



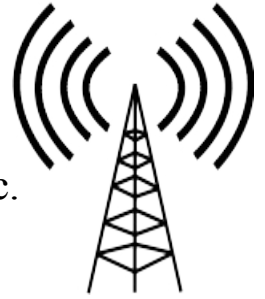
Affiliate

Printed Circuit

– Jan/Feb 2024 –

Published by the Southwest Iowa Amateur Radio Club Inc.

SWIARC meets the 4th Thursday of every month at the
Charles E. Lakin Human Services Campus
705 N. 16th Street Council Bluffs, IA 51501



Visit us at <http://www.swiradio.org>



SWIARC 2023 Christmas Dinner

This year it was held at Sugars Lounge and Diner in Council Bluffs, IA on December 20th around 6:30 pm. We had a total of 20 people show up. There was one single gift exchange between Art KBØUWR and Greg NØGR (didn't get any pictures or info).



Thank you to everyone who showed up and hope you had a good time chatting and got bellies full of food to end the 2023 year.

Contributed by DerekW0TYG

The Action 2023

Jan 6th-27th
8am-930am

Saturday Breakfast
Sugars Diner*

Jan 6
9-1030am

Heartland Hams Monthly Breakfast
Tobey Jacks Mineola Steak House*

Jan 25th
7-8pm

SWIARC Club Meeting
Red Cross Building*
Presentation: Station Evaluation

Feb 3th-24th
8-930am

Saturday Breakfast
Sugars Diner*

Feb 3
9-1030am

Heartland Hams Monthly Breakfast
Tobey Jacks Mineola Steak House*

Feb 22
7-8pm

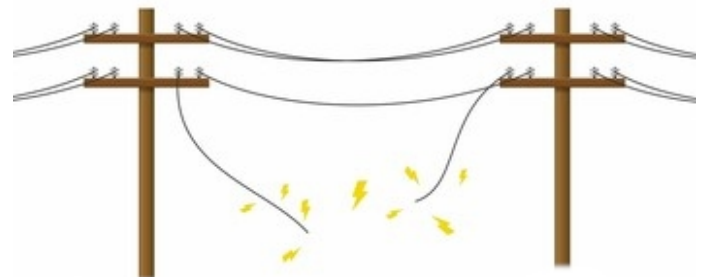
SWIARC Club Meeting
Red Cross Building*

Mar 2
8-12am

SWIARC HAMFEST
McClelland, IA

| | | | |
|---------------------------------|---|---|--------------------------------|
| A D D R E S S | Sugars Diner | Red Cross CB | Tobey Jacks |
| | 2725 E Kanessville Blvd, Council Bluffs, IA 51503 | 705 N. 16th Street Council Bluffs, IA 51501 | 408 Main St, Mineola, IA 51554 |

Connection Broken?



Not getting Printed Circuit?
Email: newsletter@swiradio.org

January Club Meeting Presentation:
FCC Rules and the Station Evaluation

Shack Chat



--FCC RF-Exposure Regulations --

and

--The Station Evaluation--

A: The Regulation

Regulations regarding Human Exposure to Amateur Radio RF energy was first introduced in 1996, That's when the 1985 Regulations were modified. These new rules now applied to the Amateur Radio Stations but most amateur stations were not required to complete an evaluation on their equipment based on transmitter power levels they used. Mobile and Handheld transmitters were exempt from station evaluations as well as most repeater stations under these rules.

The rules set limits on the RF exposure levels people may be subjected to. The Maximum Permissible Exposure (MPE) limits vary with frequency. The MPE levels represent the amount of energy that can be present where and when people are being exposed. They do not limit the permitted radiated strength from a radio station and do not change the maximum power levels permitted to Amateur Radio operators.

In 2020 a new set of regulations was finalized that Amateur Radio Stations were still to comply with radiation exposure limits but changed the exemptions to the evaluation requirement that the majority of hobbyist enjoyed. If you were exempt under the old rules for performing an evaluation you will need to do an assessment to determine if you now need an Radiation Exposure Evaluation. This requirement has taken effect as of May 3, 2023. Bulliten 65 Supplement B has been prepared for amateur stations to assist in determining compliance.

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SWIARC ONLINE



Southwest Iowa ARC Hamfest

When: March 2, 2024

Where: 117 Main Street

McClelland, Iowa 51548

Time: 8 AM to Noon

Admission: \$5.00

Table Rental w/ADM: \$12.00

Talk in station: 442.225 136.5

More Info: www.swiradio.org

Main door prize: FTM-500DR

*Must be present to win

D & L ANTENNA SUPPLY CO.



