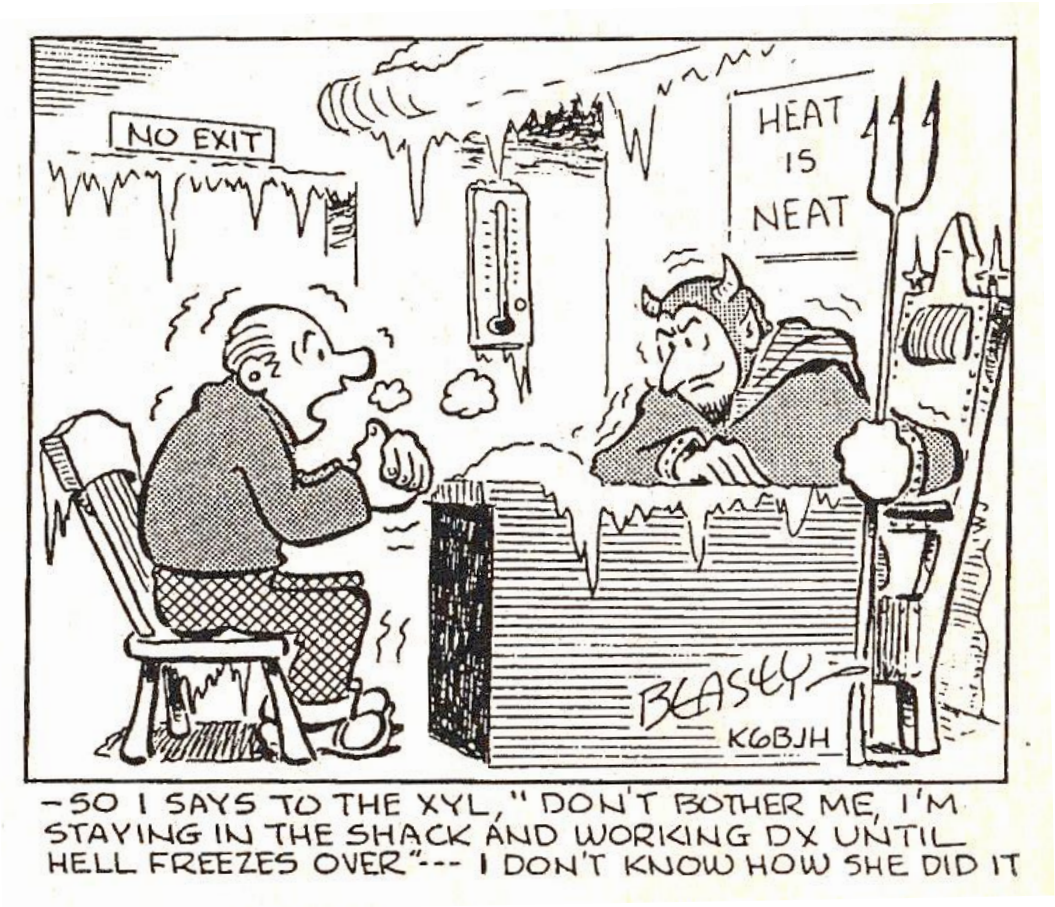
ATCO NEWSLETTER

VOLUME 38 NUMBER 2 **April 2021**

The ATCO newsletter is the official publication of a group of amateur television operators known as "AMATEUR TELEVISION IN CENTRAL OHIO Group Inc" published quarterly (January, April, July, October)

ATCO SPOTLIGHT TOPICS

Thanks to Beasley, K6BJH (SK) for allowing us to share his cartoons.



ACTIVITIES ... from my Workbench

It's time again to publish another ATCO Newsletter! WOW, time goes fast when you're cooped up at home. Let's see, I've cleaned the workroom 4 times even though it didn't need it, I re-arranged my "stuff" twice (and didn't throw anything away), the garage is swept (that one was prompted by my XYL) and now that warmer weather is upon us, I cut the lawn for the first time (I thought I'd never look forward to doing that). But things are starting to look better. Check out the Hamfest listings now. That's really good for I was having signs of "Hamfest Fever". We've saved money staying at home which is building so it wouldn't surprise me if I lost control at the next Hamfest and bought things I REALLY don't need….Wait a minute, I've already done that!!! The next Hamfest is going to be very interesting.

Let's see what's new for Ham related things… Not much for I have not been to the ATCO repeater for over a year now. Fortunately, nothing stopped working. That's good but it's a bad sign to talk about it. We'll see. I've been told to stay away from the repeater site unless it is an emergency. Being a State Government building, I can understand that. However, I have just been told that the cable penetration roof area will undergo a major repair soon to eliminate pesky past water leaks. A cable re-route is a big deal because potentially all cables will have to be temporarily removed and relocated to accommodate a new entrance partition. There are over (30) 7/8" and (6) 1 5/8" Heliax cables there now supporting services that cannot be interrupted. I absolutely do not know how they will pull this one off! I've already been asked if we can be without service for a short time and if we could move our cabinet to a different location in the communication room. I said YES to both but it will be a pain because it may require running new longer cables.

I have some antenna work to do here at home too. My tower has not been raised in almost a year now so I must test it soon. My remote tower camera on the top is not working because of a short in the power cable somewhere. It's funny how I noticed it. I've noticed some strange electrical interference noise for some time. While unplugging cables in my Ham area to locate it, I removed power to the camera and it went away. It turned out that because of the camera cable short, the 12VDC wall wart supplying power to it was switching on and off in response to the cable short creating sporadic interference bursts. So, now I have to find where the short is. I hope it's below the mast section and not from the rotator to camera. If it's in the upper section it will require removing antennas and sliding the mast down to be able to get to the camera on top. I guess I didn't have anything better to do anyhow. Wait a minute, the wife is calling me to help with flower bed weeding….my favorite thing to do!

That's all for now guys. It looks like this summer will be much better than last year. I'm looking forward to eating out at a real restaurant for a change. (I can almost taste that alcohol beverage and steak now. Also, maybe we can have a Fall Event this year. We'll wait and see but I'm thinking "Pizza Party" later this year too!

…WA8RMC

IMPORTANT NEWS FROM ARRL…

I know you have all received notice from the ARRL regarding the "Purpose of Amateur Radio" and I want to give you some context so that you'll all understand where this came from. All of this is in the wake of the events that occurred at the US Capital January 6th.

Following is an excerpt from a CNN News Story:
"New York (CNN Business) The US government is warning that groups could rely on radio equipment as an alternative to social media to plan future criminal activities. In a stark warning, the Federal Communications Commission's enforcement bureau said people coordinating or conducting criminal activity over radio waves are breaking the law. "The Bureau has become aware of discussions on social media platforms suggesting that certain radio services regulated by the Commission may be an alternative to social media platforms for groups to communicate and coordinate future activities," the FCC said in its warning Sunday ". Individuals using radios in the Amateur or Personal Radio Services in this manner may be subject to severe penalties, including significant fines, seizure of the offending equipment, and, in some cases, criminal prosecution."

The FCC licenses certain signals for people to broadcast over radio waves. Those messages are generally protected by the US Constitution's First Amendment. But the FCC reminded radio licensees and operators that it is prohibited to transmit "communications intended to facilitate a criminal act." People are also not allowed to encode their messages to obscure their meaning from law enforcement. The laws governing airwaves apply to amateurs broadcasting with personal ham radios, which can reach long distances. But they also apply to people using Citizens Band (CB) radios commonly used for communication between truckers -- or even walkie-talkies." Below is from the ARRL web site giving you the verbiage in the release from the FCC on 01/17/2021. The FCC has released an Enforcement Advisory for licensees and operators across radio services.

[Complete text of FCC Enforcement Advisory follows.]

FCC ENFORCEMENT ADVISORY Released: January 17, 2021
WARNING: AMATEUR AND PERSONAL RADIO SERVICES LICENSEES AND OPERATORS MAY NOT USE RADIO EQUIPMENT TO COMMIT OR FACILITATE CRIMINAL ACTS
The Enforcement Bureau (Bureau) of the Federal Communications Commission issues this Enforcement Advisory to remind licensees in the Amateur Radio Service, as well as licensees and operators in the Personal Radio Services, that the Commission prohibits the use of radios in those services to commit or facilitate criminal acts.

The Bureau has become aware of discussions on social media platforms suggesting that certain radio services regulated by the Commission may be an alternative to social media platforms for groups to communicate and coordinate future activities. The Bureau recognizes that these services can be used for a wide range of permitted purposes, including speech that is protected under the First Amendment of the U.S. Constitution. Amateur and Personal Radio Services, however, may not be used to commit or facilitate crimes.

Specifically, the Bureau reminds amateur licensees that they are prohibited from transmitting "communications intended to facilitate a criminal act" or "messages encoded for the purpose of obscuring their meaning." 47 CFR § 97.113(a)(4).

Likewise, individuals operating radios in the Personal Radio Services, a category that includes Citizens Band radios, Family Radio Service walkie-talkies, and General Mobile Radio Service, are prohibited from using those radios "in connection with any activity which is against Federal, State or local law." 47 CFR § 95.333(a).

Individuals using radios in the Amateur or Personal Radio Services in this manner may be subject to severe penalties, including significant fines, seizure of the offending equipment, and, in some cases, criminal prosecution. 47 U.S.C. §§ 401, 501, 503, 510.

Media inquiries should be directed to 202-418-0500 or MediaRelations@fcc.gov. To file a complaint with the FCC, visit https://consumercomplaints.fcc.gov or call 1-888-CALL-FCC. To report a crime, contact your local law enforcement office or the FBI.

