick to reception here.) We all know that current flow is restricted by the ever present resistance (R) in any circuit. Thus, if we can minimize the resistance in our tuned circuit, the current flow will be greater at the resonant frequency, signals from nearby stations will be proportionately weaker, and we say that the selectivity or quality (Q) of the signal is optimized.

The tuned circuit is simply a coil and capacitor (usually variable) in series or in parallel. The resistance of such a circuit is almost exclusively lodged in the coil. The coil resistance is the effective AC resistance and includes the resistance of the wire, losses due to distributed capacitance between the coil windings and neighboring components, and losses due to the skin effect of AC flow. In a well-designed coil, R is due almost entirely to *skin effect*. The less the resistance of the tuning coil, the better it is and the better the Q of the circuit. This quality or "goodness" is thus expressed as a ratio between the inductive reactance (X_L) and the resistance (R) of the coil. Hence, $Q = X_L/R$. But we know that $X_L = 2\pi FL$, substituting then, $Q = \frac{2\pi FL}{R}$. From this relationship, we might surmise that the higher we go in frequency, the more selective and the better will be our coil. Unfortunately, it doesn't work out that way, for R also increases as we increase frequency due to corresponding increases in distributed capacitance and losses due to skin effect. For these reasons, the Q of a coil remains fairly constant over a wide range of frequencies.

As new hams, we are often advised by the old pros to build our rigs but buy our receivers. Their advice is generally well taken, because perhaps the toughest job in home brew receiver construction is winding and positioning the band coils and capacitors to produce good selectivity so necessary to pick out signals in the crowded amateur bands.

de WA2NPD
via Crosstalk

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By the time many a man discovers money doesn't grow on trees, he's already out on the limb.

de The Ham Monitor

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OFFICIAL BULLETIN 244 FROM ARRL HEADQUARTERS NEWINGTON CONN OCTOBER 23 1969 TO ALL RADIO AMATEURS BT

Amsat, the Radio Amateur Satellite Corporation, reports that an early winter launch of the Australis Oscar 5 satellite is likely. The amateur satellite is designed to transmit on 29.450 and 144.050 MHz. Amateurs interested in tracking the satellite should review the QST article series beginning in the July issue. The orbit of Australis Oscar 5 is expected to be essentially the same as the example used in the October QST tracking article. Special reporting forms are available without charge from Amsat. Send an addressed stamped envelope to Amsat, Box 27, Washington, D.C. 20044. Listen to W1AW bulletins for further information on the launch AR

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FREQUENCY MEASUREMENT

The more advanced types of Frequency Measuring Systems employ a basic low frequency oscillator and various arrangements of dividers and/or multipliers to extend the frequency range to whatever is required. To illustrate how this works a description of one such system will be given.

The basic oscillator frequency is usually 100 KHz. The required accuracy (usually rated in parts per million, ppm) determines if a temperature controlled oven is necessary and how close to a given temperature the oven must be maintained. The 100 KHz signal is then fed to one input grid of a pentagrid converter tube or to one of the new solid state IC "Flip Flops." The plate circuit of the pentagrid tube will then contain a series of harmonics 100 KHz apart, well up into the HF and VHF spectrum and these signals will be exact multiples of the original 100 KHz oscillator.

The harmonics then become marker signals spaced 100 KHz apart on the receiver. By tuning in WWV, say on 10 MHz, the 100th harmonic of the 100 KHz oscillator will beat with the WWV signal. A small trimmer capacitor across the 100 KHz crystal can be adjusted to bring the 100th harmonic of the oscillator to zero beat with WWV and then all of the harmonics will have the same percentage accuracy.

At the same time, the original 100 KHz oscillator is coupled to a 10 KHz multivibrator and adjustments made so that it is locked to the 100 KHz oscillator. The output of the multivibrator is then connected to the other input grid of the pentagrid converter. (A solid-state IC unit can be used here also.) Now there will be marker signals spaced 10 KHz apart throughout the HF and VHF spectrum. All these signals will be as accurate as the original 100 KHz basic oscillator.

One 10 KHz marker will produce a heterodyne with any unknown signal on the receiver. The frequency of this heterodyne represents the difference between the standard marker and the unknown signal and can be measured with an electronic counter, a meter type counter (tachometer), or with an audio oscillator and oscilloscope.

George Ewing, W6GM
de Simi Valley, Calif.

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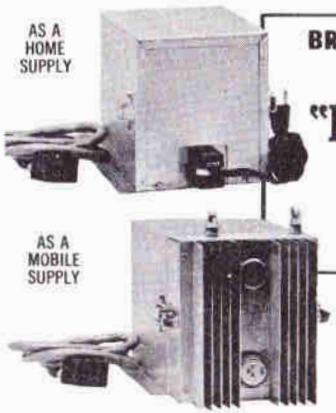

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