Club Meetings

4th Thursday of the month at the Charles E. Lakin Foundation, Inc. 705 N. 16th Street Council Bluffs, IA 51501

FCC RF-Exposure Regulations

Users of this supplement are also strongly advised to consult Bulletin 65 itself for complete information and guidance related to RF guideline compliance.

If you did do a station RF Exposure Evaluation under the old rules and you have not changed anything in your station you will not need to perform a new evaluation. Changes to your station that require an updated Station Evaluation include

- a) increased transmitter power
- b) changing your antenna
- c) utilizing a new band or operating mode

What do we mean by Human Exposure?

Biological effects can result from exposure to RF energy. Biological effects that result from heating of tissue by RF energy are often referred to as "thermal" effects. It has been known for many years that exposure to very high levels of RF radiation can be harmful due to the ability of RF energy to heat biological tissue rapidly. This is the principle by which microwave ovens cook food. Exposure to very high RF intensities can result in heating of biological tissue and an increase in body temperature. Tissue damage in humans could occur during exposure to high RF levels because of the body's inability to cope with or dissipate the excessive heat that could be generated.

What makes excessive RF exposure dangerous?

Radio frequency radiation is not ionizing radiation. This means that RF does not strip electrons from atoms leaving electrically charged particles and it does not alter DNA genetic molecules. Rather, RF energy is absorbed by our body's tissues and the result is heat. Like that leftover chunk of ham in the microwave oven, our body tissues

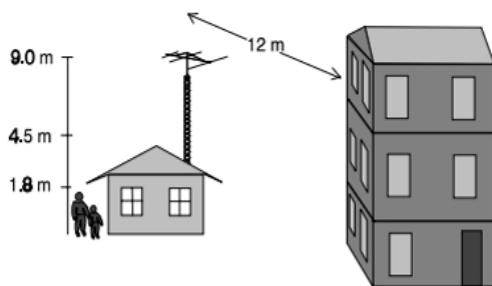


FIGURE 2. Illustration of use of Table 24.

In Figure 2, an amateur station located at a residence is transmitting using a three-element Yagi antenna (20 meter/14.35 MHz) that is located approximately 9 m above ground level. Maximum *average* operating power is 1,000 watts. From Table 24 it is apparent that a person standing at ground level (taken as the 1.8 meters level based on a person's height) would always be exposed below the guidelines, regardless of whether they are considered under the occupational/controlled or the general population/uncontrolled tiers of exposure limits. If only single story residences were located near this amateur station then the station would be assumed to be in compliance with FCC exposure guidelines. However, in the case shown in Figure 2 a three-story apartment building is located adjacent to the amateur station. People living in this building would have to be considered under the general population/uncontrolled exposure guidelines. Since the antenna is the same height (9 meters) as the third story of this building, the amateur would have to ensure that the transmitting antenna is at least 8.8 meters from the apartment building. Since the actual distance in this case is 12 meters, the amateur station can be assumed to be in compliance. However, if the distance were not at least 8.8 meters, the amateur station may not comply but there would still be several options for actions that could ensure compliance. These include (but are not necessarily limited to) raising the center of radiation of the antenna to an appropriate height above the apartment building, moving the antenna to the other side of his property, or possibly incorporating duty cycle considerations into determining exposure levels.

can get warmed up by absorbing RF energy. And some parts of our bodies are more susceptible to this kind of heating than others because of a relatively reduced capacity to efficiently carry away the heat energy. Two areas of the body, the eyes and the testes, are particularly vulnerable to RF heating because of the relative lack of available blood flow to dissipate the excess heat load. Too much RF for too long of a period can result in enough heating that some tissues may be heat damaged.

Our body absorbs some radio frequencies more readily than others. The most easily absorbed frequencies are right smack in the Technician privileges, the VHF range, from 30 – 300 MHz. This includes the very popular 2-meter and 6-meter amateur bands. So, the lowest values for recommended MPE (Maximum Permissible Exposure) are associated with the VHF bands. So, for equal power levels you'll get a bit warmer from VHF exposure than from HF or UHF exposure.

Does Distance Matter?

The distance of a human from the radiating antenna significantly affects

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FCC RF-Exposure Regulations

exposure. The intensity of RF radiation falls off as the square of the distance from the radiating element. So, double your distance from the antenna and you have reduced your exposure to ¼ the previous level. Relocating an antenna is one of the most common actions to take to prevent exposure to RF radiation in excess of FCC-supplied limits.

