

F.C.A.R.C. Inc.
P.O. Box 773
Greenfield, MA 01302



FIRST CLASS MAIL



THE COMMUNICATOR
THE COMMUNICATOR

June 2019

Upcoming Events

- *Jun 8* Sat 8:00 am **Breakfast**, Denny's; 10 am
- *Jun 10* Mon 6:00 pm **E-Board**, 7:15 pm **Elections & Annual Meeting**, GCC East Building Room 110
- *Jun 22-23* Sat-Sun **Field Day** Setup starts at 8 am Sat, Poets Seat
- *Jul 6* Sat 8:00 am **Breakfast**, Denny's; 10 am
- *Jul 8* Mon 6:00 pm **E-Board**, GCC East Building Room 110

Our June 10th meeting is our general business meeting, we will not have a speaker. But we will have our annual election.

May 2019

Secretary's Report From Anne N1YL

FCARC E-Board Meeting May 13, 2019

E-board Members Present: Aaron, Al, Howard, Ron, Erica

Others present: Anne, Keith, Jeanne

Meeting started 6:00 pm

1. Nominating chairman appointed by e-board: Keith Rowley. Members to send nominations for Vice-President and Director to Keith prior to the June election meeting.
2. Sadly we note the passing of Dick Burnham, AC1L. Our latest silent key.
3. Picnic date May 25, 2019
 - Aaron agreed to obtain food (burgers, turkey burger, hotdogs, rolls, condiments, ice, drinks inc single use waters) E-board allocated up to \$125 for food.
 - Al has reserved Leyden picnic area and will get the propane refilled. E-Board allocated up to \$125
 - Al asked for volunteers to put up signs. He has templates. No-one jumping at opportunity. To be determined.
 - Ron to get club supplies out of storage and bring them. This includes paper products, tablecloths (Barbara provided last year), and one large cooler
 - Keith will bring Al's radio. Aaron and Al will both bring antennas for a club picnic station.
 - Keith will return fox box to Al for charging. Fox hunt will happen.
 - Table space will be available for swap, trade, or sale of radio equipment.
4. Club president will be public service co-ordinator.
5. Event planning with early sign up sheets for summer events to be available at Picnic. Mission and coordination for each event need to be outlined asap. Bridge of Flowers, D2R2, Will Bike for Food, Triathlon, Green River Marathon More discussion and planning needed.
Chris in email noted that more volunteers are needed to help set up and take down public service events.
6. Aaron, Keith, and Anne setting will be setting up a small GOTA station at Boy Scout Camporee. We will be on the air on Sat May 18, 2019 1-3pm. We hope some club members will have their radios on. Jeanne agreed to 2 meters.
7. Field Day Planning.
 - Al wrote to get permission to use the high school call sign KB1MSU for the GOTA station.
 - We cannot use the AC1L call sign for field day. Possible alternatives discussed. We may use Al's call sign this field day but will investigate an alternative call sign in the future. If family members do not seek AC1L for their use we may ask to obtain it for the club honoring Dick.
 - Al has made a copy of the field day packet. Hopefully he will distribute one for each station at the picnic.
 - Radios for field day: IC738 for SSB, TS590 for GOTA and Al working to clarify radio to be used for CW. Al has consulted Al M. Computer for GOTA logging and monitor (loaned by Aaron) for SDR to be brought by Anne. Aaron will also provide an older laptop for SSB logging.
 - Aaron will bring tent used for field day side band station and may bring other tents.
 - E-board approved \$110 payable to Al for porta potty. Lock and keys to be provided by Aaron. Al to arrange for porta potty as company we worked with last year worked well. Lock will be brought by Aaron

and used as needed.

- Buddy system will be used during Field Day. SSB and GOTA
 - Buddy system discussed for all radio events to protect members and the public. This will avoid many challenging situations and is essential when working with children. This is just good practice!
 - Anne to forward log summaries from Field Day examining interference in 2018 that AI completed several months ago to e-board
 - Field Day set up to be completed by noon this year so we can check for interference before Field Day event begins. All stations to have 2 meter radios in place for entire field day to contact other stations in case of interference.
 - External ATU needed for Field Day SSB station because of use of band pass filters. AI lending his LDG.
8. VE session to be held on May 27, 2019. At least one person signed up. Emails to be sent to all FCARC license students in the last year. AI proposed asking Jeff to do 4 testing sessions per year because new Laurel VEC system worked so well and licenses can appear within the FCC in as little as an hour. Laurel VEC is consistently faster than ARRL VEC at this time.

