Field Day Operations Plan

22 – 23 June 2019

Billerica Amateur Radio Society
Billerica CERT

K. Caruso
Field Day Chairman
04 June 2019
Rev. 2.0

Contents

1. Overview and Objectives

Billerica Amateur Radio Society is looking to capitalize on an offer from the Billerica Community Emergency Response Team (CERT) to join resources and execute an operation from the Billerica CERT barracks.

The new site offers many advantages as well as some challenges.

The initial thinking is a 2F operation. Including a VHF/UHF station and a talk-in would require 4 full station setups. Temporary station deployments, E.G. Satellite, would be welcome upon volunteer interest. Advanced modes such as FT8 would also be welcome upon volunteer interest.

On the other hand, we should consider using one of the main stations as essentially the GOTA station (but without the extra bonus points). The overall operation should encompass the goal of training new and less-proficient operators, with emphasis on providing chair time to accomplish this.

This plan for Class 2F includes 3 separate stations as follows:

Table 1—Station Topology

Station	Primary	Secondary	Antennas	Band Captain
HF 1	20M	40M/ 15M/10M	Triband 20 – 10m beam;	WO1N
HF 2	40M	80M	Open Wire Dipole	TBD
VHF	6M->	2M	Rotatable beams + verticals	TBD
Talk-In	2M	N/A	Vertical	N1HTS
Satellite				TBD

The Class 2F site will be at Billerica CERT barracks, 67 Alexander Rd, Billerica, Ma

https://www.google.com/maps/place/67+Alexander+Rd,+Billerica,+MA+01821/@42.5541432,-71.2177616,17z/data=!3m1!4b1!4m5!3m4!1s0x89e3a06a68d1661b:0x4f031d2d9e1f9b36!8m2!3d42.5541393!4d-71.2155783

2 Revision History

Revision	Date	Comments
1.0	5/28/2019	Initial adapted from 2004
2.0	6/4/2019	Adds Objective Section, detail clean-up through-out, adds known committee members, adds HF Operator Schedule forms, adds Historical Appendix. Adds Table of Contents.

3 Formal Class Definition

(Class F) Emergency Operations Centers (EOC): An amateur radio station at an established EOC activated by a club or non-club group. Class F operation must take place at an established EOC site. Stations may utilize equipment and antennas temporarily or permanently installed at the EOC for the event. Entries will be reported according to number of transmitters in simultaneous operation. Class F stations are eligible for a free VHF station. At Class 2F they are also eligible for a GOTA station.

For Field Day purposes, an Emergency Operations Center (EOC) is defined as a facility established by

- a Federal, State, County, City or other Civil Government, agency or administrative entity; or,
- a Chapter of a national or international served agency (such as American Red Cross or Salvation Army) with which your local group has an established operating arrangement;

- A private company EOC does not qualify for Class F status unless approved by the ARRL Field Day Manager.

- Planning of a Class F operation must take place in conjunction and cooperation with the staff of the EOC being activated.

- Other provisions not covered are the same as Class A.

- A Class F station may claim the emergency power bonus if emergency power is available at the EOC site.
    - The emergency power source must be tested during the Field Day period but you are not required to run the Class F operation under emergency power

.

4 Site and Operational Challenges

New sites always present a few challenges most of which resolve themselves rather quickly. The operating structure is weather-proof and includes a bathroom, kitchen area and AC space.

The FD site is a bit narrower than anticipated in the areas that most of the antenna will be sited.

The portable light / generator units have 30’ telescoping masts implemented with square tubing. A challenge will be to adapt a round mast to the square tubing. Some design required. Note the mast already has manual rotational capability.

5 Overall Objective

The overall objective is to enjoy ourselves so we want to come back and try again. Setup has to be commensurate with the club demographics. I.E. I don’t see many strapping young men around to hoist up 60’ Rohn 25 towers as in the old days.

This is our first joint operation with the Billerica CERT team. We will be looking to develop a positive relationship with them.

A competitive nature creeps in on some of us and you will feel that underlying tension to a certain extent. However, we really do want as many club members to get on HF. I will personally commit to coaching you to develop an operating rhythm while using computer logging. It truly is fun and rewarding and it is what causes many of us to come back year after year.

