



Next Meeting:

**Tuesday, February 7, 6:00pm.
At Bullock's BBQ**

**Program: The Making of a Mobile
Ham Station**

By: Chris Bindrim, KE7GZ

Chris will present creating a mobile ham station with coverage from 1.8 - 1200 MHz. He will explain his choices and notes: "Everything is a Compromise"

First licensed in 1982, Chris holds an extra class license. He moved to Durham in October of last year and recently joined the DFMA. He loves building and experimenting.

For the newer ham, this is a "must see" program. And, for the old-timers, you can still learn new tricks. Check out the KE7GZ QRZ entry for some interesting pictures.

President's Corner

This past weekend, we celebrated the 97th birthday of my grandmother-in-law (also known as Jack's grandmother), Effie. Particularly when I wake up in the morning, it's hard to imagine living 50 more years. It's even harder to imagine everything that's changed in her lifetime.

I could go on and on about computers, cell-phones, Interstates, dishwashers, penicillin, ballpoint pens, electron microscopy, helicopters, frisbees and cake-mix, but we could just limit ourselves to thinking about changes in ham radio during her lifetime. So much has happened that we could just think about what ham radio was like when she was a child!

Keep in mind that Marconi's first test between England and Canada, in 1901, was just 25 years before Effie's birth. The first two-way transatlantic communications didn't occur until 1923. She was born in 1926, just before the formation of the precursor to the FCC. It was a very exciting time for a ham radio operator. (What time isn't, really?) In 1926, QST announced a "WAC Club," for "Worked All Continents." I wonder if they had "band continents"? The first Field Day was in 1933, when Effie was six. Coax was patented in 1931. ARES was created in

In this Issue

**Next Meeting
President's Corner
Local VE Tests are Back
RARSfest Tables?
DurHamFest Tasks
Antennas for Everyone
DFMA Meeting Minutes
Buy-Sell-Swap
Coming Events**

1932. Yagi antennas were developed in the 30s. Armstrong patented FM in 1933.

There is so much more to be learned from this era. We have several members in their early 90s and even they were too young to remember some of this. If you're interested learning more, Wikipedia has loads of information and I found a lot of this info in a History of Ham Radio on

<http://www.astrosurf.com/luxorion/qs1-ham-history.htm> Do you have other historical sources about amateur radio that you like? If so, let me know

73, Lenore, KF4PAB
DFMA President



Local VE Testing is Back!

David Snyder, W4SAR, and his team will be holding their first VE Testing Session in quite some time. The next session is the Saturday after our Club meeting, on February 11, from 10am to noon. As before the pandemic, the exams will be held at the Efland Bahai Center at 119 Maple Street in Efland. (This is also where the OCRA meetings take place.)

For people taking their first exam, they must get an FRN (FCC Registration Number), prior to taking the exam. Previously, social security numbers were accepted. If you already have a license and wish to upgrade, you already have an FRN and can find it on your license.

The testing fee, set by the ARRL VEC, is still \$15. However, when the exam is passed, the FCC will collect \$35 directly from the new ham.

The planned VE Testing Schedule is for the second Saturday of even number months at 10am. But the August session will be on the first Saturday, 8/5/23.

RARSfest Tables

In past years the DFMA and OCRA have jointly rented "club" tables to sell stuff for members and equipment

that had been donated to the clubs. Sales at RARSfest have historically yielded some very nice extra income for the clubs. RARSfest seems to occur the Saturday before Easter every year and this year it's on April 8th. It's all indoors in the Jim Graham Building at the NC State Fairgrounds. Parking is free (but there is no tailgating).

The nice thing about RARSfest is that you can drive in, next to your tables, and unload (and pick things up afterward). There is a Friday afternoon/evening period for unloading (as well as Saturday morning before opening if you want to get up really early). So if lots of stuff, especially heavy stuff is involved, it's a real plus.

The RARSfest costs break down as follows:

Individual Tickets

\$10 pre-registration (Payment must be received by April 1, 2023).

\$12 Any tickets purchased after April 1 and at the door.

8 ft. table w/2 chairs (does not include admission)
\$23 each with pre-registration through April 1. \$27 each after April 1

Historically we've gotten four or five tables between the two clubs. Note that tables are not cheap, even when purchasing before April 1st. So, if all you've got is junk, you're not going to sell most of it and even if you give it away you'll come out with a loss.

Important: when someone gives you something to take to the club table to "give away" or close to that, they should be charged for the table space.

