Tech-Talk Topics for 2021

(Panel of experienced club members and other discussing their experiences with the topic, with Q&A.)

1. Ham Activities for New Technician Class Hams – For those new to ham radio, this talk focuses on an overview of the many, many activities immediately available to technician class amateur radio operators. Ham radio to newcomers can seem like a new language and an impossible world of new ideas. This session will feature an in-depth discussion of a variety of activities for Technicians including privileges, considerations for equipment, operating bands and practices suited for Technicians. Such activities include ham radio for using satellites, long distance HF using Morse Code, Winlink email, weather spotting, repeater operations and ARES support for emergencies.
2. Handy talkies (HT) options, what kind, how much? Pros and Cons – This session will provide information suitable for new hams. One of the most common questions new hams face is which radio should be their HT first radio. Although some new hams may have limited financial resources a radio, others may be able to afford more advanced features in a radio. Some may only be interested in a radio for emergency communications with other hams and local area news. The most common handy talkie radio is the dual band radio, which allows you to use two bands, VHF and UHF, which can range in price from less than $30.00 to over $500.00. The popular 2-meter band is considered a must for ham radio. However, if one needs a more advanced radio for serious hobbyists, consider getting HTs with more bands such as 1.25-meters, 6-meters, or 10-meter amateur radios.
3. Building a Go-kit for ARES - An ARES go-kit is a portable collection of radio gear and emergency supplies and information that can be used for ARES deployment. Go-kits may come in the form of backpacks, fanny-packs, or pelican cases in various sizes on wheels or hand-carried. This talk is for those interested in a building a general "go-kit" useful for being deployed with ARES, this is an opportunity to receive instructions and advice on "go-kit" construction and to see go-kits other club members have built.
4. QRP (Reduced transmit power out) - This roundtable will feature experiences of a club member who has operated a QRP station. QRP operation has a large and growing band of radio hams who enjoy this aspect of amateur radio. The term comes from the Q codes that were often for Morse, CW and other radio transmissions where QRP means reduced power. Many hams prefer QRP operation as it gives them a great sense of satisfaction and provides a whole new world of challenges in terms of amateur radio operating as well as building the equipment. QRP equipment can be inexpensive and may be easily operated in a park or other portable location.
5. Portable ops (rigs, batteries, antennas, etc.) -- Portable operating may include stationary operating from cars, trucks, RVs, a campsite, park or maybe from a club communications trailer. For others, it's as simple as a chatting on a handheld radio while walking the dog. For the purpose of this discussion, portable will be defined as HF through VHF capability (possibly UHF) where all the equipment, antennas, and power source is moved to a temporary site can be deployed for relatively rapid operation of amateur radio gear. This session will feature discussions by club members or other who have operated portable configurations.
6. Mobile installations - this talk is mainly for those who want to safely install and operate their first ham radio in a vehicle. It is a discussion of selecting mobile radios, planning an installation with considerations for antennas, bonding, impedance matching, and tips on hardware installation. Many long-time members of the Alexandria Radio Club can share information and stories about the mobile radio installations, both VHF and HF, they have installed in their vehicles.
7. Starter Base Station Options - This talk is for those who want to set up an amateur radio base station for the first time. Options for antennas, feedlines, power supplies, and rigs will be discussed. Most new hams start out in ham radio with a Technician class license. This license completely opens the door to ham radio operations above 30mhz. Therefore, Technicians have all ham operator privileges from the 6 meter ham band and every ham band higher in frequency. Plus, Technicians have limited privileges on some of the HF bands including CW only on 80, 40, 15 meters and CW plus VOICE on a portion of 10 meters. With these privileges Technicians have choices about whether to start out on HF or 6 meters and above.
8. Stealthy Antennas for city dwellers – In most cases, a full-size antenna for HF is not feasible for apartments, townhouses, or communities due to the physical space required, or HOA (Home Owner Association) regulations.

This talk will cover effective antennas that can be customized around such limitations. For example, such antennas can be easy to set up and take down and so that neighbors may not easily easily see the antennas. The antenna can be removed when not operating. There are many possibilities. Many long-time members of the Alexandria Radio Club can share information and stories about their experiences using stealth antennas.

