

The Repeater

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WX4BCA 147.285 + (131.8)

Amateur Radio Club of Butts County



Jackson, GA



USA

"DPloyable You"

One recent event, a Super Bowl activity that was very much in the background, was Georgia ARES' involvement in the weekend's activities. Georgia ARES was asked to provide communications support to the Red Cross just in case of a major incident. The amazing part of the 'opercise' was that it was organized in about two weeks with very limited – almost need to know – participation. There were about thirty ARES members (mainly with DEPLOYABLE credentials) involved, including seven members of our local ARES Team. The primary participant requirements were a vetted Georgia ARES Level Three membership, DStar experience and equipment.

Our Butts County group was assigned to provide the back-up communications for two Red Cross reunification shelters located kinda-sorta near Hartsfield-Jackson. Our members were on one hour stand-by to respond to their assigned shelter locations, set-up a complete DStar station (computer, radio, power source, portable antenna)

and then operate that station for the duration of the event (12 hours on and 12 hours off). Not knowing the site beforehand made it pretty challenging. There were two, two-ham teams assigned to each site. Fortunately, we were not needed, but the event turned out to be a real good learning opportunity for everyone involved. Making sure you

were equipped and self-sufficient for a round the clock, three day event can be a challenge. "Now what did I forget?" "Where did I put those fuses?" I expect that ARES, on all levels, will see renewed Red Cross involvement because of this exercise and our excellent response. We began our standby on Friday at 17:00 and secured on Monday morning. The Butts County hams involved were: Mike (AJ4GU), Rudy (KA8LAD), Winford (W8XC), Dan (W4DED), Nancy (K4NEP), Ken (KM4HOS) and me. Bravo Zulu...



Photo by Buzz Kutcher

73,
Buzz, K3GWK

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**FEBRUARY
2019**

Vol 7, No 2

Amateur Radio Club of Butts County**February 4, 2019****Meeting Held at Butts County Fairgrounds - Jackson, Georgia****Meeting Began at 1904****Meeting Concluded at 2040**

Attendance at Meeting: Mike Crowe; David Burnham; Buzz Kutcher; Nancy Phillips; John Lipscomb; Brent Strite; Rudy Williams; Darlene Ragon; Glenn Wyatt; Mel Mosier; Ken Wallis; Michelle Burnham; Pete Acevedo; Tyson; Jarrod; Elaine Stachowiak; Tony Strite; Dan Darsey; Winford Barnes; Whit Smith.

Office of Homeland Security/CERT: Director Glen Goens No report tonight as Glen wasn't in attendance.

Net Manager's Report: Ken Wallis Five weekly Nets were held in January; Buzz Kutcher has volunteered to be Net Control for February. If you are unable to check in by voice on Tuesday evenings, try checking in using MT-63 digital. Our Club is in need of volunteers to be Net Control as well as more ARES members are needed. It will take a lot of manpower to staff 3 response sites in a real emergency. We need to train now while we can.

VE Team: Dan Darsey Dan was pleased to announce that two new Technician Licenses resulted from the VE session held in January. Congratulations to both new Hams!

Repeater/Technical Committee: Mike Crowe The Hospital Ham Station received a new computer and 2 large monitors from WellStar to assist our response team in being prepared to serve them in a time of need. Many thanks to WellStar for their continuing support. D-Star operators were in great demand for staffing the Red Cross shelters during the Super Bowl event in Atlanta. Coordinators had requested 3 prepared operators from our Club and we provided 6 well prepared operators. If you can please equip yourself with a D-Star radio and learn to use it. Six of our members were on 'stand-by' alert until 0200 Monday morning.

Fldigi and Winlink updates have been released, so be sure to update your software on your computers.

There will be some D-Rats training coming up for our Club members as well as Winlink training on our 2m radios. Georgia EOC is encouraging volunteers to become proficient with these modes.

Skywarn Coordinator: Elaine Stachowiak Elaine shared with Club members that this week was officially recognized as "Weather Preparedness" week. There will be a state wide tornado drill this coming Wednesday at 0900. Take time to assess your preparedness at home or your work place and make preparations for severe weather that might occur this spring.

Hospital Team and Public Health Department Team: Dan Darsey and Ken Wallis Ken reports that all 5 Health Department Nets were held successfully. The Hospital IT team thought they had the correct ports opened for using our D-Star equipment but are still working on the problem. Mike suggested that if any members need to erect or change their home antennas, now is the optimum time before the trees leaf out.

CERT Activities: David Ridgeway No report tonight; David was not in attendance.

Field Day Committee: Nancy Phillips Tonight's program will be on Field Day planning.