OK, enough history and fancy advice. We need someone to head this up. Will that be you? You should have seen a mailing on OCRA-DFMA@groups.io about this.

73, Dee, KU4GC

To Be or Not to Be?

** Commitment to DurHamFest **

In the National Guard Armory, we have a possible site for DurHamFest 2023. It is still not quite certain if the financial terms will be something we can afford. But success seems possible, so I am posing the very important question to all DFMA members: Are you willing to step up and do your part to help make this happen?" DurHamFest is not a one person job or even something that three or four people can accomplish alone. It will require a lot of people to participate. I am asking each and every one of you "What are you willing to contribute?". Below I have a large list of things that must be taken care of. Some

of them can be done by one person. Most will require a team of people working together so that you each get some time off to "enjoy" participating in DurHamFest -- not just being on duty 100% of the time.

Many of you have been at past DurHamFests, but there are also quite a few newcomers, so let me start with an outline of what needs to happen. The ideal venue will have plenty of parking. There will be parking space for tailgaters who pay for a parking slot where they can sell from the trunk of their cars. There will be a very large indoor space where we have tables that are rented out to vendors to sell stuff. There will also be a Club table where DFMA members can put some of their items up for sale. (Other clubs can also rent tables for their members.) In the past we've also cooked and sold hot dogs, hamburgers, and drinks. There will also be a room for VE Testing.

Typically we have a setup session the night before. Tables and chairs are placed and some of the needed signage is put. Some kind of PA system is set up and some items for sale and related to food, etc can be brought in. Then at 8am the next morning we have a half hour for vendors to bring in their stuff and and set up. Is nice to provide volunteers to help the vendors get in things quickly. Then at 8:30am we open up to the "public" for the hamfest proper. Usually there is an initial rush and things slowly taper off. At one pm we shut down. The remaining task is to clean break down the table and to clean up so that we can get out deposit back.

OK, that was an outline. Below is a list of tasks. Look at them and figure out where you can help. If we don't get enough volunteers, there will be no DurHamFest this year. **Send email to ku4gc@amsat.org to let me know if you want a DurHamFest and you're willing to help.**

DurHamFest 2023 Tasks

Tentative Date (Saturday of Memorial Day Weekend)
5/27

Counts in parentheses are possible number of people needed

Call signs are for people who are already committed

Hamfest Chair (KU4GC)

- Overall Coordination, ARRL Registration, Site Owner Interface, Insurance

Executive/Planning Committee

- People to help in planning the overall event. DFMA Board members are encouraged to be part of this but others are welcome.

Vendor (1-2)

The Link ,,

Newsletter of the Durham FM Association

- Deal with possible vendors, rent out the tables, plan the physical arrangement of tables

Tailgating (1)

- Sell and organizes tailgating slots, plans layout
- Handle cash

VE Testing (W4SAR + 4 or more) - 10am-noon

- Plan and implement VE testing

Ticket Sales (3)

- Sell and coordinate ticket sales; do actual indoor sales; coordinate parking crew sales
- Handle cash box

Early ticket sales (1 or more)

- Go to other club meetings and sell tickets
- Handle cash

Door Prizes (1)

- Plan for and purchase door prize(s)

Club Table (6 or more)

- Collect and transport items for sale
- Interface with person wanting stuff sold at club table
- Sell stuff and keep appropriate records
- Handle cash box

Friday Night Setup (10 or more)

- Set up tables and chairs and assemble signage and other equipment

Saturday Morning setup (12 or more)

- One half hour before opening, do final signage and setup; help vendors get stuff in.

Saturday Breakdown (all hands)

- Break down and store tables and chairs
- Clean up everything so we get back our big deposit

Food (many people)

- Logistics: Purchase food, supply Grill and Propane, get coolers and ice
- Food: Prep, Cooking, Make coffee
- Sales: Sell food, relay orders, collect money)
- Possible resale: Bojangles Biscuits, Krispy Kreme Donuts
- Handle cash box

Hoover Road storage (1-2)

- Transport DFMA hamfest stuff to and from (most stuff is already in hand)

Parking (6 or more)

- Coordinate all parking; sell tickets if appropriate

Handicap Parking Signs (1)

- Make new signs and see that they are placed

Signage (2)

- Place existing signs and banners; Make new signs if needed

Publicity/Advance Mail (1 or more)

- Send email to past attendees and local clubs
- Get flyers to RARSfest and any other preceding hamfests

