Volume XXXIV	February 2022	Number 2

From the President
de Pat Volkmann, W9JI

Elections were held at the January meeting. We had a full slate of candidates, and all the officer positions are now filled. Here are the results:

President:	Pat Volkmann (W9JI)	Incumbent
First VP:	Ben Evans (K9UZ)	Incumbent
Second VP:	Bill Greaves (K9GN)	First Term
Repeater VP:	Gregg Lengling (W9DHI)	Incumbent
Secretary:	Ken Boston (W9GA)	Incumbent
Treasurer:	Gary Bargholz (N9UUR)	Incumbent

The Repeater Trustee is appointed by the Board of Directors and is currently Mike Harrington (KD9GCN). Kevin Steers K9VIN is the Past President.

I would like welcome new board member Bill Greaves K9GN. Bill is a relatively new club member, but he hasn't been shy about pitching in. I'm looking forward to working with Bill in the coming year.

I would like to thank retiring board member Bill Church KD9DRQ for his service to the club. Bill served two terms as the Second VP, is a regular on the Tuesday night net and helps out at the Swapfests. Please say thank you to Bill when you talk to him.

Thank you to the nominating committee for helping with the election. The committee was chaired again this year by Tom Ruhlmann W9IPR with Jim Albrinck K9QLP and Tom Trethewey KC9ONY serving on the committee.

W9JI portable during Key Up #2

Here's a picture of me operating portable from Huiras Lake Natural area during Key Up #2. The day was very sunny, and the air temperature was 9° F. The bright sunshine caused me to squint and resulted in the funny look on my face – or maybe that's just what I usually look like! I was able to hit both the 2 M and 440 MHz machines with my HT. I only worked a handful of stations and but had lots of fun.

Word was received of the passing of Jerry Rauth, KC9WUI, on December 9, 2021. At this time, I don't have any news on

arrangements. Information will be posted to the reflector as it becomes available

See you at the meeting.

Pat Volkmann, W9JI

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A Message from the Editor
Newsletter Table of Contents
de Bill Shadid, W9MXQ

Here is a preview of this month's Newsletter Edition

_____**Onward To the Newsletter**_____

THE COMPUTER CORNER
No. 287:   Linux Mint 20.3 Is Out

De: Stan Kaplan, WB9RQR
715 N. Dries Street, Saukville, WI 53080-1664
wb9rqr@gmail.com

Labeled "UNA" (but I don't know why; the justification has not yet been printed), Linux Mint Cinnamon version 20.3 is out and ready to install on your laptop, desktop, or other configuration of computer, so long as it is a 64-bit machine. (All versions past version 19 require a 64-bit processor, but don't assume that your old beater handles only 32 bits; check it out and you may be pleasantly surprised.) This new version is good until at least 2025, so you need not worry about changing versions for a while.

Your machine needs a bare minimum of 2Gb of RAM, though you will be more comfortable with 4Gb. You'll need a minimum of 20Gb of disk space, though 100Gb is recommended. Your screen should be capable of 1024 x 766 pixel resolution, but if you have less you will be able to adjust for that.

As always, it comes with the Firefox browser (my personal favorite for ease of use and safety), and Libre Office for more or less seamless use with Microsoft Office products (why on earth would anyone spend hundreds of dollars for Microsoft Office today with several products including Libre Office available totally free?).

The Hypnotix IPTV Player has been much improved (my copy sported 859 TV channels from around the world when writing this on 17Jan). A new XApp gadget that comes with this release helps you keep track of your documents and reading program. And Sticky Notes has a new search function that should be helpful.

The themes have been cleaned up and improved for slicker views the way you like them. And there have been printing and scanning improvements that help especially with Hewlett-Packard hardware. I have always said that HP makes the best printing hardware in the world, but the worst printer software in the world, so anytime you can use controlling software from Linux and avoid HP's stuff, you are definitely ahead!

If you already have an earlier version of Linux, like 20.2 ("UMA") on board, upgrading is a snap. I recommend you first use the Update Manager (the little shield icon in your system tray). Click it to bring it up on your desktop, then click the refresh button and install all software that it lists. Reboot if suggested. By then, you should find a little System Reports icon in your tray that looks like this: [!]. Click it to expand it on your desktop and it should show an invitation to upgrade to 20.3. The instructions that follow will be clear and easy to follow.

If you want to install Linux on a machine that does not have an earlier version on it, you will have to take a couple of extra steps. You will need to download a copy of the .iso file: linuxmint-20.3-cinnamon-64-bit.iso which you can safely get from Majorgeeks.com in their Linux Distros section (left column of their opening screen). Find it under Linux

3 | P a g e

Mint 20.3, and make sure it is described exactly as shown above in red when you actually begin the download process. The file is 2.1Gb in size, so it will take some time to download it. When you have it, use burning software to make a live, bootable copy of the installation program and use that to actually produce the operating system on your computer.

How is this for an offer? Paid-up ORC members can request a live, bootable copy from me. I will burn one for you, but you will need to pick it up from my QTH. Email or call me for the request, and I will let you know when it is ready to pick up. Happy computing!

OZARES: Ozaukee Amateur Radio Emergency Services
by Don Zank AA9WP, OZARES Emergency Coordinator

Last month the discussion focused on how WINLINK, the email by radio application, is dependent upon the internet and the servers of Amazon web services. And if the availability of the internet is lost the effectiveness of WINLINK is severely crippled. The only other means of using WINLINK would be by using the peer-to-peer or station-to-station mode of operation. So, on the bright side information can be shared but only between two stations. Information sharing to a large or geographically dispersed group, although possible, would not be very efficient.

However, there is another digital mode (isn't there always another digital mode) emergency communication application that can deliver messages to large or widely dispersed group. It also has several distinct advantages. This mode can also use forms, attach csv files and low-resolution pictures.

This mode is the Narrow Band Emergency Messaging System or NBEMS application. NBEMS was created by Dave Freese, http://www.w1hkj.com/, and Howard Teller, KH6TY. The amateurs of Pennsylvania have spearheaded the efforts to make NBEMS a viable digital communication mode.

NBEMS uses, mostly on VHF, the MT63 protocol developed by Pawel Jalocha, SP9VRC. MT63, which uses 64 tones for its transmissions, is a robust mode that works great in weak signal areas and is not a fussy application. Bandwidths available are 500 Hz, 1000 Hz and 2000 Hz. On VHF, MT63 with a 2000 Hz bandwidth and long interweave provides the best modes of operation. MT63 uses forward error correction so that even if 25% of the characters are lost it can still provide a solid copy. On HF the preferred digital mode is Olivia. More on this subject later.

NBEMS modem support is provided by the *Fast, Light, Digital Modem* application or FLDIGI. FLDIGI also provides many other digital modes including PSK31, RTTY and

CW so it can be used in general amateur radio. In addition to NBEMS the FLDIGI application is integrated with other applications such as FLMSG that provides access to message form templates including ICS and Red Cross forms. The FMARQ or automatic request software allows messages to be received without the receiver being present at the station. A multi-cast application, FLAMP will transmit several files that include a checksum for verification of reception. Other functions included with FLDIGI are rig control, Winkeyer support and RigExpert antenna analyzer.

