



The Hope of Spring

The Aero Aerial

The Newsletter of the Aero Amateur Radio Club
Middle River, MD
Volume 17, Issue 3
March 2021

Editor Georgeann Vleck KB3PGN

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		Contests	Bob Venanzi ND3D

Website: <http://w3pga.org>

Facebook: <https://www.facebook.com/pages/Aero-Amateur-Radio-Club/719248141439348>

About the Aero Amateur Radio Club

Meetings

The Aero Amateur Radio Club meets at 7:30 pm on the first and third Wednesdays of the month at Essex SkyPark, 1401 Diffendall Road, Essex. Meetings begin at 7:30 p.m. local time. Meetings are canceled if Baltimore County Public Schools are closed or dismiss early.

Repeaters

W3PGA **2 M :** INPUT : 147.84 MHz, OUTPUT : 147.24 MHz, PL 123.0
W3PGA **70 Cm:** INPUT : 444.575 MHz, OUTPUT : 449.575 MHz, PL123.0
W3JEH **1.25 M:** INPUT : 222.24 MHz, OUTPUT : 223.84 MHz

Club Nets

Second Wednesday Net – 70 Centimeters (449.575 MHz Repeater) @ 8 p.m. Local Time

Fourth Wednesday Net – 2 Meters (147.24 MHz Repeater) @ 8 p.m. Local Time

Fifth Wednesday Net – 10 Meters (28.445 MHz) @ 8 p.m. Local Time

Radio License Exams

The Aero Amateur Radio Club sponsors Amateur Radio License Exams with the ARRL VEC. Examination sessions are throughout the year. Walk-ins are welcome; arrive no later than 30 minutes after start time. \$15 charge.

2021 Examination Schedule DUE TO COVID-19 DATES May be Canceled!

Time:		1 pm	1 pm
Dates:		Sat., Mar. 20	Sat., May 15
Where:		American Legion, Rosedale	American Legion, Rosedale

American Legion Post 180, 1331 Seling Ave., Rosedale, MD 21237

Contact: Patricia Stone AC3F, email: ac3f@juno.com, landline: 410-687-7209

LOCAL AREA NETS

Day	Time	Freq. (MHz)	Net Name
Daily	9 – 10 am	145.330	Oriole Net
Daily	6 pm	3.820	Maryland Emergency Phone Net
Daily	6:30 – 7 pm	145.330 no PL	Balto. Traffic Net (b/u 146.670 PL 107.2)
Daily	7 pm & 10 pm	3.643	MD/DC/DE Traffic Net
2 nd Tue	7:30 pm	146.670	Baltimore County RACES Net
2 nd Wed	8 pm	449.575	Aero ARC Net
4 th Wed	8 pm	147.240	Aero ARC Net
5 th Wed	8 pm	28.445	Aero ARC Net
Fridays	7:30 pm	145.330	Back in the Day Net
When activated by NOAA		147.030	SkyWarn (primary)

CLUB MEETINGS

2/3/2021: Aero ARC ZOOM Meeting

07:00 pm to 08:51 pm

Members Present: Rob AE3B, Don K3DON, Joe WB3FMT, Bob WA3SWA, Shane KC3PPM, Harry AC3EK, Gus AA3GG, Pat AC3F, Tom WA3QLY, Rich KB3VAE, Larry KB3QWC, George KB3TBH, Don N3FQC, Georgeann KB3PGN, Dave KA3SNY, Steve KD3TP, Dave N3SOI, Lou KC3NMT, Lou AB3QK, Jerry N3VBJ, Phil W3VRD, and Tom N3TJR
22 members

Treasury Report: Bank \$1,976.27 as of 1/21/21 On Hand: \$0.00
Check to Pat Stone for \$200.00 for Club Insurance 3/1/21 – 2/28/22

Repeater Report: 2 m: *No Problems*; 70 cm: *No Problems*

Correspondence: Pat received a copy of next this year's insurance policy.
And Credit Card application for the Club!

