

Cape Cod & Islands ARES District in conjunction with the Eastern MA Section ARES Exercise #76 Scenario and Guidelines



Cape and Islands ARES

Exercise **“Winter Wipeout”**

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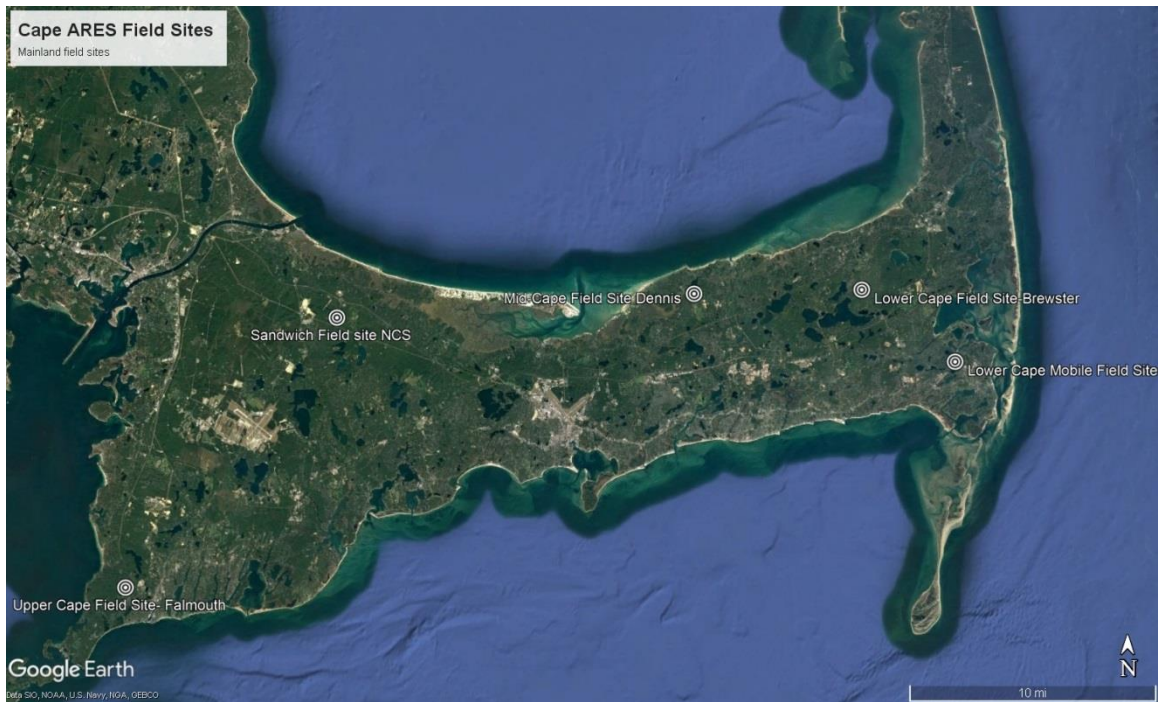
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Revised pages with this draft version:

Pages: 11-wind chill chart

Pages: 3,13-18

Cape Field Site Map-Mainland



Cape Cod ARES Zone Map



Date of Exercise

Saturday February 4th, 2023

Setup time: 8:30am

Start Time: 10:00am

End Time: 12:00pm

Operational Duration: 2 hours

Purpose

The Cape Cod and Islands District Amateur Radio Emergency Service will conduct a winter field operations exercise to test its capability in establishing communications with stations within its district and outside it under emergency conditions. The operational exercise called **“Winter Wipeout”** will test the ability of several field stations to communicate. This will also be a drill to test some of our primary stations and other ARES member home stations. The exercise will attempt to build upon the lessons learned from our past operational exercises. It is also expanded in scope to allow for the remainder of the Eastern MA Section ARES and RACES operators to participate.

Exercise Scenario

On Sunday January 29th, an intensifying low pressure area passed close to Nantucket with pressures down to 975mb. A heavy wet snow event ensued in much of MA except over the Cape and Islands where too much marine air was entrained. Much of MA was blanketed with snow amounts over 20 inches. Winds gusted to over 70mpm over the Cape and Islands with wind gusts over 60mph over much of eastern MA.

