HAM HUM

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August 1972

Vol. XXII
Vol. 8

AUGUST MEETING

WHEN: FRIDAY, AUGUST 11, 1972

TIME: 8:00 P.M. SHARP

WHERE: NORTH OMAHA PLANT
OMAHA PUBLIC POWER DISTRICT
24th and Craig

WHAT: TOUR OF OPPD POWER PLANT
QUESTIONS ANSWERED BY TOUR GUIDE

VISITORS WELCOME
REFRESHMENTS – EYEBALL QSO'S

NO REGULAR MEETING IN SEPTEMBER. PLAN TO ATTEND HAM FEST AND STEAK FRY AT MISSOURI VALLEY, IOWA PARK ON SUNDAY, SEPTEMBER 10, 1972.

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AUGUST MEETING

By—Bob Andrus, KØLUG

Each year we try to give members of the Ak-Sar-Ben Radio Club a well-rounded program, and so far this has met with approval.

The next meeting should broaden our ideas as to what makes the City of Omaha, Nebraska "tick" in the way of electric power. As we all know, if it wasn't for the power, we would all have to rely on our own generators. This trip to the main power source of Omaha should be very timely since there are a lot of questions that can be answered on emergency, about peak power use, and what could happen if the complete power of Omaha was off for any length of time.

The site of our next meeting will be the Omaha Public Power District North Omaha Plant. To reach it, drive north on Florence Boulevard to beyond Read Street where you will find an underpass. Just beyond the underpass you will come to a large sign MAIN GATE OPPD. The official address is 24th and Craig.

See you all there at 8:00 P.M. sharp. Please be prompt.

****

SILENT KEY
JUNE 8, 1972

Dave Ablowich, Jr., W5SY
(Ex 5DW, W5DW, WØDW, W6OC)
125 Poinsettia, Circle
Terrell, Texas 75160

****

July 14th

Greetings OMs:

We want to congratulate your club on the fine magazine....good print job....and novel ideas we find therein. This postage-paid card is a real good example of a "novel" idea....and I am sure you get some feedback from that one.

Thanks again for the SWAP papers and we will continue doing likewise.

73 from Ethel, K4LMB (the Editor),
and me Tex, W4TE (Adv. Mgr.)
for AUTOCALL
John F. DeBardeleben
2012 Rockingham Street
McLean, Virginia 22101

(Ed. Note: Thanks for your kind remarks. We're happy to be on the SWAP list.)