Public Service: We still need for our members to continue checking in with and helping neighbors and your fellow hams if possible.

EmCOM: SKYWARN Classes: see the info on the SKYWARN site.

VE Testing: The American Legion Hall in Rosedale is the new testing location will be continued to be used for the near future. The AL Post it is located at 1331 Seling Ave. Rosedale 21237. The following testing dates have been scheduled: Mar 20, May 22, Sep 18, and Nov 20. The Test session on Jan 16th had 10 participants and 9 passed at least one test. Pat already has 5 takers for the Mar 20th session at the Hall. Standard Covid-19 protocols will be followed.

Old Business: On January 28th, Jerry and Joe went to Kenwood to Reposition the amplifier on the 147.24r. Ran test in analog FM and C4FM, both worked as expected. Tried the amp on high power and got some intermod, reduced amp power to 70 watts, ran ok. Jerry left a Yaesu 6 connector mike to be used on either repeater. Also, went out to the old receive site and powered it down.

Dues: I still have some members that still owe dues for this year! If you are in question, send me an email at joseph.miko@verizon.net or call me a 443-956-0197. Suggestion made by Bob WA3SWA to send an email to each of the 9 members to see if they have any records stating that they paid last year. Was done and a few have responded. I will send out a second request in the next few days to the remaining members.

Club Contest: The club's January contest has ended. Send your results to Harry AC3EK at hbr3@outlook.com

New Business:

- An additional work group will be tasked with removing the old 440 and 24 repeaters later.
- Jon and Marty are members of the same AL Post, and this post is interested in starting and building a radio station, AERO ARC may be able to help them out?
- Use the second ZOOM meeting as a RAG CHEW event no meeting just Chew!

Guest Speaker Tom Henry N3TJR

Tom Henry, N3TJR (TJHjr@mac.com) is a ham working for Delegate Joe Boteler, who sponsored the antenna bill now in General Assembly. He came to the club to give an update of the bill's status, and what the bill will or won't do for hams. And, importantly how to let our representatives know what we do and how we feel about the bill. Remember this is a statewide bill so we are not the only group that should be concerned. The bill is House Bill HB0663, and will be heard on February 9th. Tom would like to get some testimony about how Amateur Radio is an asset to the community.

How we are a trained resource in the following areas.

- Emergency Communications
- Examples Such as 911, Hurricanes, Community Support, ex Walkathons, Search and Rescue Communications.
- Training as done on Field Day Events
- We also act as volunteer examiners testing Amateurs, and newcomers to the hobby.
- National Weather Service SKYWARN support: We become the NWS eyes on the ground during severe weather events.

Mention that several Amateur Radio operators are trained volunteers and have experience working with local governments. By virtue, we are our own infrastructure in the event of a county or city activity we can hit the ground running! We come with what equipment is required for the communication task.

Tom is requesting any comments supporting this Antenna Bill along with testimonials for any of your Amateur Radio Support. Please send a letter to Tom's at email address is N3TJR@ARRL.net, and write up of personal or other experience in community service, especially in emergency situations, will be helpful.

If anyone has any questions, please give me a call at 443-956-0197.

jmm

2-17-21: Aero ARC ZOOM Rag Chew Meeting Notes

07:00 pm to 08:06 pm

Members Present: Rob AE3B, Don K3DON, Joe WB3FMT, Don N3FQC, Bob WA3SWA, Harry AC3EK, Pat AC3F, Tom WA3QLY, Lou AB3QK, Rich KB3VAE, Gus AA3GG, Larry KB3QWC, Steve KD3TP, Tom N3TJR, Dave N3SOI
15 members present

You Tube presentation “Built-in SWR Analyzer” https://youtu.be/UFR9Z9a7C_I?t=10

Background there is a HAM Dave Casler, KE0OG that has a Thursday Night Q&A session from 9-10 pm on “YouTube”. Here is the link to Dave Casler’s “Youtube” home page
<https://www.youtube.com/c/DavidCasler/featured>

In Dave’s examples he measured the length of a cable, the speed of the cable 0.8, and the SWR of a 6 meter dipole at less than ¼ wave in height. This was one of Dave’s first video presentations.

