



HAM HUM

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NEXT MEETING

WHEN: FRIDAY - NOVEMBER 12, 1971

TIME: 8:00 P.M.

WHERE: RED CROSS CHAPTER HOUSE
432 South 39th Street, Omaha

WHAT: PAST PRESIDENTS' NIGHT

REFRESHMENTS - EYEBALL QSOs
VISITORS WELCOME

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 19th

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NEWS FROM WØNVE

Hi!

Don't know what some of the others have been running on their various trips where they were unable to achieve many contacts. On a recent swing East from Florida up through New England and back - I was able to make contact with something over 40 - two meter FM'rs utilizing 11 different repeaters. I was able to bring up most of the repeaters 30 or 40 miles out - probably the hottest was the Holyoke, Massachusetts repeater which I worked from south of Hartford, Connecticut thru Massachusetts and on into Vermont.

All of this with 34/94 - 34/76 and 94/94 running a stupendous paralyzing one watt to a TR-22 Drake with Hy-Gain 5/8 wave.

Wouldn't think of a trip even across the street without the two-meter - greatest thing since sliced bread.

Vy 73,

H. C. Snyder, WØNVE

P.S. The courtesies extended to me by all of the Hams I contacted

2

was absolutely outstanding - I obtained road changes that weren't yet on the map in several instances - the Atlanta bunch directed me to several very interesting attractions in their area and I picked up quite a few good 2 mtr. hints from others.

I can only hope that all of our repeater users will be as courteous to those strangers passing our way.

WHAT IS SPACE?

Space is very large. It is immense. A great deal of immensity exists in space. Space has no top, no bottom. In fact, it is bottomless both at the top and the bottom. Space extends as far backwards as forward and vice versa. A billion miles traveled in space won't bring a man any nearer to the end than one mile or an inch. Consequently space it's better to stay where you are and let well enough alone.

Anton,

de Fearl News

AUCTION FOR REPEATER FUND SUCCESSFUL

By Erv Heinz, WAØEEM

Ak-Sar-Ben Radio Club members sold their surplus equipment and resources Friday night, October 8th, and donated it to the Club. Auctioneers Cecil DeWitt, WØRMB (Radio's Midget Brain) and Erv Heinz, WAØEEM (Extra Easy Money) took turns seeking the highest bid. The spirited bidding moved right along and within the hour, Club treasurer Happy Hank Dworak, WAØ-QLÉ, had netted a \$92.00 profit for the Club's repeater.

Immediately after the auction, a tour of the Repeater at the Red Cross facility was conducted. Everyone seemed to enjoy the eyeball QSO which followed with much discussion over their bargains.

SILENT KEY

Fred A. Kruse, WAØROR
645 South Alton Way
Denver, Colorado 80231
October 16, 1971

REPEATER CONTRIBUTIONS

Sincere thanks to Bill Hendrix, WØFCE, of Comm. Systems Associates, Cameron, Missouri, for again contributing to our repeater fund. We quote in part from Bill's message: "Here is my annual to the pot for potluck repeaters. Best to all the guys."

PRESIDENTIAL LIMOUSINE LINKED TO WORLD

It's not everyone who has a limousine that costs more than \$250,000. However, the President of the United States does and it's probably the most expensive Lincoln Continental in the world.

It looks much like you would expect a luxury car to look, but it is constructed more like a tank. It has two tons of steel armor plate in it and has a fighter-like type canopy. The windows and transparent bubble top are bulletproof with glass thicker than that in a fighter plane.

It rides on four special truck tires that contain an inner steel disc which would allow the car to travel 50 miles per hour with four "flat" tires. The rear bumper folds down to provide a place for Secret Service men to ride. The car is built on an extended limousine wheelbase and has a total length of 21 feet.

Inside, it has the latest in communications equipment, including a public address system for speaking to crowds at parades, etc., viewing of three television channels at the same time, and a back seat telephone which can be linked by radio to an emergency world-wide system, or switched to the regular U.S. telephone network.

(From SARA SLIP)
de Fearl News

No use borrowing trouble — there are always people willing to give it to you.

— Service

THANKS, READERS, FROM WØWRT

John Snyder, WØWRT, reports that the response to his request in the last issue of Ham Hum for an old 6A8 tube has been overwhelming. Since the tube he wanted was for a very old Zenith radio of his mother's, he appreciated the offers very much. He tells us the first one came from Bill Mathemeier, WØAW, in Fremont and it got the radio back into service.

We quote a letter he received from K4SKI of Greenville, North Carolina: "Hi John: I hope the tube gets to you OK. If you or a friend ever need any old tubes, let me know. I have

lost a 14 element 15 meter in an ice storm; also a 8 element 20 meter beam in an ice storm. I hope the antenna losing days are over, Hi Hi. Maybe I will run into you on the band sometimes. Am enclosing a little something to help pay some postage or a little ink. Sure have enjoyed the Ham Hum from your Club. Thanks a million, and best of luck. 73's

Charlie T. Wells, Jr., K4SKI"

(Ed. Note: Thanks, K4SKI, for contribution to Ham Hum!)