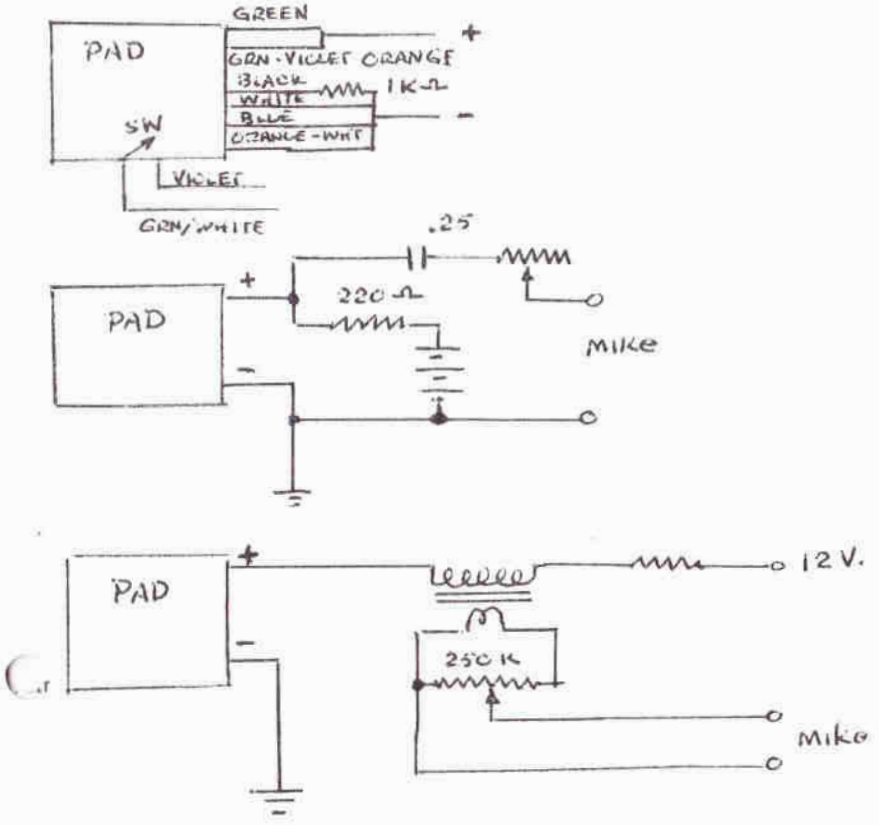
****

JULY MEETING

By—Bob Andrus, KØLUG

It was one of those rare occasions where we can get a real good technical [illegible] by one of our own members; two, even better. Jim Droege, WØYCP, and Frank Taylor, WØGOJ, came up with some very interesting facts and figures about the art of mobile radio and what to expect. For instance, did you know that there is a group of wires in most autos that can be drilled right through without half trying right behind the firewall? Jim knows, and all of the people who were at the meeting also know now. With two such modest men giving out with such good advice, we can all give them a vote of thanks for a bit of info for which most people pay dearly, not to mention all the help they have also given.

As one tremendous idea toward the repeater mode of mobile communication, they showed us the touch tone pad schematic and how to make it work in either home station or mobile. Below is a drawing of the connections from the touch tone pad and the two power source arrangements:



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1972 FIELD DAY REPORT

by Mike Wilczynski, WBØBMV
1972 Field Day Chairman

Thanks to all those who turned out for Field Day and for helping to make it a success. I am sure all members of the Ak-Sar-Ben Radio Club are as proud as I am of the Field Day shack ramrods, the operators, and the loggers. They all did a fine job!

We were 300 contacts under last year, but conditions were not the best. Results as follows:

2 meter phone	70
6 meter phone	21
15 meter phone	182
15 meter CW	3
20 meter phone	377
40 meter phone	298
40 meter CW	77
75 meter phone	196
Novice	57
	1281

Believe the novices had a good time because of no interference.

****

GO OR NO-GO METER FOR THE MOBILE RICE BOX

A 200 micro-amp to a 1 milliamp miniature meter, a diode across the meter, grounded on the visor bracket, pick-up wire along the edge or back of the visor, taped on, glue meter to sun visor. That is all. Adjustment of the visor toward and below windshield permits up to full scale reading, even with a 1 mil meter.

Dayton L. Phifer, WØVEA
East Tryon Route
North Platte, Nebraska 69101

****

MEMBER NEWS

Just a note to have you send me my copy of Ham Hum to my new address in 6 Land. I hope to stay a member to at least keep getting Ham Hum to let me know how things are going back there.

My new address is:

Bob Schellhorn
Space No. 21
Pleasant Valley Road
Oxnard, California 93073

73's and CU on 20.

****

AIR FORCE MARS

This story came in with some Air Force MARS mail.

A MARS member in charge of repeater transmitter repairs requested the repeater be brought down from its location for repair. This repeater is located on the same TV tower with the local Ham repeater.

Soon after the repeater was down, the Hams found they could not key their repeater. Making a quick trip to the TV tower, they found their repeater was gone but the MARS repeater was still on the tower. Being a decent bunch of Hams, they had the MARS repeater brought down, hauled it out, swapped it for their own repeater and reinstalled.

When the Lincoln repeater joins the MARS repeater at Beaver Crossing, perhaps signs would be in order identifying the equipment! But, this just wouldn't happen again, would it?

Ye Editor

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CONVERTER NEUTRALIZATION

Jack Power, W2AXU

An important requirement of converter alignment is the neutralization of the RF states. Proper neutralization provides stability to the RF stages eliminating regeneration or "birdies" and produces the lowest noise figure obtainable with the device used.