Harry also sent me some additional links for other topics that I want to use in the upcoming second ZOOM RAG CHEW of the month.

If you like the reports by Dave Casler let me know, and I will look for more of them!
If you have any topics you would like to have discussed about RADIO, Astronomy or Weather or if you have seen a neat presentation and think the club would like it send me the link and we will run it for a Rag Chew meeting.

Topics discussed:

- CW Training - Pat had me send out an email about Continued CW Training / refresher training on Sunday night.
- Bob ND3D and Harry AC3EK forwarded info about upcoming Phone and CW contest.

Stay well and be safe.

73,
Joe M

Net Reports

02-10-21: 449.575r, 20:00 to 20:33.

W3PGA Joe Essex, AC3EK Harry Overlea, KB3QWC Larry Middle River, KB3JVP Ken Middle River, KB3VAE Richard Middle River, N3TJR Perry Hall Tom (new club member), KC3AID Marty Rosedale 7 people on the net

2-24-21: 147.24r, 20:00 to 20:35.

W3PGA Joe Essex, AC3F Pat Middle River, AC3EK Harry Overlea, KB3VAE Richard Middle River, N3FQC Don Perry Hall, KB3JVP Ken Middle River, KB3QWC Larry Middle River
7 people on the net



VE CORNER

by Pat Stone, AC3F

Our next test session will be held on Saturday, March 20th at 1 pm in the American Legion Post 180 in Rosedale, Md. Hope to see you then.

Aero ARC Member Activities - Contesting

Georgeann,

This email from Harry AC3EK proves that CW is not dead. In a span of 2 days he was able to make 50 contacts with 49 being new to him. He also showed how to effectively listen at one rate and send by another using Ham Radio Deluxe. If he keeps doing this, I think a field trip to his QTH might be warranted! Hi Hi. This should be put in the Aerial to show what can be done on a 7foot Vertical antenna.

Thanks

Joe M

From: Harry Rundall

Sent: Sunday, February 21, 2021 9:49 PM

To: Joseph M. Miko <joseph.miko@verizon.net>

Subject: ARRL International CW Contest-Personal best!!

Joe-As mention earlier this weekend's contest was the ARRL International CW contest. Operating exclusively on 20 meters I captured 50 stations (1 dupe so 49 unique contacts) with Serbia as the farthest east into the Slavic countries, and later on south to Argentina. As far as propagation miles go, Serbia is over 4700 miles and Argentina is 4900 miles. In past contests on average I would work about 30 to 35 contacts in the same two day period. Thanks to utilizing Ham Radio Deluxe and its excellent translator decoder it helped decode the on average 35 to 45 WPM code of the received stations with ease. I would respond at 24 WPM with my Vibroplex standard key and the IC7300 keyer set to bug mode. To avoid dupes HRD has a feature where you can, in the decoder screen point to a station calling CQ and a balloon opens saying either worked them date and what mode or that you did not. Thus speeding up the determination to either call or move on to another frequency and station. The increased number of achieved QSOs is a testament to the usefulness of that tool. Instead of parking on a fixed frequency and calling CQ I preferred "fishing"; slowly tuning from

14.003 MHz to 14.060 MHz finding my next catch. With passband filters set for 250 Hz wide I was able to pick off whomever I wanted to call. I found 20 to open around 1200 UTC and peak to Europe as early as 1400 UTC. All my contacts were overseas into Europe or South into the Caribbean and South America. . The exchange between contacts was for the non- Stateside/VE contacts to send signal report and their transmitting power levels. I found most of the international contacts were reporting they were running a KW. Personally I was running 95 watts on my IC7300. I don't like to push up to 100 watts. Besides, 5 W don't make a difference when you think about it. The antenna was my Superantenna Vertical with 4 tuned counterpoise ground radials. It was doing just fine. The built-in tuner kept the SWR at a 1.1 to 1 level across my desired frequency range. Propagation for 20 was good for both days.