To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at (202) 418-0530 (voice), (202) 418-0432 (TTY)."

Finally, the ARRL has issued the following statement:
01/17/2021 For over 100 years amateur radio and ARRL — the National Association for Amateur Radio® — have stood for the development of the science and art of communications, public service, and the enhancement of international goodwill. Amateur Radio's long history and service to the public has solidified the well-earned reputation that "Amateur Radio saves lives."

Amateur Radio Operators, due to their history of public service, their training, and the requirement that they be licensed by the FCC have earned their status as a component of critical communications infrastructure and as a reliable resource "when all else fails."

Amateur Radio is about development of communications and responsible public service. Its misuse is inconsistent with its history of service and its statutory charter. ARRL does not support its misuse for purposes inconsistent with these values and purposes.

SILENT KEYS

We sadly report 2 Hams that are no longer with us. Details are not available because they wish to keep them private. Both have passed within the last month.

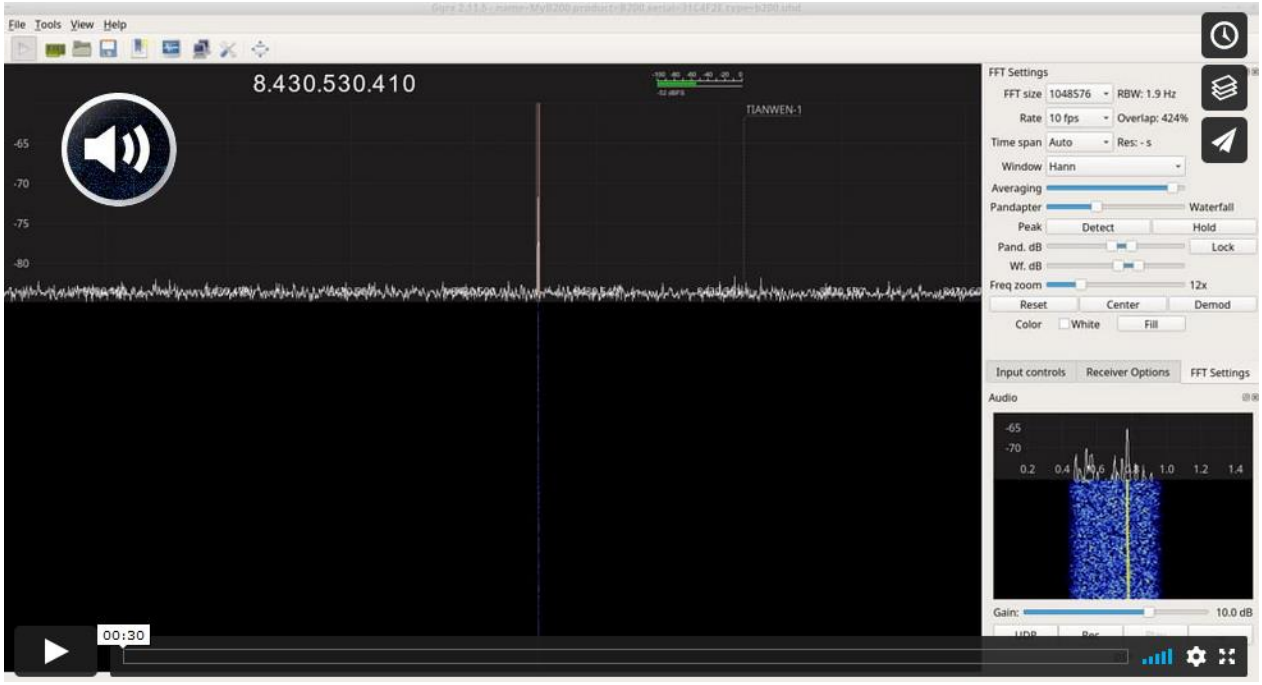
Bob Hodge, N8OCQ. Bob, an old time ATVer frequently joined us at the weekly Saturday morning breakfasts.

Ken Bird, W8SMK. Ken was the Ohio Ham frequency coordinator before retiring and longtime ATV operator.

HAM RADIO SIGNALS FROM MARS

February 16, 2021 / Dr.Tony Phillips

Feb. 16, 2021: Around the world, ham radio operators are doing something once reserved for national Deep Space Networks. “We’re monitoring spacecraft around Mars,” says Scott Tilley, of Roberts Creek, British Columbia, who listened to China’s Tianwen-1 probe go into orbit on Feb. 10th. The signal, which Tilley picked up in his own back yard, was “loud and audible.” Click to listen: https://vimeo.com/513007679



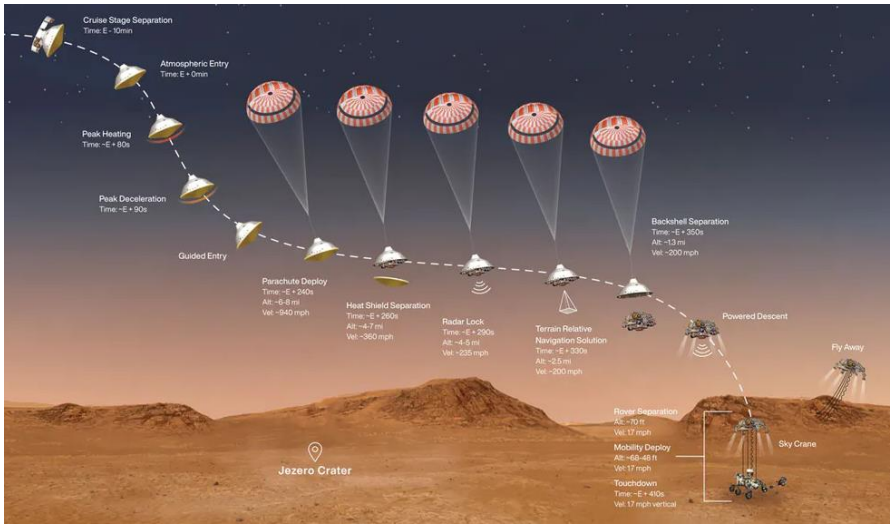
The signal from Tianwen-1 is dominated by a strong X-band carrier wave with weaker side bands containing the spacecraft’s state vector (position and velocity). Finding this narrow spike of information among all the possible frequencies of deep space communication was no easy task.

“It was a bit like a treasure hunt,” Tilley says. “Normally a mission like this would have its frequency published by the ITU (International Telecommunications Union). China did make a posting, but it was too vague for precise tuning. After Tianwen-1 was launched, observers scanned through 50MHz of spectrum and found the signal. Amateurs have tracked the mission ever since with great accuracy thanks to the decoded state vector from the probe itself.”

So far, Tilley has picked up signals from China’s Tianwen-1 spacecraft, NASA’s Mars Reconnaissance Orbiter, and the United Arab Emirates’ Hope probe–all orbiting Mars approximately 200 million kilometers away. How is such extreme DX’ing possible?

“It helps to have a big antenna,” says Tilley, who uses a 60 cm dish, pictured above. “But the real key,” he says, is the advent of Software Defined Radios (SDRs) which have become the norm for hams the past decade or so.

In a Software Defined Radio, computers digitally perform the signal mixing and amplification functions of circuits that used to be analog. SDRs are cheap, sensitive, and they give hams the kind of exquisite control over frequency required to tune into distant spacecraft.



“Amateurs really began listening to deep space probes in the late 1990s and early 2000s,” says Tilley. “This sparked an awareness that it was possible. The combination of improving technology and growing awareness has resulted in more and more interplanetary detections.”

Next up: NASA’s Mars 2020 spacecraft carrying the Perseverance rover, due to reach Mars Feb. 18th:

Tilley plans to listen but he doesn’t expect a strong signal. “Perseverance does not have a very large antenna,” says Tilley. “It doesn’t need one because it can use other NASA spacecraft in Mars orbit as relays. The signal will therefore be weak and I doubt many amateurs will record the landing in Jezero crater.”

Tianwen-1, on the other hand, has a relatively large antenna with a booming signal. “China probably plans to use it as a relay for future Chinese space missions,” Tilley speculates. “This makes it a good target for hams hoping to bag their first Martian spacecraft.”

ARISS, NASA, ESA PROBE AMATEUR RADIO PROBLEMS ON ISS

Amateur Radio on the International Space Station (ARISS) International Chair Frank Bauer, KA3HDO, reports that the ARISS team worked closely with NASA and the European Space Agency (ESA) this week to identify what may have caused what ARISS is calling a "radio anomaly" on January 27. The net result has been an inability to use the NA1SS ham station gear in the ISS Columbus module. For the time being, ARISS school and group contacts with crew members have been conducted using the ham station in the ISS Service Module. The radio issues came in the wake of a January 27 spacewalk, during which astronauts installed new cabling to support commissioning of the Bartolomeo attached-payload capability mounted on the Columbus module. The job involved re-routing the antenna cabling to the ARISS radio system onboard Columbus.

Bauer said NASA, ESA, and ARISS would conduct a set of APRS (automatic packet radio system) tests to determine the operational status of the ARISS radio in Columbus through employment of three different cabling configurations. The tests would use the station's APRS capability on 145.825 MHz, with the crew periodically shutting down the radio and swapping cables. The tests were expected to wrap up by March 3. No results had been reported by March 4.

"We cannot guarantee that these troubleshooting tests will resolve the radio issue," Bauer said.

