Signals from SARA

WØJH

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An ARRL Affiliate & Special Service Club
www.radioham.org

November 2020

Program: Mesh Networks

Erik Westgard, NY9D

Image: 14567.org

Erik Westgard, NY9D is Chair of Medical Communications for the Medtronic Twin Cities Marathon, Red White and Boom Half Marathon and Loppet Winter Festival. He has been supporting the Statewide Packet Network, MN/Iowa/ND area D-Star activities via Reflector 53 and the TwinsLAN Medical Command Mesh Network. The talk will be a short event update, then we will discuss area mesh networking standards and our new fleet of eight tower generator trailers.

For this meeting, forget about driving and instead fire up your computer. Due to the ongoing pandemic and related health & safety guidelines and protocols for senior care facilities, Boutwells Landing remains unavailable for public use. Boutwells Landing staff foresees that will be the case into 2021. We will therefore continue to hold the monthly Saturday meeting virtually using the SARA WEBEX conference room. Meetings will begin at 9:00 AM., but Joe, KCØOIO, will open the WEBEX room around 8:15 AM for "Morning Coffee" each month.

Announcements

The regular monthly meeting returns on November 14, 2020 via Webex.

Meeting: Mesh Networks - Erik Westgard, NY9D
Current Members will receive a meeting invitation via email from Joe, KCØOIO.. This meeting is only open to SARA Members. If you DO NOT receive your invite, send an email to: President@radioham.org

SARA On the Air

Phone Round Robin Ragchews & Net
(All Times are Local - Central)
> Daily "Lunch Room" Crew: 12:00 - ? SARA 2m Repeater* ... Weekdays
> Daily Top Band Crew: 20:00; 1.966 MHz LSB or USB +/- QRM (alternates: 3.966 +/- MHz, 50.166 MHz)
> Monday 75m Crew: 09:00; 3.856 MHz LSB +/- QRM
> Tuesday (TMT): 19:00; SARA 2m Repeater*
> Wednesday Informal Net: 21:00; SARA 2m Repeater*
> Sunday Digital Net: 19:00; 3.584.15 MHz USB (500-1000 Hz) on waterfall (Mode announced via email)

Can't Find Us On the Air?
... Monitor SARA Repeater!

***SARA 2m Repeater: 147.060 MHz; Positive Offset; DCS/DTCS 026 Normal)**

Ham Radio - A New Internet Avenue

Collin D O'Connor, KEØIYN

Many folks in ham radio are aware of digital radio. Whether it's digital transmission protocols like DMR or Fusion to digitally encode audio, analog transmissions of digital signals like APRS or SSTV, or even digital transmissions of digital signals over the air like FT8 or PSK-31. And of course there's things like Winlink to send email over the air.

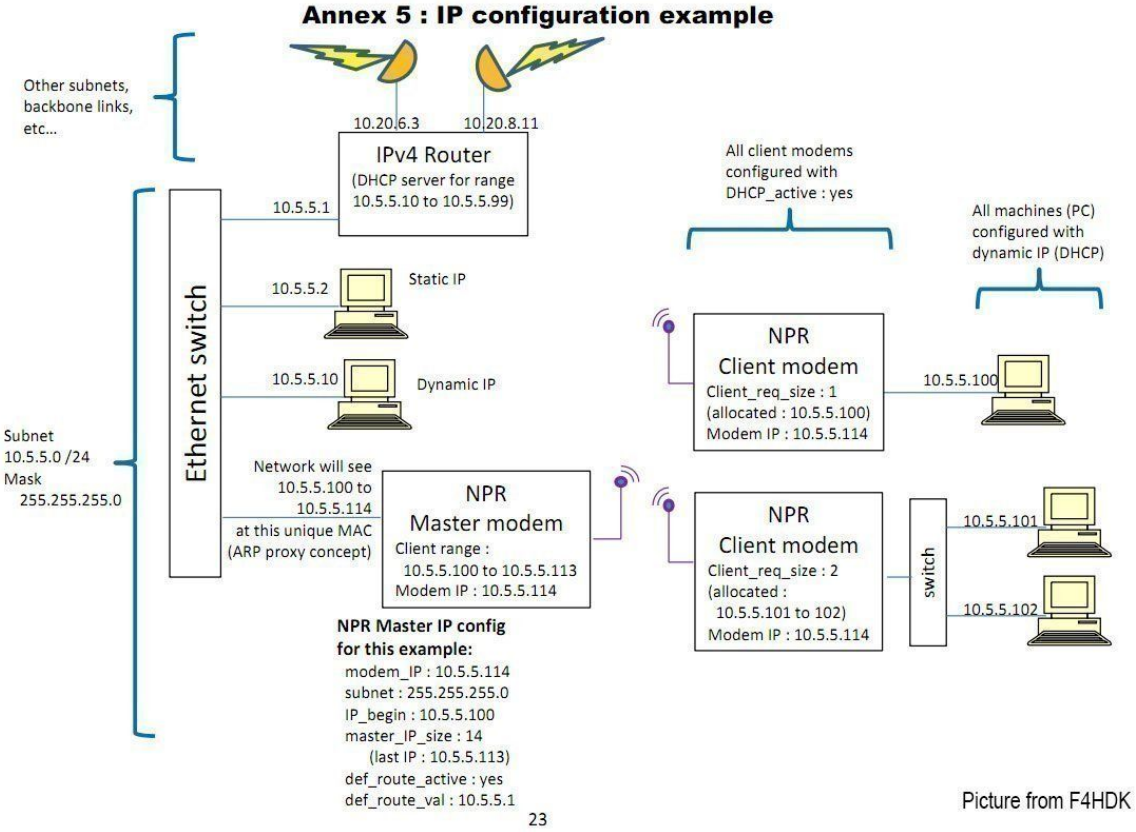
But what if there was more? What if you could do more without having to have special software or a bunch of crazy hardware, just plug in a computer and go?