Meeting Adjourned at 7:30 pm

[Editor: My special thanks to Anne for taking minutes]

News, Activities & Articles

Hello, we are looking for some volunteers to help with radio communications for a foot race this weekend. The location is Chesterfield Gorge. Cellphones do not work in the location so radios will be used. If you are interested in helping out, contact -

Jeremy@sjplive.com

CONVERSION FROM dB_{mv} TO dB_m - Submission by Leon Small

To a person with limited experience dealing with logarithms the derivation of a constant which will enable the conversion of one system to the other may seem somewhat complex. This stems from the fact that a dB_{mv} is referenced to 1 millivolt (.001 volts) and dB_m is referenced to 1 milliwatt (.001 watts). In order to convert from one system to the other we must use either watts or volts, we cannot use both in the derivation of the constant. This is made easy by the fact that there are two formulas that relate power and volts and one can be expressed in terms of the other.

The conversions below are for 75Ω and 50Ω impedances. Remember, the term “dB” is simply a ratio, a pure number, and is not referenced to any level or point. The term “dB_{mv}”, or similar terms, are referenced to a level or a point.

The two equations are: (1) $P = I^2R$ AND (2) $V = IR$ (Ohms law)

Please note, common logarithms are being used, that is, Log to the base 10, (Log₁₀). To save key strokes the term “Log” will be used to represent “Log₁₀”.

Using the basic formula for logarithms we obtain:

$$(3) \text{ dBmv} = 20\text{Log}(V_{\text{out}}/1\text{mV})$$

and

$$(4) \text{ dBm} = 10\text{Log}(P_{\text{out}}/1\text{mW})$$

combining equations (1) and (2)

we obtain

$$(5) \text{ PR} = V^2 \text{ and } (6) V = \sqrt{\text{PR}}$$

taking equation (3) rearranging terms and taking the anti log of both sides we get

$$10^{\text{dBmv}/20} = V_{\text{out}}/1\text{mV}$$

$$(7) V_{\text{out}} = (.001\text{V})10^{\text{dBmv}/20}$$

Applying the same technique equation (4) we get

$$10^{\text{dBm}/10} = P_{\text{out}}/1\text{mW}$$

$$(8) P_{\text{out}} = (.001\text{W})10^{\text{dBm}/10}$$

substituting for power (P) and (V₂) in equation (5) and we get

$$R(10^{-3})10^{\text{dBm}/10} = (10^{-3} \times 10^{\text{dBmv}/20})^2$$

$$R10^{\text{dBm}/10} = (10^{-3})(10^{\text{dBmv}/20})^2$$

$$(R/10^{-3})10^{\text{dBm}/10} = (10^{\text{dBmv}/20})^2$$

$$\text{Log}(R/10^{-3}) + \text{dBm}/10 = (2)\text{dBmv}/20$$

$$(10)\text{Log}(R/10^{-3}) + \text{dBm} = \text{dBmv}$$

$$(9) \quad \text{dBmv} = \text{dBm} + (10)\text{Log}(R \times 1000)$$

for dBm = 0 & R = 50 Ω

$$\text{dBmv}_{50\Omega} = 0 + (10)\text{Log}(50 \times 1000)$$

$$\text{dBmv}_{50\Omega} = 47$$

therefore

$$\text{dBmv}_{50\Omega} = \text{dBm} + 47$$

for dBm = 0 & R = 75 Ω

$$\text{dBmv}_{75\Omega} = 0 + 10\text{Log}(75 \times 1000)$$

$$\text{dBmv}_{75\Omega} = 48.75$$

therefore

$$\text{dBmv}_{75\Omega} = \text{dBm} + 48.75$$

BELOW IS A SOME WHAT DIFFERENT APPROACH TO THE SAME CONVERSION.

APPLYING EQUATIONS (3) AND (6) WE HAVE:

$$\begin{aligned} \text{dBmv} &= 20\text{Log}(v/1\text{mV}) \\ &= 20\text{Log}(\sqrt{PR}/1\text{mV}) \\ &= 20\text{Log}(\sqrt{PR}) - 20\text{Log}(1\text{mV}) \\ &= (20/2)\text{Log}(P) + (20/2)\text{Log}R - 20\text{Log}(1\text{mV}) \\ &= 10\text{Log}(P) + 10\text{Log}(R) - 10\text{Log}(1\text{mV})^2 \\ &= 10\text{Log}(P \times 1\text{mV}/1\text{mV}) + 10\text{Log}R - 10\text{Log}(1\text{mV})^2 \\ &= 10\text{Log}(P/1\text{mV}) + 10\text{Log}(1\text{mV}) + 10\text{Log}R - 10\text{Log}(1\text{mV})^2 \\ &= \text{dBm} + 10\text{Log}(1\text{mV}) + 10\text{Log}R - 10\text{Log}(1\text{mV})^2 \\ &= \text{dBm} + 10\text{Log}((1\text{mV}/(1\text{mV})^2) + 10\text{Log}R \\ &= \text{dBm} + 10\text{Log}(10^3) + 10\text{Log}R \\ &= \text{dBm} + 10\text{Log}(R \times 1000) * \end{aligned}$$

* THE RESULT IS IDENTICAL TO EQUATION (9)

√---INDICATES THE SQUARE ROOT OF A QUANTITY

LS (2013) N9LRS

There will be a Skywarn training at the Charlemont Elementary School on: 3 June 2019, during 1900 - 2130 hours.