A benefit for users using MT63 is that there is no need for external sound cards or TNC's. The interfacing between computer and radio is very simple audio coupling. The only requirement is that the computer have a speaker and microphone, either internally or external. A handheld next to the computer will work great if you remember to hit the PTT before sending your FLDIGI message. Also, any background noises including talking do not interrupt or disturb the sending. A trick from Rick Frost, K4RE, that helps a user to practice with FLDIGI and NBEMS is to merely put two computers side by side and use the speaker and microphone of the computer or use a pair of external headsets; no radio(s) needed.
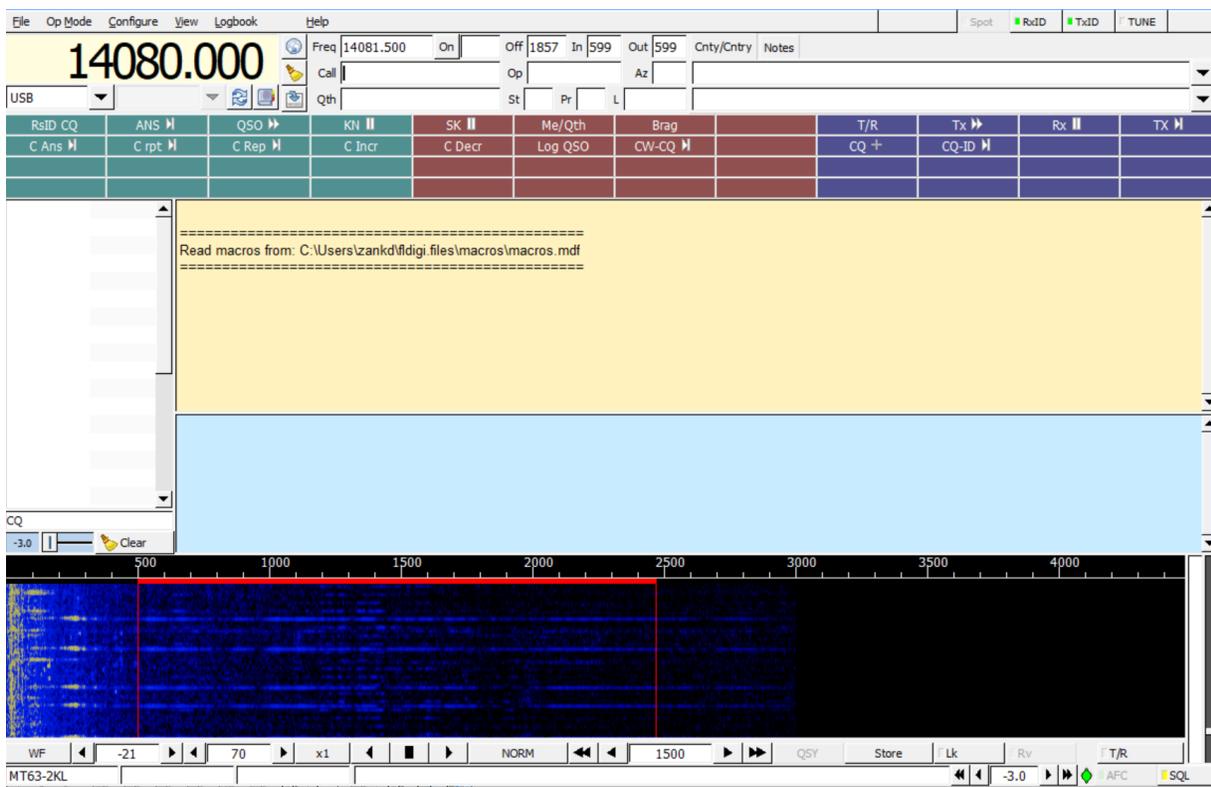

Figure 1: FLDIGI Interface Page

The MT63-2000L mode is a slow mode. A simple 3000-byte message at 1Kb per minute will take over 3 minutes. On hf the Olivia 8/500 mode is used but its transfer rate is 170 bytes/minute.

The ARES members of south east Wisconsin have successfully used NBEMS and the MT63-2KL mode mostly on VHF.

Now on HF the picture gets a little more interesting. Because of bandwidth limitations there have been numerous digital modes tested. These include the robust PSK types of PSK-500R, PSK-250R and PSK-150R. The robust PSK modes include error correction and PSK-500R is twice as fast as MT63-2000. But MT63 is a very forgiving mode, and the simple use of audio coupling is an important factor for keeping things simple.

Another mode is called THOR. The default mode is THOR 11 which has a baud rate of 11 and a bandwidth of 262 Hz. Many NBEMS nets on hf use this mode during check-in then will move to MT63 during the actual net and message passing portion.

I have had experience using NBEMS and FLDIGI on VHF simplex frequencies and found it a great way to pass information. While I have used PSK, FT-8, RTTY and WIN-LINK VARA HF digital modes on HF, I have not used the MT63 or THOR modes. The good news is that there are a number of practice nets during the week. The Pa NBEMS Net google site, paNBEMS@groups.io, provides a list of practice nets available during the week that I need to check out.

The fun thing about amateur radio; always something new to learn and try.

73

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**Please check
Page 31 for a
word from our sponsor:**

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Vintage Magazine Cover Art
de Pat Volkmann, W9JI

Our cover this month is from the February 1912 issue of ***Modern Electrics***, a Hugo Gernsback publication. We see a man in a space ship surrounded by a variety of radio and electrical devices, with a feed line running to the window. A note on the cover directs us to page 790, where the apparatus is explained. Is this a typical radio setup from 1912?

The cover picture foreshadows the direction that some of Gernsback's publications would take in the future – the presentation of we now call "science fiction" in a magazine article. In this issue, we find the 11th installment of "Ralph124C41+". Ralph124C41+ (the story title and name of the main character) was described as the greatest inventor that the world had ever produced. Throughout the series, Gernsback describes many fanciful, high-tech inventions, some of which would be realized in years to come. The 12 episodes of the story were published as a book in the late 1920s. The writing is generally panned but the stories are described as the first major work of American science fiction. In my opinion, the writing is not bad and reads better than much of what Gernsback would publish in his later science fiction magazines.

The apparatus shown in the cover illustration plays a key part in the story. The hero uses an "ultra generator" and an "inductive balance" to overcome his enemy and rescue his girlfriend. Wireless communication, both audio and visual, are featured in the story. At this time, the general public may have considered wireless nearly as futuristic as a rocket ship. Fantastic and amazing stuff indeed!

In 1912 there were few regulations for either commercial or amateur radio stations. The Anderson Bill, which passed that year, was the first substantial legislation to effectively regulate radio and it would be the law of the land the next 15 years. For hams, there were a couple of key provisions in this bill – a power limit and a frequency limit. Gernsback's editorial (page 784) discusses his support of both as a means to end interference with commercial and government stations. The power limit proposed was one kilowatt. The frequency plan proposed that "…a few meters up to 200 could be used …" for amateur communication. This seems an unusual position for Gernsback, an advocate for amateurs before the formation of the ARRL, to take. At the time, the wavelengths below 200 meters were considered useless for communication. The Anderson Bill was an attempt to regulate amateurs out of existence. As it turned out, hams were handed the entire HF spectrum, with spectacular results to follow.

You can find a PDF of this issue and many others at https://worldradiohistory.com/
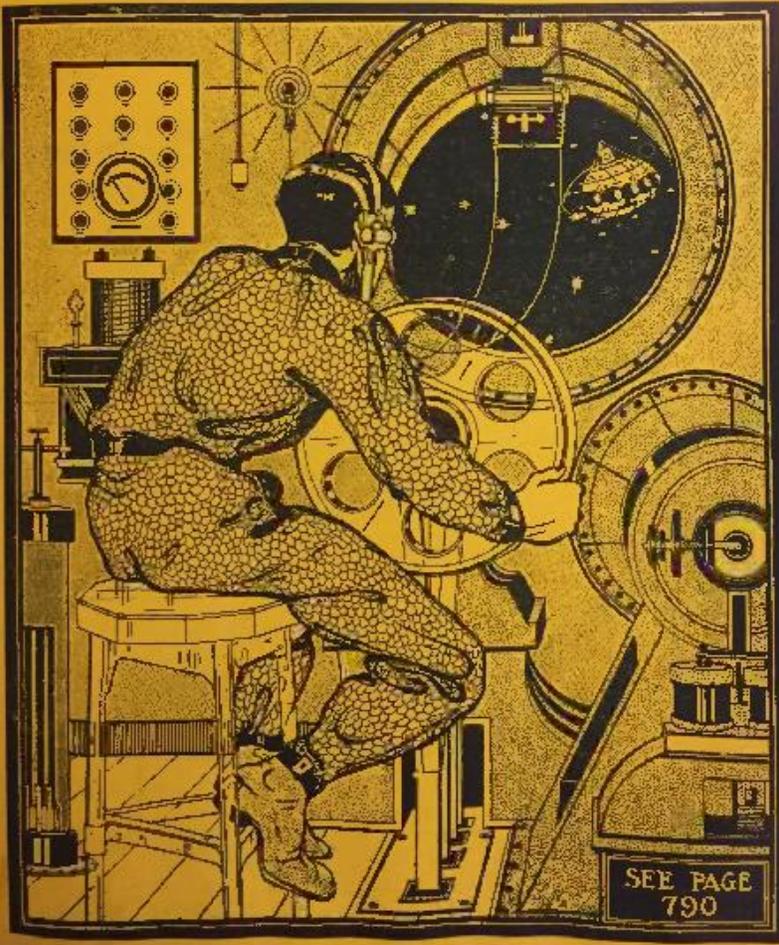
Modern Electrics February 1912

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Vintage Amateur Radio
de Bill Shadid, W9MXQ
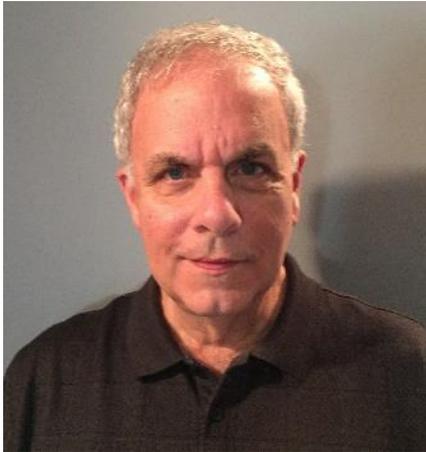
Following last month's article about R. L. Drake Company's entry into the Linear Amplifier market, we continue on with two additional models. These were the last amplifiers produced by Drake. In the late 1970's, Drake had moved from basically vacuum tube receivers and transceivers to solid state designs. While Drake never did make a solid-state Linear Amplifier, in 1979 they accommodated their recently introduced solid state TR7 Transceiver with the introduction of the matching 160-meter through 15-meter L7 Linear Amplifier. (The L7 could be field modified to operate on Amateur Radio 12-meter and 10-meter bands.