6 Scoring Objectives

The objective will be to have HF stations capable of providing up to 40Q's / hour over the 24 hour period. I have a sense that there is not a lot of HF operating experience so expectations are somewhat tempered. We will provide the coaching for any operator that shows a willingness to maximize their contact rate.

It is still advantageous to see what other Class 2F operations have been able to do. A quick review of prior Class 2F operations follows:

Year	Call Sign	Q's	Score	Section	Comments
2018	W4MLB	1539	6338	SFL	21 participants
2017	KY4KY	1763	7614	KY	25 participants
2016	AB5ER	2200	8138	AR	75 participants
2015	KY4KY	2056	8114	KY	44 participants
2014	W5ZN	2791	9956	AR	64 participants

At an average rate of 40 QSO's per hour, over 2800 QSO's are attainable from the two HF stations. Operating as much CW or digital modes as possible can further maximize the attainable score.

With-in those setups and conditions, as Field Day Chair, I would be ecstatic to see the stations staffed all 24 hours of the event. That is 48 operator hours. Whatever score is generated out of that type of effort, I can guarantee you, will be a win for the BARS community.

We should plan on getting as many of the bonus points as possible, as the population of the two clubs has more than sufficient talent to do so. See Table 2 for responsibilities for obtaining bonus points.

Table 2: Bonus Points Functional Assignments

Bonus	Points	Responsible Party	Comments
Emergency Power	100	Power System Mgr.	Per HF station, e.g. 200 points
Media Publicity	100	Publicity Mgr.	
Public Location	100	Publicity Mgr.	
Public Info Table	100	Public Relations Hardware Mgr.	

Msg Origination	100	Traffic Mgr.	To Section Manager
Msg Handling	100 (max)	Traffic Mgr.	10 points per message up to 10 messages
Satellite QSO	100	Satellite Captains	
Alternate Power	100		E.G. QRP
W1AW Bulletin	100	Traffic Mgr.	
Educational activity bonus	100		
Site Visitation (Elected Gov't official & agency rep)	100	Publicity Mgr.	
Site Visitation (Agency Representative)	100	Publicity Mgr	
GOTA Max Achieved	0	Not planned	
Web Submission	50	Chairman	
Field Day Youth Participation	10/youth		Upt to 100
Social Media	100	Publicity Mgr	
Safety Officer	100	Safety Mgr	

5. Field Day Committee

The task of making Field Day a success rests with the Field Day committee members. Committee members will each have particular responsibilities as described in the following sections.

5.1 Field Day Chairman

The Field Day chairman's job is to gather the Field Day committee and run its meetings; to prepare and maintain the Field Day plan (this document) and to coordinate the activities of the committee members.

Ken, WO1N is the 2019 Field Day Chairmen.

5.2 Facilities Liaison

This position is formerly known as Site Manager. Typically, as long as we are operating from this site, we are best served by a person in this position who knows the "powers that be" within our host's structure.

The Facilities Liaison will advise on the Field Day site layout, gather information from other committee members concerning technical and practical constraints on the site layout, produce a site plan, and coordinate the setup and takedown activities. This specifically includes siting and setup of antennas and laying of feedlines up to each station location, as well as communicate with Billerica Town Government if necessary.

Kevin, KB1KTR is the 2019 Facility Liaison.

5.3 Power System / Safety Manager

The current plan is to use the Billerica Cert emergency generators. Billerica CERT personnel will be responsible for deployment and maintenance

We have also combined the Safety Manager's position into this function as they naturally go together. The Manager will plan for and monitor safety issues at the site. These issues include, but are not limited to, the use of climbing belts, hard hats and the types of knots used to tie off antenna masts. The Power System & Safety Manager should insure an adequately stocked First Aid kit is available at the site and should establish who on site, if anyone, is trained in first aid and CPR techniques.

Billerica CERT is Power System Managers

5.4 IT / Data Processing Manager

Computerized logging has become standard practice for all serious Field Day operations. The Data Processing Manager is in charge of specifying the software and hardware required for logging, designing the log management and backup protocols, and, in conjunction with the Operations Manager, designing and conducting training for Field Day operators. He is also in charge of gathering, backing up and merging the log files.