Print Tickets (1)

- Check stock and order more if needed

Sound System (1)

- Identify and set up sound system for indoors

Thanks & 73, KU4GC

Antennas for Everyone

- Max, KO4TV (From the August 1998 DFMA Link)

(Below is a copy of Max's next article on building antennas. More reprints of Max's articles are planned for a future edition of the Link. - Dee, KU4GC, editor)

Ramblings About Mobile HF

Hello out there, all you Codeless Techs (and all other housebound Hams, too)! If you haven't gone HF mobile yet, you are missing out on a heap of fun. What better incentive to upgrade and join the mobile brigade? Just imagine chatting with Israel, Kuwait, Ireland, Zaire, Japan, and a host of other countries from your own car! Once upon a time (back when I was young and still had my hair!), mobile operation was an ordeal consisting of building your own equipment, powering it with a surplus dynamotor, remembering to NEVER transmit for more than 45 seconds without having the engine running, lest you have to either push the car off or walk home, and using a Gonset Converter ahead of your broadcast radio to receive the somewhat noisy and crowded AM that was available in those "good old days". Nevertheless, many brave and determined Hams did go mobile, and had a great deal of funjjjjjk in the process. Nowadays, it is only necessary to plunk down a relatively small number of bucks for a radio that is scarcely as large as a decent book, uses a minuscule amount of power, and operates on all HF bands, plus, in some cases, some VHF frequencies also.

But we are still faced with that old bug-a-boo, the ANTENNA! With a quarter wave antenna ranging from about 67 feet at 80 meters to 8 or 9 feet at 10 meters, how can we ever operate efficiently from a moving vehicle? The answer is some form of LOADED antenna. To be even reasonably efficient, an antenna must be resonant at the operating frequency, and present the proper impedance to the transmitter. Many schemes have been used to resonate antennas with the mobile transmitter, with varying degrees of success.

One of the first methods was to use a loading coil at the base of the antenna. This made it resonant, and could be easily tapped to present the proper impedance for matching the transmitter. The only problem was that it was dreadfully inefficient, since the most usable part of radiation comes from the

high-current end of the antenna, which, in this case, was a coil.

Next, Hams experimented with center-loading coils, which placed the coil above the high current portion of the antenna and greatly increased the efficiency. However, a given coil was only useful over a small range of frequencies, in some cases, less than one Amateur band. Many solutions were tried; some worked, some didn't, and some worked but were so unsightly that even the most dedicated Ham was reluctant to be seen motoring around with what appeared to be something from outer space!

The first attempts at multi-frequency operation involved changing coils and re-resonating the antenna for every frequency change. Then came tapped coils, which were somewhat better, but still required stopping the car, getting out and performing an operation on the antenna. In addition, tapped coils presented other problems. If they were tapped with one end left open, they became a small Tesla Coil, and created arc-over and corona problems galore! If the tap shorted out part of the coil, the shorted portion loaded the coil just like a short-circuit loads a transformer, and the efficiency went WAAAY down!

Many Hams bought mobile rigs with built-in automatic antenna tuners, thinking that would solve the problem. NO WAY, JOSE! The tuners only matched the transmitter to the feedline impedance, and with a non-resonant antenna, the problem was as bad as ever! The following comment may be engraved in stone: For a mobile antenna to be efficient, it must FIRST be resonant, and then impedance-matched to the transmitter! If you intend to operate on one frequency only, or over a small range of frequencies, a fixed, tuned loading coil is ideal. But if you were willing to be limited to this, you might as well have stayed on CB! One notable mobileer, Don Johnson, W6AAQ, experimented and built antennas for 45 years, and finally hit upon the best solution to date: the Screwdriver antenna! This remarkable unit was described in a recent ANTENNAS FOR EVERYONE article, and has been tried and found satisfactory by hundreds of Hams. It solves the problem of resonating an antenna without either shorting coils or leaving them open. It can be adjusted by remote control from the driver's seat, and never requires sending the XYL out in the weather to change taps (or worse, doing it yourself!). It is the ideal antenna for the handicapped, as well as for the ordinary user. The efficiency is higher than any comparable antenna available. The author proved this to himself recently at a public-service event, by parking near a vehicle equipped with a

popular multi-band antenna, a 100 watt transceiver and an 800 watt linear amplifier. While working several net stations on 40 meters, the author's 100 watt mobile with a Screwdriver antenna put a consistent S9+10 signal into Long Island, Pennsylvania, northern Ohio and southern Canada. The other rig was barely readable at the other end, in spite of having checked the antenna for resonance, until the operator switched in his 800 watt linear, at which time the signals were comparable! Just goes to prove what I've always said: put the bucks and effort into the antenna instead of transmitter power, and you will have a killer mobile rig!