It was fun and if it were not for a non-related hardware glitch with my 5.1 sound system (bad earphone jack cutting off the speaker sound), I would most likely would have made more contacts. I wasted an hour troubleshooting the problem.

Well, Joe, I look forward to the next contest. I found this one exciting with many active participants. I hope others within our club got onto this contest. As Ham Radio contests go this was fun.

73's, Harry AC3EK

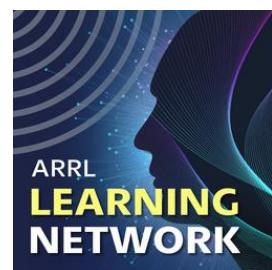
In Case You Missed It

ARRL Learning Network Webinars

Visit the [ARRL Learning Network](#) (a members-only benefit) to register, check on upcoming webinars, and to view previously recorded sessions.

Technicians: Life Beyond Repeaters -- Anthony Luscre, K8ZT

Maybe you just received your Technician-class license, or perhaps you have had it for a while and are burned out waiting for sparse FM repeater contacts. Take a new look at the possibilities available to you beyond repeaters. Explore Tech HF and 6-meter privileges for SSB, CW, and digital modes such as FT8, RTTY, and PSK31 to expand your operating modes and your station's outreach. Explore other VHF/UHF uses, including SSB, satellites, FM simplex, digital modes, contesting, and more.



Tuesday, March 9, 2021 @ 1 PM EST (1800 UTC)

The Art and Science of Operating Ultra-Portable -- Mike Molina, KN6EZE

Ultra-portable operation, or being able to carry your radio over distances (e.g., in a backpack), is quickly growing in popularity. Whether for SOTA, POTA, backcountry survival, or just spending time in nature, learning how to operate ultra-portable is a fun and rewarding experience. In this presentation, Mike, KN6EZE, will cover the basics of ultra-portable operating for both the new and experienced ham radio operator.

Tuesday, April 6, 2021 @ 8 PM EDT (0000 UTC on Friday, April 7)

The [ARRL Learning Network](#) schedule is subject to change.

Source: *The ARRL Letter* for March 4, 2021

HAM NEWS

QSO Today Virtual Ham Expo

[Register Now](#)

Coming to your desktop, laptop, and tablet:

March 12th, 2021 1800 PDT for 48 Hours

and "on-demand" until April 12, 2021

Early Bird Discounted Ticket Sales End March 11, 2021



Our Keynote Speaker

[David Minster, NA2AA, CEO, ARRL](#)

Saturday, March 13th, 12:00 PDT 20:00 UTC

Our first QSO Today Expo was a great success with over 16,000 attendees! We're working hard to make our upcoming Expo even better with new speakers, panel discussions, kit building workshops, easy-to-use video technology to meet with exhibitors, and much more. There's no need to travel - anybody can participate in this groundbreaking, amateur radio Expo built on a virtual reality platform.



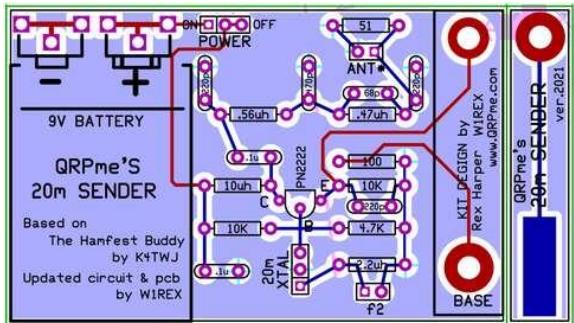
After our last Expo, we asked for feedback from the amateur radio community on how we could make our next Expo even better. We received great suggestions, many of which we've incorporated into our upcoming event. Whether you're a ham that doesn't want to travel because of Covid or just live too far from a hamvention, the QSO Today Expo offers the opportunity to learn from many great speakers, meet with exhibitors to see the latest technology, and engage with fellow hams without leaving your home ham shack. And save thousands of dollars since you don't have to worry about travel, food, and lodging! Early Bird Tickets are just \$10 and \$12.50 starting March 12th. Ticket includes entry for the Live 2 day period as well as the 30 day on-demand period.