That's what New Packet Radio is here to do.

New Packet Radio is an answer to the changing of technology. New Packet Radio is the creation and brainchild of a French ham, Guillaume, F4HDK. This tech is built to use 2m or 70cm frequencies with a special modem with completely open source firmware and hardware. This modem transforms standard internet speak, what's referred to as the TCP/IP stack that's used to make the internet and networking work, into digital audio signals. This can then be decoded to deliver content like web pages, images, email, and more over the amateur bands.

It works by plugging your computer's network cable in one side, and then having an antenna on the other. (Though, the creator does recommend using a 2m or 70cm amplifier.) With two nodes, one acts as a master, which can have servers, deploys 'IP address' referencing, and so on which allows for using a standard web browser like Chrome or Firefox or Microsoft Edge to access content. There is no encryption, which makes it legal for ham use, and can achieve speeds up to 500kbps, which is quite fast compared to other methods!

The uses of this could be quite large. For example, a simple network of these could create a second 'internet' with entirely free, non-encrypted content. For example, a message board could be created for hams to talk. A weather node could be put up to provide distributed measurements. It could be used to quickly and easily set up servers and computers for ARES deployments in emergencies over distance. It's not the kind of thing you'd want to use video or audio over (and let's be honest, it's easier to just use a standard radio for audio!) but for anything digital it has definite potential.



The biggest downside to the technology is a few limitations on band items in the US, the need to set one up as a master and have another to be the endpoint receiver, and ensuring you aren't sending encrypted content. But the entry cost is low as an amplifier and the modem unit can both be had for a combined total of about $225, and all that's needed otherwise is a computer and antenna and power. AREDN communities have expressed great interest in its use in mesh networks, and it lends itself well to such setups. Maybe this is a thing for SARA to begin looking at as a project to test and deploy. As an apartment bound ham my options are limited right now, but this is definitely on my radar as a future purchase for my shack.

New Packet Radio is a new horizon for digital technology with amateur radio. And one that we should definitely keep an eye on for exciting new developments!

Bandwidth from the President

Greetings from my shack, de Joe KCØOIO.

As the end of the year 2020 draws near, we begin to look forward to next year. I am sure we are all hoping for a better year! 2020 has been challenging, and trying, for any organization to navigate. I believe SARA has adapted well, and therefore remains strong and viable in spite of the challenges of the year.

As we do every year, November becomes a time for our association to ponder its future governance. Nominations of officers will take place in December per our By-Laws and elections will be held during the January 2021 meeting. The offices of President, Vice President, Secretary, and Treasurer are elected annually. The office of Director, of which we have 2, is alternating 2-year terms, with one seat up for election each year. The director elected in January will serve through 2022. For the record, I am willing to continue to serve as your president.

We had been holding Technical Topic Thursdays on a fairly regular basis over the summer. After a break to accommodate the Technician class, we're bringing it back on a monthly basis. There is quite a list of topic suggestions compiled that we'd like to develop further. To keep the program going, I need someone to step up and take the lead on organizing the schedule and presenters. I find that a lot of my "radio" time is spent taking care of SARA stuff at the sacrifice of getting on the air. I would appreciate someone stepping up to ease the load on my shoulders by taking on this task.