Membership Chairman: Nancy Phillips Nancy shared that we have 2 new potential members referred to our Club by Dell Davis. Two gentlemen taking the CW classes are planning to join our Club as well.

Public Information Officer: Buzz Kutcher Buzz said the local newspaper gave our Club's Ham Cram good coverage to peak interest for local folks.

EC Report: Buzz Kutcher Congratulations to Nancy Phillips; she has completed all courses and is fully credentialed as an ARES member! Yeah for Nancy!

Treasurers' Report: John Lipscomb General Funds: \$1435.66 Repeater Funds: \$1945.00 Total Funds: \$3380.66

Club Old Business: February 16, Tech Saturday, we will be working on the relay sites of distant parts of the county that Ken Wallis has been mapping out. Meet for breakfast at the Lunch Box Saturday at 0730 then gather at Fire Station #7 at 0900 for assignments. Buzz Kutcher suggested checking all of the designated shelter sites in the county first to see if communications can be relayed from those locations. Round two of the Morse Code class is going well.

Club New Business: John Lipscomb said he would follow up with Mark Clark concerning the Chamber of Commerce application for our Club to join that association.

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March is election time for new officers in our Club. Our by-laws state that officers can only serve 3 terms in a position. Members can check the by-laws for a description of the duties of an office. Nancy volunteered to be the Vice President again; Darlene Ragon volunteered to continue as Secretary and John Lipscomb was willing to continue serving as Treasurer. Buzz Kutcher will coordinate the Nominating Committee.

Coming Events: Publix Marathon will be held March 17, 2019. Volunteers are still needed.

Hamfest in Dalton, Georgia will be held February 23, 2019.

March 23, 2019 is the hand gun training class taught by the Sheriff's Department in Butts County. Class will begin at 0900 that day; contact Nancy Phillips for registration.

March 30, 2019 is the Women's Self Defense Class sponsored by the Butts County Sheriff's Department. It will be held at the Recreation Center at 0900. Contact Nancy Phillips for registration. Many thanks to Nancy for arranging these classes.

Nancy would like to hold a short Field Day Committee meeting before or after Tech Saturday at Fresh Air Barbeque. Brent and Tony Strite requested anyone that can assist with a presentation/display at Jasper County High School on April 20, 2019 contact them. This is a special Science, Math, Technology and Engineering event to foster interest in the sciences to our young people. They are asking for volunteers to man the booth at the school; set up for this event is at 0800 with the actual event covering 0900-1100.

Monthly Program: Comments from the Field Day preparation program.

Members need to go into Field Day with a positive outlook.

Last year we were a 4A station and we plan to do the same again this year.

We will continue to have Band Captains as they have been a successful way to manage things in the past.

This year we will have 'Shift Captains' as well. Jeff Phillips will be a day shift captain and Pete Acevedo will coordinate the night shift.

We need someone to be a 'Band Scanner' to locate areas of activity we can contact.

Points are awarded for each mode of communication so we plan to have a CW station again although located some distance from voice communications to decrease interference.

Once again we need someone to erect the heavy tarps around the pavilion to protect us from thundershowers.

We need a plywood floor for the CW station area.

Nancy would like to have a 'dry run' exercise to be held at Fire Station #7 to be sure everyone providing computers has the proper software and that connections between computers can be obtained.

Nancy asked Mike Crowe if he would again provide the filters needed on the band connections.

Nancy encouraged every Club member to sign up for at least one hour on the schedule to make contacts. She encouraged us to give just 10% more this year than last year.

Every operator should have a logger to make recording contacts easier on the voice operator.

Nancy challenged all Technicians to make 10 QSO's; Generals to make 60 QSO's and Extra License to make 100 QSO's.

Nancy asked the Club to sponsor Justin, a 15 year old boy (who is battling lymphatic cancer) and is in the CW class, with radio equipment he can use to do CW at home.

She also suggested that we give away a Technician's study handbook to someone attending the GOTA station.

Nancy has designed a special Club tee shirt for Field Day as well as for graduates of the CW classes. The price to screen print 24 shirts would be in the neighborhood of \$206. Nancy suggested that we have a special photo taken for the Club member who make the most QSO's or the most improved member.

Pete Acevedo volunteered to be the generator captain of refueling and he and Dan Darsey will share the title of "Safety Captain".

Melvin Mosier will be designated the "Ambassador to all Visitors" for Field Day.

Mike Crowe volunteered to make the antenna arrangements.

Nancy asked that a copy of everyone's Ham Licenses be on file.

The Family Picnic has been changed to 11:30 Saturday morning so we don't have to stop contacts to prepare the picnic later in the day.

Raffle Funds Raised this Meeting: \$41.00.