While keeping some basic performance parameters and tube selection, Drake updated the design of the L7 as compared to its predecessor, the model L-4B.

Drake L7 Linear Amplifier

W9MXQ

By the time of the arrival of the TR7 Transceiver and the L7 Linear Amplifier, Drake had established itself as a major player in the amateur radio market.

With the L7, Drake answered the growing demand for equipment that supported the popular 160-meter band. Essentially, the L7 was a 1.8 to 30 MHz general coverage amplifier which made it well equipped to perform well on the new 17-meter and 12-meter

bands. The L7, however, did come from the factory with its circuitry inhibited from 24 to 30 MHz. This was in keeping with the Federal Communications Commission's ruling that amplifiers marketed in the United States could not function on the 11-meter Citizens Band (at 27 MHz). Of course, a licensed Amateur Radio operator was free to modify such amplifiers for operation on the 12-meter and 10-meter bands – and Drake did offer instructions to do so with proper proof of being licensed.

The design of the Drake L7 Linear Amplifier was meant to match the Drake products of the day:

Drake TR7 HF Transceiver
W9MXQ

Drake TR7A HF Transceiver
W9MXQ

The Drake L7 Linear Amplifier had the following specifications[1]:

- Two Eimac 3-500z or Amperex 8802 Triode Tubes
- 2000 Watts PEP Input SSB or 1000 Watts CW / RTTY
- Linear AM input power to be held to 500 watts (in SSB Mode)
- 160-15 Meters (Continuous coverage from 1.8 to 24 MHz)
  - 24 to 30 MHz coverage could be added in a field modification
- Separate L7-PS Power Supply (see picture below)

L7-PS HV Power Supply Views (Front and Back)
(Physically, the late L4-PS and the L7-PS Power Supplies are identical)
W9MXQ

On the rear panel of the L7 are connectors for feeding high voltage (through a Millen High Voltage Connector) and control interface (through a large, 8-pin, Jones Connector) to the separate L7-PS HV Power Supply. The interface cables and main AC feed cables are hard wired to the L7-PS. The transformer providing filament voltage for the final amplifier tubes, the meter lamps, status lamps, and the voltage for the transmit/receive

control relay was inside the RF Cabinet with primary voltage fed via the control interface cable.

The L7 and its predecessor L-4B had a quite different appearance. Look at the two amplifiers, side by side:

Front Panel Layout – L7 at the Left – L-4B at the Right
Functions are the same – but Layout is different – see text below for details.
**W9MXQ**   **W9MXQ**

Looking at the above pictures, note that the two different meters have the same purpose. The Ammeter is on the right on the L7 and on the top on the L-4B. The same functions are handled by the multimeter (left on the L7 and on the bottom on the L-4B). Those functions are:

- Grid Current
- Plate Voltage
- Forward Power (3,000 watts)
- Reflected Power (300 watts)
- Forward Power (300 watts)

These are handled by the black pushbuttons on the L7 and a rotary switch on the L-4B. Note the ALC level knob just above the Power and Mode Rocker Switches on the L7 and on the knob to the right of the lower meter on the L-4B. The Standby (SDBY) switch on the L7 is the red button to the right of the row of black buttons on the L7. That same function was handled with a push-pull switch on the shaft of the ALC level knob on the L-4B. Function and status on the L7 are shown by lamp indicators (to the right of the plate ammeter). Also, the illuminated blue color meters on L7 are nearly hidden with power is removed from the amplifier.

The rear panel connections for input and output allowed the Drake L7 HF Linear Amplifier to easily accommodate previous and current Drake (and other brand) equipment of the day:

Rear View – Drake L7 Linear Amplifier
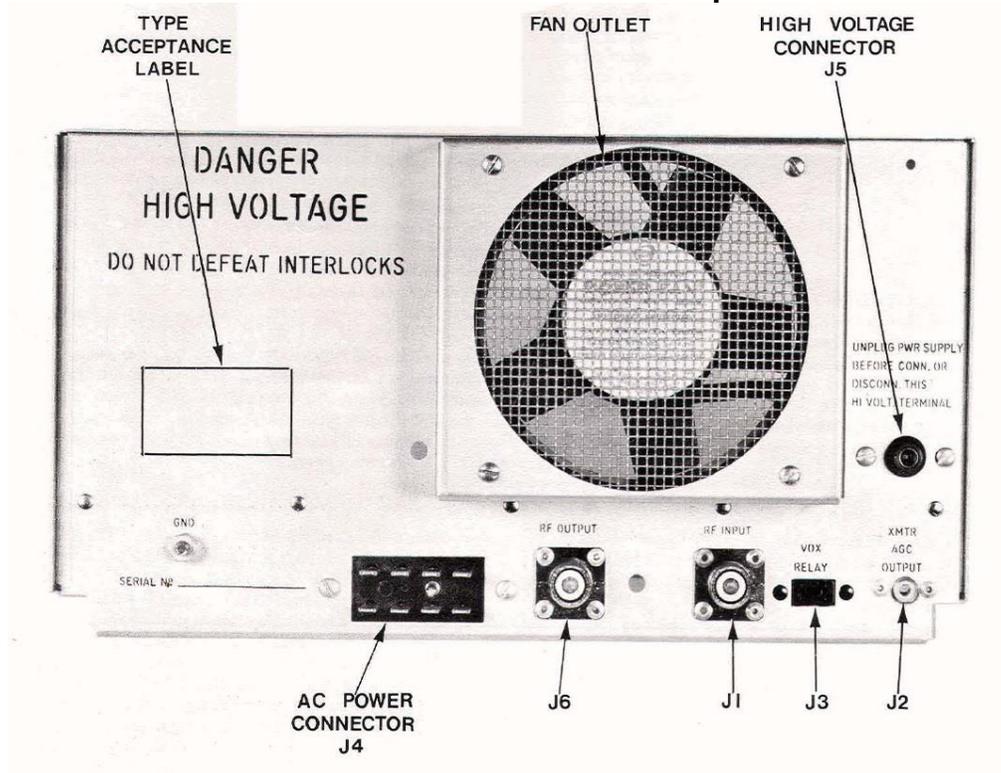
See connection descriptions in the text, below.
**From the Drake L7 Operating Manual – R. L. Drake Company**

The connection to the remote L7-PS Power Supply were via a cable with two connectors at the amplifier end – one to the heavy-duty AC Power Connector (J4) and the other to the High Voltage positive voltage line to the Millen High Voltage Connector (J5). These two lines actually were one cable from the L7-PS that broke into two lines at the L7 Amplifier end. BEWARE!! That cable contains voltages at, or exceeding, 3,000 volts DC.

After a short while in production the connector at the VOX Relay (J3) became a phono jack and it moved away from the two pin (crystal socket) connector traditionally used in earlier Drake Transmitters and Transceivers. The VOX Relay connection requires current and voltages too high for most modern transceivers. Users should modify their amplifier accordingly or use an external switching interface[3].

RF input from the Transceiver or Transmitter is connected via the RF Input connector (J1). The drive provided should not exceed 100 watts or damage to the input circuits or tubes can result – not to mention distortion in the radiated output. Output to the antenna is via the RF Output connector (J6). Automatic Level Control (ALC) voltage from the Transceiver or Transmitter is connected to the XMTR ALC Output Connector (J2).

The following are some internal views of the Drake L7 Linear Amplifier:

Inside Top View – Drake L7 Linear Amplifier – Front Panel at Bottom of Picture
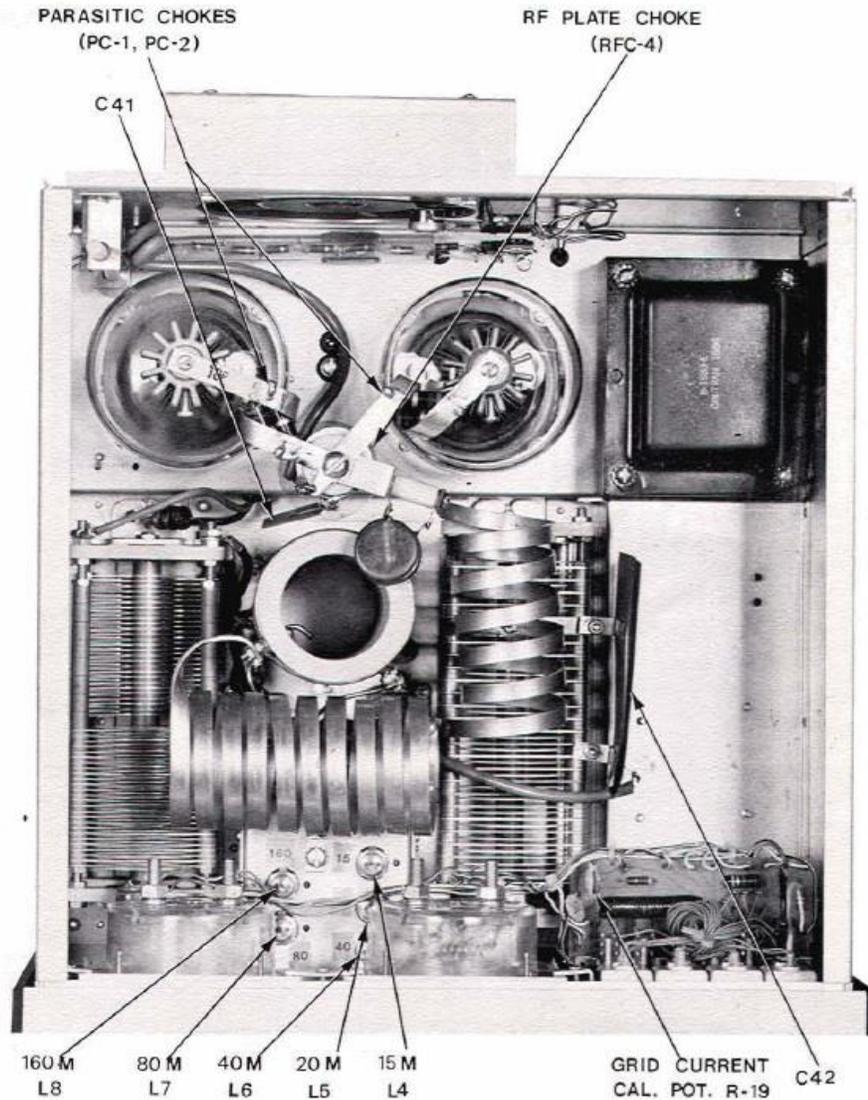
The meters are at the center and left of the Front Panel – with the indicator lamp array visible to the right. Just behind the meters are the tuned input coils with the three sections of the tank coil visible behind that. The Plate Tune Capacitor is to the right of center and the Load Capacitor is along the left side. Rear left are the two 3-500z triode amplifier tubes cooled by the horizontal fan at the very rear. To the right rear is the filament/control voltage transformer.

From the Drake L7 Operating Manual – R. L. Drake Company

Inside Bottom View – Drake L7 Linear Amplifier – Front Panel at Bottom of Picture
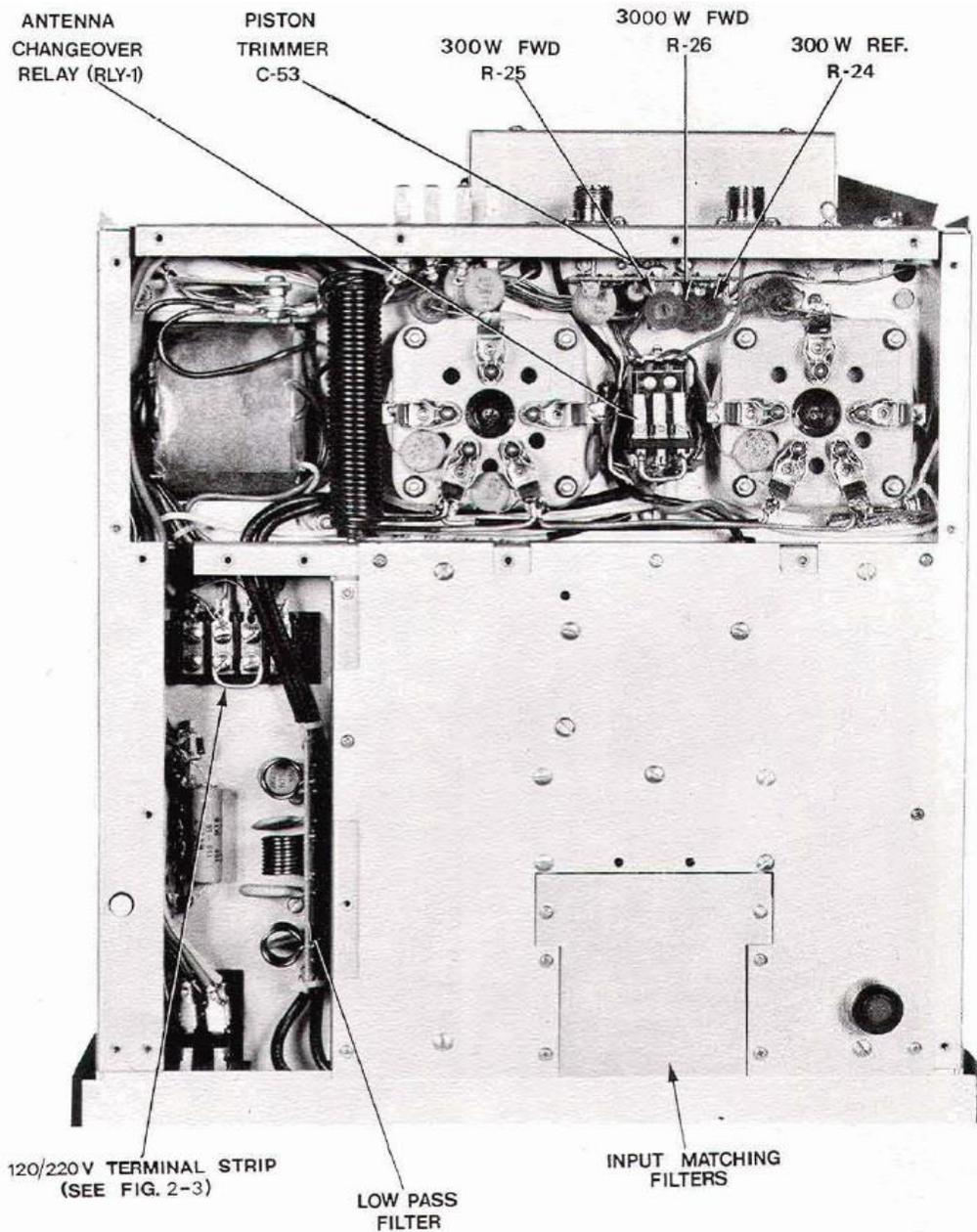
Again, the bottom of the picture is the front panel. The tubes are at the top center and right. The filament/control voltage transformer is to the left of the tubes. You can see the filament choke between the tubes and the transformer. Toward the front from the transformer, you can see the terminal strip for 120/240 strapping of just that transformer. Called out is the LOW PASS FILTER – covered later in the text of this article. The INPUT MATCHING FILTERS re-movable panel covers he input matching filter components. The ANTENNA CHANGEOVER RELAY (RLY-1) is between the tube sockets. The coaxial connectors for input and output are shown at the top right on the back panel. In that same area you can see the housing for the cooling fan.

From the Drake L7 Operating Manual – R. L. Drake Company

The Drake L7 came in two forms that I can identify. Early models included a rather difficult to access and modify in-inline filter to inhibit operation above 24 MHz. This filter had its own circuit board with the input RF signal fed the circuit on its way to the tuned input coils. Later TR7 models included a by-pass circuit trace on the filter board so that conversion of the amplifier to include the 12-meter and 10-meter bands was somewhat easier to accomplish in the field.

Relatively late in the production running of the TR7 HF Transceiver and the L7 Linear Amplifier, Drake began a product line addition of a lower cost HF Transceiver, the Drake model TR5. The TR5 had a completely different conversion scheme and owes its design heritage more to the former TR-4 series Transceivers than the TR7[2].

To support the product expansion, Drake began to release accessories with model numbers ending in the number "75," to show the relationship to both lines. One of those was the L75 HF Linear Amplifier. Shown below is the L75 next to the matching TR5:

Front Panel Layout – L75 at the Left – matching TR5 at the Right
WB4HFN   W9MXQ

The Drake L75 Linear Amplifier had the following specifications[1]:

- A single Eimac 3-500z or Amperex 8802 Triode Tube
- RF power was specified as:
    - 1200 Watts PEP Input SSB (Continuous Duty)
    - 1000 Watts CW (50% Duty Cycle)
- 160-15 Meters (Continuous coverage from 1.8 to 24 MHz)
- Internal 120/240 VAC Power Supply – no separate power supply

Metering on the single meter L75 is less convenient than on the dual meter equipped L7. Metering ranges on the L75 (switched via push buttons as on the L7) are as follows:

- Plate Voltage
- Grid Current
- Plate Current
- Relative Output

The rear panel connections for input and output allowed the Drake L7 HF Linear Amplifier to easily accommodate previous and current Drake (and other brand) equipment:

Rear View – Drake L75 Linear Amplifier
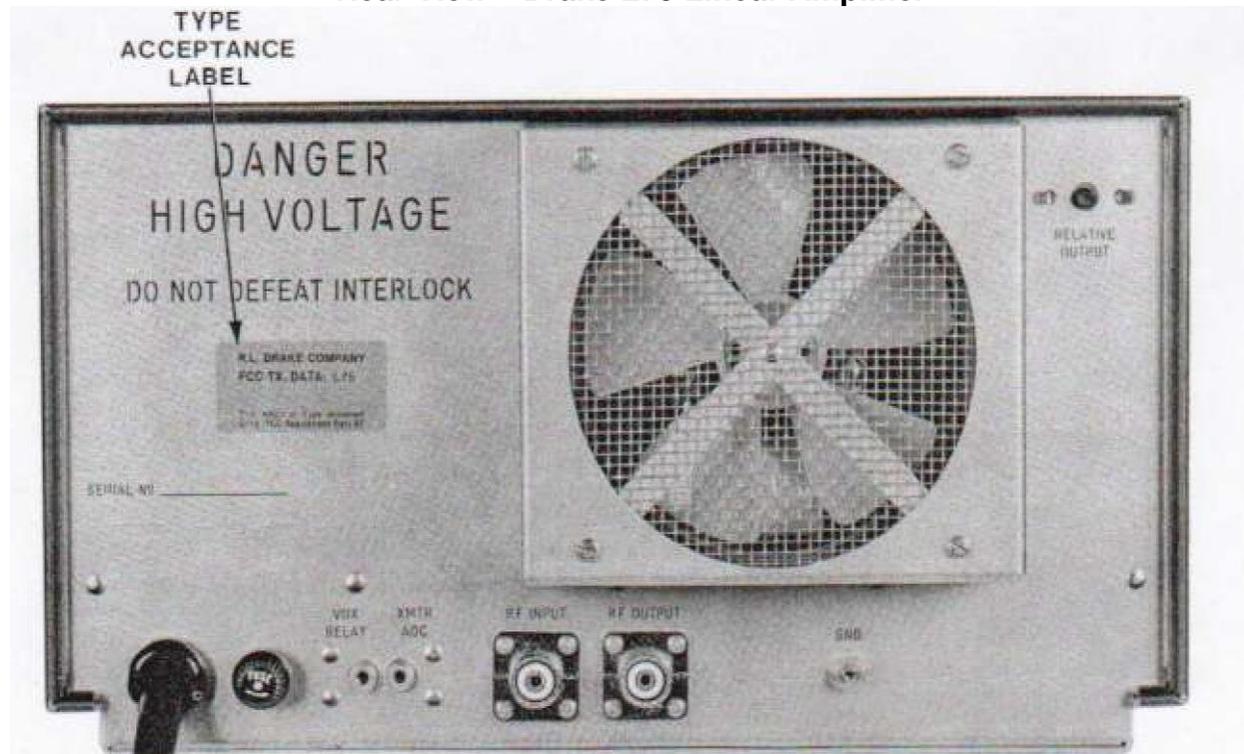
See connection descriptions in the text, below.
From the Drake L75 Operating Manual – R. L. Drake Company

Unlike the L7 Linear Amplifier, the L75 includes its power supply within the single cabinet. So, the dangers and necessary cautions of running high voltage from one cabinet to another is eliminated.

The VOX RELAY is the PTT Line from the Transceiver or Transmitter driving the L75. As in the L7, the connection requires current and voltages too high for most modern transceivers. Users should modify their amplifier accordingly or use an external switching interface[3].

Also, as with the L7 Linear Amplifier, the drive from the Transceiver or Transmitter is connected via the RF INPUT connector. The drive provided should not exceed 100 watts or damage to the input circuits or tubes can result – not to mention distortion in the radiated output. Output to the antenna is via the RF OUTPUT connector. Automatic Level Control (ALC) voltage from the Transceiver or Transmitter is connected to the XMTR ALC Output Connector.

The following are some internal views of the Drake L75 Linear Amplifier:

Inside Top View – Drake L75 Linear Amplifier – Front Panel at Bottom of Picture
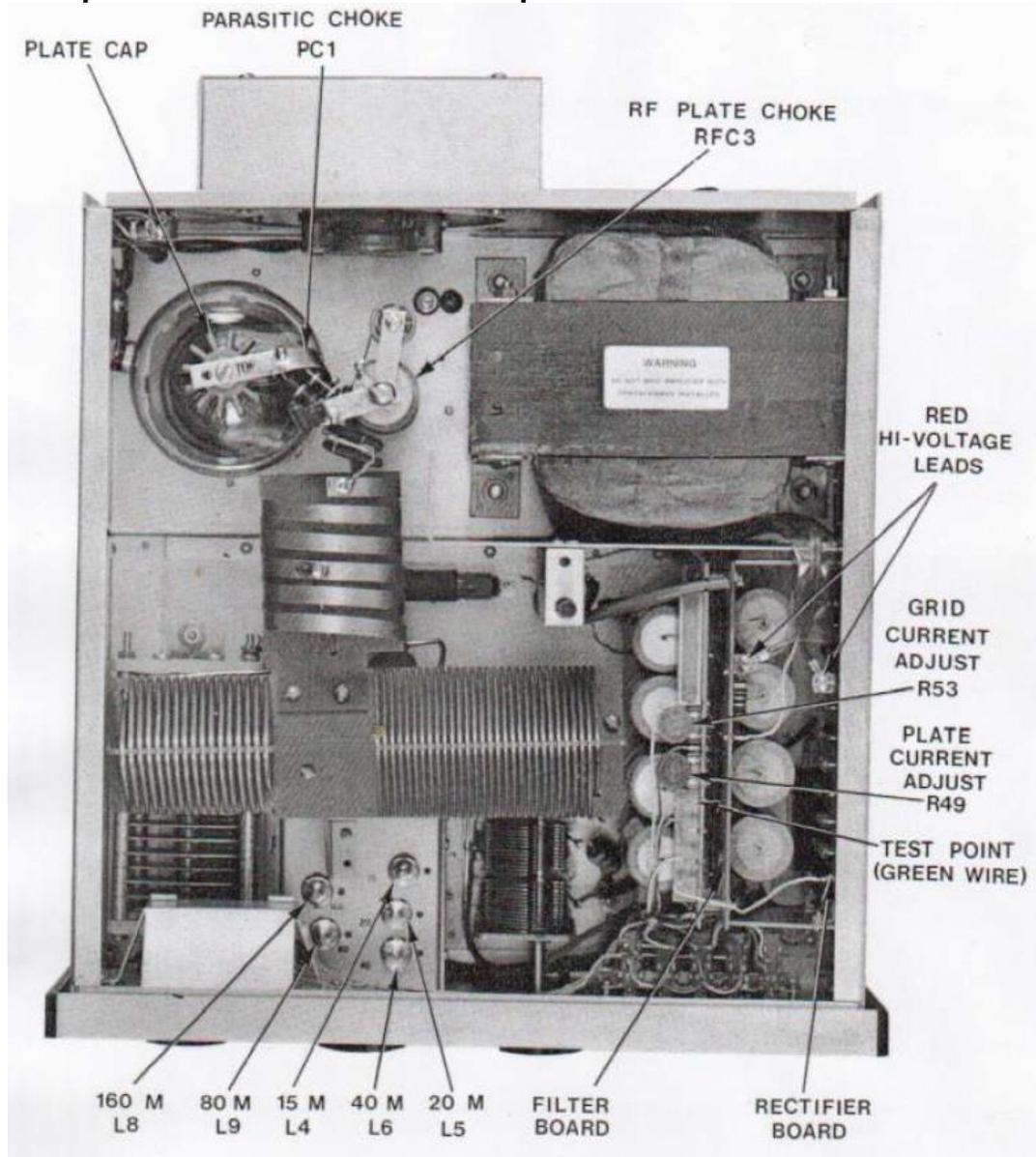
The meter is at the left, behind the front panel. To the right of the meter are the tuned input coils. The Plate Tune Capacitor is visible to the left, below the meter and the Load Capacitor is in the center, near the front panel. The indicator lamps are to the right of the Load Capacitor. Behind the lamps are the power supply components. Rear left is the 3-500z triode amplifier tube cooled by the horizontal fan at the very rear. Power transformer is right rear.