By the time you read this, we'll have wrapped up the 16th Annual Remembering the Edmund Fitzgerald Special Event. It will have been an interesting weekend as we operated from our home stations. Many thanks to all who organized and participated in the weekend event.

The November monthly Saturday meeting will be held virtually using the SARA WEBEX conference room. Meetings will begin at 9:00 AM. I intend to open the WEBEX room around 8:15 AM for "Morning Coffee" social gathering.

The meeting program will feature Erik Westgard NY9D with a short update on communications support for local major running (marathon) and ski (Loppet Winter Festival) events and the unique trailer mobile mesh network. I've seen a preview and this will be an interesting and intriguing presentation.

I wish you all well. Stay Safe – Stay Healthy!

73 es CUL de KCØOIO

Four New Hams Complete SARA's First Virtual Technician Class

Bob Jensen, WØGAF

Following what may have been the longest intermission ever for a SARA licensing class, four of our students passed their license exams at a VE session hosted by the South East Metro Amateur Radio Club (SEMARC). The new hams are:

Dan Gabrielson - KD9QPO, Technician
John Hannigan - KF0CCK, Technician
Mike Rude - KF0CCL, General
Samson Hulme - KF0CCM, Technician

Congratulations and welcome to the hobby. We at SARA are looking forward to assisting these new hams on their amateur radio journey.

You may recall that our Technician class was halted due to COVID-19 concerns and the loss of a facility to conduct classes. In the early days, we were hoping the closing of both the Stillwater Library and Boutwells Landing facilities would be temporary, and that classes could be resumed. That would turn out to be optimistic thinking, as those facilities have still not re-opened.

As many organizations have done, we turned to a virtual model to complete the 2020 Technician class. Conducting class sessions virtually is challenging for both students and instructors. For instructors, the lack of face-to-face interaction makes it difficult to see

when students need more information or clarification on a topic. Also, many of our sessions normally include hands-on interaction with equipment, which is not possible virtually. When students are in the classroom, they are able to lean over to their buddy and confirm their understanding of a concept. They are also able to engage with the instructor individually during a break or after class. These normal learning behaviors for students can be difficult or not possible at all.

We polled both instructors and students to see if they would be willing and able to continue the class virtually. As usual, our instructors stepped up to the challenge and agreed to present their sessions via WebEx. Students were also ready to resume classes virtually so they could get their licenses. SARA's investment in a WebEx account earlier this year meant we had the tools we needed.

The next problem to be solved was to identify a VE session where students could take an exam. The SARA VE Team was not able to operate due to loss of their facility at Boutwells Landing. Finding a new facility, and then developing and implementing COVID safe procedures that would be necessary to conduct a test session was not a feasible option. Fortunately, we discovered that the SEMARC group has been able to resume their VE sessions in a COVID safe manner. Dan Franz – WDØGUP is the VE Coordinator for SEMARC, graciously agreed to reserve space in their October VE session for the SARA students.

With instructors, students, tools, and a VE session in place, SARA's first virtual Technician class was off and running. We had five students that attended the virtual sessions. The virtual sessions also provided an unexpected bonus. As class was starting up, we had a number of people that were interested in learning about ham radio, even though they knew they would not be ready to test with the class. We were able to invite these folks to ride along in our virtual classes, giving them a head start on their ham radio journey. There were certainly some growing pains experienced. Patience and creativity on the part of both instructors and students was key to our success. We've learned some things along the way, and we are prepared to deal with the reality that virtual learning is likely to be our new normal for some time to come.
Our thanks go out to the students, SARA instructor team, and SEMARC, for making it possible to complete this class and to bring new hams into the hobby.

Our next virtual SARA class will be a General class to be scheduled sometime in January 2021.

DID YOU MISS IT???

Well, the Edmund Fitzgerald Special Event has come and gone. We missed you if you missed it!

There were over 100 time slots that were available for operators to fill. I would have to guess that over 80% were filled. I'm sure elsewhere in this newsletter you'll find a final report from WØOXB as to how many contacts were made. I believe we set a record of over 1,000 contacts!
This was the first year that we included CW and Digital modes with SSB and it worked quite well. Thanks to all who helped organize the operation!