Skywarn is a program of the [United States' National Weather Service](#) (NWS). Its mission is to collect reports of localized [severe weather](#). These reports are used to aid forecasters in issuing and verifying severe weather watches and warnings and to improve the forecasting and warning processes and the tools used to collect meteorological data. Reports are also used by local [emergency managers](#) and [public safety](#) officials.

Date: Mon Jun 3 2019

Time: 7 PM - 930 PM

Location:

Hawlemont Regional Elementary School
10 School Street
Charlemont, MA

Trainer: NWS Meteorologist & Amateur Radio Coordinator. Registration is required via Eventbrite at the following link: <https://www.eventbrite.com/e/skywarn-training-class-charlemont-ma-tickets-59696937146>

The FCARC Apparel Store has been reopened for a limited time. Place your order online by or before June 7th and select "Pickup" to receive your order at Field Day, June 22nd. We look forward to seeing many people wearing club gear for our big event! Don't forget that you now have the option to display your name and call sign on your new FCARC gear.

The FCARC store is live now. Please check it out: <https://stores.inksoft.com/fcarc/shop/home>

Email Anne at N1YL@arrl.net if you have any questions or you would like to arrange a different pick up location.

Keith, Anne and I attended the Boy Scouts camporee. We have a few pictures, the event was a big success with a HF station to get on the air, and handheld radios to talk to local people.



My thanks to Keith and Anne for their quick action and willingness to do an event on short notice.

Aaron – KC1CXX

We had our club picnic last weekend, and with a very good attendance below are just a few pictures.



Aaron KC1CXX

Dick Burnham AC1L, SK

AI - N1AW

Richard Burnham died on May 10th. Dick, AC1L, was a mentor to me and I presume to many others. He held several offices in the FCARC over the years, including Secretary, Newsletter Editor, and several others. I was surprised when he told me he was never Club President, which he thought was a good thing.

Dick was in the Class of 1938 at Greenfield High School. In the old GHS building there used to be a row of plaques with information about notable former students, faculty, and staff. These were on the wall in the main hallway, outside the school office. When I was working for the Greenfield Schools long-time volunteer GHS Secretary Betty Nee asked me for some information about Dick for a plaque about him, as she knew I was affiliated with the FCARC. Here is the text, as it finally appeared:

RICHARD C. BURNHAM

Class of 1938

Richard C. Burnham graduated from GHS in 1938, and went on to the Chicago School of Aircraft Instruments and then three years in the U.S. Army Air Force. He worked at Farr's Garage, Chauncey Wing & Sons and at Bete Fog Nozzle, Inc. for the past 61 years.

Richard has been married to Mildred Turner (also Class of 1939) for 65 years and they have three children. Carol-Class of 1965, Dale, Class of 1968 and Margo, Class of 1971.

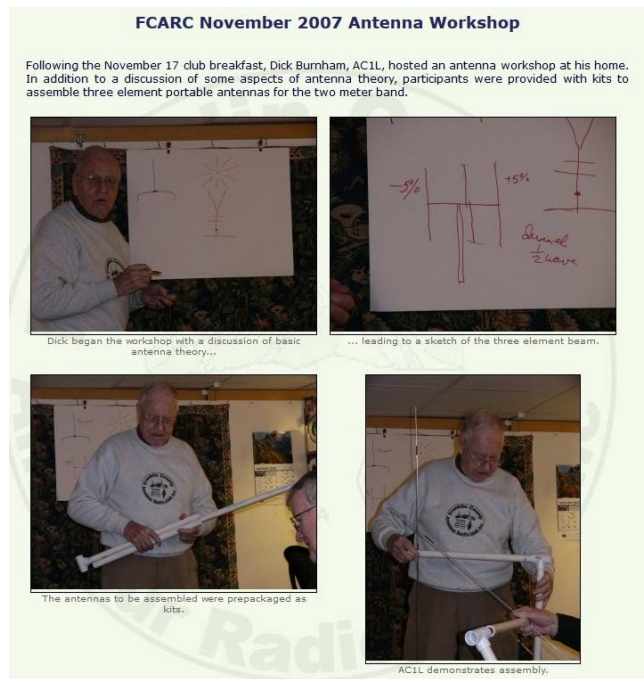
While Richard was in high school he was the Student Manager for the Baseball team and some of his cherished memories were traveling with the team. At graduation he was designated Class Secretary, a position he still maintains. As an only child, he felt that the daily interaction with classmates was very important. His favorite class was Social Studies. He was the only one who regularly read the daily newspaper. His favorite teacher was Mrs. Nichols (wife of Coach Ump Nichols). She let him sort things out and he went from a first quarter mark of "D" to a last quarter mark of "A".