Jim, N1HTS is the 2019 Data Processing Manager.

5.5 Operations Manager

The Operations manager is in charge of all issues related to the operating strategy. This includes deciding what bands and modes to operate and when to operate them, where to point antennas, and any other issues of the real time operating strategy. The Operations manager will participate in operator training and will also handle the scheduling of operators.

Ken, WO1N will be the operations manager.

5.6 People Support Manager

The People Support Manager is in charge of food, including Saturday Lunch, Saturday night dinner, Sunday morning breakfast, Sunday Lunch. The People Support Manager is also in charge of coffee, drinks and water for the operators.

TBD is the 2019 People Support Manager.

5.7 Hospitality & Activities Manager

The Hospitality Manager will handle the hospitality tent, which serves as the central point for coordinating Field Day Activities and is the place for people to hang out and relax. The Hospitality manager will locate the shelter and all necessary chairs, coolers, etc and will be in charge of the setup, operation and takedown. The Hospitality Manager will also look after visitors.

TBD will be the Hospitality & Activities Manager for 2019

5.8 Publicity Manager

Publicity is an important aspect of Field Day and part of the event scoring is based on the type and quality of the publicity we gather. The Publicity Manager will insure that all steps necessary to get the publicity points (see ARRL rules) are taken care of.

Kayla, W2IRY will be the 2019 Publicity Manager.

5.9 Technical Consultant

The Technical Consultant is responsible for decisions concerning antenna design and placement, RFI control, grounding etc. This year's job is particularly challenging as we will be debugging a new site layout and much of the layout should emphasize low band operations.

Ken WO1N, is the Technical Consultant for 2019.

5.10 Technical Support

Considerable on-site Tech support is required each year. This includes Field Repair of equipment, stocking of spare parts and tools and tending to the various technical disasters that pop up on site.

TBD is the Tech Support resource for 2019.

5.11 Photographer

Although Billerica Access TV will be invited to tape our operation, still photography has its place in the organization archives. The photographer will be responsible for document all aspects of the Field Day weekend and making pictures available to club members and the press.

Kayla, W2IRY will serve as the 2019 Official Photographer

5.12 Traffic and Message Handling

The Traffic and Message Handling Manager will plan and execute the operations necessary to ensure that our effort receives maximum bonus points for messages and NTS-style traffic handling during our operations. Responsibilities also include copying the W1AW Field Day message. This person should have a working knowledge of NTS-style traffic-handling procedures and will utilise the VHF station to pass the messages.

TBD is the 2019 Traffic and Message-handling manager.

5.13 GOTA Station Managers

The GOTA is not planned for 2019.

5.14 Satellite Station Manager

The satellite Station Manager will ensure that the team gets the bonus points for operating and working a station via one of the amateur satellites, as well as educating other members and the general public about the Amateur Satellite Service. The Manager will bring or organise the equipment needed to perform these tasks.

TBD will manage Satellite operations for 2019.

6. Site and Equipment Preparation

6.1 Site Preparation

The Facilities Liaison, Technical Consultant, Power System Manager and Operations Manager will develop the site plan showing the topography of the site and the positions on the various stations, antennas, power lines, feedlines and support structures.

6.2 Staging

During the weeks prior to Field Day the antennas and supports will be staged, checked out and prepared for shipment to the Field Day site.

6.3 Setup

Ad-hoc teams will be designated for specific tasks including antenna-raising, tent setup, power distribution and radio setup. Setup will begin Friday afternoon at 1800 UTC, June 21, the earliest time allowed by Field Day rules.

6.4 Takedown

Ad-hoc teams will be designated for specific tasks including antenna lowering, station teardown and repack, tent teardown and the like.