REFLECTED AND DIRECTED

CAN FCC PLEASE EVERYBODY?

As this is written, FCC has issued a Notice of Proposed Rule Making which will drastically alter the operating pattern on the amateur HF bands. A relatively small number of amateurs have read the actual FCC proposal — and as a result, there is more rumor being discussed than fact, with the usual preponderance of heat over light. We understand that the April issue of QST Magazine was hurriedly re-worked, (which is a fringe benefit of the offset process), and that the FCC proposals will be set forth there in detail. Even if you are not an "amateur lawyer," it would make good sense for you to read the QST analysis carefully. It affects you!

Whether the "CW only" operators like it or not, FCC proposes to expand the 'phone bands — and diminish the exclusive CW segments. In general, the proposal shoves the 'phone segments another 25 Khz lower into the bands, creating another 25 Khz of General/Conditional Class 'phone space at the top. If this solves any existing problems, consider the new ones created:

- (1) CW operators who eagerly demonstrated superior skill and knowledge in the field of radiotelephone by passing the Extra Class exam, and who enjoyed 25 exclusive Khz at the bottom of the bands from 3.5 to 28 Mhz, are now squeezed into the bottom 10 Khz. Assuming George Hart, WINJM, the League Communications Manager, will move WIAW's operating and

OBS frequency into this 10 Khz area (as he did with the 25 Khz segment), the utility of Extra Class CW segments will be almost nil. A fine reward for CW excellence!

- (2) CW traffic nets which, unlike 'phone nets, do not masquerade as "nets" merely to gain rag-chewing rights, will be further compressed.
- (3) Canadian amateurs can be expected to ask for preservation of "our 'phone band" — and will move lower into U.S. CW segments.

On the positive side, DX-chasing U.S. amateurs are finally given a place for working amateurs in other Regions on mutually usable frequencies. Inter-zone 'phone contacts will be permitted in the segment 7075-7100, and since Extras will have 3750-3775, and Extra and Advanced 3775-3875, it will be a lot easier to work Europeans on the low end of '75. During the last 2 years or so, VE's have moved in on top of Europeans just below 3800, and frequently conducted a "Master of Ceremonies" type of operation for other VE stations, with Americans participating only by the obnoxious method of CW break-in.

We are not certain, upon an initial examination, whether all the proposals should be supported, or whether some of them should be opposed. In the past, where amateurs have filed intelligent comments containing constructive suggestions, the FCC has modified its final order, based on such comment. — W8AP

(From: "DARA Bulletin," Detroit ARA)

de FEARL News

CHICAGO FM CLUB

Phil Schuman, WA9TKA
Secretary CFMC

The Chicago FM Club began as a small group of amateurs that wanted to experiment with VHF and UHF FM repeaters in the two meter band. The club officially started on February 25, 1964, when it was registered with the state of Illinois, and a charter was issued. From this meager beginning grew one of the finest repeater systems in the midwest; WA9ORC (WA9 O—outstanding R—radio C—Chicago).

The two meter repeater system originally started out as a project between the basements of two members on the north side of Chicago. From this initial experiment, frequencies were changed three times, until today they exist as 146.34 Mhzs input and 146.76 Mhzs output. The receiver sites have also undergone major changes. It was found that multiple, outlying receiver sites would be best suited for the type of coverage that was desired; at this time we have four sites in operation, and three more

in construction. Each receiver site in effect, a repeater; repeating 146.34 Mhzs to a separate 450 Mhzs link frequency. At the downtown transmitter site (the First National Bank Building in Chicago) each satellite receiver has a corresponding 450 Mhzs link receiver. These link receivers then key the 146.76 Mhzs transmitter and supply the necessary audio. Each site identifies (on 450) every time it is keyed, but the ID tone is filtered out so it is not heard on 156.76 Mhzs. Control over the repeater is provided by touchtone over 450 Mhzs and by wireline stations. The wireline stations (five) can also use the repeater as a remote base, keying it directly.

In the last few months, a new repeater has taken the call of WA9ORC; the 450 repeater. The system is very simple and runs on-site from the bank building. Because of the high amount of RF in the area, the repeater had to go to a PL type access.