On Tuesday January 31st, a second more powerful storm moved up the east coast and stalled near Nantucket Island. This system underwent rapid deepening reaching pressure as low as 956mb. Due to a blocking downstream pattern, the surface low stalled its forward speed remaining almost stationary for more than 34 hours. With an incredible pressure gradient from a strong high in Canada, winds gusted over the Cape and Islands over 100mph for over 10 hours and over 85mph for over 15 hours. This storm brought no snow for the Cape and Islands, but the destructive winds were some of the greatest ever recorded from a non-tropical cyclone. Winds in other parts of eastern MA gusted over 80mph for many hours.

Devastating coastal flooding occurred along the east coast of MA from the historical easterly winds over 4 high tide cycles. Hundreds of structures have been blasted into the Atlantic with many people reported missing as of February 2nd.

Snowfall has reached historic heights. Boston reported 34 inches at Logan airport shattering previous records. In parts of Metro west and central MA, snowfall over 45 inches occurred. This is on top of the nearly two feet from the previous event. In western MA, snowfall over 36 inches was common.

As the staggering storm began to pull away on February 3rd, brutal arctic air began to move in with temperatures dropping below zero in almost all areas of MA.

Perhaps the most destructive winter storm in the history of the Commonwealth has occurred. Much of the highways in the Bay State are completely paralyzed in a state much worse than experienced in 1978. The destruction along the east coast from battering waves was similar or worse than in 1978. Along extreme SE MA and the Cape/Islands, wind was the killer. At least a hundred structures lost their roofs. Most roads are being cleared slowly, but the devastation to infrastructure is staggering. 3 of the regional shelters on Cape Cod have had their flat parts of their roofs ripped away. Several EOCs have structural damage. Power is completely wiped out over the Cape and Islands with not much better conditions all the way to Plymouth and New Bedford. Power restoration times will be measured in weeks.

Away from coastal areas, no one can move. Communications infrastructure in these areas was hard hit, but at least 60% of public safety and amateur repeaters survived. ARES and RACES are helping at EOCs, if they were there before travel became impossible. Others in these areas are helping from home stations on VHF/UHF and HF. Near the coast of eastern MA, communications infrastructure was hit harder with only 50% surviving as the snow was much heavier combined with the winds.

As we near the Cape and Islands, communications infrastructure faced widespread destructions. Only one of the 800 MHz towers is still operational, but it is cut off with the entire 800 MHz system being unusable. Most of the public safety 400 MHz antennas were destroyed along with all of the amateur radio repeaters. 90% of cell and internet are offline. A mobile tower was setup in Barnstable County at the MACC with a Starlink terminal allowing for some VHF Winlink despite the reduced height and efficiency. Cape and Islands ARES teams can now move around a bit, since we had no snow, but most buildings are damaged or without heat. Field teams have been set up to communicate on and off Cape by HF and some VHF operations. The Barnstable County Incident Management Team in conjunction with the local communities are trying to get those regional shelters that are still usable, up and running. Our job is to support those facilities with our field teams. This will be a storm talked about for decades, but right now we need to come through. It will be a tough grind, but we can do this.....remember that staying safe is job one!

Cape District Exercise Objectives

The objectives of this exercise are as follows:

- Deploy field operations sites to the Upper, Middle, and Lower Cape zones
- Establish contact with other ARES districts and their EOCs where possible
- Test zone relay operations with Home Stations
- Communicate with the Nantucket and Martha's Vineyard ARES/RACES stations
- Use HF 75m and 60m voice in the district and attempt contact with the off Cape HF net* See page (TBA)
- Use HF 75m NVIS for Cape District operations
- Practice using 6m FM simplex and/or repeater operations
- Allow our new people to get some operating experience and field orientation
- Provide guidance for the rest of the Eastern MA ARES section and RACES to participate and develop their own local exercise operations
- Send Winlink SKYWARN and ICS-213 message on 2M VHF FM (Optional)
- Send Winlink SKYWARN and ICS-213 message on HF (Optional)
- Send NBEMS messages on HF (Optional possible add in)
- Send NBEMS messages on VHF
- Pass NTS formatted messages on VHF FM and digitally
- Check in on Echolink New-England3 Node 9123
- Send messages by Winlink P2P on HF
- Report low temperature at your location with wind chill IF available