After a converter is wired, the wiring checked and before the solid state devices are wired into the circuit, the tuned circuits should all be resonated to the desired frequency by a grid dip meter. The devices can then be wired in and voltage applied, the oscillator chain tuned and with a strong signal the RF and mixer circuits tuned for maximum signal to the IF. The next operation is to use a weak signal or a noise ratio or the lowest internal noise consistant with optimum gain.

Now comes the neutralization procedure. The preceding alignment may satisfy you but you really can't be sure. There are several methods for neutralizing. An accurate but time-consuming technique is to inject the desired frequency signal into the output circuit of the stage to be neutralized and monitor it with another converter from the input connector. Using a low level signal, adjust the tuned circuits for maximum signal and neutralizing circuit for minimum signal. With vacuum tubes, the signal can be injected into the front end, and, with the B plus voltage removed, the neutralizing circuit tuned for minimum signal transfer. This method can't be used with solid state devices because of the capacitive coupling inherent in the device.

If a second converter is not available, another technique can be used. After the converter is aligned for best noise figure, the converter gain is noted, as the supply voltage to the RF stage is varied from the value used for the alignment. Varying the supply voltage will cause the feedback capacitance to vary. If the stage gain increases as the voltage is increased or decreased, it is an indication that the stage is improperly neutralized. The gain should decrease if properly neutralized.

This effect is particularly true when using junction fixed effect (JFET) transistors. The reverse transfer capacitance (CRSS), which is the feedback capacity from the drain to the gate, changes as the drain voltage is varied.

When you're finally satisfied that the stages are neutralized, make one final check. Operate the converter with the input circuit shorted and opened. The converter should be stable with no signs of regeneration or "birdies" in the IF receiver.

W2AXU, John B. Power
de Crosstalk, N.J.

****

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806 Bellevue Blvd. South,
Bellevue, Ne.
Phone: 291-7347

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NICKEL CADMIUM BATTERIES

By Bob Shriner, WAØUZO

As more and more walkie-talkies appear on the ham bands, especially 2 meter FM, the need for a rechargeable battery becomes quite apparent.

The normal walkie-talkie will use a set of 8 AA penlite cells and at a cost of about 15¢ each or $1.20 per set. It doesn't take long to realize there must be a better way.

The answer is the nickel cadmium rechargeable batteries.

First let us discuss the drawbacks. Of primary importance is cost. These AA size will cost about $1.25 each or roughly 20 times the cost of regular dry cells. Next is the fact that they only put out 1.2 volts instead of the 1.5 volts of a dry cell. This means that you must use 10 of these cells to equal the voltage of a dry cell pack of 8.

The life of a single charge in the rechargeable battery is very comparable to the dry cells and any difference would be due to the condition of the cells.

O.K. Now what about recharging? These rechargeable cells can be recharged 1,000s of times provided that they are properly charged. On the other hand, they can be ruined in the first charging cycle.

In order to recharge these batteries, 3 different methods can be used:

1. Controlled voltage.
2. Controlled amperage.
3. Control both voltage and amperage.

In the controlled voltage method the charging current is automatically regulated by the battery and the high current at the start of the charge will not damage the battery under normal conditions, but if the battery is in a serious state of discharge a heating and/or gassing problem could arise.

The constant amperage method of charging is quite good; however, the rate will vary depending upon type of battery. In using this method of charging a careful watch should be kept on the batteries and when the charge is complete a sharp rise in voltage will be noted. The batteries must be removed from the charger at this time as they will start to gas and will be ruined in a short period of time.

The best method is to control both voltage and amperage. In this method the batteries can be put on charge and left there until needed at which time they can be placed in service and you will know that you have a fully charged battery.