Attendees have the opportunity to:

- Listen to and engage with 60+ internationally recognized ham radio luminaries that have committed to lead Expo sessions. [For the list of speakers and speaker topic, click here](#)
- Take part in **Live virtual kit building workshops**. Kits will be available for purchase and delivered to you in time for the Expo so you can participate and build from the convenience of your home.
- Walk through our virtual exhibit hall filled with popular amateur radio suppliers. Watch new product demos and interact directly with booth staff. At this Expo we'll introduce new video technology to enable a better experience when engaging with exhibitors.
- Return over the next 30 days to listen to speakers you missed during the Live period, explore, and re-engage exhibitor offerings.

Build-A-Thons at the "Expo"

Learn to Solder Instructors: Rex Harper, W1REX; Stephen Houser, N1SH



This workshop will introduce wannabe kit builders to the basic tools and techniques of building electronic kits. Participants will build a custom, self contained 20m transmitter kit, called the 20 Meter Sender, designed specifically for this workshop. It includes a built-in key and 9v battery. This 20m QRPpp transmitter kit is a fairly simple build. It has enough components to perform a useful function but not too many so it becomes a difficult project. Traces and pads are large so the kit is largely "bullet proof" in order to endure the untrained skills of beginner solderers.

Order your kit before the Expo: <http://qrpme.com/?p=product&id=20S>

Build it! The NS-40 QRP Transmitter Instructors: David Cripe, NM0S; Virginia Smith



The NS-40 is a 'No-Simpler' design, only 14 components, yet delivers 5 watts of RF at 7.030 MHz from 12vDC. This is an ideal first kit for budding homebrewers and will also appeal to the seasoned QRPer due to its innovative design. Just because this is a simple transmitter, doesn't mean that there is a compromise in performance. The transmitter incorporates a two transistor MOPA (Master Oscillator-Power Amplifier) circuit, with a 2N7000 crystal oscillator driving the IRF510 Class E final. Both are keyed

for a clean, click-and-chirp-free signal. The innovative Low Pass Filter (LPF) provides harmonic rejection to greater than -50 dBc. The signal is a clean >5 watts into a 50 ohm load. Using the rugged and low-cost IRF510 MOSFET this transmitter utilizes a Class-E final amplifier for maximum efficiency

and reliability.

Order your kit before the Expo here: <https://tinyurl.com/yxgkdet8>

Build a Kit! Building the Cric-Key Instructor: Joe Eisenberg, K0NEB

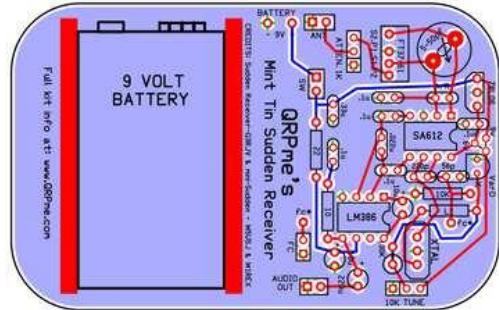


The Cric-Key is a simple CW keyer with paddle, well suited for not only use at home, but in the field as well. This kit is designed to complement 4SQRP's popular CRICKET series of QRP transceivers with a useful and easy-to build keyer circuit. High quality, double sided printed circuit board construction is used, with solder mask and silk screened component reference designators. All components are

through-hole for easy assembly. The CRIC-KEY can be constructed by beginners as well as experienced builders. Construction time is approximately 30 to 90 minutes, depending on experience level.