Operational Ground Rules

Communications Options to be utilized

Communications options for this exercise will be 2m FM, 6m FM, 440 FM UHF (mainly for field sites), HF 75M and 60M voice. There will be a tactical net on 146.580 MHz FM simplex. VHF and HF Winlink will be used (Optional). VHF NBEMS will be used. Echolink will also be utilized (Optional).

Field teams must be completely self sufficient

The ARES field teams must bring all of their own equipment and supplies. Served agency communications equipment may **NOT** be used in any way. *We only use what we have brought with us.* Teams operating inside RACES EOC's or other served agency sites are exempt, of course.

NTS formatted messaging between field sites

Message handling, on voice, will include the sending of an NTS type formatted message from each field site to the 2m VHF net control in Sandwich. The message will include numbers of operators and whether they are using battery, generator power or both. These messages will not be sent into the NTS system, but only between the field sites. Their information will be used for an NTS message that will be sent to an NTS station for inclusion into the NTS system.

NTS formal message traffic into NTS system

An single NTS formatted message will be sent by the ARES NCS to an NTS station (N1ILZ) for insertion into the NTS system for distribution to its destination. This message will be to the EMA Section Emergency Coordinator and will be sent by Winlink.

Setup and Timeline

Setup time will be 8:30am. The exercise will begin promptly at 10am for HF operations. The VHF simplex net will begin at 10:30am. The exercise will last approximately 2 hours and will end at 12pm. Timelines may be adjusted accordingly in response to turnout and early completion of primary objectives.

Operational Disclaimers

Due to the proliferation of radio scanners and the possibility of misconstrued information by the public, all tactical voice messages *that can be misconstrued* will be preceded by the words **"This is a Drill"**. Any NTS formal messages will have the words **"This is a drill X"** as the first five words in the body text. In this time of national public concern, we must make all efforts to ensure that the general populace is not misled and that amateur radio is not portrayed in a negative manner.

Operational Players and Field Units

Sandwich field site-2M Net Control site (NCS)

The Cape Cod ARES Sandwich field site will operate:

- 2m FM 175W station
- 6m FM 50W
- 440 UHF simplex
- 75M and 60M voice SSB
- VHF/HF Winlink and VHF NBEMS

The site in Sandwich will be established at the lower parking lot, of the Human Services Building. It will serve as the Net Control site and field site for medium to long range coverage. It will operate self-sufficiently.

Falmouth Field Site

The Falmouth field site (pending approval) will be in a parking lot at Falmouth Hospital. It will operate 2m FM simplex and Winlink VHF. It may also have HF operation. It will operate self-sufficiently.

Communications with the islands

Communications with the Islands will be attempted from the Net control station along with ARES home stations, field teams and any EOC stations. Home relay stations can also be employed where necessary to establish contacts by simplex. Nantucket will likely have one or two stations active. Islands communications are critical, as always. We will also accept any contact with any mobile stations on the islands.

Home Operator Stations

Home operator stations will be of value in this exercise as stations that will communicate with the NCS site and field units within their range. We will continue our test of home stations and their ability to serve as backup stations to ARES/RACES EOCs. Home stations can be the primary anchor points for our zones of operation within the district. This exercise will give our member's home stations a chance for testing of any new or experimental equipment, as well as, their emergency power backup systems. This will be an ideal time for the home operators to fully evaluate their stations performance.

Mid-Cape Field site in Dennis

The Mid-Cape field site is will be in Dennis, MA. It will have HF capability. It will also have VHF 2m FM capability and possibly HF with digital. It will operate self-sufficiently.

Lower Cape Field site in Brewster

The lower Cape field site will be Brewster, MA. It will have VHF 2m FM capability and possibly HF. It will operate self-sufficiently.