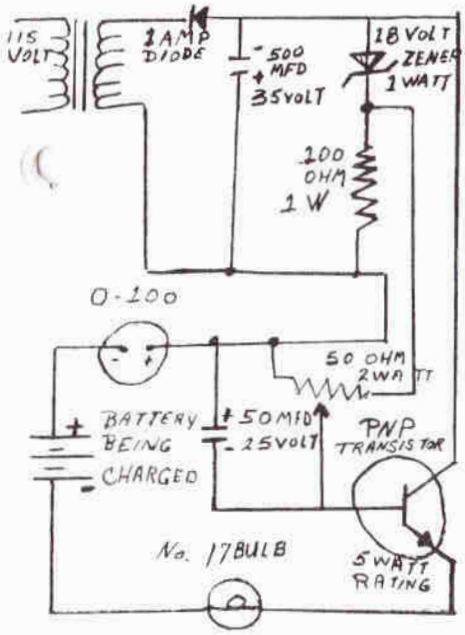
A battery charger for nickel cadmium batteries can be easily built by the average amateur and successful nickel cadmium recharging can be done if the following notes are observed.

1. Charging is most efficient at battery temperature of between 40 degrees F and 80 degrees F, never to exceed 100 degrees F.

2. Two or more batteries having the same rated voltage regardless of capacity may be charged in parallel on a constant voltage charger, if the charger has the proper current capabilities.

3. Do not connect two or more batteries in series when using the constant amperage method unless the batteries are of the same type & capacity and in the same state of discharge.

4. The charging voltage must be 10% above the rated voltage of the battery.



NICKEL CADMIUM BATTERY CHARGER

5. The charging current must never exceed 25% of the rated ampere-hour rating of the battery. 10% is a slower charging rate but a safer figure. Less than 10% will take too long to charge the battery.

6. The charge efficiency is the ratio of ampere-hour available on discharge to the ampere hours returned to the battery during charge. This ratio is always less than 1; therefore, excess charge must always be returned to the battery after discharge to restore rated capacity. A figure of 125% may be used depending upon cell type and condition.

The schematic of the charge shown has proven to be very satisfactory.

The only adjustment necessary is R1 which should be adjusted to give an output voltage of 10% over the rated voltage of the battery pack.

de Grid Leak, Pueblo, Colo.

****

NEW MEMBERS ADDITIONS TO ROSTER

Richard C. Cutter, WA3MKT/Ø
1100 Betz Road
Bellevue, Nebraska 68005
Phone: 292-2172

Dr. Roger M. Johnson, WBØGAI
5004 Western Avenue
Omaha, Nebraska 68132
Phone: 558-6707

Roger L. Merritt, WAØKOD
2717 Poppleton Avenue
Omaha, Nebraska 68105
Phone: 345-1568

Milo J. Nechvatal, WBØBWX
4129 Erskine Street
Omaha, Nebraska 68111
Phone: 451-8869

Dan C. Pettengill, WBØBXC
2418 Newport Street
Omaha, Nebraska 68112
Phone: 455-4523

****

"You were 20 minutes late again this morning. Don't you know what time we start work here?" – "No sir, everyone's already working when I get here."

* * *

Employer, looking at his watch as That Girl, comes thru the door: "You should have been here at 8:30!" – "Why," says she, "What happened?"

de Fresno Amateur Radio Club, Inc.

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GUEST EDITORIAL

DO YOU DESERVE THE PRIVILEGE?

By Gene Burton, WA4YNW

To use the amateur bands is a privilege. In exchange for this privilege, what is expected of you? What have you done to deserve this privilege?

Hams should be reasonably well read and informed. They should use good operating procedures and be a good example. A good ham knows the rules and operates in their framework. Do you read *QST, CQ, Florida Skip,* etc?

Hams are courteous and tolerant. They recognize CW, AM, FM, SSB, and RTTY. Any one ham may not use all of these modes, but he recognizes the value and place each one plays in Amateur Radio.

Hams recognize and respect the interests of fellow hams. DX, county hunting, and all kinds of certificate hunting are a real part of our hobby, as is rag chewing. Do you low rate and condemn any of these areas?

Hams help other hams. How long has it been since you have encouraged a beginner, helped a novice, participated in a tower raising, or helped some fellow with a rig problem?

Hams recognize the value of organization within their hobby. Are you a member of the ARRL and your local club?