Whit's Wisdom

Whit Smith - WA4VBX

Pill Bottle Usage

What do you do with an old pill bottle? Here are several ideas for you to consider.

Idea 1: When you go to the court house, or the beach, the laundry, or some other place where they have provided parking meters for you to use, they generally require quarters. If you have an old pill bottle filled with quarters, you are ready to go. The pill bottle in my car will hold \$ 8.75 worth of quarters. This should be adequate for most single applications. Then, replenish the supply later. If you plan to go to a place where you might need a lot of quarters, you should put a second pill bottle filled with quarters in the glove compartment.

When you want to prepare to pill bottle for use as a quarter container, remove the label if desired. If you are persistent, and have strong fingernails, you can sometimes remove the label completely, with a lot of effort. If you want another method, then use mineral spirits, "Goof Off", or some similar product to remove the label and glue. Be sure to use gloves when handling the solvent, have adequate ventilation, and keep away from flames.

Idea 2: If you have the type of pill bottle that has a top that will spin around and then you have to push down to

remove the top, then consider the following if you have trouble pushing the top down hard enough to remove it, or just don't want it. Take a knife and put a slit in the side of the cap of about 1/4" to 1/2" from the rim of the cap. Move around about 1/2" to 3/4" inch and put another slit in the side of the cap. You might have to do this a third time. This should allow you to remove the loose fitting cap and to use the bottle without having the "push down" top. If you don't like the top removed, simply replace the top on the bottle and continue to use.

Idea 3: If you need to remove some screws or nuts to make some repairs on an item, having one or more containers to temporarily hold them is a big help. You can use some pill bottle tops for this purpose or you could use some supplement bottle caps. If neither is large enough, get a larger size supplement bottle with a soft plastic sides. Cut the top off and trim down the sides to 3/4" to 1" from the bottom. You could use any size plastic container for this purpose. If you have some small items that you want to keep together, pill bottles with hard plastic "see through sides" are nice.

Hopefully, you can benefit from one or more of these ideas.

_ WS

D-RATS WORKSHOP

Butts County ARES will be holding a **D-Rats "workshop" March 2, 2019 at BCFD Station #7**. As usual, we will gather for breakfast at 07:30 (The Lunchbox) and then meet at 08:45 for the workshop. Interested members are asked to bring their laptop and DStar go-kit stations so we can get them set up and operating. If you don't have DStar equipment, no matter, come anyway. DStar and D-Rats are tools in the Georgia ARES Toolbox and now that there is a usable DStar repeater in Griffin, it is a tool we can access.

The D-Rats software can be found at <http://www.dstarinfo.com/drats.aspx>

Please have the software loaded, we can figure out the configurations at the session. Remember this is a workshop so we can experiment and learn. ***Don't forget your data cable and laptop!***

If you have any questions, please contact Buzz at K3GWK@arrl.net, or Mike Crowe at 770-714-7337 or AJ4GU@bellsouth.net.

Jackson Football Alumni 5K will be held on May 4, 2019

It is a **morning** event and is held in the neighborhoods around the football stadium. I think this will be our 4th time providing course communications support for the event.

190204 Net Mgr Report

We held 5 ARCoBC Trng Nets in Jan, and averaged 5+ voice chk-in's per wk, 3+ on MT-63, w/ WinLinks at 8+ weekly. Better month since the CW classes have moved off Tues nights, especially the 22nd when we had 10 voice, 6 digital, and 12 WL's!! Now THAT's more like it, esp w/ a 40 mbr club. Would be nice to have MORE participation, esp w/ the digital part of the net.

The ARCoBC still needs Net Controllers, Buzz, K3GWK has volunteer'd for this month, but we still need NCS's 'scheduled' for the upcoming months.

Lemme know if any of you would like to try the NCS slot on the net one Sunday, voice, digi, (or both) and also Winlink Net Logger and I'll be glad show you how they're done. (Reports too, if you'd like) The Net 'Preamble' (NCS script) is in the Yahoo grp files and my FLDigi 'Trng Net' macros are avail on request. I'll be glad to show you how to use 'em. Who knows, you might have some SERIOUS FUN!! and wanna do it the next wk and maybe wanna git scheduled for a whole month... (that's a HINT folks).

As a reminder, for those of you who are too far away to chk in on voice, you may be able to get in on digital so you can still participate. We usually use MT-63 2KL, ctr'd on 1500 on the waterfall. I always have my ph handy so if you're fightin' gremlins call me and we'll try to get you chk'd in.

ARES, again... we can STILL use more volunteers. We have enuf to handle the monthly/weekly testing of our 3 Response Team sites, but as y'all know, most of us are double-scheduled on the teams and we can't be at 2 places at once.