Why do I feel nice and warm in your backyard?

The rules define two exposure environments, each with different MPE levels allowed.

Controlled Environments apply where **people are aware** of their exposure and have the ability and knowledge to control it. Greater MPE levels are permitted in controlled areas. A good rule of thumb is that the controlled exposure limit can be applied to those areas in which you can control access. An example of this is your fenced-in backyard. Your own household can also be a controlled environment if your family or guests have been given instruction about RF exposure and safety.

The Uncontrolled Environment applies to areas where people would **not normally know** they are being exposed. This includes "public" areas such as your property line or a neighboring apartment, even in your backyard if they are not aware of your hobby and antenna.

Limits for Occupational/Controlled Exposure

(f=frequency in MHz * Plane-wave equivalent density)

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm2) | Averaging Time E 2, H 2 or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|----------------------------|--|
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | (180/f2)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | -- | -- | f/1500 | 30 |
| 1500-100,000 | -- | -- | 1.0 | 30 |

Limits for General Population/Uncontrolled Exposure

(f=frequency in MHz * Plane-wave equivalent density)

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm2) | Averaging Time E 2, H 2 or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|----------------------------|--|
| 0.3-3.0 | 614 | 1.63 | (100)* | 6 |
| 3.0-30 | 1842/f | 4.89/f | (900/f2)* | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | -- | -- | f/300 | 6 |
| 1500-100,000 | -- | -- | 5 | 6 |

Who can do a Station Evaluation?

Amateur Hobbyists can perform their own station evaluations. The FCC does not require any specific paperwork to be submitted to anyone, however it is always a good idea to store any results in your Shack Logbook to show compliance.

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S.W.I.A.R.C.

Join the Club!

SWIARC club dues are \$20/year for 2024. You may bring a check to any 4th Thursday club meeting, or send it to the club address:

SWIARC INC.
PO BOX 661
COUNCIL BLUFFS IA 51502

Dues for students are half price per year.

Club Officers

President Derek W0TYG

president@swiradio.org

Vice President Craig KD0YTI

vicepresident@swiradio.org

Secretary TBD

secretary@swiradio.org

Treasurer Rich WA0ZQG

treasurer@swiradio.org

Station Trustee Chris KF0FBL

repeater@swiradio.org

Paul WBØGXD (Assistant)

Club Committees

Repeater Chris KF0FBL

repeater@swiradio.org

Paul WBØGXD (Assistant)

Field Day

fieldday@swiradio.org

Hamfest Derek W0TYG

hamfest@swiradio.org

Other Contacts

Ham Testing

testing@swiradio.org

Newsletter Rich KORWJ

newsletter@swiradio.org

FCC RF-Exposure Regulations

What do I Submit?

There never was a requirement to submit any paperwork but a FCC agent can ask for verification at anytime. The new Application for Renewal of Amateur Radio Station License, FCC Form 610-R now includes that all applicants acknowledge an RF Safety Compliance by checking a box. The application that applicants must now sign reads:

"I have READ and WILL COMPLY with Section 97.13(c) of the Commissions Rules regarding RADIOFREQUENCY (RF) RADIATION SAFETY and the amateur service section of OST/OET Bulletin Number 65."

For more information see:

Form 610 Bulliten 65

Amateur Supplement "B"

Copies can also be downloaded from [OET's Home Page on the World Wide Web](#)

The Evaluation

Completing the Evaluation use to be easy-peazy, just jot down some numbers on a piece of paper and file it away, just not in a round file box! You ~~will~~, ~~might~~, ~~could~~, be asked for it in the middle of the night when they knock at your door because your neighbor cannot get Perry Mason on their TV.!

Today the easiest way to have your station exposure figured is to utilize one of the many web based calculators available. The parameters that are needed are inputted into a software calculator app and the resulting safe distance is figured. The ARRL's calculator is the one I utilized for this station's compliance.

Below is the calculator app's entry page.

Parameters

- Power at Antenna: (Need help with this?) (watts)
- Mode duty cycle:
- Transmit duty cycle: (time transmitting)
You transmit for minutes then receive for minutes (and repeat).
- Antenna Gain (dBi): (Need help with this?)
- Operating Frequency (MHz):

Include Effects of Ground Reflections

If you would like to receive future announcements of any FCC news related to RF-exposure or the requirements for amateurs to evaluate their stations, you may **optionally** provide an email address.

| | |
|------------------------------|----------------------|
| Email Address: (optional) | <input type="text"/> |
| Comments: (optional) | <input type="text"/> |

Calculate

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ATTENTION ALL AGENTS!