Bauer said that if the tests are unsuccessful, "a contingency task" has been green-lighted for a March 5 spacewalk (EVA). "This EVA task would return the ARISS cabling to the original configuration prior to the January 27 EVA," he explained, noting that a contingency task will only be performed if time allows.

"If you definitely hear the packet system working or are able to connect through it, let us know the date, time, and grid square of the occurrence," he added.

ARISS HAM STATION IN COLUMBUS MODULE OPERATIONAL AGAIN

ARRL Headquarters Newington, CT March 17, 2021

Some 6 weeks after going silent following a spacewalk that installed new antenna cabling, the Amateur Radio on the International Space Station (ARISS) ham station in the Columbus module is once again operational. The Columbus station, which typically uses the callsign NA1SS, is the primary ARISS amateur radio station used for school contacts and other activities. A January 27 spacewalk replaced a coax feed line installed 11 years ago with another built by the European Space Agency (ESA) and Airbus.

While the specific cause of the problem has not yet been determined, a March 13 spacewalk that restored the antenna cabling to its original configuration provided the cure. The plan to return the ARISS cabling to its original configuration had been a "contingency task" for a March 5 spacewalk, but the astronauts ran out of time. The ARISS work was appended to the to-do list for astronauts Mike Hopkins, KF5LJG, and Victor Glover, KI5BKC, to complete a week later.

"On behalf of the ARISS International Team, our heartfelt thanks to all who helped ARISS work through the cable anomaly investigation, troubleshooting, and ultimate repair," ARISS International Chair Frank Bauer, KA3HDO, said. Bauer praised NASA, the ESA, Airbus, and ARISS-Russia lead Sergey Samburov, RV3DR. While the Columbus ham station was off the air, ARISS school and group contacts were able to continue using the ham station in the ISS Service Module on the Russian side of the station.

During the weekend spacewalk, Hopkins swapped out a cable for the Bartolomeo commercial payload-handling platform that had been installed in series with the ARISS VHF-UHF antenna feed line, returning the ARISS system to its pre-January 27 configuration. Hopkins raised a question concerning a sharp bend in the cable near a connector, but no further adjustments were possible.

On March 14, ARISS was able to confirm the operation's success when Automatic Packet Reporting System (APRS) signals on 145.825 MHz were heard in California, Utah, and Idaho as the ISS passed overhead. ARISS team member Christy Hunter, KB6LTY, was able to digipeat through NA1SS during the pass. With additional confirmation from stations in South America and the Middle East, ARISS declared the radio system operational again.

Work during the March 13 spacewalk also made Bartolomeo operational. "Yesterday was a great day for all!" Bauer exulted. "Ad astra!"

QSO TODAY VIRTUAL HAM EXPO - TECHNICAL ISSUES

The QSO Today Virtual Ham Expo attracted thousands of participants over the March 13 - 14 weekend. Taking a different tack than it did for its inaugural event last August, the expo leveraged the capabilities of two virtual event platforms to increase interaction among attendees, speakers, and exhibitors. All did not go smoothly, however.

"Unfortunately, we had many technical issues with the Airmeet presentations and the integration of the vFairs and Airmeet platforms," expo chairman Eric Guth, 4Z1UG/WA6IGR, explained afterward in a message to participants. All recorded presentations are available for attendees during the expo's 30-day on-demand access period, which ends April 16.

ARRL, a QSO Today Virtual Ham Expo partner, enjoyed virtual visits from attendees to its two exhibits. One included staff representatives for Member Services, Radiosport, ARRL Field Day, and Field Services. The other exhibit highlighted the expertise of ARRL Laboratory personnel, who offered technical and practical advice to those stopping by. On the team were Senior Test Engineer Bob Allison, WB1GCM, who streamed from inside the Lab's screen room where *QST* "Product Review" testing is conducted, and RFI Engineer Paul Cianciolo, W1VLF, who helped participants deal with pesky noise and interference

issues. W1AW Station Manager Joe Carcia, NJ1Q, conducted virtual tours of the Hiram Percy Maxim Memorial Station all weekend.

All told, 16 staff members worked in rotating shifts at ARRL Headquarters, greeting visitors through livestreaming video and audio. Several members of the ARRL Board of Directors were on the platform too.

CEO David Minster, NA2AA, delivered the event's keynote address. Minster, who arrived in the midst of the COVID-19 pandemic last year, said ARRL would become a bigger player in the digital age.

"A major part of the digital transformation at ARRL has to do with taking our excellence in content development and editing, and bringing it to video," Minster said. "You are seeing more activity from us on YouTube, the Learning Network (webinar series), and then later this year the launch of our Learning Center." Video, Minster pointed out, is always available and easy to pause and refer back to.

Amateur radio manufacturers and vendors including FlexRadio, Elecraft, Connect Systems, and Quicksilver Radio Products welcomed visitors and answered their questions on a one-to-one basis.

Guth apologized for the poor experience many participants had in accessing and navigating the event.

"I attempted to integrate a number of systems together in order to make a better user experience," he explained. "It was a noble idea, because I wanted the convention like last August, with the lounge tables of Airmeet to make it more interactive. We failed on this platform for many of you. I am very sorry."

"One of the things that we've stressed in all of our communications is that the QSO Today Virtual Ham Expo team is committed to constantly learning and improving what we do," Guth said in a statement. "Virtual conventions of this magnitude are new territory. We believe that there's a place for a virtual ham expo to serve the needs of the very large amateur radio community, especially those that don't attend in-person national or regional events (or even local events). We are committed to making that happen."

The expo announced on Wednesday, March 17, that 80 presentations had already been added to the platform for on-demand viewing.

AMATEUR RADIO GETS A PARTIAL REPRIEVE ON 3.5 GHZ

From ARRL Headquarters Newington CT March 23, 2021

Pending future FCC action, amateur radio secondary use of the 3.3 - 3.45 GHz band segment may continue indefinitely. The FCC, as part of a lengthy Second Report and Order (R&O) for commercial licensing of 3.45 - 3.55 GHz adopted on March 17, agreed with ARRL that continued access by amateur radio to 3.3 - 3.45 GHz should be allowed until consideration of the 3.1 - 3.45 GHz spectrum in a later proceeding.

The FCC action in WT Docket 19-348 represents a partial "and temporary" reprieve from the FCC's December 2019 proposal to remove amateur radio from the entire band, and it makes available an additional 50 Megahertz than an FCC proposal last fall to allow amateur temporary use of 3.3 - 3.4 GHz.

The Second R&O can be found in PDF format at, https://docs.fcc.gov/public/attachments/FCC-21-32A1.pdf .

Amateur secondary operation in the 3.45 - 3.50 GHz band must cease 90 days after public notice that the spectrum auction has closed and licensing has begun. That is expected to happen early in 2022. The FCC announced the opening of 3.45 - 3.55 GHz for auction to commercial 5G interests on March 17.

The FCC stated that "While we adopt our proposal to bifurcate the band, we adjust our proposal and set 3450 MHz as the frequency at which the band will be split." It agreed "with the ARRL's assessment that the guard band is not necessary from a technical standpoint. We also recognize that the nature of amateur equipment realities makes the 50 Megahertz at 3400 - 3450 MHz particularly valuable to amateur operators because it means existing equipment can continue to operate in the band for the time being."

This allows "amateur operations to continue in the lower portion of the band while the FCC and federal government users continue to analyze whether that spectrum can be reallocated for flexible use," the FCC said. The FCC had proposed splitting the band at 3.4 GHz, permitting amateur use in 100 Megahertz of spectrum "while also providing a buffer to protect flexible-use operations at the lower edge of the 3.45 GHz band."

"We therefore allow secondary amateur operations to continue in the 3.4 - 3.45 GHz portion of the band," the FCC said. "We emphasize, however, that amateur licensees remain secondary users, and those that operate on frequencies close to the 3450 MHz band edge must do so with particular caution to avoid causing harmful interference to flexible-use licensees in the 3.45 GHz Service, which hold primary status.

"In light of these considerations, while amateur operations between 3450 MHz and 3500 MHz must cease within 90 days of the public notice announcing the close of the auction for the 3.45 GHz Service, as specified in the Report and Order; amateur operations may continue between 3300 MHz and 3450 MHz while the Commission, NTIA, and the DoD continue to analyze whether that spectrum can be reallocated for commercial wireless use."

"There is no expectation that such operations will be accommodated in future planning for commercial wireless operations in this spectrum, or that amateur operators will receive more than a short period of notice before their operations must cease," the FCC said.

70-CENTIMETER INTERFERENCE IN WESTERN USA

From ARRL Headquarters Newington CT. March 24, 2021

ARRL, the FCC, and the US Department of Defense are cooperating in an effort to eliminate the possibility of amateur radio interference on 70 centimeters to critical systems at White Sands Missile Range (WSMR) in New Mexico. The Defense Department's Regional Spectrum Coordinator contacted the FCC in March, seeking information on whom to contact regarding detected amateur transmissions it believed could pose a threat to a critical WSMR system operating on 70 centimeters. The FCC, in turn, asked ARRL to be involved in the discussion and any necessary remedial efforts. It is to be noted that the Amateur Radio Service is a secondary service on the band.

Investigation revealed that the potential problem was not with individual operators or repeaters, but with RF control links at 420 - 430 MHz used to establish a linked repeater system within New Mexico. "Based on the investigation, and with the support of the FCC, the owners of the RF control links being used in the 420 - 430 MHz portion of the amateur allocation within a certain proximity to WSMR are being asked to re-coordinate the link frequency to a new one above 430 MHz," explained ARRL Regulatory Information Manager Dan Henderson, N1ND.