Hams are public service minded. Do you handle traffic and belong to CD? Are you ready for an emergency? Have you helped a local club with some public service activity? Do you have a ham license plate on your car?

Certainly, no one ham is expected to do all of the above. How do you rate? Make out your own list. Next time you fire up the rig, find a hole, and start operating, ask yourself, "Do I deserve the privilege?"

(From Slant Bars and Fla. Skip)

****

ANTENNAS

There has been some confusion regarding the spelling of the word for a metallic device (as a rod or wire) for radiating or receiving radio waves when we have more than one of them.

This editor is using Webster's Seventh New Collegiate Dictionary, Copyright 1971, which says that the plural is usually "antennas."

Anyone who objects to the term being used by this magazine should furnish the editor with a new dictionary.

****

I CALL IT STUPID

For the past fifteen minutes this fellow sat on 3940 calling CQ on the upper sideband. From the sound of his voice he finally got a bit disgusted and quit.

Now I know that this occurs from time to time when changing over from 14 mc. That comes under the category of carelessness but to sit and call time after time for 15 minutes without finally waking up to the fact t[illegible] something could be wrong is plain "STUPID."

Onyx
de Florida Skip

****

PROJECT 6.3v

Homebrew Builders today would not think of using a type '80 rectifier on a new project. Even the 5U4 family rectifiers have seen their day. Solid State rectifiers have gone over solid. Failures are practically unheard of where ratings are not exceeded.

Today it is easy to use two diode rectifiers to replace the old style vacuum rectifier of the full wave variety. These diodes are rated in "peak inverse volts" rather than average or DC values, since wave form and duty cycle play an important part in the actual rating. The popular 600 PIV 750 M.A. rectifier will handle up to 250v DC when used with 60 cycle full wave supplies. Several diodes may be connected in series to increase the overall rating of the system. Voltage drop is in the order of approximately one volt per unit. You may use "voltage divider bleeders" made up of resistance, and, or capacitors, but after several years of experimentation, we have not found this necessary. We would rather use a surge resistor in series with each string or unit where capacitor input filters are used. A five watt 5 ohm resistor will handle 1000 M.A. and will fill the bill in most cases.

To most of you hams this is old stuff. The Handbook is full of kindred information. They forget to tell you, though, what to do with those "left over" 5 volt windings that were meant for tube type rectifiers.

We solved this problem by adding enough turns on the transformer to bring the voltage up to 6.3 for heating additional tubes. Most small transformers require only four to six turns. It is no problem to fish these few extra turns around the outside of the winding without removing the core. If you see no space open, carefully mash the insulation next to the core and you will find ample space for several turns. Use good heat-proof hookup wire so that the insulation will not break down when exposed to the transformer core. No. 33 wire will handle up to one ampere, No. 20 should be good for one to one and a half ampere, No. 18 from 2 to 3 amperes.

Connect the new added turns in series with the old 5v winding. Check the AC voltage. If the new voltage is not higher than 5v, reverse the connections to the new winding and try again. Now compare the voltage with other 6.3v winding on the same transformer to be sure if you have the correct number of turns.

Most early type 80 windings were rated at 2 amperes. Late 5U4 windings are rated as high as 3 amperes. It is not wise to exceed these ratings.

The Old Timer
de Florida Skip

****

FOR SALE

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Chuck Sudds, KØTVD
3222 Pacific Street
Omaha, Ne. 68105
Phone: 345-4679

****

A good intention clothes itself with sudden power. –Emerson

de Florida Skip

****

THE OLD GROUCH

Anonymous Unknown
c/o Editor, Auto-Call

The recent loss to Silent Keys of a close ham friend and the events following his demise lead me to repeat for what it is worth my first column as The Old Grouch printed in the October 1961 issue of Auto-Call: "Has a friend or an acquaintance of yours recently joined the Silent Keys lately. If not, we are all very happy, but if so, have you done anything to protect his widow's financial interest in the equipment he possessed at the time he died? Did he leave, in his station files, a listing of the equipment he owned, indicating the approximate value of each item and, if he was a member of MARS, which items would be subject to recall into the MARS supply system? Could you help his survivors to recapture a fair and reasonable value for the disposition of the equipment?