IF we have an 'event', and some of the RT mbrs are 'snow'd in' or diggin' or swimmin' out fm under their wrecked house, I doubt Butts Co ARES has

the depth and/or REDUNDANCY to handle the situation, esp if it lasts longer than 7 or 8 hrs and we need to staff 'shifts' at the RT sites...also the new EC could tag ANYBODY to be the NCS (voice and/or digital), not to mention any mobile or portable stations if needed.

"...we GOTTA be able to DO what we SAY we can do." - Mike Crowe, Nov '16 mtg

Thx & 73,
Ken, KM4HOS
Butts Co Net Mgr

190204 BCHD Report

We got chk'd into 5 outta 5 GA Health Dept Nets last month. We have 7 Response Team operators at the Butts Co Health Dept. If you're interested in helpin' us out over there, pls contact Ken, KM4HOS, for more details.

REMINDER: Most of our BCHD Response Team members are double-scheduled on other teams, and we can't be in 2 places at once if we have an 'event'. Soooo.... we could still use a couple more ARES 'volunteers' for ALL 3 of our 'permanent' Butts Co RT sites, not to mention any /P (portable) or /M (mobile) operators the new EC may need for an 'event'.

If you'd like more info or wanna volunteer for our Butts Co ARES 'krew' and/or one of these RT sites, pls see Buzz, K3GWK, for more info, your participation will be a big help, much needed, & APPRECIATED.

Thx fer yer support...
Ken, KM4HOS
yer friendly, neighborhood HD rep

NOTES FROM THE BACK ACRE

_ Buzz Kutcher, K3GWK



It's another *"Rainy Week in Georgia"*, my apologies to Brook Benton and Tony Joe White.

This weekend (February 15, 16 & 17) provided another opportunity to copy Amateur Television from space as ARISS activated the Slow Scan TV system onboard the ISS. Lots of great pictures, Chuck McCord (KK4TKJ) posted a picture that he downloaded on Saturday. As I began to put this report together RS0ISS was banging away, sending another picture.

The UHF repeater is still not connected to the Internet and the world-wide DStar system. It is not because of a lack of trying on our part. Scheduling support from the busy Wellstar IT group has been a challenge. David Benoist (AG4ZR) is still very much involved. Our UHF machine will repeat DStar or analog voice; it just can't be linked to any reflectors. Make sure you have 'Encode and Decode' CTCSS activated on your radio so you don't hear the D-STAR noise. The CTCSS tone is 131.8 Hz.

ARES Connect is now the way that monthly ARES Reports are sent to the league. Make sure you check the ARES Connect Events Calendar regularly and be sure to sign up for the activities you plan to participate in. In most cases, ARES team members can (should) enter their own hours immediately after an event is completed. (<https://arrr.volunteerhub.com/lp/ga/>) If you don't register and then report your time – you did not participate in the event and those hours of activity are lost. "If you don't log

it, it didn't happen." All of our events are still being entered and tracked in the Georgia ARES database.

Due to the failure of the event calendar and general lack of support, the BC_ARES Yahoo Group will be moving to *Group.IO* in the very near future. The move will be transparent, if you do not wish to continue receiving posts you can opt out at that time. All of the existing conversations, pictures and files will transfer to

the new site. This group email site is just one of our ways to communicate within our team.

Club dues must be paid by the March meeting. Club membership is not required for ARES but it is encouraged. Our dues support our activities. Please maintain your ARC of Butts County membership. If you are not sure of your club

member status, contact Nancy Phillips, K4NEP@arrr.net, 573-528-0697.

Thanks for all you do for Amateur Radio in and around Butts County. If you hear our new hams; Tyson (KN4RXL) and Jarrod (KN4RXM) on the repeater – say 'hello.'

That's about it from soggy Jenkinsburg Station. ([Weather Underground ID: KGAJENKI2](#))

73,

Buzz (K3GWK)

"When all else fails, ham radio works..."



RS0ISS send. Scan captured by Buzz Kutcher K3GWK

A LOOK AT COAX

_ JEFF PHILLIPS KN4FRG

This article will delve into some of those questions one might have while determining HT setup, knowledge about their first Handheld (HT), and information to increase their knowledge base. It might even serve as a reminder for other folks, as you know, when we get older our memories fade. Let us begin with what Coaxial Cable should I use?

The most popular form of transmission (feed) line used for getting signals from our HT (connecting to an external antenna), mobile, and/or HF radio are coaxial cables. There are many types to choose from and it can be confusing to choose the best one for your application. Here are a few generally used by that old/new operator.