ARRL enlisted the assistance of the state's designated repeater frequency coordinator for information on specific links in that part of the band. New Mexico Repeater Frequency Coordinator Bill Kauffman, W5YEJ, agreed to work with the control link operators to find new frequencies that will meet the needs of the link operators.

"Time is a factor in this request," Henderson said. "The new systems at WSMR are in advanced testing now and will become fully operational by early summer 2021." The FCC-imposed deadline for the affected control links to change frequencies is set for May 31, 2021.

"It appears a total of 32 control links will have to be addressed," Henderson said. ARRL has mailed letters to each of the RF control link operators, based on the recordkeeping of the frequency coordinator, to advise them of the DoD's request as the primary user on the band. "Any links with the potential to affect the identified systems at WSMR still in operation after May 31, 2021 will be subject to action by the FCC."

Henderson said the changes should have no direct impact on the use of any local repeater, but until all the affected RF control links are transitioned to new frequencies, certain links may be temporarily inoperative. Links unable to be relocated by May 31 will have to be shut down until the situation can be resolved. ARRL will be in contact with the FCC after the May 31 deadline to advise it of the status of the remediation effort.

DAYTON HAMVENION UPDATE

Michael Kalter, W8CI from the Dayton Amateur Radio Assn. reports on the forthcoming special Hamvention Weekend Activities reported via the Portage County Amateur Radio Service's RADIOGRAM.

"That magical weekend in May is approaching. "With no Hamvention this year, due to continuing Corona virus restrictions, we have been developing several activities to keep Hams busy and engaged in the hobby. We have a two-day prize total of $15,000.

"On Thursday May 20, 2021 the Virtual Contest University will be held starting at 9 AM EDT 1300Z. The course outline will be available soon. This will be a free event! Even if you are not a contester you will learn so much about Amateur Radio and hear the techniques and critiques of many of the world's foremost Hams. Hamvention is a proud sponsor along with Icom and DX Engineering. Plan on attending this amazing free event! Several Icom radios will be given away during the all-day event. You must be registered on Zoom and present online at the time of the drawing to win the radios. Please check http://contestuniversity.com for updates.

"On Friday May 21Starting at 11 AM EDT 1500Z we will have the 2021 Virtual Hamvention Forums. The Hamvention Virtual Forums celebrates the 2021 Hamvention Award winners. Each awardee will give a 45 minute presentation followed by Q&A. The Hamvention Forums will be presented via a Zoom webinar. Registration for the Zoom webinar will start 30 days before the event –look for the registration information on the Hamvention Website. Several Icom radios will be given away during the 2021 Hamvention Forums. The winners will be selected at random. The winner must have registered on Zoom for Hamvention Forums and be present during the drawing to win. Drawing times are random throughout the Virtual Forums event. Thanks to Hamvention, Icom and DX Engineering for their support of the 2021 Hamvention Virtual Forums.

"Our presenters are: Technical Achievement: WX6SWW –Tamitha Mulligan Skov is well known as the "Space Weather Woman". Folks that have seen her space weather forecasting show will freely admit that she is full of energy and excited about her work. She is a real space pioneer.

"Special Achievement: W3WL –Wesley Lamboley was nominated by his peers for his lifetime, high energy support for the science and art of amateur radio. Not only has Wesley supported youth coaching, membership recruiting and technical problem assistance, he always does it with a smile and great humor.

"Amateur of the Year: WP3R –Angel M. Vazquez is known for being one of the principal support engineers for what was one of the greatest antennas in the world –the National Science Foundation's Arecibo parabolic dish antenna. Angel's award stems from his unswerving and diligent support of amateur radio throughout the entire territory of Puerto Rico and extends worldwide.

"Club of the Year: K4HTA --The Vienna Wireless society was chosen this year for its 58 years of service to the amateur radio community. K4HTA, with its 280 members, focus on youth education, public service and promoting the overall growth of radio through the DC area and around the world.

"On Saturday May 22, Participate in the Hamvention QSO Party 8 AM to 8 PM EDST(1200 May 22 to 0000 May 23 UTC). W8BI, the club call of the Dayton Amateur Radio Association, will be a bonus station scored at 10 points per band and mode. Bands: 10M, 15M, 20M, 40M, 80M. Typical call will be: CQ CQ HVQP (Hamvention QSO Party) W8XX (Your call). Typical exchange will be signal report and first year you attended Hamvention; eg on CW: KB8XXX 599 1998 W4XX. If you have never attended Hamvention, please send 2021 in place of the year. Send your score (number of QSOs including bonus points) to 3830scores.com within 5 days of the event. You will be able to print a certificate after the contest."

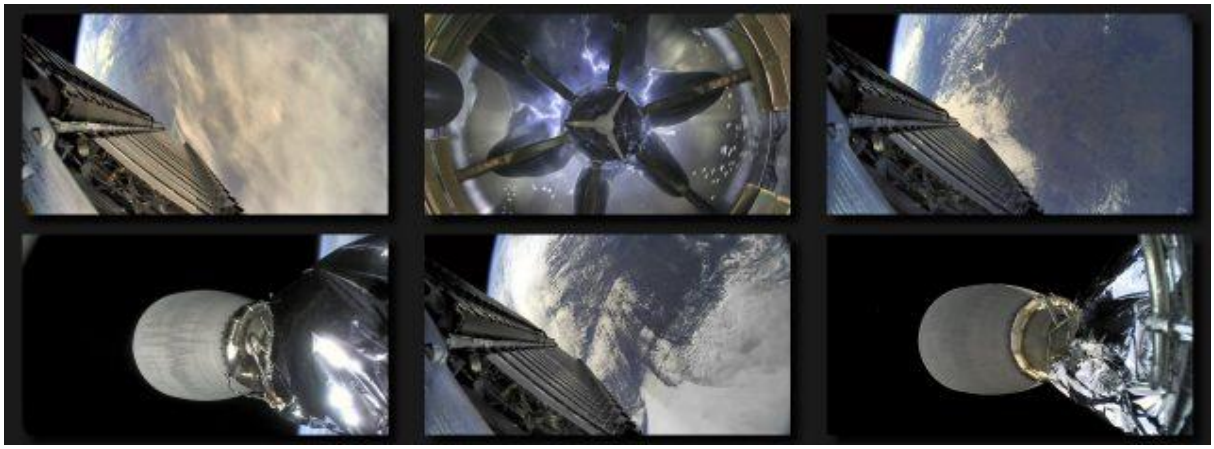
… Michael Kalter W8CI, Hamvention Executive Committee, Dayton Amateur Radio Association.

SPACEX ENCRYPTS TELEMETRY AFTER HAMS DOWNLOAD DATA

SpaceX doesn't operate like a traditional aerospace company. For one, the CEO is usually hamming it up on Twitter during launches and providing details that would usually go in a press release. SpaceX also live streams almost all of its launches, even the prototypes that have an unfortunate tendency to blow up lately. It wasn't even encrypting the Falcon 9 telemetry feed… until now. Unfortunately, some digging by amateur radio tinkerers seems to have convinced SpaceX to step up its security.

It all started a few weeks ago when several Redditors managed to lock onto the 2232.5 MHz telemetry downlink from a Falcon 9 upper stage. Right away, they were able to pull out a few interesting plaintext snippets from the unencrypted feed. With a little more work, the radio enthusiasts were able to capture some amazing images from the spacecraft's cameras.

After that discovery was public, other SpaceX fans tried to grab some data from the Starship during its prototype tests. However, SpaceX had chosen to encrypt that data. Even with the correct wireless equipment, the decoded signal was just noise. Now, it appears the same thing is happening with the Falcon 9. When attempting to pull data from the most recent Falcon 9 launch, the original signal snoopers discovered it had also been encrypted. A series of tweets from SpaceX engineers suggest the decoding of the telemetry signal was the reason for the change.



Images from the unencrypted feed, via Redditor /u/derekcz.

Naturally, the amateur radio community is upset about the move. The general feeling among these groups is that SpaceX didn't need to encrypt the signal because they weren't doing anything wrong. This is true, but even the original decoders have to admit there could be bad actors who intend to misuse the rocket's telemetry. I'd also wager someone at SpaceX panicked about the possibility sensitive proprietary data could leak out through its telemetry feed. SpaceX has national security contracts as well, and the government most likely wouldn't appreciate seeing its secret assets on a decoded telemetry feed. Sorry guys https://t.co/LcqpjyS3xK

There's a growing sentiment among amateur radio operators that the new generation of spacecraft and satellites will be off-limits to civilians. Many of those involved in analyzing the telemetry signal have expressed disappointment that SpaceX would lock them out, but this could be par for the course going forward.

…Stephen Barrett (@skiboysteve) March 26, 2021

UPDATED RF EXPOSURE RULES EFFECTIVE MAY 3

ARRL Headquarters Newington CT April 13, 2021 …The FCC announced rule changes detailed in a lengthy 2019 Report and Order governing RF exposure standards go into effect on May 3, 2021. The new rules do not change existing RF exposure (RFE) limits but do require that stations in all services, including amateur radio, be evaluated against existing limits, unless they are exempted. For stations already in place, evaluation must be completed by May 3, 2023. After May 3, 2021, any new or existing station modified in a way that's likely to change its RFE profile - such as different antenna or placement or greater power - will need to conduct an evaluation by the date of activation or change. The Report / Order is online in PDF format at, https://docs.fcc.gov/public/attachments/FCC-19-126A1.pdf .