Richard has six U.S. Patents as well as one each in Canada, Germany, and Sweden. These designs bring income to our local economy each year.

He has been an Amateur Radio operator for many years and taught students Morse code. When I asked my brother (Class of 1958) if he remembered Richard; he said "Sure, he taught me Morse Code when I was in Sea Scouts." Richard is proud of having been able to communicate with thirty countries from his home using a three watt radio. He has been an active member of the Franklin County Amateur Radio Club, and served in several leadership roles including editing the group's newsletter. Ham radio is a technical hobby, and he has been a mentor to many younger hams.

Richard's advice to high school students is to graduate and keep going!

The club used to hold E-Board meetings in Dick Burnham's well-furnished neat basement. Otehr events also took place there. One that is memorable to me was a Saturday session in which a number of club members participated in constructing simple two meter beams, using materials and plans supplied by Dick. The construction phase was preceded by a short lecture on the theory of Yagi-type antennas. Here is an excerpt from a web page with pictures of that event:



AI - N1AW

<http://www.franklincountywastedistrict.org>

Please take note everyone, of the above website link for the **Franklin County Solid Waste District**, which is officed at this address
50 Miles Street, Greenfield, Mass. 413-772-2438

Miles Street is a small, short side street, right off of main street in downtown Greenfield right across from the Greenfield Copy Cat Center. The reason I bring this up, is because after being a Ham for a number of years, I have acquired a number of dead rechargeable batteries for 2 way radios as well as cordless power tools. I called my local DPW office and they referred me to the Franklin County Solid Waste District office at 50 Miles Street. I called that office and spoke with a woman who was very helpful. All rechargeable batteries, Ni-Cad, Nickel Metal hydride, Lithium Ion, and variations of those, including rechargeable AA, AAA and rechargeable button sized batteries, can be properly disposed of at 50 Miles Street, as well as most, Not All, but most local transfer stations. All rechargeable batteries must be in

individual plastic ziploc type sandwich bags or wrapped in plastic and tape sealed. Maybe we as a club can collect up oldbatteries perhaps Field Day and put batteries in a common box, and take the batteries down to 50 Miles Street.

Mark Your Calendar: SATURDAY SEPTEMBER 21ST 8:30 AM - 3:30 PM Located at Greenfield Community College

FRANKLIN COUNTY ANNUAL HAZARDOUS WASTE COLLECTION DAY

Do you have old paints, hazardous chemicals, paint thinners and strippers, pesticides

Paints: Lacquers, Stains, Oil Based Enamels and Stains, Enamels, Urethanes, Marine Epoxy paints. must be separated from Latex and Acrylic latex paints.

It is requested that Latex based paints have kitty litter or a latex paint hardener added to the paint to harden the paint and then dumped into a Latex paint container. All of the other type paints must be boxed seperately and you will be directed as to what to do on Sept 21st.

All paint thinners, Lacquer thinner, strippers (strypeez), Benzene, as well as Pesticides must be in closed containers with chemical labeling.

Check you garage, basement and locate hazardous waste and be ready for Septemer 21st at GCC

Rev. Dr Richard R.Stewart ThD/PhD KB1NOX

Upcoming Ham Fests and conventions:

NoBARC Hamfest

Saturday Aug. 17, 2019

Bowe Field (Adams Agricultural Fair Grounds)

Right off of Route 8 in Adams, Ma.

Boxborough ARRL Convention

September 6, 7, and 8th in Boxborough, Massachusetts

THE COMMUNICATOR is an informational publication for members of the Franklin County Amateur Radio Club. Officers: President: Aaron Addison (kc1cxx@arrl.net), Vice President: Joe Henefield, KB1WVO (joehenefield@comcast.net), Treasurer: Howard Field, N1LUP (howfield@comcast.net), Secretary: Chris Myers, KB1NEK (camyers1@verizon.net), Director: Belle Dyer, KB1NOG (bdyer582@juno.com), Director: Ron Niswander, K8HSF (reniswander@gmail.com).

This is your newsletter! Amateur radio information of general interest, club member project descriptions and doings, radio applications to other activities, corrections, or suggestions are all welcome. Individual submissions make for variety! We need more writers! Send submissions to: Jeanne A. Dodge, KC1DCQ (j.anndodge@gmail.com).

Back issues of the Commmunicator are online at <http://www.fcarc.org/commun.htm>