Lower Cape mobile field site Chatham

The Lower Cape mobile field site will be operated by a one or two team crew. It will operate from a high location in Chatham with an extension mast system. It will operate 2m FM, 440 MHz, and possibly 6m FM.

VHF NET Operations

Primary Tactical NET

The primary tactical NET will operate on the Primary **simplex** operating frequency of 146.580 using FM. The net will begin **30 minutes after the 10am start of the exercise** beginning at 10:30am. HF operations will begin first at **10am sharp**. This will be covered in the HF section of the document. The VHF NET may remain at 146.580 or move, if necessary, to alternate frequencies as required for the exercise.

Operating Procedure for the Tactical NET

The operating procedure for this exercise will consist of a roll call format. The NCS station will do a staggered priority and geographical call up. 1st call will be for ARES/RACES field sites. The second call up will be for any EOC stations in our district (including the Islands). The third call up will be for home and other stations by order of zones in sequence (Outer Cape, Lower Cape, Mid Cape, Upper Cape, Nantucket, and Martha's Vineyard).

Last call up will be for stations outside the Cape/Islands district. After the initial call up, NCS will call each field site and ask for any NTS messaging from those sites. NCS will take one message from each field site. NCS will then poll all field sites and individual check in stations which will read aloud those stations they could hear on the net and attempt direct contact with each of them when requested by the NCS station. This will give our operators valuable contacts and air time. We will continue to evaluate successful communications paths based on that data. All stations will keep a log of whom they can hear. Mobile units (if any) may call NCS outside of the roll call when any mobile operators feel the necessity of doing so.

As a late addition to the exercise due to weather extremes, we will be asking all check-ins if they have an actual low temperature to report from their location. If you know your wind value, you can also report your wind chill value (a chart will be on page 11). If you do not have your wind speed available, just report your temperature. This report can also be sent to KD1CY by Winlink if you have Winlink capability.

VHF Winlink operations

VHF winlink operations for the Cape and Islands district will involve the sending of a winlink ICS-213 message to the DEC WQ10 at wq10@winlink.org using the W1SGL-10 RMS station in Barnstable on 145.090mhz or the WA3SWJ-10 RMS station in Brewster on 145.030mhz. The ICS-213 will state the location of your station and the number of modes that you used in the exercise. Any field site or home station may send this message. Stations using Winlink are also encouraged to send a winlink message using an ICS-213 form to our Eastern MA ARES Section Emergency Coordinator Rob Macedo at kd1cy@winlink.org. This will contain the same information as the messages to the DEC. A SKYWARN message can also be sent to wx1box@winlink.org using the SKYWARN form in Winlink. **NOTE:** If sending within the Winlink system to another winlink address, the @winlink.org is not required.

VHF NBEMS operation

VHF NBEMS operation will occur on 145.750 using 8PSK1200F mode. Timing will be 11.45am. Stations will send out a message using flmsg. It can be a form or just a test message using a blank form.

Echolink operations

Operators with internet access are encouraged to check in on Echolink New-ENG3 9123 node. Although our scenario makes Echolink use unlikely in the area, we wanted to give additional exposure for our members to additional modes of operation.

HF Operations

HF voice operations

HF stations in the Cape Cod and Islands district will attempt contact with the Eastern MA section ARES HF nets which will likely be anchored off Cape to our north. The Net will begin at 10am sharp. The VHF Net will begin 30 minutes later at 10:30am. The reason for this change is that some members would like to participate in both HF and the VHF net. Staggering the time slot will make it easier for those operators to utilize both, especially if they are operating alone at home. Two nets on HF will likely be operating and anchored off Cape. The first will be 75m at 3930 kHz. The second will be 60m at 5330.5 kHz. Cape field sites and home stations are encouraged to check in on one or both nets. In the future we will be increasing our use of 60m for ARES/RACES operations for drills and actual emcomm. If stations wish to contact each other, they may ask net control for permission to do so. If the off Cape net control stations are unavailable, then Cape HF stations will assume the NCS duties.