"In the RF Report and Order, the Commission anticipated that few parties would have to conduct reevaluations under the new rules and such evaluations will be relatively straightforward," the FCC said in an April 2 Public Notice. "It nevertheless adopted a 2-year period for parties to verify & ensure compliance under the new rules." The Amateur Service is no longer categorically excluded from certain aspects of the rules, as amended, and licensees can no longer avoid performing an exposure assessment simply because they are transmitting below a given power level.

"For most amateurs, the major difference is the removal of the categorical exclusion for amateur radio, which means that ham station owners must determine if they either qualify for an exemption or must perform a routine environmental evaluation," said Greg Lapin, N9GL, chair of the ARRL RF Safety Committee and a member of the FCC Technological Advisory Council (TAC). "Ham stations previously excluded from performing environmental evaluations will have until May 3, 2023, to perform these. After May 3, 2021, any new stations or those modified in a way that affects RF exposure must comply before being put into service," Lapin said.

The December 2019 RF Report and Order changes the methods that many radio services use to determine and achieve compliance with FCC limits on human exposure to RF electromagnetic fields. The FCC also modified the process for determining whether a particular device or deployment is exempt from a more thorough analysis by replacing a service-specific list of transmitters, facilities, and operations for which evaluation is required with new streamlined formula-based criteria. The R&O also addressed how to perform evaluations where the exemption does not apply, and how to mitigate exposure.

Amateur radio licensees will have to determine whether any existing facilities previously excluded under the old rules now qualify for an exemption under the new rules. Most will, but some may not.

"For amateurs, the major difference is the removal of the categorical exclusion," Lapin said, "which means that every ham will be required to perform some sort of calculation, either to determine if they qualify for an exemption or must perform a full-fledged exposure assessment. For hams who previously performed exposure assessments on their stations, there is nothing more to do."

The ARRL Laboratory staff is available to help amateurs to make these determinations and, if needed, perform the necessary calculations to ensure their stations comply. ARRL Laboratory Manager Ed Hare, W1RFI, who helped prepare ARRL's RF Exposure and You book, explained it this way. "The FCC did not change any of the underlying rules applicable to amateur station evaluations," he said. "The sections of the book on how to perform routine station evaluations are still valid and usable, especially the many charts of common antennas at different heights." Hare said ARRL Lab staff also would be available to help amateurs understand the rules and evaluate their stations."

RF Exposure and You is available in PDF format for free download from ARRL at, http://www.arrl.org/files/file/Technology/RFsafetyCommittee/28RFSafety.pdf

ARRL also has an RF Safety page on its website at http://www.arrl.org/rf-exposure .

THE UNCERTAIN FUTURE OF HAM RADIO

ED Note: This article is not ATV specific. However, it has important well written details about what seems to be happening to Ham Radio in general. It's good reading material and reproduced here with the author's permission. WA8RMC

Software-defined radio and cheap hardware are shaking up a hobby long associated with engineering.

By Julianne Pepitone

Photo: John Anderson (AJ7M), from Marysville, Washington on the air from home for the 2020 ARRL Field Day event, held June 27-28. Field Day is ham radio's largest on-air annual event and demonstration.

Will the amateur airwaves fall silent? Since the dawn of radio, amateur operators—hams—have transmitted on tenaciously guarded slices of spectrum. Electronic engineering has benefited tremendously from their activity, from the level of the individual engineer to the entire field. But the rise of the Internet in the 1990s, with its ability to easily connect billions of people, captured the attention of many potential hams. Now, with time taking its toll on the ranks of operators, new technologies offer opportunities to revitalize amateur radio, even if in a form that previous generations might not recognize.

The number of U.S. amateur licenses has held at an anemic 1 percent annual growth for the past few years, with about 7,000 new licensees added every year for a total of 755,430 in 2018. The U.S. Federal Communications Commission doesn't track demographic data of operators, but anecdotally, white men in their 60s and 70s make up much of the population. As these baby boomers age out, the fear is that there are too few young people to sustain the hobby.

"It's the $60,000 question: How do we get the kids involved?" says Howard Michel, former CEO of the American Radio Relay League (ARRL). (Since speaking with *IEEE Spectrum*, Michel has left the ARRL. A permanent replacement has not yet been appointed.)

This question of how to attract younger operators also reveals deep divides in the ham community about the future of amateur radio. Like any large population, ham enthusiasts are no monolith; their opinions and outlooks on the decades to come vary widely. And emerging digital technologies are exacerbating these divides: Some hams see them as the future of amateur radio, while others grouse that they are eviscerating some of the best things about it.

No matter where they land on these battle lines, however, everyone understands one fact. The world is changing; the amount of spectrum is not. It will be hard to argue that spectrum reserved for amateur use and experimentation should not be sold off to commercial users if hardly any amateurs are taking advantage of it.

Before we look to the future, let's examine the current state of play. In the United States, the ARRL, as the national association for hams, is at the forefront, and with more than 160,000 members it is the largest group of radio amateurs in the world. The 106-year-old organization offers educational courses for hams; holds contests where operators compete on the basis of, say, making the most long-distance contacts in 48 hours; trains emergency communicators for disasters; lobbies to protect amateur radio's spectrum allocation; and more.

Photo: ARRL Former ARRL CEO Howard Michel (WB2ITX) at headquarters station, W1AW.

Michel led the ARRL between October 2018 and January 2020, and he fits easily the profile of the "average" American ham: The 66-year-old from Dartmouth, Mass., credits his career in electrical and computer engineering to an early interest in amateur radio. He received his call sign, WB2ITX, 50 years ago and has loved the hobby ever since.

"When our president goes around to speak to groups, he'll ask, 'How many people here are under 20 [years old]?' In a group of 100 people, he might get one raising their hand," Michel says.

Photo: Ronny Risinger (KC5EES) Members from the LASA High School Amateur Radio Club, K5LBJ, in Austin, Texas participated in School Club Roundup, a twice-yearly on-air event that encourages participation from ham radio school groups.

ARRL does sponsor some child-centric activities. The group runs twice-annual Kids Day events, fosters contacts with school clubs across the country, and publishes resources for teachers to lead radio-centric classroom activities. But Michel readily admits "we don't have the resources to go out to middle schools"—which are key for piquing children's interest.

We need to "convince them there's more than getting licensed and putting a radio in your drawer and waiting for the end of the world."

Sustained interest is essential because potential hams must clear a particular barrier before they can take to the airwaves: a licensing exam. Licensing requirements vary—in the United States no license is required to listen to ham radio signals—but every country requires operators to demonstrate some technical knowledge and an understanding of the relevant regulations before they can get a registered call sign and begin transmitting.

For those younger people who *are* drawn to ham radio, up to those in their 30s and 40s, the primary motivating factor is different from that of their predecessors. With the Internet and social media services like WhatsApp and Facebook, they don't need a transceiver to talk with someone halfway around the world (a big attraction in the days before email and cheap long-distance phone calls). Instead, many are interested in the capacity for public service, such as providing communications in the wake of a disaster, or event comms for activities like city marathons.

“There’s something about this post-9/11 group, having grown up with technology and having seen the impact of climate change,” Michel says. “They see how fragile cellphone infrastructure can be. What we need to do is convince them there’s more than getting licensed and putting a radio in your drawer and waiting for the end of the world.”

New Frontiers

Photo: Sateesh Nallamothu Dhruv Rebba (KC9ZJX) with memorabilia from his ham radio contact with astronaut Joe Acaba (KE5DAR) onboard the International Space Station.

The future lies in operators like Dhruv Rebba (KC9ZJX), who won Amateur Radio Newsline’s 2019 Young Ham of the Year award. He’s the 15-year-old son of immigrants from India and a sophomore at Normal Community High School in Illinois, where he also runs varsity cross-country and is active in the Future Business Leaders of America and robotics clubs. And he’s most interested in using amateur radio bands to communicate with astronauts in space.

Rebba earned his technician class license when he was 9, after having visited the annual Dayton Hamvention with his father. (In the United States, there are currently three levels of amateur radio license, issued after completing a written exam for each—technician, general, and extra. Higher levels give operators access to more radio spectrum.)

“My dad had kind of just brought me along, but then I saw all the booths and the stalls and the Morse code, and I thought it was really cool,” Rebba says. “It was something my friends weren’t doing.”

He joined the Central Illinois Radio Club of Bloomington, experimented with making radio contacts, participated in ARRL’s annual Field Days, and volunteered at the communications booths at local races.

“We want to be making an impact… The hobby aspect is great, but a lot of my friends would argue it’s quite easy to talk to people overseas with texting and everything, so it’s kind of lost its magic.”

But then Rebba found a way to combine ham radio with his passion for space: He learned about the Amateur Radio on the International Space Station (ARISS) program, managed by an international consortium of amateur radio organizations, which allows students to apply to speak directly with crew members onboard the ISS. (There is also an automated digital transponder on the ISS that allows hams to ping the station as it orbits.)

Rebba rallied his principal, science teacher, and classmates at Chiddix Junior High, and on 23 October 2017, they made contact with astronaut Joe Acaba (KE5DAR). For Rebba, who served as lead control operator, it was a crystallizing moment.

“The younger generation would be more interested in emergency communications and the space aspect, I think. We want to be making an impact,” Rebba says. “The hobby aspect is great, but a lot of my friends would argue it’s quite easy to talk to people overseas with texting and everything, so it’s kind of lost its magic.”

That statement might break the hearts of some of the more experienced hams recalling their tinkering time in their childhood basements. But some older operators welcome the change.