Until next month, best 73 & KEEP 'EM TALKING!
Max KO4TV

Durham FM Association (DFMA) Club Meeting Minutes & Christmas Dinner 12/6/2022 - KO4YAR, Secretary

President: Lenore, (KF4PAB) called the meeting to order at 7:25 pm.

Attending:

Lenore (KF4PAB), Dee (KU4GC), Charlie (NC4CD), Paul (N2XZF), Dave (NA4VY), Nancy Ballantyne, Bob (KD8FQM), Jo Ann Carr, Mark (KJ4NPF), Pat (KO4QLU), Will (KQ4CDN), Sam (KJ4VWG), Bob (KF4NTC), Renu Annechiarico, Terrence (WA4BVY), Robin Rogers, Herman (N4CH ex WB4DBB), Donna (N4RXL), Jack (KM4MBG), Pam (KO4YAR), Sue (KA4AVM), Jim (WB4YYY), Karen (KD4YJZ), Dave (W4SAR), Henry (WB4ROI), Bob (W4FK), Chris (KY4OU), Lee (WA4HYL), Becky (K4BCK), Bob (K4VO), Nikola (KQ4ESW)

A total of 31 attendees, at least 27 of them hams.

President

Lenore thanked everyone for coming and participating in the Toys for Tots toy collection and donations for the Food Bank of NC and Urban Ministries.

OFFICER REPORTS

Vice President - Bob (W4FK) Nothing to report

Secretary - Pam
Nothing to report

Treasurer - Jack
We have over 100 current paid memberships. \$575 from passing the bucket around in addition to the Toys for Tots.

Repeater Manager - Charlie

Visited the Hillsborough repeater site for a small maintenance issue that was resolved quickly. All sites are working properly. Charlie talked about the history of the club and encouraged everyone to be more active on the repeaters.

President - Lenore

We need a new Hamfest Chair. If you have any interest in working with Dee it would be great to have more than one person working on this task.

Hamfest Chair - Dee

We don't have New Year's commitments from last year. Herman just rejoined the club. Herman and Charlie were founders of the club in 1971. Jack recently came across the Articles of Incorporation from 1972, making the DFMA club 50 years old.

2023 NEW YEAR'S RESOLUTIONS

Charlie (NC4CD) - Be more active on the repeaters.

Patrick (KO4QLU) - Initiate more QSO's rather than just responding to calls this year.

Terry (WA4BVY) - Marry Robin.

Mark (KJ4NPF) - Earn General License.

Pam (KO4YAR) - Be on the radio at least 100% more.

Bob (KD8FQM) - Get an antenna up on the roof of the house so he can talk on the repeaters.

Bob KF4NTC - Get an antenna up on the roof of the house.

Dave (W4SAR) - Better field day this year.

Karen (KD4YJZ) - Talk more on the radio.

Becky (K4BCK) - Support Bob in his endeavors

Bob (K4VO) - Get a baker's dozen on the Wednesday night 6m Net every week

Paul (N2XF) - Get an antenna up.

Bob (W4FK) - 2022 New Year's resolution was to get on HF more. 2023 - More of the same and help more people get on the air.

Chris (KY4OU) - Get on Parks on the Air, learn CW again.

Sam (KJ4VWG) - Continue to learn CW.

Dave - N4VY - Get on the radio more & learn digital text.

Nikola (KQ4ESW) - New to Ham Radio - wants to be able to give back to new hams because he has had such a warm welcome into the hobby.

Will (KQ4CDN) - Make contact with someone not located in the continental U.S. and would like to learn CW someday.

Herman (N4CH ex WB4DBB) - Share the history of Ham Radio.

Jack (KM4MBG) - Learn digital voice.

Lenore (KF4PAB) - Revise the by-laws for the club. Continue to learn CW. Start listening to CW in 2023.

Dee (KU4GC) - Would like to complete his 2022 resolution - Missing two states on the 12m Worked All States. Refresh my knowledge on CW. Would like to receive and send around 20-21 words a minute.

Presentation

Herman shared the history of Ham Radio equipment and brought the only FM27 made, Issue 0001.