Type	Diameter	Usage
RG-58	0.194 in	Standard cable for mobile installations. Higher loss with longer runs
RG-8X	0.242 in	Larger and lower loss than RG-58, but still convenient for shorter cable runs and jumpers - flexible
LMR-240	0.242 in	Same size as RG-8X, but can offer a significantly larger center conductor and supports better signal retention for longer cable runs (up to 150') and higher frequency use, but less flexible than RG-8X
RG-8U	0.405 in	General Purpose coaxial cable, best for long cable runs (Lower loss), not very flexible. An excellent coax for higher frequencies (VHF/UHF)
LMR-400	0.405 in	This coax is the same size as RG-8U and provides superior performance for runs up to 250'. An excellent coax for higher frequencies (VHF/UHF)

At one time, the RG series cables were military standards, but now some manufacturers use these terms very loosely. Be aware that not all vendors follow these military standards for their cables, so, choose a reputable business to purchase your cable of choice. Each of these cables will handle 100W or more below the 500 MHz at 50 ohms covering most Ham transceivers. If you are running more than 100W, ensure you check the power specification for the cable you plan to use. A good source to calculate coaxial cable specifications (performance) is the Times Microwave Systems site @ <http://www.timesmicrowave.com/calculator/?productId=121#form>.

The following two figures provide a good comparison between the type of coax that would be best for 2meter / 70cm home stations. The cable assembly performance provides the differences between the two cables. As a note, the higher the attenuation the more loss to the feedline and as you can see, the LMR-400 is an outstanding choice for a home station feedline.

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Coaxial Cable Attenuation & Power Handling Calculator

RG-58 ▼
 Frequency (Mhz) 146
 Run Length (feet) 50
 [Send Calculation via Email](#)
RESET CALCULATE

Product Performance Parameters		Cable Assembly Performance	
Nominal Attenuation	5.5 dB/100ft 18.2 dB/100mtr	Cable Run Attenuation	2.8 dB
Average Power	0.2KW	Total Cable Assembly Loss	2.8 dB
Cable Vg	66.0%	Cable Run Efficiency	52.8%
Nominal Td	1.5nSec/ft, 5.1nSec/Mtr	Cable Run Time Delay	77.0 nSec
Capacitance	28.8 pF/ft, 94.4 pF/mtr		
Typical Connector Loss	0.0 dB/pair		

Figure 1. Comparison for Choice of Cable for Higher Frequencies

Coaxial Cable Attenuation & Power Handling Calculator

LMR-400 ▼
 Frequency (Mhz) 146
 Run Length (feet) 50
 [Send Calculation via Email](#)
RESET CALCULATE

Product Performance Parameters		Cable Assembly Performance	
Nominal Attenuation	1.5 dB/100ft 5.0 dB/100mtr	Cable Run Attenuation	0.8 dB
Average Power	1.5KW	Total Cable Assembly Loss	0.8 dB
Cable Vg	85.0%	Cable Run Efficiency	84.0%
Nominal Td	1.2nSec/ft, 3.9nSec/Mtr	Cable Run Time Delay	59.8 nSec
Capacitance	23.9 pF/ft, 78.4 pF/mtr		
Typical Connector Loss	0.0 dB/pair		

Figure 2. Comparison for Choice of Cable for Higher Frequencies

Now, what is signal loss?

All coaxial cables will attenuate (the reduction of signal strength) the signal as it travels down the feedline and based upon the choice of cable, can be significant (as seen above). For example, a 3dB signal loss means that the operator will lose half of the transmit power as it propagates down the feedline. The loss applies for both transmit and receive – will get less power out to the antenna and less signal showing up on the receiver. The cable loss depends upon the size of the cable (bigger is better), the dielectric used in the cable (the insulator between the center conductor and

the shield) and the frequency of operation. As an example, consider a 100' run of cable for use at 146 MHz, which is high enough in frequency and a long enough cable run such that we will see some significant losses. According to the Times Microwave calculator, 100' of RG-58 style cable produces a loss of 5.5 dB, which means that only 28% of the power gets through the cable. (The percent power delivered is shown as Cable Run Efficiency in the calculator.) This is not good, so we would rarely (never?) want to use RG-58 for that long of a cable run. So, use the Times Microwave System calculator to try

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out different combinations of cable length, cable style, and operating frequency. But, the better the cable, usually the more costly – typically buy the appropriate cable based upon your budget. The usual first radio for a Technician is an HT, but many operators will remove the vendor's antenna and connect the HT to an external antenna.

All Ham radio HT transceivers ship standard with an electrically-shorten antenna commonly called rubber duck or better yet, a very convenient crummy antenna. Even though the antenna is handy when carrying the HT, adequate for many uses, but not as efficient as a full-sized (mobile/Home) antenna. It is nice to be able to attach a higher performance antenna when needed, such as a longer HT antenna or a mobile mag-mount antenna. So, as a reference, to attach an external antenna (mobile mag-mount) you will need to know the type connector for your HT and a jumper cable to connect to the new antenna.