9. QSL Cards – A QSL card is a written confirmation of either a two-way radio communication between two amateur radio operators or confirmation of a shortwave listener's report. These cards normally detail the band or frequency used, the time and date of the contact, and other technical information. These cards can also be used to confirm details for amateur radio awards, competitions, etc. The international standard size for a single page QSL card is 5.5" x 3.5". In modern trends QSL cards can be exchanged electronically and printed out with a color printer. QSL cards can be very artistic or decorative, and may displayed as on the walls of ham radio "shacks." Many members of the Alexandria Radio Club can share information, hints, tips, and stories about their experiences with QSL cards.
10. Getting Started with ECHOLINK - ECHOLINK allows amateur radio operators to communicate using VOIP via PCs, Androids and iPhones. An amateur radio link is required to register the ECHOLINK software, which is feee. ECHOLINK is a great way for Technicians to talk around the world without HF. One can operate ECHOLINK from a PC using a microphone and speakers/headset and transmit through repeaters on the other end of the link. Several members of the Alexandria Radio Club can share information, hints, tips, and stories about their experiences with ECHOLINK.
11. Getting Started with Amateur Radio Satellite Communications – Satellites function as communications relays in space, as well as, for other purposes. Amateur radio operators can hear other amateurs in the ISS, work FM and SSB satellites, track satellites, and receive NOAA weather satellite communications. A satellite can be selected for a suitable receiver. Some can be received using simple omni-directional antenna, but better results with a larger number of satellites can usually be obtained with modest directional antennas of the type very often found in existing amateur radio set ups. A good way to start is to concentrate on being able to receive the satellite's beacon transmission. Once you are confident at doing this, move onto receiving signals from other amateur stations which are being retransmitted by the satellite. Very often, the FM satellites are the easiest to receive. Amateur radio satellites in Low Earth Orbit are generally only in-range for 10-15 minutes at a time. FM satellites are just like a repeater: only one person may transmit at a time. Since a satellite is overhead for 15 minutes at most, each operator will want to make some contacts, a pass should not be monopolized; let the other hams have some time on the pass as well. A number of members of the Alexandria Radio Club and others can share information, hints, tips, and stories about their experiences with amateur radio satellite communications.
12. Parks on the Air for Beginners - Parks on the Air ® (POTA) is a amateur radio activity involving international portable amateur radio operations that promote emergency awareness and communications conducted from national/federal and state/provincial level parks. The activator and all the equipment must be within the perimeters of the park, and on public property. Activators cannot attempt to activate from any private property because the spirit of the POTA program is to get out of the house and operate from a vehicle/park bench/various methods etc. The park must be OPEN. Use the map on the POTA site in combination with Google Maps, and official park sites to find the official boundaries. If the park is part of a trail system or river, radio activities need to be within 100 feet of the trail or river. Members of the Alexandria Radio Club can share information, hints, tips, and stories about their experiences with POTA.
13. Working with Repeaters – Those new to ham radio hear the term "repeater" early and very often without having a comfortable understanding of repeaters. Some experienced hams also lack a clear understanding of repeaters. A repeater receives a signal on one frequency and simultaneously retransmits (repeats) it on another frequency. The frequency it receives on is called the "input" frequency, and the frequency it transmits on is called the "output" frequency. ou need to program your radio to switch from the Output to the Input frequency when you push the Transmit button, and to send the correct identifying tone. Only then will the repeater let you pass a message. Once you have the settings correct, save them to a memory on the radio for easy use next time. Certain members of the Alexandria Radio Club have extensive experience maintaining and configuring repeaters and can share information, hints, tips, and stories about their experiences with repeaters.
14. Using NVIS -- Near vertical incidence skywave (NVIS) propagation is a form of ionospheric HF radio propagation that permits radio communications links within a region that covers relatively short distances. Optimum amateur radio NVIS propagation performance requires an HF antenna designed for 80 or 40 meters in a horizontal configuration mounted near the ground. NVIS fills the gap between line-o- sight propagation and the

longer distance distances of HF skip propagation. This form of propagation can be vital for responding to emergencies or disasters. NVIS propagation can also be used for effective contesting within a state. Certain members of the Alexandria Radio Club have strong experience using NVIS propagation and can share information, hints, tips, and stories about their experiences with this form of propagation.