7. Timeline

June

Friday, 24 May, 2019	Site walk
1st - 2nd Week of June	Antenna staging at K1TWF

Friday June 21, 2019 (all times local DST) (This is tentative)

0900 hrs EDT	*Convene Breakfast at Stelios to receive assignments*
1000 hrs - 1400hrs	*People and equipment and transport to site.*
1400hrs - 2000hrs	*Setup of 80M antenna, Light cows and operating center*

Saturday, June 22, 2019

0800 - 1300 hrs	Setup and Test at Billerica CERT site
1200 hrs	Lunch break
1300 - 1330 hrs	Operator Schedule development
1330 - 1345 hrs	Station Inspection
1345 - 1358 hrs	Pre-Event Pep talk
1400 - on	Operate
1800 - 1900 hrs	Dinner Available
1900 - 2400	Operations continue

Sunday, June 23, 2019

0000 - 0600 hrs	Operations continue
0700 - 0800 hrs	Breakfast, if People Support Manager is there to direct
1200 - 1300 hrs	Lunch available
- 1400 hrs	Operating event ends
1401 - 1800 hrs	Teardown, equipment and people transport

8. Equipment

8.1 Logging and Computerization

In order to insure all contacts are properly logged, that all Field Day rules are complied with, and that we will not accidentally have more than the allowed number and type of stations on the air at any one time, a number of guidelines have been setup. The following functions will be managed:

- Develop and maintain a list of all people, hams and non-hams, who participate in BARS Field Day or who visit the site. This information is needed for the message that will be sent to our ARRL Section Manager, and also to validate our claim for the 100 point publicity booth bonus. Appendix 1 contains a sample sign up form for the participants and Appendix 2 contains a form for visitors. Traffic & Message Handling Managers will be responsible for this task.

- Maintaining and distributing backup logging materials, as needed. There will also be paper logs available in case of computer problems. Assuming that the computer network is fully operational, the Station Packets used in prior years will be obsolete unless the network goes down. These materials are the responsibility of the Data Processing Manager.

- Posting of estimated scores and contacts. This is the responsibility of the Data Processing Manager.

- Talk-in on 147.72/12. The People Support Manager and Hospitality & Activities Managers will coordinate this task.

- Serve as a focal point for visitors and supply tour guides to anyone wanting to see the stations.

8.1.1 Log Management

We will use N1MM+ for all logging functions. The Data Processing Manager is responsible for all log management. Equipment pertinent to logging and networking will be defined by the D.P.M..

A Wireless or Wired network will be established. The accomplishes two goals, automatic dupe detection and redundant copies of the log are available on a laptops.

In the event of failure of any of the network nodes or the entire network, packets containing the following items will be made available:

- ❑ Paper logs and dupe sheets, with instructions
- ❑ A list of the ARRL/CRRL section identifiers
- ❑ A Band Map
- ❑ Pencils

Additionally, a copy of the rules will also be available at the location where these emergency supplies are kept.

With luck, no one will ever have to use the paper logging materials, but they will be available in case of computer failure.

8.1.2 Computer Equipment

The computers at the individual stations will be Windows laptops. There will also be a central computer used for merging and backing up individual station logs and / or checking score progress. The computers will be running N1MM+ on a networked system.

8.2 Station Equipment

The following equipment should be provided for each station. The Equipment Manager is responsible to ensure that each station is adequately equipped. It is generally assumed that the Band Captain for each station will wrangle the actual equipment used at his / her station.

8.2.1 HF Stations

- ❑ Operating Table
- ❑ Outlet Strip
- ❑ 2 Chairs minimum
- ❑ HF Transceiver.
- ❑ Power Supply, if needed
- ❑ Networked Computer (provided by Data Processing Manager)
- ❑ Microphone
- ❑ Key and keyer
- ❑ Keying Interface cable and Y-connector to key rig with either computer or key/keyer
- ❑ Dual headphone adaptor
- ❑ Fan
- ❑ Light
- ❑ Antenna tuner (if needed)
- ❑ BandPass Filters
- ❑ Antenna switch
- ❑ Coax Jumpers
- ❑ Headphones

8.2.2 VHF Station

- Operating Table
- Outlet Strip
- 2 Chairs minimum
- VHF transceiver(s)
- Power Supply, if needed.
- Networked Computer (provided by Data Processing Manager)
- Microphone
- Key and keyer
- Keying Interface cable and Y-connector to key rig with either computer or key/keyer
- Dual headphone adaptor
- Fan
- Lighting
- Coax Jumpers
- Headphones

8.2.3 Satellite Station

- Operating Table
- Outlet Strip
- 2 Chairs minimum
- VHF transceiver(s)
- Power Supply, if needed.
- Networked Computer (approved by Data Processing Manager)
- Microphone
- Dual headphone adaptor
- Fan
- Lighting
- Coax Jumpers
- Headphones

8.3 Antennas

The following antennas will be needed. The Equipment Manager is responsible to ensure that each station is properly equipped. The appropriate amount of feedline will also be provided for each antenna.