75m NVIS Cape HF voice operations

There will be an attempt to use NVIS 75m voice operations in the Cape and Islands District. The frequency will be 3950kHz. This will be separate from the EMA ARES Section net on 3930 kHz. All stations are welcome to attempt contact.

60m voice operations

HF 60m operation will be first attempted on Channel one 5330.5 kHz. ***As we are a secondary user on 60m, any primary user (US Government stations) cannot have interference from a secondary user. Primary users will have priority access at all times.*** If a primary user is operating on channel one, the net will fall back and be conducted on channel four 5371.5 kHz. See frequency information on 60m in the frequency listings on page 10.

HF Winlink Operation

Stations having HF Winlink capability are free to attempt to send the messages described under the VHF winlink section by HF. A list of currently operating HF winlink RMS stations with locations and modes can be found on the winlink.org online site.

HF Winlink P2P operation

We will be attempting to pass some traffic by using Winlink P2P. More on this will be covered in the EMA section of the document.

6m Mt. Wachusett repeater operations

A voice net on the 6m Mt. Wachusett repeater will be established. More on this topic is in the EMA section of the document.

Problem Solving Situations and Improvisation

Unexpected situations

There will be one or two unannounced problem situations in the exercise. This will require the operators to improvise and think “out of the box”. These situations will enhance our ability to adapt to rapidly changing conditions. They will occur without notice, so be prepared to act quickly.

Incident Command Structure (ICS)

ICS functions will be assigned before operations begin at the site. An Incident action plan will be created, if time permits, and distributed for all operators participating. We shall continue to use the ICS in future exercises in order for us to become knowledgeable in operating under this system for served agencies.

Critique and Evaluation of the Exercise

We will have a meeting to critique and analyze the exercise no later than 15 *days* after the exercise. All participants should bring their notes and observations for evaluation by the group. All exercises will produce information that could be useful to future operations. Even seemingly small details can prove valuable to our training and development.

This is an *Advanced* Level Exercise

Although CCARES has had some multi-site large exercises in the past, this will be an advanced level operations drill rivaling some of the earlier ones. It could be technically demanding on the field sites.

Cape-Exercise Frequency Usage

Primary Tactical NET: 146.580 Primary FM *Simplex*

Secondary Simplex 2m: 147.465 FM Simplex

440 MHz simplex: 446.000 (see the section part of the document on 6m repeaters)

6m FM simplex: 52.540 MHz

Primary 75m HF Operations: 3930 kHz (LSB)

Primary 60m HF Operations: 5330.5 kHz (USB), fall back to 5371.5 kHz if needed. (See page 8). Note that newer HF radios that have 60m as a standard feature often have the frequencies displayed as channelized (center frequencies) whereas radios that have been modified for 60m operation often display the dial frequencies. Power limit is 100 watts ERP.

Center	'Dial' Frequency (USB)	'Unofficial' Channel Designation
5332.0 kHz	5330.5 kHz	Channel 1
5348.0 kHz	5346.5 kHz	Channel 2
5358.5 kHz	5357.0 kHz	Channel 3
5373.0 kHz	5371.5 kHz	Channel 4
5405.0 kHz	5403.5 kHz	Channel 5

VHF Winlink: W1SGL-10 RMS station on 145.090 MHz Barnstable.
WA3SWJ-10 RMS station on 145.030 MHz Brewster