Order your kit before the Expo Here : <http://www.4sqrp.com/crickey.php>

Let's BUILD Something! (The Mini-Sudden Receiver) Instructors: Rex Harper, W1REX; Stephen Houser, N1SH



Participants will build the Mini-Sudden, a pocket & mint tin friendly direct conversion 20m receiver. It is a time tested direct conversion receiver that just simply WORKS! The Mini- Sudden receiver is mint tin friendly and comes complete with a pair of 20m crystals. While it is more of an intermediate level kit due to the density and close soldering tolerances of the parts, it can still be built by beginning builders who exercise care while

soldering.

Order your kit before the Expo Here: <http://qrpme.com/?p=product&id=mSR>

Source: *The ARRL Letter* for March 4, 2021

ARRL to Extend Field Day Rule Waivers from 2020, Add Class D and E Power Limit



The COVID-19 pandemic-modified [ARRL Field Day](#) rules from 2020 will continue this June with the addition of a power limit imposed on Class D (Home Stations) and Class E (Home Stations-Emergency Power) participants. The news from the ARRL Board's Programs and Services Committee comes as many clubs and groups are starting preparations for Field Day in earnest. Field Day 2021 will take place June 26 - 27.

"This early decision should alleviate any hesitancy that radio clubs and individual Field Day participants may have with their planning for the event," said ARRL Contest Program Manager Paul Bourque, N1SFE.

For Field Day 2021, Class D stations may work *all other* Field Day stations, including other Class D stations, for points. This year, however, Class D and Class E stations will be limited to 150 W PEP output.

For Field Day 2021, an *aggregate* club score will be published -- just as it was done last year. The aggregate score will be a sum of all individual entries that attributed their score to that of a specific club. ARRL Field Day is one of the biggest events on the amateur radio calendar. Last summer, a record 10,213 entries were received.

"With the greater flexibility afforded by the rules waivers, individuals and groups will still be able to participate in Field Day, while still staying within any public health recommendations and/or requirements," Bourque said.

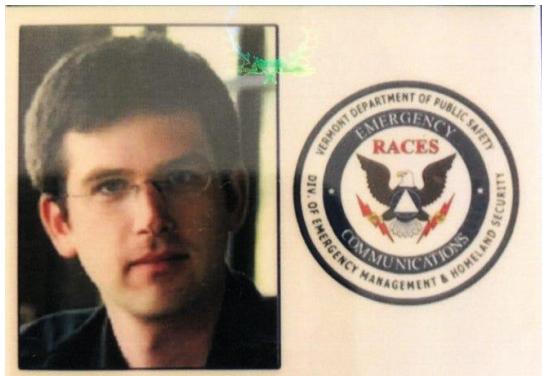
The [ARRL Field Day](#) web page contains complete rules and entry forms, as well as any updated information as it becomes available. Join the ARRL Field Day [Facebook group](#). Read [an expanded version](#).

Over neighbors' objections, Shelburne operator gets the green light for ham radio towers

[Joel Banner Baird](#), Burlington Free Press

NOTE: An earlier version of this story incorrectly identified the reasons for the FAA's 200-foot height limit for amateur radio antennae.

SHELBURNE – One-on-one talks with fellow amateur radio operators as far away as Moscow are now firmly on the horizon for a Shelburne man.



The erection of two antenna towers on Zachary Manganello's rural property on Dorset Street — a source of contention with his neighbors for at least a year — was approved by the Telecommunications Review Board this week.

On paper, and later, in balloon tests that attempted to approximate the towers' altitude, the structures struck some folks as too tall for the neighborhood.

Radio towers downsized

Compromises were struck along the way. The new structures will be measurably less of an eyesore. Originally conceived at 70 feet, Manganello's ham radio project is getting off the ground with slim, guywire-supported towers that extend up 40 and 60 feet.

If the towers ever collapse, they'll remain on his lot. If he moves, he'll have to pay for their removal.

Manganello's persistence — and patience — draws on more than a century of niche science. His community of fellow amateurs, also known as "hams," have swapped notes, both casual and urgent, over non-commercial radio frequencies (originally in Morse code) since the 1890s.