(1) 3-element triband Yagi, fixed SW, with 30 ft. towers

(1) 80m open-wire or coax-fed dipole or other similar wire antenna.

(1) dedicated 40m antenna.

6m Yagi

2m Yagi

Satellite Antennas (TBD)

The 6M/2M antenna should be on a function rotator

9. Operating Strategy

The operating strategy will be adjusted in attempt to make the best out of the deteriorating HF band conditions that will be expected in 2019. Since propagation cannot be predicted, all of the stations should have the capability to be moved up and down the bands during the day. The two HF stations will be operated in a manner that maximizes rate.

Band changes will be determined by the Operations Manager and the appropriate Band Captain. The exceptions to this rule will be the VHF and GOTA stations, where band changes will be determined by the Band Captain.

9.1 160 Meters

This band just does not generate the Q's to make it worth it for FD.

9.2 80 Meters

Eighty Meters should be active from around sunset on Saturday to several hours after sunrise on Sunday. During this period we will emphasize CW if there are available operators—otherwise SSB will be utilized when rates drop off (i.e., we've worked out the band) or CW operators are not available. The main antenna used for this band will be a dipole or other resonant antenna.

9.3 40 Meters

Forty Meters should be active for the entire 24 hours of the event and is, in fact, the "money band" for the majority of FD stations. Again, operator availability will drive the mode selection. The main antenna used is still under discussion but will likely be a resonant dipole.

9.4 20 Meters

Twenty Meters should be active from the start until around sunset. The capability to move the 20 M station down to 80M is key when the band shuts down. Twenty meters will be operated primarily from the HF1 station, using a tribander on a tower for an antenna system. The operating strategies include:

1. If 20 is completely dead, move to 80M
2. If 6 Meters has a good sporadic E opening while 2 is also active, move to 10 Meters.
3. If there is Sporadic E on 10 and 15M some time will be spent on these bands.
4. European DX is not anticipated during Sunday morning.

20 Meters should reopen near sunrise on Sunday and will be operated for the remainder of the contest with possible jaunts to 15 or 10, if propagation supports it.

9.5 15 Meters

In recent years 15M has not been opening to any great extent. We will move to/from 20m to/from here. At least one mode should be active during some of the daylight hours. Again, CW will be emphasized depending on available operators.

9.6 10 Meters

We are not expecting much activity on ten this year, but if propagation is good on 10m, we will move to this band. Strong Sunday morning Sporadic-E openings are possible.

9.7 VHF

6M/2M should be available. 6M and 2M will be emphasized. All modes will be available but we will emphasize 2M FM simplex frequencies and passing stations from band to band whenever possible.

We will also use this station to grab the bonus points from NTS-style traffic operation.

Band utilization of this station will be equipment driven (i.e., will depend on the equipment provided).. Some possibilities include:

- Scanning 2M FM simplex frequencies
- Soliciting QSO's on accessible frequencies and moving them to simplex.
- By working reverse on repeater frequencies
- By watching for Aurora (CW QSO's)
- By watching for ducting and Sporadic E.

9.8 GOTA Station

At this time a GOTA station is not anticipated

9.9 Satellite

The goal here will be to make the minimum satellite contacts to gather the 100 pt bonus. The Satellite station is a free station and as such, can remain on the air for as long as the operators wish.

9.10 Natural Power

We will gather the required five natural power QSO's early in the contest. We will again try opening on the highest open band with a QRP rig connected to the battery, then switch to the "regular" station once the rate slows. We have found that It is MUCH easier to get the minimum Q's needed for natural power this way, rather than trying to use a battery-powered 2m rig. In the Northeast, HF still rules. One of main other transmitters must QRT while this station is transmitting.