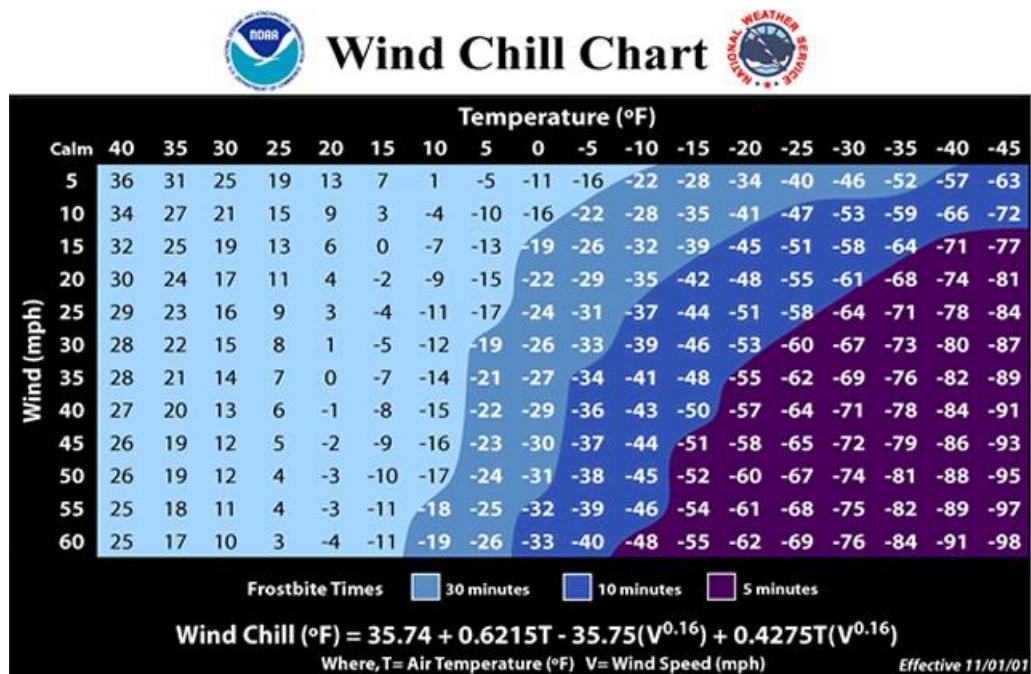
HF Winlink: See www.winlink.org website

Echolink: New-Eng3 9123 node

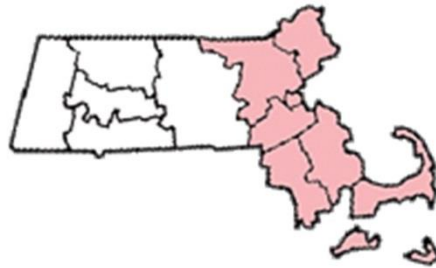
Local Cape District NVIS 75m HF: 3950 kHz (LSB)

VHF NBEMS: 145.750 Mhz Mode 8PSK1200F

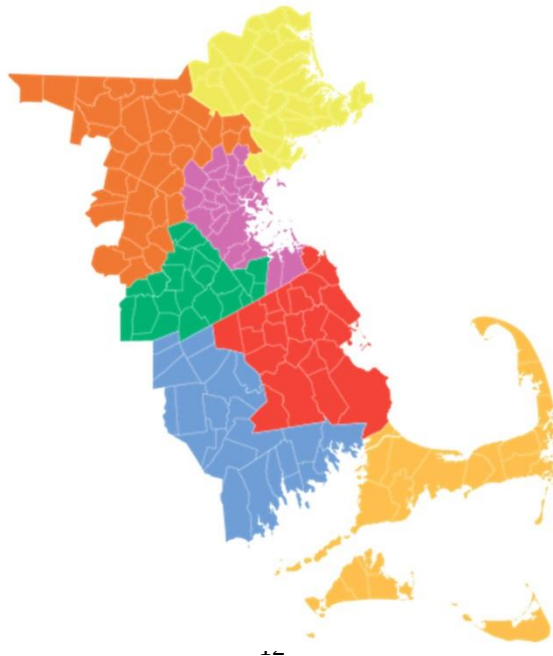
HF Winlink P2P: see the section of the EMA part of the document



Eastern MA ARES exercise participation



Eastern MA ARES Map



Although the primary focus of this exercise design is for the annual Cape and Islands ARES District Winter exercise, The Eastern MA section ARES likes to take advantage of any training and exercise opportunities. The scenario was left quite broad allowing for many local and district based emcomm groups to develop plans for their own participation. You are free to use any of the operational modes listed earlier in the document or add your own as needed. Some basic objectives are listed below. These are not all requirements. Groups may use what works for them.