I worked as WØF on 20 and 30 meters and really had a great time. I was in no hurry and found that there were a number of hams who wanted to 'rag chew' and I was happy to do that. I heard several comments from different members who wondered how much time it would take to explain a special event operation to a contact who was not acquainted with our event. I found out there was no problem as I only had two stations who asked what our special event was about. I had pre-programmed a memory in my rig to send,

" WØF is a spec evnt being operated to honor the sinking of the Edmund Fitzgerald. Enter WØF on QRZ for full details."

That seemed to satisfy their questions and made it easy to give my key a rest and just push a memory button hihi.

Those of us who operate also contact other members who are operators to 'get in the log' for a nice certificate that is sent out to all stations who request NØDRX (via email). This year, all of the event operators were asked to email an operating photo to WØOXB for inclusion on the Event Certificate. We're looking forward to seeing that!

So, if you missed it, let's hope we'll hear from you next year. Heck, maybe you'll want to be one of our Special Event operators next year and enjoy being on the end of a 'pile up'.

73,
Keith Miller – AGØH

Remote Base Station Update - Antenna Tuners

by Patrick Tice, wa0tda@arrl.net

If you have ever operated in an RF-dense environment like a multiple station Field Day event, you know that interference between stations that are near each other is a perennial problem. Usually The problem is receiver front end overload. Spacing out the various antennas and operating on different bands at any given time are the usual solutions.

The HF remote base multiple station location at my location is different, though. Stations WØZSW and WAØTDA are both available to users 24/7, and may be operated on most of the same bands. Often I am running a third station from my own ham shack. The antennas for all of the stations are designed to work on multiple bands, and all are mated with automatic antenna tuners. This can make for some interesting equipment interactions! At times I will hear the clatter of one of the LDG antenna tuners and I'll know someone is tuning the antenna on one of the stations. Modern automatic antenna tuners store settings for previously used frequencies. They also can initiate the tuning sequence automatically when they sense RF at a frequency that is too far afield of the last frequency operated, so that the transmitter "sees" a match. Usually memorized frequencies are accessed nearly instantly, with the tuner making a single clicking sound.

The fun begins when one station's RF is received by the other nearby station and the second station's automatic antenna tuner mistakes it for RF from its own transmitter. The tuner begins clattering away, trying to find a match on the interfering signal, sometimes in the rhythm of a CW QSO, without ever achieving tuned status. Of course this leaves the second station's tuner in some odd state that is basically useless the next time someone tries to use that station. Tuning has to be done again on that second station in order for the antenna to even be effective on receive.

I've found that others in multiple station environments have also had this problem. The most effective way to deal with it is to reduce power whenever possible. In previous columns I have discussed the RCForb host software's "Security Manager" feature. This allows the station's admin to hide the RF power slider control from the end user interface. That means that the power level can be reduced to allow for minimal interference between stations and cannot be changed from the user interface. Often it doesn't take much of a power reduction to be effective. Generally running 75 watts instead of 100 on SSB will barely be noticeable. My FT8 station, and Icom IC-706M2G and a Butternut HF9V vertical antenna, does quite well with only 30 watts, even for DX. Sometimes I

use that radio for a quick check in to PICONET on 3.925 MHz SSB and forget to increase the power from the usual 30 watts. I always get through.

The current station setups are as follows:

WØEQO: Kenwood TS-480SAT with LDG autotuner and 300' OXB Special dipole located in rural Park Rapids and isolated from any other HF stations. 160 - 6 m operation. Remote operation only.

WØZSW: Icom IC-7300 with internal tuner or LDG autotuner and 125' off-center coax fed dipole. (Buried feedline) 80 - 6 m operation. Located at WAØTDA QTH. Remote operation only.

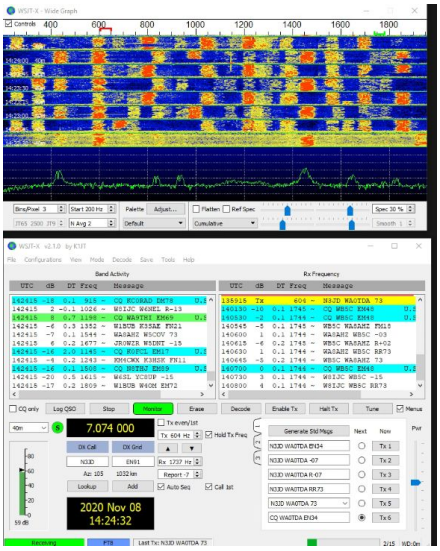
WAØTDA: Icom IC-7200 with LDG autotuner and inverted vee maypole multiple dipole system, fed with buried coax. 160 - 6 m operation. Located at WAØTDA QTH. Remote and local operation.