Door Prizes - No door prizes

Announcement: - No announcements.

Lenore adjourned the meeting at 8:00.

Durham FM Association (DFMA)

Club Meeting Minutes 1/3/2023 – KO4YAR,
Secretary

President: Lenore, KF4PAB called the meeting to order at 7:00 pm.

Attending:

Lenore (KF4PAB), Dee (KU4GC), Charlie (NC4CD), Paul (N2XZF), Bob (KD8FQM), Mark (KJ4NPF), Pat (KO4QLU), Will (KQ4CDN), Sam (KJ4VWG), Wally (WA4UJM), Jack (KM4MBG), Pam (KO4YAR), Karen (KD4YJZ), Dave (W4SAR), Chuck (KW4KZ), Keith (KQ4CXU), Henry (WB4ROI), Bob (W4FK), Chris (KY4OU), Chris (KE7GZ), Nikola (N4IKO), Brian (K4BMW), Keith (KQ4CXU), Mark (AJ2X)

A total of 24 attendees, all of them hams.

OFFICER REPORTS

Vice President - Bob, W4FK
Nothing to report.

Secretary - Pam
Nothing to report.

Treasurer – Jack
We received our first piece of mail at the new P.O. Box.
DFMA has 63 paid-up members.

Repeater Manager – Charlie

VP Bob inquired about The Boredom Breaker Net being on the 220 repeater. The Boredom Breaker Net has been added and airs between 3:00-4:00 pm. This is a very cross-country net based in Oklahoma. We pipe it in by All Star into the 224.26. They also put it on the 145.45 just to see if they could, and it worked. There are also different nets at different times.

President - Lenore

We need a new Hamfest Chair. If you have any interest in working with Dee it would be great to have more than one person working on this task.

Hamfest Chair - Dee

Dee is hoping to hear back from the National Guard Armory on Stadium Drive to see what the costs would be. The DFMA has used them for hamfests before but moved when costs got too high.

Door Prizes - Mark (AJ2X) has donated a lot of books, some will be used for door prizes. The door prizes were: 1/4" Hex bit extender, QRP Power book, and a collegiate Ham Radio 2023 calendar.

Announcement:

Dave (W4SAR) has been working on the Ham Radio License testing schedule for 2023. Testing will be done on even numbered months, first or second Saturday's, to be determined. Field Day outcomes are not available at the local level. Dave will get the national and local numbers and post the information.

Presentation

Lenore interviewed Jack on EVs and how and why he chose to purchase a particular EV.

Lenore adjourned the meeting at 8:30.

Durham FM Association (DFMA)

Board Meeting Minutes 1/17/2023 - KO4YAR,
Secretary

President: Lenore, KF4PAB called the meeting to order at 7:00 pm.

Attending Video Call: Lenore (KF4PAB), Dan (KR4UB), Charlie (NC4CD), Jack (KM4MBG), Paul (N2XZF), Bob (K4VO), Dee (KU4GC), Pam (KO4YAR), Karen (KD4YJZ), Dave (W4SAR), Bob (W4FK)

OFFICER REPORTS

Vice President - Bob (W4FK)

The February presentation will be a Guide to a Mobile Ham Shack. The March presentation will be on cell phone technology. Charlie will make calls.

Bob suggested Adopt a highway. Requirement would be a two mile stretch of road, cleanup four times per year. This will be brought up for discussion in the Club Meeting.

Treasurer - Jack

At the January meeting we had 63 paid members and have gained a few since then.

We had expenses for food for the Christmas Dinner and the club donated \$500 each to Urban Ministries and the Food Bank. Additional money donated from members at the Christmas Dinner was also paid out as directed. Total paid out was \$777.50 to Urban Ministries and \$797.00 to the Food Bank.

A motion was made and passed to give Jack authority to open a fixed term, no risk on return CD and to transfer money from DFMA existing accounts.

Jack and Charlie need to get together concerning the Crown Castle payments.

Secretary - Pam

There are a few questions still for the December minutes, but the New Year's Resolutions are typed.

Repeater Manager - Charlie

Derwin is the last remaining net control of the Possum Trot net. As the only Net Controller he can't maintain it five days a week. There was discussion about linking our repeater into the Fayetteville repeater that has the original Possum Trot net so there would be a larger pool of Net Controllers.