10. Operator Training

Pre-event operator training is expected. As always, the strategy is to pair up less experienced operators with seasoned OF's. To accomplish this all stations must have two sets of headphones. The best training for this style of operating remains live operating, sitting in and listening to a more experienced operator-- then diving in!

11. Special Scoring

Extra points are given for origination of a message to the ARRL section manager, for receipt of the official ARRL Field Day announcement from ARRL headquarters and for messages received and relayed. The message sent will rely on filled-out data from the form in Appendix 1.

In the past, the official ARRL announcement has contained information that affected the final score. The Traffic & Message Handling Managers will be responsible for receiving the bulletin transmission Saturday morning (special bulletins will be sent at 1400 GMT on CW and 1500 GMT SSB on both Saturday and Sunday mornings and by PSK31 at 1500 GMT Sunday).

Refer to Table 2 for Bonus point availability and which member of the FD Committee is responsible for each.

12. People Support

Coffee and cold drinks will be available during the entire time on-site—provided by the clubs. Reasonable charges will be established club-supplied food (e.g., Hamburgers and Hotdogs) to defray the cost to the club. Participants are invited to bring anything along that they would like to have for meals or wish to share with the other participants. Anyone bringing food or beverages that is not to be shared should bring their own cooler and mark the entire cooler as “private stock.” Any items in the “group” coolers or left on the tables will be assumed to be for the masses.

13. Budget

BARS has voted on a budget allocation of up to $250 for FD expenses at the June meeting. The actual expenditure usually comes in well below this figure.

Billerica CERT allocation will be proportional to the number of CERT members participating.

14. Important Numbers

Ken – WO1N 508-572-3347

Appendix 1 ARRL Field Day Participants Log

Name	Call Sign	ARRL?	ARES?

Appendix 2 Visitors Sign In Sheet

Billerica Amateur Radio Society Field Day

Name	Address (if you would desire more information)

Appendix 3 – HF #1 Operator Schedule

Time (UTC)	Operator	Comments
1800 – 2000	WO1N	HF#1 Band Captain
2000 – 2200		
2200 - 0000		
0000 – 0200		
0200 – 0400		
0400 – 0600		
0600 – 0800	WO1N	
0800 – 1000	WO1N	
1000 – 1200	WO1N	
1200 – 1400		
1400 – 1600		
1600 – 1800		

Appendix 4 – HF #2 Operator Schedule

Time (UTC)	Operator	Comments
1800 – 2000		HF#2 Band Captain
2000 – 2200		
2200 - 0000		
0000 – 0200		
0200 – 0400		
0400 – 0600		
0600 – 0800		
0800 – 1000		
1000 – 1200		
1200 – 1400		
1400 – 1600		
1600 – 1800		

Appendix 5 – Historical Club Activity

Year	Call Sign	Q's	Score	Class	Comments
1977 – 1994	No Data				
1995	WO1N	6082		5A	Nashoba Valley Ski Hill
1996	WO1N	2215	7606	3A	Tyngsboro
1997	W1TQ	2747	9886	3A	Nashoba Valley Ski Hill
1998	KY1B	1701	5172	2A	Nashoba Valley Ski Hill base (rain)
1999	W1DC	2542	9578	3A	Nashoba Valley Ski Hill
2000 – 2001	No Ops				
2002	W1ON/WO1N	2753	9806	3A	Mitre
2003	W1ON/NF1A	2448	9238	3A	Mitre
2004	W1ON/N1HY	2255	8456	3A	Mitre
2005	W1ON/N1HY	2012	8084	2A	Mitre
2006	W1ON/N1HY	2117	8434	2A	MItre
2007	W1ON/W1MJ	1558	5706	2A	Mitre
2008	W1HH/N1HY	2308	8998	2A	Mitre
2009 – 2010	No Ops				
2011	W1HH	1717	6196	2A	Mitre
2012-2016	No Ops				
2017	W1HH	226	2730	2E	Chelmsford
2018	No Ops				
2019	W1HH			2F	Billerica CERT