Take Bob Heil (K9EID), the famed sound engineer who created touring systems and audio equipment for acts including the Who, the Grateful Dead, and Peter Frampton. His company Heil Sound, in Fairview Heights, Ill., also manufactures amateur radio technology.

“I’d say wake up and smell the roses and see what ham radio is doing for emergencies!” Heil says cheerfully. “Dhruv and all of these kids are doing incredible things. They love that they can plug a kit the size of a cigar box into a computer and the screen becomes a ham radio…. It’s all getting mixed together and it’s wonderful.”

But there are other hams who think that the amateur radio community needs to be much more actively courting change if it is to survive. Sterling Mann (N0SSC), himself a millennial at age 27, wrote on his blog that “Millennials Are Killing Ham Radio.”

Photo: Sterling Mann Sterling Mann (N0SSC) is advocating that ham radio shift away from a focus on person-to-person contacts.

It’s a clickbait title, Mann admits: His blog post focuses on the challenge of balancing support for the dominant, graying ham population while pulling in younger people too. “The target demographic of every single amateur radio show, podcast, club, media outlet, society, magazine, livestream, or otherwise, is not young people,” he wrote. To capture the interest of young people, he urges that ham radio give up its century-long focus on person-to-person contacts in favor of activities where human to machine, or machine to machine, communication is the focus.

These differing interests are manifesting in something of an analog-to-digital technological divide. As *Spectrum* reported in July 2019, one of the key debates in ham radio is its main function in the future: Is it a social hobby? A utility to deliver data traffic? And who gets to decide?

Those questions have no definitive or immediate answers, but they cut to the core of the future of ham radio. Loring Kutchins, president of the Amateur Radio Safety Foundation, Inc. (ARSFi)—which funds and guides “global radio email” system Winlink—says the divide between hobbyists and utilitarians seems to come down to age.

“Ham radio is really a social hobby...Here in Mississippi, you get to 5 or 6 o’ clock and you have a big network going on and on—some of them are half-drunk chattin’ with you.”

“Younger people who have come along tend to see amateur radio as a service, as it’s defined by FCC rules, which outline the purpose of amateur radio—especially as it relates to emergency operations,” Kutchins (W3QA) told *Spectrum* last year. Kutchins, 68, expanded on the theme in a recent interview: “The people of my era will be gone—the people who got into it when it was magic to tune into Radio Moscow. But Grandpa’s ham radio set isn’t that big a deal compared to today’s technology. That doesn’t have to be sad. That’s normal.”

Gramps’ radios are certainly still around, however. “Ham radio is really a social hobby, or it has been a very social hobby—the rag-chewing has historically been the big part of it,” says Martin F. Jue (K5FLU), founder of radio accessories maker MFJ Enterprises, in Starkville, Miss. “Here in Mississippi, you get to 5 or 6 o’ clock and you have a big network going on and on—some of them are half-drunk chattin’ with you. It’s a social group, and they won’t even talk to you unless you’re in the group.”

Photo: Richard Stubbs Martin F. Jue (K5FLU), founder of well-known radio accessories maker MFJ, is developing new products to accommodate the shift towards digital radio communications in the amateur bands. “It’ll all be digital at some point, right at the antenna all the way until it becomes audio.”

But Jue, 76, notes the ham radio space has fragmented significantly beyond rag-chewing and DXing (making very long-distance contacts), and he credits the shift to digital. That’s where MFJ has moved with its antenna-heavy catalog of products.

“Ham radio is connected to the Internet now, where with a simple inexpensive handheld walkie-talkie and through the repeater systems connected to the Internet, you’re set to go,” he says. “You don’t need a HF [high-frequency] radio with a huge antenna to talk to people anywhere in the world.”

To that end, last year MFJ unveiled the RigPi Station Server: a control system made up of a Raspberry Pi paired with open-source software that allows operators to control radios remotely from their iPhones or Web browser.

“Some folks can’t put up an antenna, but that doesn’t matter anymore because they can use somebody else’s radio through these RigPis,” Jue says.

He’s careful to note the RigPi concept isn’t plug and play—“you still need to know something about networking, how to open up a port”—but he sees the space evolving along similar lines.

“It’s all going more and more toward digital modes,” Jue says. “In terms of equipment I think it’ll all be digital at some point, right at the antenna all the way until it becomes audio.”

The Signal from Overseas

China’s advancing technology and growing middle class, with disposable income, has led to a “dramatic” increase in operators.

Outside the United States, there are some notable bright spots, according to Dave Sumner (K1ZZ), secretary of the International Amateur Radio Union (IARU). This collective of national amateur radio associations around the globe represents hams’ interests to the International Telecommunication Union (ITU), a specialized United Nations agency that allocates and manages spectrum. In fact, in China, Indonesia, and Thailand, amateur radio is positively booming, Sumner says.

China’s advancing technology and growing middle class, with disposable income, has led to a “dramatic” increase in operators, Sumner says. Indonesia is subject to natural disasters as an island nation, spurring interest in emergency communication, and its president is a licensed operator. Trends in Thailand are less clear but he believes here too that a desire to build community response teams is driving curiosity about ham radio.

“So,” Sumner says, “you have to be careful not to subscribe to the notion that it’s all collapsing everywhere.” China is also changing the game in other ways, putting cheap radios on the market. A few years ago, an entry-level handheld UHF/VHF radio cost around US $100. Now, thanks to Chinese manufacturers like Baofeng, you can get one for under $25. HF radios are changing, too, with the rise of software-defined radio.

“It’s the low-cost radios that have changed ham radio and the future thereof, and will continue to do so,” says Jeff Crispino, CEO of Nooelec, a company in Wheatfield, N.Y., that makes test equipment and software-defined radios, where demodulating a signal is done in code, not hardwired electronics. “SDR was originally primarily for military operations because they were the only ones who could afford it, but over the past 10 years, this stuff has trickled down to become $20 if you want.” Activities like plane and boat tracking, and weather satellite communication, were “unheard of with analog” but are made much easier with SDR equipment, Crispino says.

Nooelec often hears from customers about how they’re leveraging the company’s products. For example, about 120 members from the group Space Australia to collect data from the Milky Way as a community project. They are using an SDR and a low-noise amplifier from Nooelec with a homemade horn antenna to detect the radio signal from interstellar clouds of hydrogen gas.

“We will develop products from that feedback loop—like hydrogen line detection, we’ve developed accessories for that so you can tap into astronomical events with a $20 device and a $30 accessory,” Crispino says.

Looking ahead, the Nooelec team has been talking about how to “flatten the learning curve” and lower the bar to entry, so that the average user—not only the technically adept—can explore and develop their own novel projects within the world of ham radio.

“It is an increasingly fragmented space,” Crispino says. “But I don’t think that has negative connotations. When you pull in totally unique perspectives, you get unique applications. We certainly haven’t thought of it all yet.”

The ham universe is affected by the world around it—by culture, by technology, by climate change, by the emergence of a new generation. And amateur radio enthusiasts are a varied and vibrant community of millions of operators, new and experienced and old and young, into robotics or chatting or contesting or emergency communications, excited, nervous, pessimistic or upbeat about what ham radio will look like decades from now.

As Michel, the former ARRL CEO, puts it: “Every ham has [their] own perspective. What we’ve learned over the hundred-plus years is that there will always be these battles—AM modulation versus single-sideband modulation, whatever it may be. The technology evolves. The marketplace will follow where the interests lie.”

About the Author. Julianne Pepitone is a freelance technology, science, and business journalist and a frequent contributor to *IEEE Spectrum*. Her work has appeared in print, online, and on television outlets such as *Popular Mechanics*, CNN, and NBC News.

ATCO TREASURER REPORT - de N8NT

OPENING BALANCE (01/17/21)	$ 3729.99
Receipts (dues)	$ 60.00
Payment to WB8LGA for ZOOM shared use	$ (100.00)
PayPal fee	$ (0.59)
CLOSING BALANCE (04/22/21	$ 3689.40

LOCAL HAMFEST SCHEDULE

This section is reserved for upcoming Hamfests. They are limited to Ohio and vicinity easily accessible in one day. Anyone aware of an event incorrectly or not listed here; notify me so it can be corrected. This list will be amended, as further information becomes available. To see additional details for each Hamfest, Control Click on the blue title and the magic of the Internet will give you the details complete with a map! To search the ARRL Hamfest database for more details, CTL click ARRLWeb: Hamfest and Convention Calendar …WA8RMC.