Hams tout the technology as a forerunner of the internet, and one that still serves to connect, entertain and alert far-flung communities of emergencies when cellphone and broadband service goes down.

The FCC takes these hobbyists seriously enough to require them to get licensed. Shelburne limits such antennae's height to 35 feet in this part of town, which lies roughly equidistant between

Spear Street and Hinesburg Road.

Ham radio offers backup emergency communication

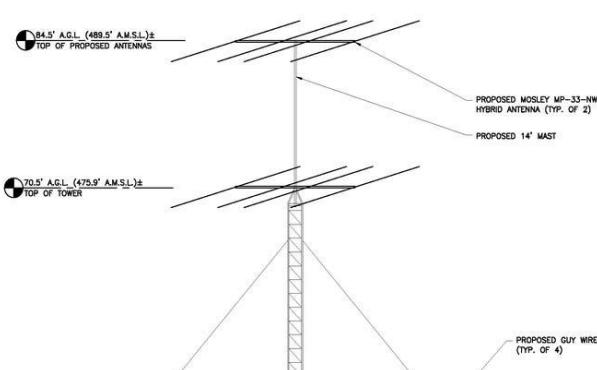
The prospect of backup emergency communication offered by a local ham radio operator, as well as Manganello's openness to public education and research projects, eventually swayed the citizen-run review board.

So did the Federal Communications Commission, which strongly suggests that local regulators make "reasonable accommodations" to amateur operators — not just for practical reasons, but for "the amateur's unique ability to enhance international goodwill."

Aside from Moscow, Manganello lists Japan and Hawaii as among his over-the-air "targets."

And he is an amateur only in the limited, technical sense. Now in his early 40s, Manganello got his first ham license when he was 14, according to his application to Shelburne.

He has held the highest class of amateur license since he was 17; he is now a card-carrying member of the Vermont Department of Public Safety's [Radio Amateur Civil Emergency Service](#).



"My own technical investigations," Manganello wrote in his application, "have included wireless mesh networking, internet linking, radio astronomy, weak signal propagation evaluation, and antenna design."

The new towers will take about a year to build. They'll have no lights — they lie beneath the FAA's 200-foot threshold for interference with air traffic.



Call sign K1ZK is able to stay on the air if the grid goes down

And if the grid goes down in an ice storm? Manganello's in-house station (call sign K1ZK) will, thanks to a solar-charged array and a cluster of Tesla Powerwall batteries, maintain a connection.

Contact Joel Banner Baird at 802-660-1843 or joelbaird@freepressmedia.com. Follow him on Twitter @VTgoingUp.

Source: <https://www.burlingtonfreepress.com/story/life/2021/02/19/air-ham-radio-towers-finally-okayed-vermont-operator/6797246002/>

Hamfests

CANCELED

Sunday, March 14, 2021: Winterfest, ARRL Virginia Section Convention 2021

Location: Richard Ernst Community Center, Northern Virginia Community College, 8333 Little River Turnpike, Annandale, VA 22003

Website: <https://viennawireless.net/wp/events/winterfest/>

Sponsor: Vienna Wireless Society

Talk-In: 146.910 (no tone)

Public Contact: Harry Mamaux , K3NF, 8425 Peace Lily Ct Apt 316 Lorton, VA 22079, Phone: 703-395-6721, Email: k3nf@cox.net

NO NOTICE OF CANCELLATION AS OF 3/6/21

Sunday, June 20, 2021: Father's Day Hamfest at Arcadia

Location: Arcadia Fairgrounds, 16920 Carnival Ave., Upperco, MD 21155

Website: <http://W3FT.com> Facebook Baltimore Amateur Radio Club

Sponsor: Baltimore Amateur Radio Club

Talk-In: 146.67 (PL 107.2)

Public Contact: David Shadwell , AB3TE, P.O. Box 120 Reisterstown, MD 21136, Phone: 410-252-2878, Email: W3FT@yahoo.com

From the Skies over Mt. Essex

SKY Events for March 2021

Mar 1st & 30th – Zodiacal Light vis in N lat. in W after evening twilight for the next two weeks.