Durham Hamfest Chair - Dee

Dee received a call back from Sgt. Thompson from the National Guard Armory. Rental for the facility is normally \$2,500 per day but is reduced to \$500 per day for non-profit organizations. There are other charges which may yet be too high. We will need people to volunteer before we commit. Date would be May 27, 2023.

Field Day - Dave

VE sessions schedule has been worked out and notice will be put out.

Lenore adjourned the meeting at 7:45 pm.

Buy - Sell - Trade

The following equipment was donated to OCRA and Wilson, W4BOH is overseeing its disposition.

Heathkit SB-300-Simple but very effective ham band receiver. Amazing condition, \$150.

Kenwood TS-850-Solid state transceiver, the K3 of the 90s. Recently tested, GREAT receiver, HI-FI

analog audio and excellent filters, with speaker and PS, \$700.

Hallicrafters SX-99-Vintage Receiver, works but needs love. Easy to work on. \$50.

Please contact **Wilson, W4BOH** by email:

infomet@embarqmail.com

if interested or to get more info.

DOWN-SIZING SALE of RADIO & TEST EQUIPMENT

A DFMA member is down-sizing to a location that does not allow antennas for a ham station. The **items on the right** are for sale at very reasonable prices.

Email nc4cd@earthlink.net if you are interested in buying any of these items before they go on ebay.

Do you have something that you need or something you want to get rid of? There's this spot in The Link set aside just for you. Just email the appropriate info to ku4gc@amsat.org and it will be included with the next issue. Make sure to include contact info and feel free to include a picture (that is yours – please no copyrighted stuff from the web).
73, Dee, KU4GC

Web Site: dfma.org

Upcoming Events (dfma.org for details)

- 02/07 DFMA Meeting, Bullock's BBQ, 6pm
- 02/11 OCRA VE Testing, Efland Bahai Center, 10am
- 02/13 OCRA Meeting, Efland Bahai Center, 7:30pm
- 02/21 DFMA Board Meeting, virtual, 7pm
- 03/07 DFMA Meeting, Bullock's BBQ, 6pm

Sale Items

- Collins KWM-2 HF Transceiver
 - Drake TR4-C HF Transceiver
 - Drake T4XC Transmitter
 - Drake R4C Receiver
 - Drake MS-4 Speakers w/ AC-4 Power Supplies - 3 each
 - Corsair CX750M Power Supply Upgrade for Drake AC4
 - Ameritron AL-811 Amplifier
 - LDG AT-1000 Pro II Auto-tuner
 - MFJ-998 Intellituner
 - Drake TV-3300-LP Model 1608 Low Pass Filter
 - Eagle One HF Vertical Antenna
 - Bird 612 Termaline Wattmeter 80 Watt 30-500 MHz.
 - Bird 6156 Termaline Wattmeter 150 Watt 25-512 MHz.
 - Telewave 44AP Thruline Wattmeter w/Case
 - Telewave 44L1P Thruline Wattmeter w/Case
 - Tektronix TBS 1052B Digital Oscilloscope
 - Tektronix 2430 Digital Oscilloscope
 - Almost All Digital Electronics DFD4 Frequency Counter
 - Almost All Digital Electronics Precision Freq. Reference
 - Heathkit Sine-Square Audio Generator IG-18
 - Heathkit Sine-Square Audio Generator IG-5218
 - Heathkit Sine-Square Audio Generator IG-5218
 - Heathkit FET/Transistor Testert IT-121
 - Heathkit Transistor Tester IT-18
 - Heathkit Voltmeter IM-17
 - Heathkit Antenna Noise Bridge HD-1422
 - B&K Model 707 Tube Tester
 - YouKits FG-01 Antenna Analyzer 1-60 MHz.
 - ECG AM-30 Analog Multi-meter
 - Extech Digital Multi-meter
 - Micronta Clamp-On AC V-A Meter
 - Comtek COM-L1-11140 Line Isolator
 - Hamtronics 2M Receiver Preamp
 - Icom IC-V82 2M HT
 - Icom IC-U82 440 MHz HT
 - Ten-Tec 2591 2M HT
- Email nc4cd@earthlink.net**

73 - Dee, KU4GC, Editor
Lenore, KF4PAB, Proofreader

Send copy to ku4gc@amsat.org
Deadline: one week before the Club Meeting
(Images and copy: KU4GC or as credited)
© Copyright 2023 Durham FM Association, Inc.

New DFMA Mailing Address
The DFMA has a new mailing address. Please address any mail you have for the club to:
Durham FM Association
9169 W State St #644
Garden City ID 83714