Crypto Transmission from KPH!

The Maritime Radio Historical Society, in cooperation with our good friends at the Cipher History Museum, present a unique, over-the-air cryptographic challenge.

On January 20 2024, KPH will transmit a coded message consisting of 5-digit groups. The message will be encrypted using typical Cold War numbers station cryptographic procedures. All KPH listeners are invited to try their hand at receiving and decrypting the message. Certificates will be awarded to those who successfully decode the message. Additionally, a special certificate will be awarded to the first person to decode it.

Numbers Broadcast: Date, Time and Formats

The numbers broadcast will commence at 2100Z (1300 PST) on 20 January 2024 on all KPH CW and RTTY frequencies. The CW frequencies are (in kilocycles): 425.0, 6477.5, 8642.0, 12808.5, 17016.8, and 22477.5 . Upon completion of the CW transmission, the broadcast will be repeated using RTTY (170cps shift, 45 baud) on the following frequencies: 6324.5, 8427.0 and 12585.5 kcs.

To find out more visit <https://www.radiomarine.org/mrhs-events>

SWIARC REPEATERS and NETS:

Club Repeaters

Primary Club Repeater: 2M @ 146.820 R- No PL
SWIARC digital C4FM 442.225 PL 136.5 Wires-X connected.

Club Nets

146.82 Tues. OPS Net 9:00 pm - 10:00 pm
146.82 Wed. Ragchew Net 9:00 pm - 10:00 pm
146.82 Sat. Swap Net 12:00 pm - 1:00 pm



More Local Nets

Sunday

| | | |
|----------|---------------|----------------|
| 02:00 PM | 50.2 Mhz | 6 meter net |
| 07:50 PM | 144.25 2M USB | Heartland Hams |
| 09:00 PM | 146.94 | Aksarben ARC |

Monday

| | | |
|----------|------------------|----------------------------------|
| 07:00 PM | 145.29 | Heartland Hams ARES informal net |
| 08:00 PM | 147.39 PL: 131.8 | Bellevue ARC |
| 09:00 PM | 146.94 | Aksarben ARC Chat Net |

Tuesday

| | | |
|----------|------------------------------------|------------------------------|
| 07:00 PM | 147.36 | QCWA Net, Chapter 210 |
| | (seasonal, October through March). | |
| 09:00 PM | 146.82 | KØSWI SWIARC Tuesday OPS Net |

Wednesday

| | | |
|----------|-----------------|--|
| 07:00 PM | 146.67 | Dodge Co. Ne. ARES |
| 08:00 PM | 147.39 PL 131.8 | Mid-America Council Radio Scouting Net |
| 09:00 PM | 146.82 | KØSWI SWIARC |

Thursday

| | | |
|----------|--------|----------------------------|
| 07:30 PM | 145.31 | Lincoln Ne. SATERN Net. |
| 08:00 PM | 28.35 | 10-Meter SSB Net. |
| 08:00 PM | 144.25 | 2-Meter Simplex U-SSB Net. |
| 08:00 PM | 146.36 | Heartland DX Ass. |
| 09:00 PM | 28.305 | 10-Meter Net. |

Friday

Saturday

| | | |
|----------|----------|--------------------------|
| 09:00 AM | 146.775 | Pawnee ARC |
| 12:00 PM | 146.82 | KØSWI SWIARC Swap Net |
| 07:00 PM | 145.29 | Heartland Hams Tech. net |
| 08:30 PM | 3.921.00 | QCWA Chapter 20. |

Want Other Nets listed ? Let me know, email newsletter@swiradio.org

FCC RF-Exposure Regulations

Lets look at the specifics of the parameters to understand what they mean.

1. “Power at Antenna”

This is the transmitter power minus feedline losses. If you have the capability to measure at the antenna your output power level enter that reading or Alternatively you can be conservative and enter the transmitter's output power (which is naturally a higher power than at the antenna) if you cannot determine the actual power at the antenna.

2. “Mode duty cycle”

This affects the *average* output power.