We use the BNC (Bayonet Neill–Concelman) connector in a wide variety of electronic products and can be a standard connector for HTs. It is particularly convenient due to its “twist and lock” operation – easy on, easy off. As HTs became more compact, the BNC was largely replaced with the much smaller SMA (SubMiniature version A) connector.



Figure 3.
BNC Connector



Figure 4.
SMA Female
Connector
(Yaesu, ICOM, &
Kenwood)

A few manufacturers use the male SMA connector as the antenna connection for their HT. The other SMA, male SMA connector, are following the lead of some of the major manufacturers such as Motorola.



Figure 5. Male SMA Connector
(Wouxun & Baofeng)

Either gender of SMA connector works fairly well, but be cognizant of the type required when ordering accessories for your HT. Some older HAMs love the convenience of using a BNC connector for ease of connecting several types of antennas to their HT.

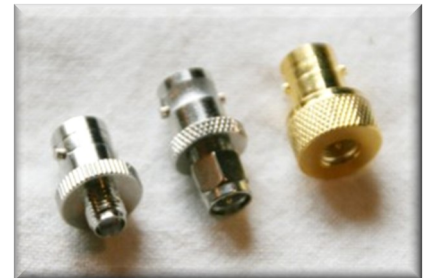


Figure 6. SMA-BNC Adapter

The adapter in the center is a common adapter for cable use, but arguably mechanically weak for adapting HT antennas. The adapter on the left adapts BNC antennas to an HT with a male SMA connector and fits snugly on the top of the HT, providing mechanical support. Similarly, the adapter on the right adapts BNC antennas to an HT with a female SMA connector. These adapters are commonly available at Amazon, E-Bay, and of course the major HAM vendors including Ham Radio Outlet, DX Engineering, GigaParts, and etc. As a new Technician, you will receive several terms from those experienced HAMs that you might not quite understand. We will explore a few.

So, what is simplex and duplex? In the amateur radio context, *simplex operation* means the radio stations are communicating with each other directly, on the same frequency without a repeater. Both stations take turns transmitting and receiving on the same frequency with no repeater or

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other device in between. Duplex operation means that a radio station transmits on one frequency and receives on a different frequency. Operating full duplex is the ability to transmit and receive *simultaneously*. Operating half duplex means having to switch between transmit and receive. The next item is repeaters.

Very often simplex and duplex operation are associated with FM on the VHF and UHF bands. If you are talking to another HAM directly, on one frequency, with no repeater involved, that is simplex operation. FM repeater operation uses two frequencies: the repeater receive frequency and the repeater transmit frequency. The repeater's job is to take the signal it hears on its receiver and retransmit it on the transmit frequency. Repeaters operate in *full duplex* mode, because they receive and transmit at the same time. The repeater user is usually operating in *half duplex*, using two frequencies, but switching between transmit and receive. Some FM ham radio gear can operate in full duplex mode (usually employing two different ham bands), but most equipment is half duplex only.

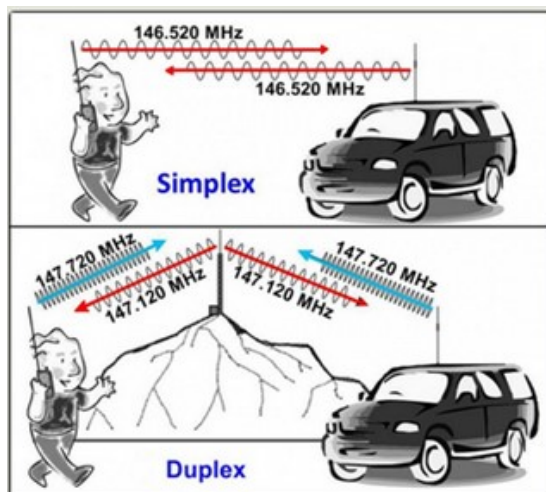


Figure 7. Examples of Simplex vs. Duplex Operations

The figure portrays the repeater station (lower image on mountain) is full duplex, instantly retransmitting a received signal. Each user's station is half duplex, unable to transmit and receive simultaneously, but shifting between transmit and receive frequencies. We refer to a repeater by the

transmit frequency, the frequency the user listens on. When the user transmits, the radio automatically changes frequency as required by the repeater's *offset* (the difference between its transmit and receive frequencies.) The repeater offset is sometimes referred to as the *repeater split*. The last topic we will explore is signal tone.