TWO METER REPEATER SYSTEM

146.34 input 146.76 output
transmitter — 900 feet 200 watts ERP
receiver sites — 1800 cps North
2000 South
2200 Joliet
2250 Griffith
under construction ** Chicago Loop
** Wheaton
** Benton Harbor

* 450 REPEATER
* 448.75 input
* 443.75 output
* on-site system
* 900 feet
* transmitter 60 watts
* access is 2A PL code
* (114.8 cps)
*
*

The Chicago FM Club. A Non-Profit Radio Amateur Club

HANNA HINTS

Hardly anyone of you have not at some time used solder, that metal stuff that melts so easy and holds the wire the hole. Anyhow, let's take a look at this substance that most of us take for granted.

Solder is one of the oldest, simplest, and most generally useful of all the metals in common use. Ordinary soft solder is a fusible alloy consisting essentially of tin and lead. In addition to the tin and lead, solder occasionally contains varying amounts of antimony, bismuth, cadmium or silver, which are added for the purpose of varying the physical properties of the alloy. However, in many solders, some of these elements, notably antimony, are only present as impurities.

In use, solder actually dissolves a small amount of the metal that is being soldered — be it copper or even steel. Actually, a soldered joint is chemical in character, rather than purely physical, because the attachment is formed in part by chemical action rather than by mere physical adhesion as with most glue.

In making a solder joint, the usual practice is to put the wire through a hole, wrap the wire around to make a good mechanical joint, then apply the solder. It is not really necessary to make such a connection; it is quite enough to stick the wire in the hole and apply the solder. I have contended is for years and I think it is borne out since the advent of printed boards where the wire is stuck through the hole in the board, then soldered.

When resoldering a connection, it is best to remove all the old solder with a

small wire brush or other means. A much better joint will result when new solder is applied, as something goes out of the solder, either by vaporization or from the chemical action above. Usually, when something is unsoldered, it takes more heat to do the job than it took to put the solder on in the first place.

Solder is made up of different amounts of lead and tin, depending upon the use. Pure lead will melt at 620 degrees F, while tin will melt at 450 degrees F. A mixture of 63% tin and 37% lead will have a melting point of 361 degrees F. Most mixtures will be with less tin than this. A feature of solder that makes it so useful is that it can exist in three states: solid, liquid, and plastic. A 20% tin and 80% lead is the most plastic. Most mixtures will become solid at 361 degrees F. Years ago when plumbing was lead and the telephone company used lead covered cable, wiped joints were made. Because the solder stayed plastic, it would be shaped and worked like putty and a nice connection resulted. The men who did this were real artists.

Most radio solder is 40/60, 50/50 or 60/40. The 60/40 is most popular for printed boards since it has a real low melting point (370 degrees), and therefore a very short period in the plastic stage.

Cold joints can result from either moving the part while the solder is in the plastic stage or not getting all the parts hot enough.

Ralph Hanna, W8QUR/ARNS
(From: "Ham Shack Gossip,"
Toledo, Ohio)

de Fearl News

UNDERSTANDING SWR — — — REVISITED

In the April issue of "GRID LEAK" we published an article authored by Bob Shriner, WA0UZO, which was a brief, and simplified explanation of Standing Wave Ratio, and some of the author's experiments along that line. This item has turned out to be one of the most discussed (and cussed) ever to run in this paper. Among the many comments received by the author on this article, one in particular is, we feel, interesting enough, and noteworthy enough, to merit further discussion. Since this month's issue of GRID LEAK is being distributed at the Rocky Mountain Division ARRL Convention and will be read by many hams who did not get a chance to see the original story, we will print first, the original item, and then follow it with the very interesting comments of Mr. Lew McCoy, W1ICP, of the ARRL headquarters staff. (Who says your items in GRID LEAK aren't widely read?)

UNDERSTANDING SWR by Bob Shriner, WA0UZO

Many articles have been written explaining SWR or Standing Wave Ratio. Most of these articles are way over my head so I think to myself possibly they are over your head too.

After building several antennas and attempting to match them, I have developed a way to look at and observe the standing waves on an antenna line that may be of interest to others, so here goes and if you don't agree with my thoughts, then why don't you write down your thoughts

and I believe the Editor will publish them also.

First off, let me stick my skinny neck out and say that SWR is caused by a mismatch between your antenna and your feedline and can only be corrected by matching these two elements. Adjusting the length of your feedline may help but will not correct the situation.

SWR can only be checked at the antenna or at some multiple of $\frac{1}{2}$ wavelength down the feedline. It is generally too much trouble to check at the antenna or some multiple of $\frac{1}{2}$ wavelength down the feedline, so the easiest method is to stuff your meter in the line and check it and then add $\frac{1}{4}$ wavelength line between your meter and your feedline and check again; if the readings vary, then you've got standing waves and again I will repeat that this can only be corrected at the antenna.

Now, what about your meter? Just because the manufacturer says that it will check your system, maybe you had better check him. This is very simple, connect a known 50 ohm dummy load to your meter and see if it reads 0 reflected power. At low power a 2 watt 50 ohm resistor can be used across the output of your meter. Now adjust the meter for full scale forward reading and switch to reflected reading and it should read 0. Now try a 100 ohm and a 25 ohm resistor in the same manner. They should both show a 2:1 reflected power reading.