WAØTDA: Icom IC-706M2G with LDG remote tuner at the base of ground-mounted Butternut HF9V vertical, fed underground with hardline. Located at WAØTDA QTH. (Remote and local operation. Private station - no public access.)

As we near another year of successful remote HF operation, I want to thank our SARA members, our volunteers, and our users. 2020 was a year like no other. One of our Piconet net control operators ran the net remotely multiple times from Guatemala, where he was stuck when air travel shut down due to Covid-19. Other users can get on bands their own stations won't cover by operating through the remotes. We will see how the upcoming "snowbird" migration plays out this year, since some of our regular snowbird users may elect to winter here on the frozen tundra instead of travelling.

In any case, we will keep this resource up and running for you!

73 - Pat wa0tda@arrl.net



In this screenshot of the WAØTDA FT8 station on 40 m, the yellow band of RF interference obscures all but the strongest signals.

Membership Dues Update - November 2020

Callsign	First Name	Last Name	SARA Member Through Date
no call	Dick	Hammond	2021
no call	Craig	Martin	2022
ADØSN	Rich	Smith	2021
AEØJT	Al	Van Duren	2021
AGØH	Keith	Miller	2021
KB9WTB	Ron	Jansen	2022
KC9GEJ	Dan	Wayner	2021
KCØOIO	Joe	Heitzinger	2021
KD9QPO	Dan	Gabrielson	2021
KDØJTG	Jake	Heitzinger	2021
KDØLPY	Ray	Hoyt	2021
KEØIYN	Collin	O'Connor	2022
KEØQAQ	Pam	Jungwirth	2021
KEØSCA	Dave	Baker	2021
KF0CCK	John	Hannigan	2021
KF0CCL	Michael	Rude	2021
KF0CCM	Samson	Hulme	2021
KFØAQF	Paul	Brandt	2022
KIØB	Jim	Stemwedel	2021
KØCFL	Carl	Lindholm	2021
KØGCP	George	Power	2021
KØSON	Bruce	Jungwirth	2021
KØZZT	Ray	Pilgrim	2023
N9EZC	Dick	Miller	2021
N9JNQ	Dave	Iverson	2021
N9TOW	Doug	Farrell	2021
NØBJE	Brian	Edgell	2021
NØDRX	Shel	Mann	2021
NØDXH	Mary	Mann	2021
NØODK	Mike	Paskeuric	2022
NØUHR	Tom	Voigt	2021
W3QLC	Joe	Hibberd	2021
W9LHG	John	Lyon	2022
WAØKKE	Mike	Knox	2021
WAØTDA	Pat	Tice	2022
WB9OKQ	Lyle	Miller	2021
WØDIK	Dick	Auld	2022
WØGAF	Bob	Jensen	2021

SARA Memberships run on a calendar year from Jan 1st to Dec 31st, and we have 111 members for 2020. We are now at the time when dues payment for 2021 membership should be made to

prevent forgetting later and having your membership lapse. Late payments will not extend a membership, so best to get it done now!

Please review the accompanying list and if you are not on it, your 2022 dues have not been processed as of November 9th. Those on this list have current memberships that are good until December 31st of the year listed. We currently have 38 members for 2021, which includes 9 who have prepaid through 2022 and 1 prepaid through 2023. Thank you to all who have maintained current membership with timely renewals and prepayments. It helps simplify processing for both the Treasurer and Trustee.

A membership form can be found on the radioham.org website and can be mailed along with your check made out to SARA, to the preferred address of: SARA, 1618 Pine St W, Stillwater, MN 55082. Dues for regular membership is $20 and associate membership is $10. Having an amateur radio license is a requirement to be a regular member. A new membership form is in the works, but the old one will work fine for now. We are also nearly ready to release an online payment process set up through PayPal. This will offer the option to eliminate mailing a check and membership form, but will result in a modest service fee in addition to the dues. This will be on the SARA website at radioham.org when it goes live.

Please send any questions as well as updates to your membership or license status to:

Trustee@radioham.org

Go to Radioham.org, then ABOUT, then Membership Application. The PDF application has information about where dues payments should be mailed and how checks should be made out. If you are joining us for the first time, fill out the application and return with your dues. If you are simply mailing in a check, this is also a good time to let us know about any changes of address.

Thanks and we hope to hear you on the air and at upcoming meetings!