On FM VHF and higher, radio amateurs use tones to perform many functions, including activating repeaters and controlling repeaters. This can be confusing for new Technician licensees (and maybe for the old timers, too?). Many FM repeaters operate using carrier squelch, meaning the repeater keys up any time it hears a signal on its input frequency. In today's world, we have many electronic devices with digital circuitry spewing out all kinds of frequencies, just waiting to trigger a receiver. So, most repeaters use a tone to allow an operator access to it. A more controlled squelch system is called Continuous Tone Coded Squelch System (CTCSS). The idea is very simple – the FM transmitter includes a continuous tone on the transmitted audio. When the receiver (repeater) hears the required tone, the squelch opens. If there is no tone, the receiver stays squelched, no matter how strong the signal is at the receiver.

To make the system flexible, repeaters can use 50 unique tones so that different systems can use their own unique tones. (Some radios do not implement all of these tones, so check your radio manual). This tone system is sometimes used in the land mobile service to allow multiple users to share the same repeater without having to listen to the other users on the channel. Each user group is assigned its own specific CTCSS tone. The CTCSS frequencies are in the range of 67 Hz to 254 Hz. HTs, etc. send CTCSS tones any time the transmitter is on. This means that the tones will be present with the normal voice signal. Virtually all modern VHF/UHF FM transceivers for amateur radio use include CTCSS encode and decode as standard features. So, at this point, if you are planning to hit a repeater with your HT, in most cases you will need to program the radio with the repeaters transmit and receive

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EC REPORT

First, many of you may be familiar with Mike Brown, KE4FGF. Mike was first licensed in 1993 and has been the Georgia Section Emergency Coordinator since 2009. Prior to his appointment to SEC, he was the EC for Thomas and Grady counties, the DEC for the Tallahassee Office of the NWS and the Southwest GA DEC. Even though Mike lived in Thomasville, he was often seen at Atlanta area hamfests and was a permanent fixture at the state ARES meeting in Forsyth. He was the presenter for the Ham of The Year (HOTY) award. Along with his ARES duties, Mike was (for many, many years) the president of the Thomasville Amateur Radio Club. Mike died unexpectedly at his home on February 9th. Mike always had an ear available; I counted him as a friend and advisor. He will be missed. Keep his family in your prayers.

January was a busy month for us with 4 FM Training Nets, 5 NBEMS Nets and 6 ARES Operations. We put in 204 Ham Hours in January. The highlights include the HamCram and VE Session (7 Techs and 2 General Upgrades), the state ARES Convention in Forsyth and a stand-by SKYWARN

_Buzz Kutcher

resource net during the severe weather.

We operated informal resource nets during the recent ice storm; we had 11 stations check in on Wednesday (2/12) and 7 stations check in on Thursday (2/13). Thanks to all of the ARES Team members who checked into those nets. Our activity was reported to the Butts County OHS/EMA. An exercise is being planned for March. Our March team training will be a "Digital Tune-Up" session. Bring your laptop for a refresher on Fldigi, Echolink and RMS-Express. Remember our training net on Sunday evenings now starts at 21:30 GMT (16:30 EST), you can also check in to the net using Winlink2000 at WX4BCA. Dual check-ins are appreciated – got to keep those tools sharpened.

I did manage to finally work FT5ZM on Amsterdam Island and my QSO was confirmed, just 1 of the 165,000 QSOs.

Thanks for all you do ...

73,

Buzz Kutcher, K3GWK

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frequency, an offset, and a tone. Many newer HTs will now automatically set the offset based upon the frequency, but you will need to verify during HT programming.

Hopefully this article provided some information regarding questions a new Amateur operator might need to know. We explored some of the many types of coaxial cables, but the operator should determine their cable requirements for a feedline based upon their application and budget. Users should use an online calculator to verify the performance of a given coax to help determine the best one for the job. Almost all HAMS have a HT and probably at some point will attach an external antenna to add range or to hit their local repeater. Operators can use a BNC connector as a universal connection mechanism or just choose the best adapter (SMA) fitting their HT of choice. There are often terms that the new HAM might not fully understand like the difference between simplex and duplex. Simplex is when two operators are having a conversation directly and duplex are what most repeaters do by transmitting and receiving simultaneously. Lastly, repeaters provide the HT a means to extend their transmit range, but often times the repeater requires transmit and receive frequencies, an offset, and a tone that the operator must program into the radio to allow access to it.

NETS

SUNDAY:

(rev. 181001)

Metro ARES FM Net - 1st Sunday ONLY at 1600L,
WA4ASI repeater, Covington, 146.925-, 88.5 PL
KK4GQ repeater, Fayetteville, 145.210 -, 131.8 PL
KC4AQS repeater, Paulding Co, 145.805 +, 100.0 PL

GA ARES/BCECA WL Express Net - Send an ICS-213 (or regular typed msg, if unable 213) to WX4GMA and WX4BCA by 2200Z. [1700L EST, winter/1800L, EDT, summer.] Please use a Winlink RF gateway; Winmor packet, etc, if capable; otherwise, use Telnet.