Mar 5th – Last quarter Moon & Mercury is 0.3° N of Jupiter 7UT, 02:00 EST.

Mar 6th – Mercury at greatest elongation W 27° 11UT, 06:00 EST.

Mar 9th – Saturn 4°N of Moon 23UT, 18:00 EST.

Mar 10th – Jupiter 4° N. of the Moon 16UT, 06:00 EST.

Mar 11th – Mercury 4° N. of the Moon 1UT, 20:00 EST on 3/10

Mar 13th – New Moon & Lowell Observatory announces the discovery Pluto in 1930.

Mar 14th – Daylight Saving Time Begins 02 EST ends Nov 7th.

Mar 17th – Uranus is 3.0° N of Moon 2UT, 22:00 EDT *

Mar 19th – Mars is 1.9° N of Moon 18UT ,14:00 EDT.

Mar 20th – Equinox 09:37UT, 05:37 EDT

Mar 21st – First Quarter Moon

Mar 28th – Full Moon, Traditional the Fish Moon, Celtic Moon of Winds.

Mar 30th – Zodiacal Light vis in N lat. in W after evening twilight for the next two weeks.

Planet Lookout at mid-Month EDT

Sunrise 07:12 EDT and Sunset 19:10 EDT

Mercury -- Morning Rises 06:15 Sets 17:00 Mag 0.0. 0and Size 6.2 arc seconds

Venus – Too close to the Sun.

Mars -- Evening Rises 10:29, Sets 01:05, Mag 1.1 and 5.8 arc seconds.

Jupiter -- Morning Rises 05:44 Sets: 16:31, Mag -2.0 size 33.7 arc seconds.

Saturn -- Morning, Rises 05:14 Sets 15:23, Mag 0.7 size 15.7 arc seconds.

Uranus— Evening Rises 09:06, Sets 22:36; Mag 5.8 size 3.3 arc seconds.

Neptune -- Morning Rises 07:08 Sets 18:44; Mag 8.0 size 2.3 arc seconds.

Occultations and Eclipses of Jupiter's Moons

Every six years the orbital plane of Jupiter's four moons is edge-on with Sun and Earth. The current season began on January 3rd and will end on Nov 16th. Basically, three events can happen: A moon crosses the planet face of Jupiter that's an Eclipse, secondly a moon goes behind the planet that's an occultation and thirdly the moon misses the planet but its shadow crosses the planet that is called an Transit.

In the case of Mutual Events one of the moons of Jupiter will appear to Occult another moon or will Eclipse another moon.

An eclipse occurs when the shadow of on moon lands on the surface of another. An occultations happens when the disk of one moon covers the disk of another. Eclipses and occultations can be partial to near-total, the greater the brightness drop the more dramatic the event.

The For observers in the US observing times would be between 01UT to 09UT, 20:00 EST to 05:00 EST.

For a complete list of mutual events, or to generate predictions for your area, visit <https://is.gd/mutualevents>

Selected Jupiter Mutual Satellite Events

Date	Time UT	Event	Mag Change
3/17	13:04 - 13:08	Io occults Europa	0.6
3/29	12:06 – 12:14	Io occults Ganymede	0.4
3/30	09:30 – 09:35	Europa eclipses Io	0.5
4/1	13:17 – 13:23	Ganymede Io	0.6
4/6	11:46 – 11:51	Europa eclipses Io	0.3
4/11	10:01 – 10:11	Io eclipses Calisto	0.4
4/12	10:08 – 10:16	Ganymede eclipses Europa	0.5

Ref S&T March pg 49

Other Jupiter Moon Events are Double shadow transits.

4/3	16:23	Double shadow transit on Jupiter
4/7	04:15	Double shadow transit on Jupiter
4/7	05:42	Double shadow transit on Jupiter
4/10	19:01	Double shadow transit on Jupiter
4/14	08:21	Double shadow transit on Jupiter

Observer's Handbook 2021, pg. 106, April Events