If the meter passes the above test let me know because I want to buy one. Most all meters will pass the above test at some frequency, but not at all frequencies. Check yours on the frequency that you operate on.

Now what do you do if you find that your meter is off? Well, I might suggest that you cry a little — I haven't found that this helps much but it's the best solution that I know.

In summing up, we might say that order to check SWR first check your meter, then place meter in the line and check and finally add one quarter wavelength line and check again.

OK, now just how important is SWR? This depends upon how fussy you are, how critical your transmitter and receiver are and how long a feedline you have.

The longer the feedline, the higher the frequency; and the greater the SWR, the more loss you will have in both transmit and receive. A 2 to 1 SWR will cost you over 1/2 of your signal in 100 ft. of coax on the 2 meter band. 100 ft. of RG8 coax alone with a perfect match at this frequency will cost you about 1/2 of your signal, so any added SWR loss is starting to get pretty serious.

A lot of transistor type and some tube type transmitters are pretty critical of SWR and kind of hate to work into a bum load.

I have been doing a lot of work on the Sonobouy transmitter lately and find that I can put a 25 ohm resistor across the output (2:1 SWR) and burn out the final in less than two minutes. This is finding out the hard way but now I am smart enough to know better. END OF ORIGINAL ARTICLE

What follows are the comments received from Lew McCoy of the QST staff. These comments are being reprinted with his permission.

"You have one error that many hams make in discussing SWR. You

state that, 'SWR can *only* be checked at the antenna or at some multiple of 1/2 wavelength down the feedline.' You go on to talk about adding a quarter wave of line, etc. In any case, the SWR is established by the impedance of the antenna, and the impedance of the line, as you agree and so stated in your article. For example, if the antenna has 100 ohms impedance, and the line is fifty ohms, you will have an SWR of 2 to 1. Here is the point that so many hams go wrong on . . . that 2 to 1 SWR is the same at *any* point in the line, not a quarter-wave, not a half-wave, BUT any point in the line. (Disregarding line losses of course.) If you place the bridge in different points of the line, and get different readings, then you should really scratch your head and ask yourself what is going on. Only two things can be wrong to give you such results. Your indicator isn't telling you the truth, or it is measuring something else besides the fundamental signal, such as harmonics. The usual case for the different readings is that rf is getting on the outside of the line, and then into the indicator circuit. These are parallel standing waves, and can cause faulty readings in your bridge. The answer to that of course is to get the outside of the line cold so that your bridge is only reading what is inside the line.

"The other reason, harmonics is a little tougher to cope with. The bridge is responding to the SWR of 2 to 1 from the antenna's 100 ohm impedance for the fundamental, but for any harmonics that may be present, the antenna impedance may be something else again.

"What fouls so many hams up on that half-wave point, is that they are

confusing antenna impedance with SWR. You can check the antenna impedance at a half-wave point, but the SWR is the same there as at any point in the line, 2 to 1 in our example. One other point is that it is always best to check your SWR at the antenna, or as close to it as possible.

"If you take 200 feet of RG-58 at 2 meters and leave it un-terminated, the SWR would be infinity. However, if you put an SWR bridge at the input to the line, you'll have an indicated SWR of 1.7 to 1, when actually the real SWR is infinity. The moral here, of course, is to use loss-less transmission line. A lot of hams who use wattmeters always seem to miss one important thing, and that is that the power you look at on the wattmeter is the TOTAL power the rig is putting out, which includes fundamental signal, harmonics, and so forth. A check of a new, commercially built 2-meter FM amplifier showed 35 watts out on the wattmeter; however, when a strip-line filter was inserted into the line, the output dropped to 29 watts, which was the true two-meter output. As I say, many hams overlook that point. And you have to be careful, because many transistors are notorious for producing spurious."

We are very grateful to Mr. McCoy for his comments, and hope that reprinting them helps to clear up some questions regarding SWR.

de Grid Leak, Pueblo, Colo.

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Randell (Rod) Roderique, WAØQII
1511 Olin Avenue
Omaha, Nebraska 68108
Phone: 344-0719

Trouble with a budget is it's al-
ways open at the wrong end.

- Service

RESULTS OF ARNS PUBLICATIONS CONTEST

The Amateur Radio News Service (ARNS) again this year sponsored the ARNS Publication Contest in which numerous amateur publications were submitted in competition. Several 1970 issues of HAM HUM were submitted for judging. The contest is over and the results have been published.

HAM HUM PLACED AS FOLLOWS:

Second ----- in General Format Category

First ----- in Technical Articles

Third ----- in Photographic Process

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