From the Drake L75 Operating Manual – R. L. Drake Company

Inside Bottom View – Drake L75 Linear Amplifier – Front Panel at Bottom
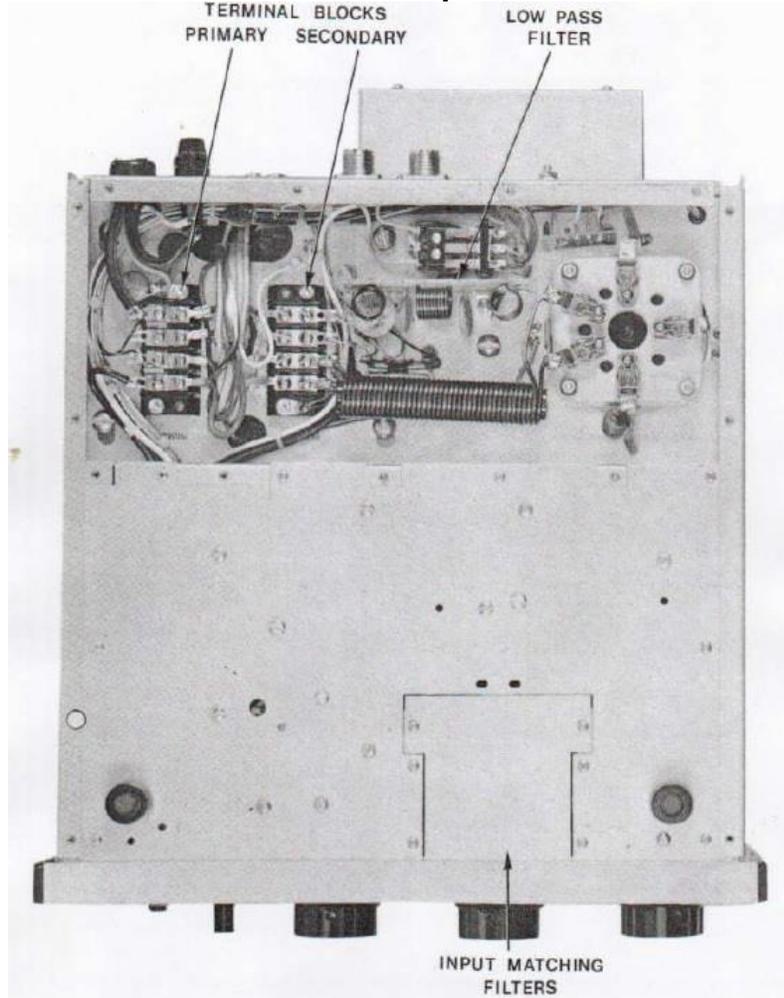
Again, the bottom of the picture is the front panel. The tube is at the top right. The power transformer connections are to the left of the tubes, along with the filament choke. The INPUT MATCHING FILTERS removable panel covers he input matching filter components. The AN-TENNA CHANGEOVER RELAY (RLY-1) is between the tube sockets, The coaxial connect-ors for input and output are shown at the top right on the back panel. In that same area you can see the housing for the cooling fan.

From the Drake L75 Operating Manual – R. L. Drake Company

Time is the best judge of success for amplifiers such as the Drake L7 and L75. To this day these amplifiers are sought after products. The L75 is extremely hard to find on the used market. The higher volume L7 is hardly better in that respect but are occasionally available. Both command more today to buy than when they were new.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, W9MXQ@TWC.com.

A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is a lot more than a proofreader as he nearly always adds commentary that makes it into the article.

Credits and Comments:

[1] Product specifications for the Drake L7 and L75 models shown come from their respective Instruction Manuals – all of which exist in my files. Most Drake manuals are available on line for downloading. I download Drake manuals from Ron Baker, WB4HFN, at: http://www.wb4hfn.com/DRAKE/DrakeManuals.htm.
[2] The TR5 HF Transceiver was the subject of a previous article.
[3] Reference the Ameritron ARB-704 Interface at: https://mfjenterprises.com/search?q=ARB-704. Not shown here are other ways to mitigate the high voltage and current switching inside the amplifier. Contact me for further details at W9MX!@TWC.com for details.

© *W9MXQ*

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The Best Of The Best
Drake "C" Line

©WB4HFN

This picture, and the sentiment it represents to Drake radio aficionados is from Ron Baker, WB4HFN, and his Drake related website at
http://www.wb4hfn.com/DRAKE/DrakePageHome.htm
If you have one of these sets – contact me to have it included in an updated article on these ground breaking radios – *that are still popular today*.
W9MXQ@TWC.com

Do you have this pair? If so, I need to hear from you!
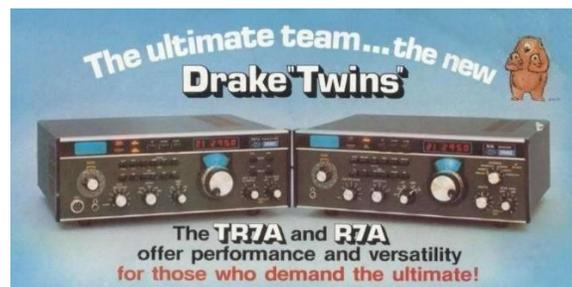
TR7 or TR7A with R7 or R7A
© R. L. Drake Company

On The Air!

de Gary Sutcliffe, W9XT

It is not too early to reserve the afternoon and early evening of Sunday, March 13, for the Wisconsin QSO Party. We won the club competition in 2020 and came close last year. It is time to win it again. We just need as many people as possible to get on and send in their scores.

It starts at 1800 UTC and runs to 0100 UTC. This is 1:00 PM until 8:00 PM. Note that we switch over to Daylight Savings Time Saturday night.

The web page shows the dates and info for the previous years, but I didn't find a link to this year's event. Keep an eye on their web page as we get closer in case they make some changes to the rules. mail.warac.org/wqp/wqp.htm

SSTV pictures from the International Space Station

The amateur radio equipment on the ISS is used in different modes. One mode is an FM repeater with a 2M uplink and a 70 cm downlink. Signals on the downlink are strong, and a few watts into a small beam are enough to get into it. At other times it is used as a packet digipeater. At other times it transmits SSTV pictures.

During the last week of December, the ISS ham equipment transmitted SSTV pictures showing the past, present, and future of lunar exploration. I had never done anything with SSTV, so I searched for programs for decoding SSTV signals. I came across a YouTube video by K7AGE going through all the steps necessary to copy SSTV from the ISS. https://www.youtube.com/watch?v=YgY3saXXTXs

The video recommended the MMSSTV program by JE3HHT. I have been using his RTTY program, MMTTY, for years and found the look and feel of the SSTV program familiar.

The schedule for the ISS being overhead was not great at that time. Most of the passes were after 2:00 AM and repeated about every 90 minutes until 8:00 or 9:00 in the morning. I frequently stay up all night in my ham radio operations, but this one did not quite reach the priority to be losing sleep. Fortunately, MMSSTV will automatically decode pictures and store them, so the radio and computer can stay awake while I sleep.

The other problem is I didn't have a good satellite antenna. My 2M EME array is too sharp and requires manual tracking. The 11-element horizontal Yagi would only be good when the ISS was close to the horizon in the direction it was pointing. So, I decided just to try my 40M dipole.

I got a few good pictures. Unfortunately, fading from polarization was a big problem. An antenna with circular polarization would be much better.

I was not the only ORC member copying SSTV pictures from the International Space Station. Don, AA9WP, also was coping them. I asked Don to send me a few words and some pictures to include in this column, but he sent me an entire article! I passed it on to our editor, Bill, W9MXQ, to publish as a standalone article in its own right. It is located elsewhere in this issue. Thanks, Don, and Bill!

They will be doing more SSTV pictures in the future. You can view the status at the ARISS website. www.ariss.org/current-status-of-iss-stations.html

It appears that the ISS will be in repeater mode, 2-meter FM up, and 70 cm FM down, during at least the early part of February. The best site for finding out when the ISS is overhead is https://heavens-above.com/

In the upper right-hand corner, you need to enter your location. Then on the left is a column "Satellites." Go down the list to ISS and click on it. It will show all the visible passes, which will be in the hours of darkness just after sunset and before sunrise. You don't need to see it with your eyes to hear the ISS. It just needs to be above the horizon. Click on the "All" button to see all overhead passes for the next ten days.
I also have the Heavens Above app on my phone. I like to sit out on my patio and see how many satellites I can see on pleasant, clear evenings. But, of course, it will be a few months before I do that again! Sorry iPhone users, the app is only available for Android.

SSTV pictures copied from the ISS by W9XT December 2021

Deep Space Network

I have always been interested in the space program. I remember sitting on the floor in my PJs as a seven-year-old watching Alan Shepard make his suborbital flight. After that, all my friends wanted to be astronauts. I wanted to be the guy in the control room pressing the launch button. I guess I was destined to be an engineer. Later I was fortunate enough to work on a satellite and planetary probe to Venus in my early career and I am still interested in anything related to space exploration.

The James Webb Space Telescope launched on Christmas Day. Of course, I made sure I watched the launch and followed its deployment on its month-long trip to its L2 orbit location. It arrived at the end of January, and everything in this very complex project has been successful so far. In some technical discussions with an engineer/ham friend of mine, the subject of data transmission came up. Some searching came up with the Deep Space Network (DSN).

The earth rotates, so one spot on earth can't see in a specific location in space 24 hours per day. To communicate with space probes, a minimum of three ground stations are needed, so NASA established the DSN. There are ground stations in Madrid, Spain, Canberra, Australia, and Goldstone in New Mexico.

The website (https://eyes.nasa.gov/dsn/dsn.html) has a lot of interesting information, but the most interesting page shows the real-time status of the network. It shows the different dish antennas. At any given time, only some of them will be active. The non-active ones are greyed out. The active ones have waveforms going to and from the dish depending on if it is transmitting, receiving, or both. The name of the spacecraft it is communicating with is also shown. A side panel has more information on the probe and the dish picture, apparently a live feed.