"Unfortunately the writer knows of at least three (now some more) situations which occurred in the fairly recent past in which the family of a new member of 'Silent Keys' was subjected to irresponsible exploitation by 'friends' of the decedent, under the guise of 'getting a fair value for the equipment' or, in one case, 'arranging the return of the MARS equipment to the proper agency.' In all three (then, now more) cases, the widow was deprived of a considerable amount of cash money which could have been recovered if her late husband had compiled a list of his equipment and its approximate value, and in the case of a MARS member, a list of those items in his possession which should be returned to MARS.

"Think it over, and do something about it; unless she is an amateur, your wife probably knows little or nothing of the actual value of the equipment you have."

de Auto-Call

****

How's Your Signal? Because most of us, these days, purchase ready-built rigs or put them together from standard kits, there is a decided tendency to take signal quality for granted, to try to relegate the responsibility for this to the manufacturer and blame him or the person criticizing instead of placing the blame and responsibility on the real culprit – yourself. It is *you* who gets the ticket from FCC for poor signal quality (oh yes, it still happens), you who has to answer it, and you who gets put off the air if the answer or the remedy is not satisfactory.

The above topic is inspired by a blurb in a bulletin of the Miami Valley (Ohio) F.M. Association which reads as follows: "Have you been listening to the repeater lately? Have you ever *objectively* listened to the quality of the signals? If you answer *yes* to these two questions, you, like I, have come to the conclusion that we have plenty of room for improvement! I am not talking about the quality of the *repeater* – I am talking about the quality of the signals going *into* the repeater. Thousands of dollars worth of engineering and development have gone into our rigs, to give them good communications quality. However, it's up to *us* as the operators to see that they are kept in proper condition and

sounding right. Anything less than the 'designed in' quality should not be acceptable. It's up to each of us to seek and obtain authoritative reports the quality of our signals. Don't be satisfied with one report through the repeater; get on simplex with a friend."

The subject has a broader application than repeaters, of course, although anyone should know that the repeater that improves the quality of a signal being repeated hasn't been invented yet. Blind acceptance of quality of a manufactured rig, whether it be on FM, SSB, AM or CW, is dangerous. Trying to blame poor quality on the manufacturer is foolish – that is, the fact that you paid umpty-ump dollars in good faith that the equipment was high quality is not an excuse and will never be accepted as such. Even the fanciest equipment can be mistuned, ineptly operated, or even, let's face it, poorly constructed or engineered. You *and you alone* are responsible for the signal you put out on the air, so you'd better be aware of it and believe it if your signal has defects, regardless of the reason.

(Tnx to WBØBMV, Mike for submitting this article.)

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REPEATER CONTRIBUTION

Thanks to Mike Wilczynski, WBØBMV, for his recent contribution to the repeater fund.

****

A farmer came into the village railway station with his wife and approached the ticket window. He addressed the station agent.

"Say mister, has the three-ten train gone yet?"

"The three-ten train left a quarter of an hour ago."

And how soon will the four o'clock train be along, do you think?"

"It'll be quite a while before that train is due."

"Are there any passenger trains before then?"

"No."

"Any freights?"

"No."

"No trains at all?"

"None."

"Are you sure?"

"Certainly, I'm sure!" bawled the exasperated ticket agent.

"Then, Sophie," said the old farmer, turning to his wife, "now I reckon we can cross them tracks."

Masonic Temple Topics

****

GLOSSARY OF RADIO TERMS

AMPLITUDE: The maximum instantaneous value of an alternating voltage or current, measured in either the positive or negative direction.

AMPLITUDE DISTORTION: The changing of a waveshape so that is is no longer proportional to its original form. Also known as harmonic distortion.

AMPLITUDE MODULATION: The process changing the amplitude of an RF carrier wave in accordance with the variations of an AF wave.

de Florida Skip

****

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