GA ARES Digital Net - 2100Z [1600 EST, winter/1700 EDT, summer.] 3.583 MHz USB.

GA ARES PSK 'Traffic' Net - send an ICS-213 to WX4GMA NCS, centered on 1500 MHz.

GA ARES PSK 'check-in' Net - Even numbered months, center on 1000Hz, 'text' check-ins only and will run concurrently with the PSK 'Traffic' Net.

GA ARES D-RATS Net - 2130Z [1630 EST/1730 EDT].
Odd months, port: gaares.ratflector.com.

GA Section HF Net - 2200Z [1700 EST/1800 EDT], 3.975 MHz LSB, voice, by callsign prefix.

SE Weather Net - 2100L, D-Rats/D-Star, on
sewx.ratflector.com. D-Star Voice on REF004A.

TUESDAY:

Butts County Emergency Comm Training Net - 1930L, WX4BCA repeater, 147.285 MHz, + offset, 131.8 PL, begins with voice check-ins, followed by an NBEMS Digital Net. WL Express msgs accepted if Not sent the previous Sunday, send to WX4BCA with name, callsign, location, and whether you are on mobile or aux power.

THURSDAY:

NCRC/ARES/RACES FM Net - 2000L, WA4ASI repeater, 146.925 - & 444.800 -, 88.5 PL. WL - K4NCR. May have a 'follow on' Digital Net - MT63-2KL, centered 1500 Hz, D-Rats on
gaares.ratflector.com.

*** For other training opportunities, see the BCECA Yahoo Group website, and/or the GA ARES website for other Nets w/ days, times, freqs, protocols, etc, for your training convenience.***

ANNOUNCEMENTS

2 Special Classes

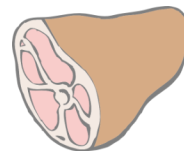
Sat, **March 23**: A **Firearms Class**, 9AM-4PM. The Firearms class requires an ID card, a handgun and 50 appropriate rounds. (Wear jeans!)

Sat, **March 30**: A **Women's Defense Class**, 9AM-Noon. For the Women's Defense class, wear comfortable clothes, such as sweats.

Please contact Nancy 573-528-0697 to sign up and get further info.

HAM HOCKS ...

Assorted ham radio parts
for sale, trade, or wanted.



Ads must have your name and a means of contact. Including a price is up to you. Deals are between seller and buyer. ARCoBC and the Editor not liable. Honesty is the best policy!

ALINCO DR-635 T/E with RT systems software.
\$275 negotiable. Win Barnes W8XC McDonough
248-421-0822 winfordb@att.net

YAESU MH-31 hand mic. Made for a Yaesu FT-817; possibly fits models 450, 857, 891, and 950. Has been checked out and works. \$30. Nancy Phillips K4NEP Jackson 573-528-0697 k4nep@arrl.net

Don't forget to sign up for attendance *and also record your hours in the ARESCONNECT HUB.*
(Home study time also counts!)

CALENDAR

FEBRUARY 2019

23 - Dalton (GA) HamFest - 8AM-2PM, Dalton FGs

MARCH 2019

2 - D-RATS Workshop, 0845, FS #7, 144 Colwell Rd

4 - Monthly Meeting, 7PM, Jackson FGs

7, 11 - Morse Code Level II - 7-8 PM, FS #7,
144 Colwell Rd

16 - Hungry Hams - Lunch Box - 0730

16 - VE Session - 0900, FS #7, 144 Colwell Rd

23 - Day at the Range - Capt Garrison - 9AM - 4PM

30 - Women's Defense - Capt Garrison - 9AM-Noon

30 - Possible Mapping Day #2

APRIL 2019

1 - Monthly Meeting - 7PM, Jackson FGs

20 - Hungry Hams - Lunch Box - 0730

20 - Tech Saturday - 0900 - Noon - TBA

MAY 2019

6 - Monthly Meeting - 7PM, Jackson FGs

11 - Hungry Hams - Lunch Box - 0730

11 - VE Session - 0900, FS #7, 144 Colwell Rd

17-19 - Dayton HamFest - Dayton, OH

JUNE 2019

3 - Monthly Meeting - 7PM, Jackson FGs

15 - Hungry Hams - Lunch Box - 0730

15 - Tech Saturday - 0900, FS #7, 144 Colwell Rd

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2019 FIELD DAY

**June 22 -23, Kersey Pavilion
Daughtry Park, Jackson**

CONTACT INFO

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