05/21/2021 - 05/23/2021
Online - Dayton Hamvention, An ARRL Sanctioned Specialty Convention
Location: Xenia, OH
Type: ARRL Convention
Sponsor: Dayton Amateur Radio Association
Website: http://hamvention.org

06/05/2021 - FCARC SummerFest
Location: **Wauseon, OH**
Type: **ARRL Hamfest**
Sponsor: **Fulton County AR Club**
Website:
http://k8bxq.org/hamfest

07/10/2021 - Mansfield Mid-Summer Trunkfest
Location: MANSFIELD, OH
Type: ARRL Hamfest
Sponsor: Intercity Amateur Radio Club
Website: http://WWW.IARC.CLUB

07/17/2021 - NOARSFEST
Location: Elyria, OH
Type: ARRL Hamfest
Sponsor: Northern Ohio Amateur Radio Society
Website: http://noars.net

07/18/2021 - VAN WERT HAMFEST
Location: VAN WERT, OH
Type: ARRL Hamfest
Sponsor: VAN WERT AMATEUR RADIO CLUB
Website: http://W8FY.ORG

08/07/2021 - 2021 Columbus Hamfest
Location: Grove City, OH
Type: ARRL Hamfest
Sponsor: Aladdin Shrine Audio Unit
Website: http://columbushamfest.com

08/07/2021 - DX Engineering Hamfest
Location: Tallmadge, OH
Type: ARRL Convention
Sponsor: DX Engineering
Website: http://dxengineering.com

08/28/2021 - Cincinnati Hamfest℠
Location: Owensville, OH
Type: ARRL Hamfest
Sponsor: Milford ARC
Website: http://CincinnatiHamfest.org

09/26/2021 - Cleveland Hamfest
Location: Berea, OH
Type: ARRL Hamfest
Sponsor: Hamfest Association of Cleveland
Website: http://www.hac.org

12/04/2021 - FCARC WinterFest
Location: Delta, OH
Type: ARRL Hamfest
Sponsor: Fulton County Amateur Radio Club
Website: http://k8bxq.org/hamfest

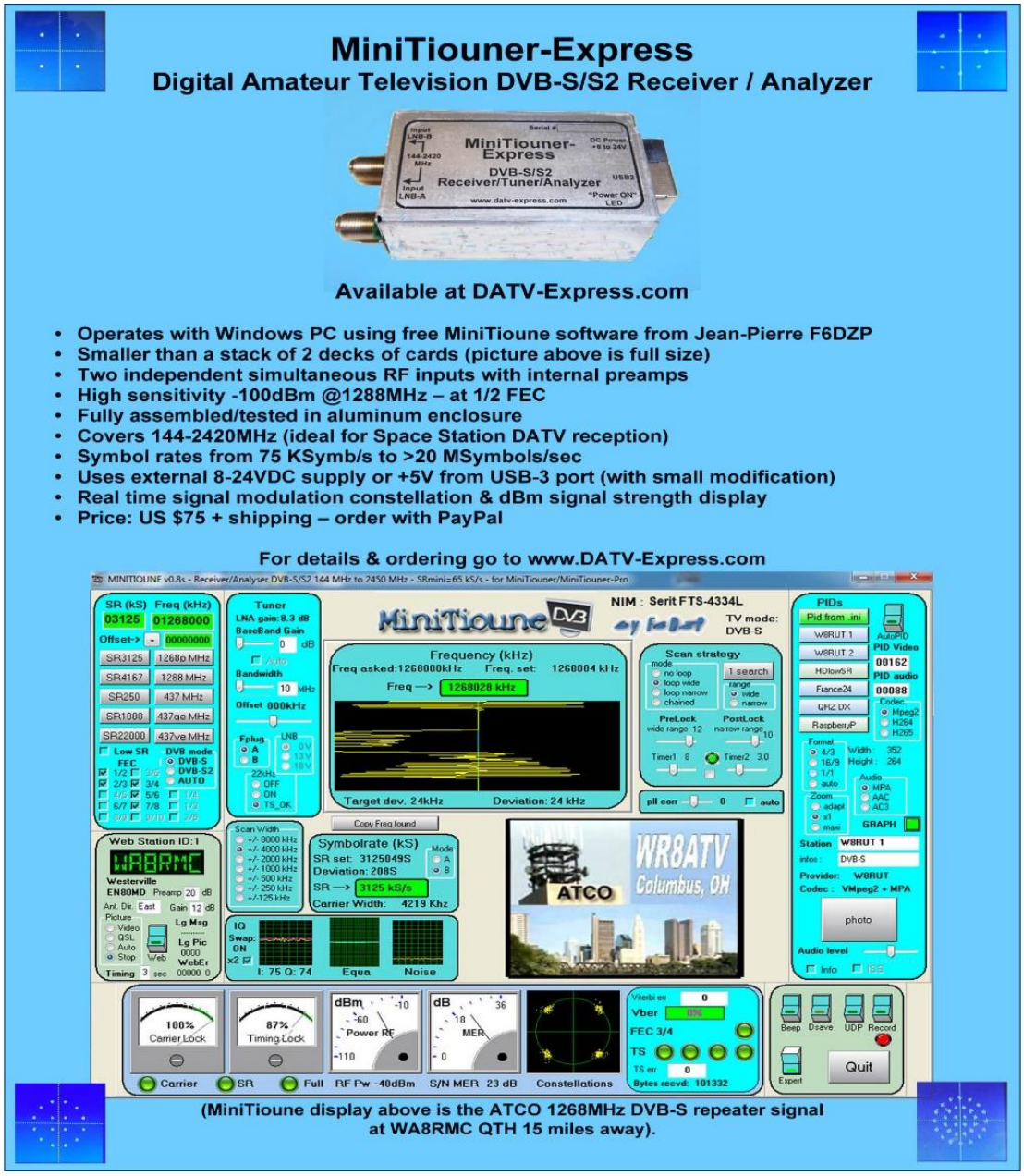
TUESDAY NITE ZOOM NET (We listen to 147.48 also)

Every Tuesday night @ 8:00PM WA8RMC hosts a net for ATV topic discussion. There is no need to belong to the club to participate, only an interest in ATV. All are invited. We usually chat for about an hour so please join us via the internet using ZOOM on your computer. We also listen to 147.48 during the meeting so if there is anyone checking in there you will be heard and included. It would be great if some of the previous ATCO members would join us as it's been a long time since we've heard from you.

We normally have 10-15 check-ins from various parts of USA and beyond. It's a fun informal time with various topics and jokes. Share with us a funny story or one liner you have if you can.

To join ZOOM for the first time, simply type **https://zoom.us/join** then download, install the .exe program and run it. ZOOM will start. Click on **join**, enter the **9670918666 meeting ID** then the **191593 password.** Use video or just audio if you don't have a camera.

Note: The DARA ATV ZOOM Net is on Wednesday at 8PM using this same ZOOM link. Feel free to join the discussion there as well.



ATCO REPEATER TECHNICAL DATA SUMMARY

Location: Downtown Columbus, Ohio
Coordinates: 39 degrees 57 minutes 47 seconds (latitude) 82 degrees 59 minutes 58 seconds (longitude)
Elevation: 630 feet above the average street level of 760 feet (1390 feet above sea level)

TV Transmitters: 423.00 MHz DVB-T, 10 W cont. FEC=7/8, Guard=1/32, Const=QPSK, FFT=2K, BW=2MHz, PMT=4095, PCR=256, Video=256, audio=257
427.25 MHz Analog VSB AM, 50 watts average 100 watts sync tip (cable channel 58)
1258 MHz 40 watts FM analog
1268 MHz DVB-S QPSK 20W continuous. SR=3.125MS, FEC=3/4, PMT=32, Video=162, Teletext=304, PCR=133, Audio=88, Service =5004)
Two video channels in this output: Channel 1 is fed from all receivers. Channel 2 is fed direct from 439.25 analog receiver only.
2397 MHz Mesh Net transceiver 600mw output (channel 1 minus 2). ID is WR8ATV-2
10.350 GHz: 1watt continuous analog FM

Link transmitter: 446.350 MHz: 5 watts NBFM 5 kHz audio. This is an output used for control signals and to repeat the 147.48 MHz and 449.975 MHz input.

Identification: 423, 427, 1258, 1268 MHz, 10.350 GHz transmitters video ID every 10 min. with active video and information bulletin board every 30 minutes.
423 MHz digital, 1268 MHz digital & 10.350 GHz analog - Continuous transmission of ATCO & WR8ATV with no input signal present.

Transmit antennas: 423.00 MHz - 8 element Lindsay horizontally polarized 5 dBd gain "omni"
427.25 MHz - Dual slot horizontally polarized 7 dBd gain "omni" major lobe east/west, 5dBd gain north/south
1258 MHz - Diamond vertically polarized 12 dBd gain omni
1268 MHz - Diamond vertically polarized 12 dBd gain omni
2397 MHz - Ubiquiti dual polarity omni 13dBi gain slot for channel 1 minus 2 MESH Rx/Tx operation
2397 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni (Used for experimental Mesh operation)
10.350 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni

Receivers: 147.480 MHz - F1 audio input with touch tone control. (Input here = output on 446.350)
439.000 MHz - DVB-T QPSK, 2MHz BW. Receiver will auto configure for FEC's. (Input here = output on all TV transmitters)
439.250 MHz - A5 NTSC video with FM subcarrier audio, **lower sideband**. (Input here = output on all TV transmitters & also direct to 1268 MHz DVB-S output channel 2.)
449.975 MHz - F1 audio input aux touch tone control. 131.8 Hz PL tone. (Input here = output on 446.350).
1288.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters)
1288.00 MHz - DVB-S QPSK SR=4.167MS, fec=7/8. PIDs: PMT=133, PCR=33, Video=33, Audio=49 (Input here=output on all Transmitters)
2398.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters) (inactive at this time because of MESH on 2397)
10.450 GHz - F5 video analog NTSC. (Input here = output on all TV transmitters)

Receive antennas: 147.480 MHz - Vert. polar. Diamond 6dBd dual band (Shared with 446.350 MHz link output transmitter)
438.00/439.250 MHz - Horizontally polarized dual slot 7 dBd gain major lobe west (Shared with 438 & 439 receivers)
1288.00 MHz - Diamond vertically polarized 12 dBd gain omni (shared with analog and DVB-S receivers)
2398.00 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni (inactive at this time because MESH is on 2397)
10.450 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni

Auto mode Input control:	Touch Tone	Result (if third digit is * function turns ON, if it is # function turns OFF)
	00*	turn transmitters **on** (enter manual mode-keeps transmitters on till 00# sequence is pressed)
	00#	turn transmitters **off** (exit manual mode and return to auto scan mode)
	264	Select Channel 4 Doppler radar. (Stays on for 5 minutes) Select # to shut down before timeout.
	004	Select 10.450 GHz receiver. **(Always exit by selecting 001)**
	001	Select 2398 MHz receiver then 00# for auto scan to continue

Manual mode Functions:		
	00* then 1 for Ch. 1	Select 439.25 analog /438 digital receiver (if video present on digital, it is selected. Otherwise, analog)
	00* then 2 for Ch. 2	Select 1288 digital receiver
	00* then 3 for Ch. 3	Select 1288 analog receiver
	00* then 4 for Ch. 4	Select 2398 receiver
	00* then 5 for Ch. 5	Select video ID (17 identification screens)
	01* or 01#	Channel 1 439.25 MHz scan enable (hit 01* to scan this channel & 01# to disable it)
	02* or 02#	Channel 2 1288 MHz digital receiver scan enable
	03* or 03#	Channel 3 1288 MHz analog receiver scan enable
	04* or 04#	Channel 4 2398 MHz scan enable
	A1* or A1#	Manual mode select for 439.25 receiver audio
	A2* or A2#	Manual mode select for 1288 digital receiver audio
	A3* or A3#	Manual mode select for 1288 analog receiver audio
	A4* or A4#	Manual mode select for 2398 receiver audio
	C0* or C0#	Beacon mode – transmit ID for twenty seconds every ten minutes
	C1* or C1#	No function at this time
	C2* or C2#	No function at this time

ATCO MEMBERS as of April 2021

Call	Name	Address	City	St	Zip	Phone
KD8ACU	Robert Vieth	3180 North Star Rd	Upper Arlington	OH	43221	614-457-9511
KC3AM	Dave Stepnowski	735 W Birchtree Ln	Claymont	DE	19703	
AH2AR	Dave Pelaez	1348 Leaf Tree Lane	Vandalia	OH	45377	937-264-9812
W8ARE	Terry Meredith III	6070 Langton Circle	Westerville	OH	43082-8964	
K9BIF	Charlie Short	415 West Pike Street	Goshen	IN	46527-0554	
VK3BFG	Peter Cossins	14 Coleman Road	Melbourne	Au	03152	
N9BNN	Michael Glass	6836 N. Caldwell Rd	Lebanon	IN	46052	
WB8CJW	Dale Elshoff	8904 Winoak Pl	Powell	OH	43065	614-210-0551
N8COO	C Mark Cring	2844 Sussex Place Dr.	Grove City	OH	43123	614-836-2521
N3DC	William Thompson	6327 Kilmer St	Cheverly	MD	20785	301-772-7382
K8DMR	Ron Fredricks	8900 Stonepoint Ct	Jennison	MI	49428-8641	
WA8DNI	John Busic	2700 Bixby Road	Groveport	OH	43125	614-491-8198
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	OH	43026	614-405-1710
KB8EMD	Larry Baker	4330 Chippewa Trail	Jamestown	OH	45335-1210	
WB4IR	Bob Holden	7725 Tressa Circle	Powell	TN	37849	865-314 - 4285
WA8HFK,KC8HIP	Frank & Pat Amore	P.O. Box 2252	Helendale	CA	92342-2252	760-503-8106
W8KHP	Allen Vinegar	2043 Treetop Lane	Hebron	Ky	41048	
WA8KKN	Chuck Wood	5322 Spruce Lane	Westerville	OH	43082-9005	614-523-3494
WB9KMO	Rod Fritz	8334 E. Culver Street	Mesa	AZ	85207	
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	OH	45331	937-548-2492
WB8LGA	Charles Beener	2540 State Route 61	Marengo	OH	43334	
W8MA	Phil Morrison	154 Llewellyn Ave	Westerville	OH	43081	
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	OH	45660	
N8NT	Bob Tournoux	3569 Oarlock Ct	Hilliard	OH	43026	614-876-2127
W8NX, KA8LTG	John & Linda Beal	5001 State Rt. 37 East	Delaware	OH	43015	740-369-5856
KB8OFF	Jess Nicely	1888 Woods Drive	Beavercreek	OH	45432	
W6ORG,WB6YSS	Tom, Maryann O'Hara	2522 Paxson Lane	Arcadia	CA	91007-8537	626-447-4565
AE6QU	Ron Phillips	2227Via Puerta unit N	Laguna Woods	CA	92637	
WA8RMC	Art Towslee	438 Maplebrooke Dr W	Westerville	OH	43082	614-891-9273
W8RUT,N8KCB	Ken & Chris Morris	2895 Sunbury Rd	Galina	OH	43021	
KB8RVI	Dave Jenkins	100 Miller Ave Apt. 108	Ashville	OH	43103	740 954-9221
W8RWR	Bob Rector	135 S. Algonquin Ave	Columbus	OH	43204-1904	614-276-1689
W8RXX, KA8IWB	John & Laura Perone	3477 Africa Road	Galena	OH	43021	614-579-0522
WA6RZW	Ed Mersich	34401 Columbine Trl West	Elizabeth	CO	80107	
WA6SVT	Mike Collis	PO Box 1594	Crestline	CA	92325	
NR8TV	Dave Kibler	243 Dwyer Rd	Greenfield	OH	45123	937-981-1392
KB8UWI	Milton McFarland	115 N. Walnut St.	New Castle	PA	16101	
WA8UZP	James Reed	818 Northwest Blvd	Columbus	OH	43212	614-297-1328
KB9VGD	Gary Oaks	472 Storle Ave	Burlington	WI	53105-1028	
KC8WRI	Tom Bloomer	PO Box 595	Grove City	OH	43123	
AA8XA	Stan Diggs	2825 Southridge Dr	Columbus	OH	43224-3011	
AC8XP,KE8GTT,KE8HPA	Troy,Seamus Bonte	5210 Smothers Road	Westerville	OH	43081	
AC8YE	Larry Howell	4080 Dill Road	Centerburg	OH	43011-9771	
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	OH	43064	
KC8YPD	Joe Ebright	3497 Ontario St	Columbus	OH	43224	
KD8YYP	Anna Reed	818 Northwest Blvd	Columbus	OH	43212	
WB8YTZ	Joe Coffman	233 S. Hamilton Rd	Gahanna	OH	43230-3347	
N8YZ	DaveTkach	2063 Torchwood Loop S	Columbus	OH	43229	614-882-0771
W8ZCF	Farrell Winder	6686 Hitching Post Ln.	Cincinnati	OH	45230	513-218-3876

ATCO CLUB OFFICERS

President: Art Towslee WA8RMC
V. President: Ken Morris W8RUT
Treasurer: Bob Tournoux N8NT
Secretary: Mark Cring N8COO
Corporate trustees: Same as officers

Repeater trustees: Art Towslee WA8RMC
Ken Morris W8RUT
Dale Elshoff WB8CJW
Statutory agent: Stan Diggs AA8XA
Newsletter editor: Art Towslee WA8RMC

NEW MEMBER(S)

Let's welcome the new members to our group! If any of you know anyone who might be interested, let one of us know so we can flood them with information. New members are our group's lifeblood so it's important we aggressively recruit new faces.

No new members this time.

ATCO MEMBERSHIP INFORMATION

Membership in ATCO (Amateur Television in Central Ohio) is open to any licensed radio amateur who has an interest in amateur television. The annual dues are $10 per person. Additional members within an immediate family and at the same address are included at no extra cost.

ATCO publishes this Newsletter quarterly in January, April, July and October. It is sent to each member without additional cost. All Newsletters are sent via Email unless the member does not have an internet connection. Dues payments are as of the date paid and will expire on the same month/year on the due date year.

Your support of ATCO is welcomed and encouraged.

Membership expiration notices will be sent out via Email starting 30 days prior to expiration date.
NOTE: Dues records on your individual portion of the ATCO website are listed as the date money is received and shows due one year from that date.

ATCO MEMBERSHIP APPLICATION

RENEWAL ○ NEW MEMBER ○ DATE _____
CALL _____
OK TO PUBLISH PHONE # IN NEWSLETTER YES ○ NO ○
HOME PHONE _____
NAME_____
INTERNET Email ADDRESS_____
ADDRESS _____
CITY _____ STATE _____ ZIP _____-_____
FCC LICENSED OPERATORS IN THE IMMEDIATE FAMILY
_____
COMMENTS_____
_____
_____
ANNUAL DUES PAYMENT OF $10.00 ENCLOSED CHECK ○ MONEY ORDER ○

Make check payable to ATCO or Bob Tournoux & mail to: Bob Tournoux N8NT 3569 Oarlock CT Hilliard, Ohio 43026. Or, if you prefer, pay dues via the Internet with your credit card. Go to www.atco.tv and fill out the "pay ATCO dues" section. Alternately, you can use the ATCO web site www.atco.tv/PayDues.aspx directly. Credit card payment is made through "PayPal" but you DO NOT need to join PayPal to send your dues. Simply DO NOT fill out the password details and there will be no "PayPal" involvement.

ATCO Newsletter
c/o Art Towslee -WA8RMC
438 Maplebrooke Dr. West
Westerville, Ohio 43082

FIRST CLASS MAIL

REMEMBER...CLUB DUES ARE NEEDED.
CHECK THE
MEMBERS PAGE OF ATCO WEBSITE FOR THE EXPIRATION DATE.
SEND N8NT A CHECK OR USE PAYPAL IF MEMBERSHIP IS EXPIRED.