"Remembering the Edmund Fitzgerald" Special Event (Nov. 6, 7 & 8, 2020) - Part 1

For the 16th year in a row, SARA has organized and operated this event. But this year was a first and different from all the others. This was the first year we did not operate from Split Rock Lighthouse State Park. With COVID-19, we felt it was not possible to operate as we've done in the past and keep 20+ operators and other attendees safe.

After doing some serious "noodling," we came up with ideas like dropping the event, operating in a small group/groups at Split Rock or operating from our own QTHs. Our decision, based on Webex online meetings, was to use what we call a "Distributed Operating Stations" (DOS) format. (To be honest; others have done something similar; but to my knowledge, SARA coined the phrase DOS. Maybe we should trademark it?!)

Each volunteer operator was scheduled to participate from their own QTH. Ops chose agreed upon times, frequencies and modes for their operating schedules. Each operated in accordance with their license class and used one of the approved call signs; WØJH (phone) and WØF (CW & Digital). Stations outside our call district appended calls to include their area (e.g., WØJH/VE3, WØJH/8, WØF/8). In other words, we had stations operating simultaneously and using the same call signs, as they are operated on different bands and different modes.

Keeping all this scheduling straight could have been a nightmare had it not been for Joe (KCØOIO). It seems Joe found a very useful online tool to keep track of what we needed; Days, Times, Modes, Bands for all participating Ops. This "SignUpGenius" was exactly what we needed and a godsend!

As I'm writing this a day following the event, we don't have the final tallies for the number of contacts made. Of course, Shel is staying up late (nothing new for him!) to sort, slice and dice the logging data so we know how we did by band, mode, time of day, etc., etc. You'll be seeing all the numbers in Part 2 of this article next month. For now, Shel and I have pretty much agreed (and we don't often do that!); this year's event very likely produced by far, the most contacts over our 16-year history for the event. It's our guess we made ~1,500 contacts.

73 es CUL,
Dave (WØOXB)

Upcoming events

- What? Wait! You haven't paid your 2021 SARA dues yet? Get out the checkbook right now and get it done. (See page 10.)
- SARA Lunchroom - M - F Noon to ?
- November Meeting: Saturday, November 14 - Virtual meeting via Webex
- December Meeting: Saturday, December 12.

READ MORE ON OUR WEBSITE

General Class starting November 5th

By K3RA, Rol Anders

I am starting a General Class course on Zoom beginning Thursday, November 5, and running for 9 sessions. Due to holiday breaks, the course ends January 21. Sessions will start at 6:30 Easter Standard Time (2330 UTC), and run 3 hours. No charge, of course. These are the classes sponsored by the National Electronics Museum that we have been holding for years. Please publicize this with anyone you know whom you think would be interested. Those wishing to sign up should email me at roland.anders@comcast.net.

A Note from the Editors

This edition of the 2020 -2021 Signals season is produced on a new platform, Google Docs. It replaces Microsoft Publisher, which has served us well for many years, because it has new features that make editing easier and more universally accessible. We can now accept your article submissions as .docx (Word-compatible) files complete with embedded graphs and photos, something that was a real headache in the old system. Anyone can use their word processing software to create a compatible doc file for submission.

Formats for submission of articles

- Microsoft Word or compatible formats, with file extensions .doc, .docx, etc. Embedded pictures and graphics are okay (and preferred) in this format.
- Text files, either plain text or rich text; .txt, .rtf, etc. **It's easy to just create your document and send it to wa0tda@gmail.com as an attachment if you like.**

If you have been using Dropbox to submit in the past, you may continue to do so.

More about Google Docs

Google Docs also employs advanced AI to recognize errors, going beyond simply finding spelling errors. Editing the newsletter happens in real time, with everything being keyboarded also being saved on a cloud server. Documents can be set with permissions for multiple editors, and it is easy to create copies on the cloud server to experiment with layout or to just work on a copy while preserving the original. Since everything is web-based, any computer or device capable of use as a writing tool can edit as long as the internet is available. It is as easy to edit with Linux or Apple as it is with Windows. No specialized publishing software is needed. The final copy can be converted to the universal format PDF, also completely accomplished by Google Docs in the cloud.

The look of your Signals from SARA is a clean, less cluttered one. The new typeface is calibri, which is similar to the old arial font, but uses less ink when printed, assuming any of us can still get our printers to work.

I recommend using Google Docs for most anything you had used other "office-style" software packages to do. The continuous updating of your work assures that you will not lose what you have been working on. The access to all your files from a web browser, regardless of your operating system, is a definite plus. And updating your old software could run into money, but not so with Google Docs.

73 - Pat, WAØTDA

Radioham.org