Hams will be interested in the transmission specs, including distance to the spacecraft, the round trip time for the signals, frequencies, data rates, transmission power, and receive signal strengths. I have found myself opening the page on a second monitor while I do other work on the computer. It has become sort of a screen saver for me. So, if you want to see some big antennas working some real DX, check it out.

FT8 Dying?

Is FT8 going to be a victim of its own success? I am starting to think so. FT8 has been valuable during the sunspot minimum. Often it was the only way to make contacts. But conditions are improving as the sunspot counts increase. So has activity on FT8. It is often tough to find an open frequency. Give someone a call, and someone will likely cover them up before you can complete the QSO.

The problem is that there are just too many stations trying to crowd into a space about 3 kHz wide. We need to spread out. There are alternative frequencies for FT8, but I rarely hear anything there. FT4 is another option. FT4 is faster than FT8 but requires some-

what stronger signal levels. Unfortunately, when the FT8 spectrum is crammed with too many loud signals, I often go to FT4 only to find very few stations.

It has been especially bad during VHF contests. We can get some huge 6-meter opening, and it is so crowded on FT8 it takes forever to complete a QSO. Go down to phone or CW, and you can work S9+ stations in a few seconds on CW or phone, but there are very few of them. The ARRL recently sent out a questionnaire on how to encourage VHF contesters to use CW and SSB more during contests. It will be interesting to see what they come up with.

I found a few tricks to improve things on FT8 in crowded conditions. First, go up to the top line and click on Decode. Then, if you are set for fast, try Deep. If your PC is not too fast – fast enough for Deep – try Normal.

The other thing I tried was to download JTDX. It is similar to WSJT, and much of the code is from WSJT. However, the decoding algorithm is somewhat different. I run them simultaneously and sometimes get better decodes on one over the other. My initial experience is that JTDX does a better job when the signal you are trying to decode is partially overlapping another signal. The downside of running both programs at the same time is you fill up your screen. I have two 20" LCD displays in the shack. I need to upgrade to bigger ones and maybe add a third.

Update your QRZ page

If you have a ham license, you have a web page for it. Did you know that? It is on QRZ.com Old-timers will remember the Call Book. It was like a phone book but sorted by call sign. If you wanted to send a QSL, you need a copy of it and hope the guy had not moved. They came out once a year. When I was a Novice and trying to get Worked All States, it was disappointing to work a station too new to be listed. They had quarterly updates, but it got expensive to stay up to date.

Like so many things, the Call Book was a victim of the Internet. But the Internet version is much better. It is not just an address list. You can customize it with pictures, information about yourself, your station, ham interests, or pictures of your dog.

All you need to do is set up an account (it's free), and you can go in and edit it. It is pretty easy once you get the hang of it. It is interesting to see more about the ham you are working. If you are in a rag chew, check them out and you might find something you have in common and make the QSO more memorable.

I typed in a few calls of some of the more active ORC members. Here are a few who have upgraded their QRZ.com listing: N9UUR, W9GA, W0NG, W9KR, K9DJT, WT9Q. The listing for W9XT also has more information about my ham activities. Maybe you should update yours! Also, make sure you add the ORC logo to it!

Contests

The ARRL DX contests are coming up. As sunspots increase, these will be a lot more fun. Check the propagation numbers. If the solar flux is over 90,15 meters should be good, and 10 meters will be pretty good if it gets over 100. Although cycle 25 is rising about twice as fast as predicted, it is still pretty spikey. In the last month or so, we have seen as low as the mid-70s and as high as 140. Hope for the best.

There are a couple of things I like about the ARRL DX contests. The first is that the DX works only US and Canadian stations. So, you don't get situations where some rare Asian or African station only works much louder European stations. The other thing I like is the DX stations give their power as part of their exchange. It is interesting to work QRP stations. Once, I worked a Belgium station during an ARRL DX phone weekend running 350 mw.

If you like RTTY, you have a couple of chances with the NAQP and CQWW WPX contests. Note that, unlike the ARRL RTTY contest, you can't use FT8 in these. But if you can already work stations on FT8, all you need is a program for RTTY. I like MMTTY, which integrates well with the N1MM logging program.

I don't do the CQWW 160M phone contest seriously. It is challenging doing phone on 160 if you want to work distant stations. But it can be fun to get on for a few hours during the evening hours. It is an excellent way to pick up states for 160-meter WAS, but that KH6 or KL7 may be difficult unless you have good antennas and probably running power.

W9XT's contest picks for February and early March 2022					
Name	Start	Length	Bands	Mode	Link
ARRL DX CW	0000Z Feb 19	48 hours	HF + 160M	CW	https://contests.arrl.org/ContestRules/DX-Rules.pdf
ARRL DX Phone	0000Z Mar 5	48 hours	HF + 160M	Phone	https://contests.arrl.org/ContestRules/DX-Rules.pdf
CQWW RTTY WPX	0000Z Mar 12	48 hours	HF	Digital	cqwpxrtty.com/rules.htm
CQ 160M Phone	2200Z Feb 26		160M	Digital	cq160.com/rules.htm
Wis QSO Party	1800Z March 13	7 hours	HF+ 160M + VHF	CW, phone, Digital	mail.warac.org/wqp/wqp.htm
North American QSO Party	1800 Feb 26	12 (Work 10)	HF	RTTY	www.ncjweb.com

Dates/Times in UTC. Subtract 6 hours from UTC to get local (CST). HF = 80, 40, 20, 15, 10 Meters

DX

DXpeditions continue to be slow due to COVID. There have been quite a few announced, but most are for later in the year. But there are some interesting DXpedtions to Africa and the Indian Ocean coming up.

Also, take a listen a few days before the ARRL DX contests. There are usually contest DXpeditions to the Caribbean and other areas, and the ops get on before the contests to test their stations and get a feel for propagation.

W9XT's DXpedition picks for February and early March 2022					
QTH	Dates	Call	Bands	Mode	Link/notes
Zimbabwe	Feb 3-20	Z22O, Z21A	160 + HF	C/S/D	
Ivory Coast	Feb 4-14	TU5PCT	HF	C/S/D	
Maldives	Feb 12-Mar8	8Q7WM, OK2WX	160, 80,40	C/S	
Saudi Arabia	Feb	HZ3FD, 7Z3FD, 8Z3FD			Saudi Arabia Founding Day Feb 22. Special event stations expected to be on much of February

Modes: C = CW, S = SSB, D = Digital (may include RTTY) HF = 80-10 Meters

That wraps up February. HF conditions usually improve as we approach the equinox. Turn on your radio!

73, W9XT

SSTV from the International Space Station

By Don Zank AA9WP

My route to amateur radio started, like many others, with short wave listening. And this holiday season, December 26 to the 31, I got to play some extreme SWL'ing by listening and recording SSTV signals from the International Space Station. I also added to the paper chase collection with a verification certificate and applied for a QSL card. There was a collection of 12 images available in December, but I only managed to capture four.

Amateur Radio on the International Space Station or ARISS is sponsored by a consortium that includes amateur radio organizations and the space agencies of the United States, Russia, Canada, Japan, and Europe. Their goal is to stimulate students interest in the subjects of science, engineering, and mathematics by interacting with the crew aboard the ISS. Much more information can be found at their website https://www.ariss.org/

ARISS SSTV images have been sent since 2008 and there are over 150,000 images posted including almost 16,000 from December 2021. They can be viewed at https://www.spaceflightsoftware.com/ARISS_SSTV/index.php (Including one of mine if you look for AA9WP.)

So how do you know when the ISS be sending SSTV signals? Sometimes you will see a post on the ARRL website, but the ARISS blog post is https://ariss-sstv.blogspot.com/ is probably the best site.

How do you know when to listen? Tracking the ISS can be accomplished by using various app's including Heavens-Above, or AMSAT prediction website: https://www.amsat.org/track/

Just be sure you are looking at all passes and not just visible passes occurring in darkness.

Recording the SSTV signals is very easy using a VHF FM radio along with several choices of software. An android phone app, Robot36, set for mode PD120, listening to a HT tuned to the frequency of 145.800 MHz can be used as a portable setup. As the space station comes over the horizon, normally above 10 degrees, the signal can be heard, and the image is created on the phone. One problem with a HT is that the rubber duck antenna is a marginal antenna for maintaining in contact with the transmission. So, you need to chase around with the HT trying to maintain reception. And this setup also requires the listener to be available when the ISS available, which may be 2:30 AM.

A more reliable method is using a good VHF vertical antenna, a vhf receiver tuned to 145.800 and a sound card connected to a computer running MMSSTV software. This

can be left running and it will capture those 2:30 am images. The software will store the images for viewing later.

The PD120 mode will take two minutes to send an image, then be off for two minutes before transmitting again. An overhead pass will take about 10 minutes and provides the best opportunity for acquiring several clear images. Other passes will be close to the horizon and may be only 4 to 5 minutes long. The ISS should be higher than 10 degrees at the horizon to capture an image and the signal becomes weaker as it descends to 10 degrees. Because of the quickness that the ISS is moving there is a Doppler shift in the frequency but, as far as I can tell, that has not been an issue with reception.