Choices are:

| Mode | Duty Factor |
|--------------------|-------------|
| Conversational SSB | 20% |
| Conversational SSB | 40% |
| Voice FM | 100% |
| FSK/RTTY | 100% |
| AFSK | 100% |
| Conversational CW | 40% |
| Carrier | 100% |

3. “Transmit duty cycle”

Your percentage of transmitting is the number of minutes you transmit, followed with the number of minutes you receive. This also affects the *average* output power.

4. “Antenna Gain (DBi)”

Use manufacturer's free space gain figures in dBi when available. Dbi is measured in Free Space.

5. “Operating Frequency”

You may need to run the calculator multiple times to get a complete picture of your situation, i.e. You will need to test each of the bands you typically use.

Let’s look at a completed Calculator Worksheet.

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Would you like to submit an article to the SWIARC Newsletter?

We encourage your involvement. Share your stories, wit, knowledge, experience, and upcoming events here. Submit your articles at a SWIARC Meeting, or to newsletter@swiradio.org

FCC RF-Exposure Regulations

RF Exposure Calculator

Parameters

- Power at Antenna: (watts)
- Mode duty cycle:
- Transmit duty cycle: (time transmitting)
You transmit for minutes then receive for minutes (and repeat).
- Antenna Gain (dBi):
- Operating Frequency (MHz):

Include Effects of Ground Reflections

This calculator should not be used for antennas that are less than 20 cm (8 in) from a person.

Results for a controlled environment:

Maximum Allowed Power Density (mW/cm²):
Minimum Compliance Distance (feet):
Minimum Compliance Distance (meters): **8.18 feet**

For an uncontrolled environment:

Maximum Allowed Power Density (mW/cm²):
Minimum Compliance Distance (feet):
Minimum Compliance Distance (meters): **11.57 feet**

Mitigation Activities

If you don't pass, the FCC gives you ways to mitigate and control exposure levels.

You can use a different frequency or operating mode. You can also change the direction your antenna points in. You can also lower power levels when humans are closer than your evaluation minimum distances computed to.

Again the results should be documented and stored in your station logbook for safekeeping. Any changes in your Station components could require a new evaluation to be necessary to stay in compliance with the FCC's Rules.

73s

Rich KØRWJ

Meeting Minutes 10/2023

Sixteen of us attended the meeting. (3 other guys chose the Zoom link.)

| | | | |
|-------|--------|-------|--------|
| Derek | W0TYG | Terry | KS0L |
| Don | W0AF | Dell | KF0NSP |
| Bruce | N0BHB | John | KB0QKH |
| Chris | KF0FBL | Rick | KA0RLR |
| Bill | KD0FJR | Rich | K0RWJ |
| Greg | N0GR | Dan | KB0TDW |
| Paul | WB0GXD | John | AB0VX |
| Dale | W0HMO | Wayne | KN0WDJ |
| Manny | KF0IWE | Craig | KD0YTI |
| Norm | WA0JYD | | |

Some free stuff was handed out. Numerous coax pieces and other miscellaneous items. (This is becoming a regular feature. Maybe you should show up once in a while.)

Dan KB0TDW did a show on **Ham Shack Hot Line** (Bat Phone). You need an Ethernet phone, and must register to use it. Greg N0GR is number 4713. Paul GXD, a more recent member, is number 610.000.2326. There are 35k members internationally. Thank you Dan.

Business Meeting

Beginning the business meeting after the fun stuff, we approved printed **Minutes** and accepted Greg N0GR's \$2,745.77 **Treasurer's** report.

Repeater Report

A new **Astron** RM-50 power supply for the 225 repeater has been purchased and installed. Cost was \$497 and Paul GXD has been reimbursed for the purchase. After installation, the draw under transmit load in situ was 19 Amps. This should provide us with adequate headroom for our needs.

The **Henry RF amp** for the 82 repeater was shipped back to ENTERPRISE ELECTRONICS for repair. A number of capacitors were replaced, but finals were not replaced. The cost of \$147.31 was less than the original estimate. Paul GXD has been reimbursed. It was bench tested with a typical 7.5 Watt input providing 104 Watts of output. This should be adequate and safe for our application.

Repeater (cont.)

Additional configuration on the Vertex 7000 is necessary before the amplifier is installed.

The VHF .82 repeater is only up 15 ft (from top of hill) at Memorial Park. John QKH offered his site at 1250 ASL and a 55 ft telephone pole. Wants to use a bucket truck to place the antenna (for a couple hundred). Still looking for a long term location.