15. Working with Digital modes – The wide availability of computers has transformed the nature of amateur radio. With the developments in computer techniques and transmission technology along with and general hardware and software it is now possible to use very advanced techniques that has resulted in a variety of digital modes of transmission modes. Today some of the most popular amateur radio activities use digital modes. FT-8 is an example of a popular digital mode, but there are many, many others including WINLINK, the non-Internet email system. Use of digital modes has also saved a significant amount of space, a commodity often short in ham radio stations. Certain members of the Alexandria Radio Club and others have strong experience using digital modes and can share information, hints, tips, and stories about their experiences with digital modes.
16. Radio Scanners for Beginners -- Scanners can receive signals transmitted on a wide range of frequencies, allowing the user to listen in to a huge range of different communications including air traffic control, emergency services (ambulance and fire), hobbyists (Citizens Band, Amateur radio), security guards, taxi's and a lot more. A scanner has two main modes of operation; these are commonly known as 'search' and 'scan.' In 'search' mode, it is possible to search for any transmissions within a certain frequency range specified by the user, i.e. 400-470 MHz. The scanner will quickly scan through the frequencies and if it detects a transmission it will stop immediately and let you listen to what it has found. . which can be saved to memory. Once memory channels or filled with frequencies of interest, a scanner can 'scan' through only the channels that have been saved. Software defined radio (SDR) technology has made scanning very fast with more interesting displays. Members of the Alexandria Radio Club and others have strong experience using scanners and can share information, hints, tips, and stories about their experiences with scanners.
17. Packet Radio – Packet Radio is a form of digital communications that of employs discrete bundles of data, called packets and is used in amateur radio for emergency communications support and in many other applications, including the WINLINK email application. These packets can be individually checked for integrity and acknowledged (or NAK'ed), and processed, or routed on to somewhere else. The basic protocol used in packet radio is called AX-25, an adaptation of X.25. Error correction is achieved through a 16 bit cyclic redundancy check (CRC). Although AX-25 is by far the most common protocol in use. , amateurs are free to experiment with other protocols which meet the ACA identification requirements. This is unlike some countries, which are forced to use AX-25. Members of the Alexandria Radio Club and others have strong experience using packet radio and can share information, hints, tips, and stories about their experiences with packet radio.
18. Raspberry Pi Applications -- Raspberry Pi miniature computers have brought computing power to amateur radio application in ways not imagined just a short while ago, and new application are constantly being introduced. Hardware implementations for terminal node controllers and desktop computer implementation for a host of applications are just a couple of examples. Members of the Alexandria Radio Club and others have strong experience using raspberry pi units and can share information, hints, tips, and stories about their experiences with raspberry pi technology.
19. Virtual Ham Shack Tour -- A ham shack tour can be an excellent way for new hams to become familiar with the entire package of equipment and capabilities that can exist in a ham radio shack. This session will feature a virtual tour conducted by club members or other who want to share information, hints, tips, and stories about their ham shack.
20. Ham Shack Hotline -- The 'Ham Shack Hotline' project allows ham radio operator as unique telephone number on a VOIP telephone system that can be useful in a variety of applications, including emergency response situations. This technology allows a ham to register with the "Ham Shack Hotline" server and to instantly contact another registered ham operator on the system using a telephone, without a conventional telephone outlet. Members of the Alexandria Radio Club and others have experience using "Ham Shack Hotline" installation and operations, and can share information, hints, tips, and stories about their experiences.
21. Installation and Logging with N3FJP – Logging of ham radio contacts is way of life for most ham radio operators whether for contesting, casual contacts, or ragchewing. The Alexandria Radio Club uses the N3FJP program for logging during annual Field Day events which requires participants to be skilled with using the program. This discussion will focus on how to install and use the features of the N3FJP program. N3FJP is a general logging program, but has separate full-featured programs for state QSO parties, ARRL contests, and other contesting.

Members of the Alexandria Radio Club and others have experience using N3FJP operations, and can share information, hints, tips, and stories about their experiences.

22. Matching Antennas to Feedlines -- The challenge of matching the impedance of the antenna to the impedance of the feedline, normally coax, can be significant, but is very important. Mismatched lines create high SWR and, consequently, feedline losses. When a feedline and antenna are mismatched, some of the power you are trying to transmit will be reflected back down the feedline toward the transmitter. SWR the ratio of the amplitude of the reflected wave to the amplitude of the wave you are trying to send is called the reflection ratio. To match the impedance of the feedline to the impedance of the antenna, a variety of different techniques are available. Matching topics include delta matching, gamma matching, stub matching as a few examples.
23. Solar Cycle 25 and Propagation – The emergence of Solar cycle 25 is being talked about a lot these days. To fully appreciate some of these discussions, a familiarity with solar activity terminology and propagation is invaluable. This discussion will focus on the terminology and science of solar activity that is important to formation and nature of the ionosphere and how it supports HF radio propagation. The nature of sunspots, sunspot history and trends, the measurement of solar radiation, and measurements of ionospheric conditions will be discussed. The correlation between solar activity, the ionosphere and propagation for HF bands will be discussed extensively.
24. "Time" for New Amateur Radio Operators - this presentation will be an overview of Coordinated Universal Time (UTC) / Greenwich Mean Time (GMT) / Zulu time (Z) and how the United States Navy, the official time keeper for the United States, utilizes the United States Naval Observatory (USNO) Master Clock to provide time services to the National Institute of Standards and Technology (NIST) for dissemination to the public via High Frequency (HF) “short wave” radio stations WWV and WWVH, along with Low Frequency (LF) “long wave” radio station WWVB, and how the newly licensed ham can utilize these time synchronization services to establish precise time keeping in their ham shacks using radio-controlled “atomic” clocks. An overview of other timing synchronization sources such as the Global Positioning System (GPS) and Network Time Protocol (NTP) servers along with world time zones and the international dateline will be covered.