Below is one of the better images (Right) captured along with the certificate available after posting the images (Left).

73, AA9WP

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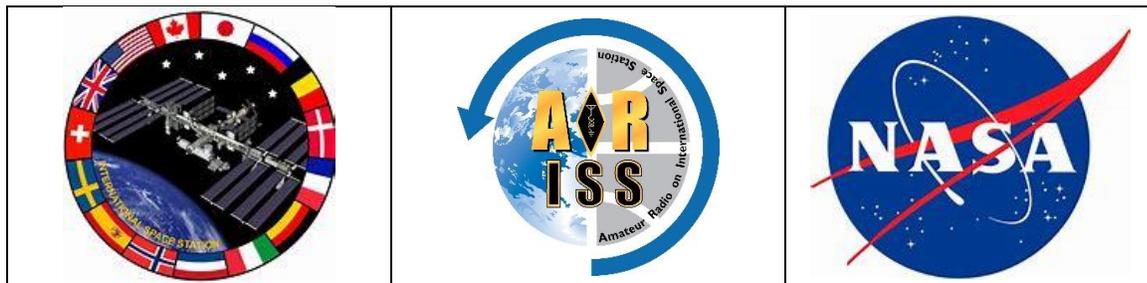
Ozaukee Radio Club Minutes of Membership Meeting: 1/12/2022
de: Ken W9GA, Secretary

This ORC meeting was conducted via an online (internet) connection using the ZOOM app. Prior to the meeting start, those members who were able to access the 'waiting room' via phone or computer/webcam were then introduced into the meeting space hosted by Pat, W9JI. At that time various audio and video connection issues were addressed for the members before the meeting began.

ORC President Pat W9JI officially initiated the meeting at 7:32 PM, as introductions were recognized when members checked into the meeting, a go-around was not conducted. A few comments were then made; The Key-up #2 event will be happening this coming weekend [Jan 14-23]; Fred W9KEY has made available a contest worksheet; Bill W9MXQ mentions that he can process corrections for newsletter items.

Program:

The January meeting has always been when the elections for officers and board members has been conducted, but due to the short time needed for this business, Pat W9JI put together a sort trivia 'contest' for the membership to enjoy. This trivia test covered historical notes such as the origin of the term HAM; DX, 73, Wouff-Hong, and others. He also dropped in some interesting historical facts about the early days of the ORC from 1964.

Election process and results:

Tom W9IPR [chair] then presented the slate of officers for the 2022 calendar year as follows:

President	Pat Volkmann, W9JI	Incumbent
First Vice President	Ben Evans, K9UZ	Incumbent
Second Vice President	Bill Greaves, K9GN	New in Office
Repeater Vice President	Gregg Lengling, W9DHI	Incumbent
Secretary	Ken Boston, W9GA	Incumbent
Treasurer	Gary Bargholz, N9UUR	Incumbent

Tom also called for any further nominees from the floor, but as there were none made, Stan WB9RQR moved that the slate be accepted as provided; Bill W9MXQ 2nd the motion, and a hand count of the votes was taken, and the motion carried, and the slate was voted into office.

Committee reports:

Repeater: Gregg W9DHI reported the repeater system is fine, but that he has been busy with medical issues in the family.

Treasurer: Gary N9UUR recapped the 2021 financial hi-lites, consolidating into one bank, and added that the audit committee [K9QLP, K9DJT, KD9FZK] had made a successful audit of the books. The December treasurers' report was accepted; motion made by W9MXQ, 2nd by W9DHI, and carried.

Secretary: Ken W9GA reported the December 2021 minutes had been posted; K9GN moved, WB9RQR 2nd, motion to accept carried.

Scholarship/STEM: Tom W9IPR presented a detailed report on the recent activities of the fund, which included some historical detail [started 1997]; the earlier involvement of FAR to administer the disbursement, and subsequent transfer to the ARRL; 23 recipients of a scholarship so far; including KD9JNT [member]; donations continue from club members; silent auctions for donations in hand will be starting soon; the STEM local fund is flush with over $14K in hand; Tom is always looking for members who would like to participate in the Scholarship/STEM program.

OLD business: None

NEW business: Jim K9QLP reported that he and the committee had carried out a successful audit of the books just recently, via Zoom. Some uncashed checks were resolved, and anonymous donations [field day] were reported. The results are available to the membership, contact Jim.

Adjournment: WB9RQR moved to adjourn, K9QLP 2nd, motion carried; time ending was 9:00 PM.

There were 33 attendees.

Following the meeting breakout rooms covering any general topics; were opened.

Respectfully submitted,
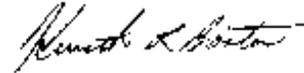
Kenneth Boston W9GA, Secretary

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Upcoming ORC Monthly Meeting Programs
de Pat Volkmann, W9JI

February – Gary Sutcliffe, W9XT – Antenna Basics
March – Chuck Curran, W9KR - Hickok tube testers
April – Bill Shadid, W9MXQ - Drake Linear Amplifiers – Features and Failures

Please contact Pat W9JI with your program ideas.

Creating a Presentation

Many of our presenters use Microsoft's PowerPoint to organize and present their information. If you don't have access to or aren't familiar with PowerPoint, there is an alternative. The Open Office package contains Impress, which is similar to PowerPoint. Impress is easy to use and available at no charge. You can check out OpenOffice here: http://www.openoffice.us.com/

The monthly program is the highlight of the Ozaukee Radio Club meeting. We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related. Contact Pat Volkmann, W9JI, at orc_pat_w9ji@outlook.com to discuss your idea for a program.

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ORC Meeting Agenda

February 9, 2022

1. 7:15 – 7:30 PM – Check-In and Introductions

2. 7:30 PM Call to Order:
   President Pat Volkmann (W9JI)

3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.

4. Presentation: Antenna Basics, Gary Sutcliffe, W9XT

5. President's Update:
   Pat Volkmann (W9JI)

6. 1st VP Report:
   Ben Evans (K9UZ)

7. 2nd VP Report:
   Bill Greaves (K9GN)

8. Repeater VP Report:
   Gregg Lengling (W9DHI)

9. Secretary's Report:
   Ken Boston (W9GA)

10. Treasurer's Report:
    Gary Bargholz (N9UUR)

11. Committee Reports

12. OLD BUSINESS

13. NEW BUSINESS

14. Adjournment

Meeting Note:

Until the club decides it's safe to hold in-person meetings again, we will be holding the meetings via the Zoom Videoconferencing platform on the same evening and time as we had the in-person meetings. President Pat Volkmann will email sign-in info, W9JI via the ORC remailer usually about an hour before the start of the meeting.

Next ORC Meeting via Zoom
   9 February 2022

7:15-7:30 PM – Check-In

7:30 PM – Meeting Begins

The Ozaukee Radio Club presents its 42nd Annual Spring Indoor
Amateur Radio, Electronics & Computer
SWAPFEST

Saturday, April 30, 2022 – 8 AM to 12 PM   (Setup begins at 6 AM)
featuring TOWER ELECTRONICS!
Columbia St. Mary's Center – W67N890 Washington Ave., Cedarburg, WI

Talk-in: 146.97 – PL 127.3

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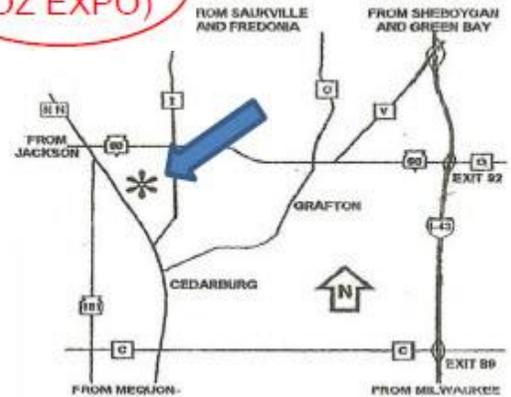
Table Spaces $10 (All Tables are 6 ft)
Buy 1 Ticket & 1 Table… just $15!

Use Order Form below, email, or call Tom Trethewey, KC9ONY at 262-421-6351
Email: **swapfest@ozaukeeradioclub.org**
- -
For Advance Tickets, send check with self-addressed stamped **Business-Size Envelope** to:
Tom Trethewey, KC9ONY – W69N905 Evergreen Ct N, #202, Cedarburg WI 53012
Admission Tickets just $5 (Please make checks payable to ORC)

Company Name: _____   Phone# _____

Contact Person: _____   Call Sign: _____

Address: _____   e-mail: _____

City: _____   State: _____ Zip: _____

No. of Tickets: _____ X $5 = _____   Electricity: Yes (Add $5) _____ No _____

No. of Tables: _____ X $10 = _____   Total Amount Enclosed: _____

(For Official Use Only)

Ticket(s) # _____   Table(s) # _____ Init: _____

Date: _____ Time: _____   Vendor Entrance Used (Circle one):   **1   2   3**