Old Business

Derek TYG will arrange our year end dinner at **Sugar's** (out East by Bomgaars) probably in the days between Christmas and New Year's. Derek will give an update at the November meeting depending on availability at Sugar's.

Veterans Day parade is a week early on Saturday Nov 4th. We are providing comm. Terry KS0L is in charge. There are about 7k veterans in the Council Bluffs area.

New Business

We don't have a Secretary volunteer for 2024. This is the list of officers so far for next year:

SWIARC officers for 2024

| | |
|---------|--------------|
| Pres | Derek W0TYG |
| VP | Craig KD0YTI |
| Sec'y | none yet |
| Treas | Rich WA0ZQG |
| Trustee | Chris KF0FBL |

Derek asked if there were any new nominations for Secretary. No nominations. Will take up nomination next meeting.

As usual, our 4th Thursday meeting date conflicts with Thanksgiving. We voted to move it up a week to 3rd Thursday, Nov. 16th.

Minutes by members KD0YTI & K0RWJ
in absence of Sec'y ZQG

Minutes 11/2023

As usual, club President Derek W0TYG arrived early to set up the **Zoom** link for the guys who couldn't drive over here, and also connected to the ceiling projector to show an American flag for the pledge, and later a pic of a homemade **Hartley oscillator** made by W1YG (SK) using a type 10 tube and period parts. Attending were:

| | | | |
|--------------|---------------|---------------|---------------|
| Derek | W0TYG | Norm | WA0JYD |
| Allen | K0AAI | Dell | KF0NSP |
| Don | W0AF | John | KB0QKH |
| Bruce | N0BHB | Rick | KA0RLR |
| Chris | KF0FBL | Rich | K0RWJ |
| Bill | KD0FJR | Dan | KB0TDW |
| Greg | N0GR | Dennis | WA0VJL |
| Dale | W0HMO | Craig | KD0YTI |
| Rick | KF0IQL | Rich | WA0ZQG |
| Manny | KF0IWE | (19) | |

We had two (2) programs, first Craig YTI with reprint copies of an article in QST detailing how to set up a **CORES** account with the **FCC**. You have to have this to renew your license. Craig says it's not hard. If you weren't there, the article is on p.63 of the Nov 2023 QST magazine.

Rich ZQG handed out a page of old info, stuff like Alessandro Volta making batteries in **1799**, Andre Ampere in **1820**, and Georg Ohm in **1827**, all trying to become Hams by guessing about how stuff works. The first 'radios' were **spark** transmitters and huge amounts of wire in the air hooked to earphones. No amplifiers. DeForest, coincidentally born in Council Bluffs, made a tube that would amplify RF or audio, a major milestone. It was really tough making contact before tubes showed up.

Tubes allowed single freq transmitters (spark wiped out a whole band), sensitive receivers, and after the **superheterodyne** concept in late 1920s, receivers nearly as good as ours today.

Business Meeting

Minutes of the previous meeting in October, put together by collaboration of VP Craig YTI and Rich RWJ in the absence of our club Secretary, were approved without modification. Treasurer Greg N0GR reported a balance of \$2,779.

Repeater

Link for the SWIARC streaming feed on the club site (SWIradio dot org) is now .225 instead of our former .82 repeater. Tnx to Derek TYG.

We have three Yaesu brand repeaters, a couple controllers, audio voters, power supplies, cans, and other repeater stuff of varying vintage. Items for our VHF .82 repeater are being examined and where needed, reconditioned. Meantime, .82 is working on a 'Lifeboat' system, minimum parts to keep it working until next spring. Ideas for a permanent site go to Repeater @ SWIradio.org

Hamfest 02 March 2024

Derek has contacted Mayor of McClelland IA. We authorized a budget of up to \$1k.

Old Business

Again, no one volunteered to be club Secretary next year. ZQG suggested offering a 15 in laptop with Solid State Drive if they'd do it for 2 yrs.

Christmas dinner is at Sugar's Wed. 20 Dec.

Chris FBL said organizing the Veteran's Day parade (the week before - 04 Nov.) was like herding cats. People ignored signs, positioned themselves in wrong places, etc. Fun. Derek TYG acknowledged, "No one died." Helping out were KS0L, FBL, GXD, TDW, and TYG. Also, Paul's XYL Marcia.

Announcements

Rick RLR said Paul GXD had a knee replaced (after the parade). Send him a card.

ZQG said the Free Flea is Saturday 20 January.

Meeting adjourned at 8:11 PM.

Minutes by club Sec'y, WA0ZQG