Section Wide possible objectives

- Simulate the activation of shelters in your area
- Simulate the activation of EOC stations in your area
- Establish and conduct a tactical net on simplex 2m FM/ repeater for your group
- Simulate contact with any Town EOC RACES stations
- Establish contact with other ARES districts where possible
- Establish an HF 75m and 60m voice net for all of MA (and potentially other areas)
- Pass an NTS type message on VHF 2 meters and/or 440mhz UHF
- Pass a SKYWARN and/or tactical message on voice 2 meters and on the HF net
- **Optional:** Pass a SKYWARN Severe weather report form using VHF/HF Winlink RMS to wx1box
- **Optional:** Pass an ICS-213 message form on VHF/HF Winlink RMS to kd1cy
- **Optional:** Send messages to other stations by VHF/UHF Winlink P2P if you have no HF digital or simply want to practice Winlink locally
- **Possible Optional add in** Send messages locally by VHF and/or HF NBEMS
- Check in on the NEW-ENG3 9123 Echolink node
- **Optional:** Attempt HF Winlink P2P messaging
- Report your low temperature (and wind chill if you have it) at your location by VHF/UHF voice or Winlink

VHF/UHF operations

Local ARES or RACES groups are free to determine their own local modes of operations for this exercise and inclusion in this document.

6m Mt. Wachusett repeater operation

In this exercise, a voice net will be set up on the 6m Mt. Wachusett repeater. The frequency is 53.310 MHz. Note that the shift is a **minus 1 MHz offset** with a PL encode of **71.9 Hz**. Any station in the section is welcome to try to hit this repeater for the purposes of this exercise.

HF Operations

HF nets are to be set up on 75m and 60m. They will run for the duration of the exercise. There will be an increasing use of 60m in section exercises. 75m operation will also still occur to ensure that those without 60m can still participate.

Digital operations

Digital modes may be used as an optional activity by any group in the section. You can use your own modes and frequencies in addition to the Winlink operations.

Section HF Winlink Operation

Stations having HF Winlink capability are free to attempt to send the messages described under the VHF winlink section by HF. A list of currently operating HF winlink RMS stations with locations and modes can be found on the winlink.org online site and in the Frequency Usage section of this document.

Section HF Winlink P2P Operation

HF Winlink P2P (Peer to Peer) operations will be available as an optional section-wise activity. Target stations will be monitoring for Winlink P2P traffic from 11:00AM to Noon.

Remember to signify the message type as Peer to Peer or the transmission will fail. **In the Enter a New Message window, choose Send As: Peer to Peer Message.**

A standard Winlink check-in form will be used for the message being sent. **In the 'Enter a New Message Window' Select Template, Standard Templates, General Forms, Winlink Check In.txt. Be sure to Enter "To:" as the callsign of the Target Station you are sending the P2P message to.**

If available, please include your **local actual current temperature** in the Comment section of the Check-in form. If you know the wind chill, include that as well.

Target stations will relay successfully received P2P messages to KD1CY and WQ1O.

VARA HF (licensed or unlicensed) will be the transmission mode. Choose Open Session: **VARA HF P2P**

Once in the VARA HF P2P session, enter the callsign of the Target Station and the designated Center Frequency. The Dial Frequency will automatically fill in. Be sure your radio is tuned to the correct dial frequency and is in USB Digital mode before transmitting.

Also, please be sure to check for traffic on the frequency prior to initiating your P2P transmission.

If the band is crowded, please set VARA HF to use a lower session bandwidth. This is done in the Winlink VARA HF Peer-to-Peer Session screen under Settings, VARA TNC Setup. Under 'Session Bandwidth', choose 500Hz.

Please see the Frequency Usage listing at the end of this document for Winlink HF P2P target stations and frequencies.

Norfolk County Operations

The focus of the Norfolk County efforts in this exercise are on radiogram messages in different forms to compare the behavior of passing ICS-213 logistics messages by Voice, Winlink, and NBEMS. This is an important skill to master as it will often be used within shelters and ECOs.

The exercise will last from 10AM to 12:00PM with the exception of **non-P2P** Winlink activities, which will take place starting at 12:00PM and will last until 8 PM as well as any APRS activity, which will run from 9AM until 8PM.

10:00 – 10:30AM: VHF Voice net

- VHF voice net on Walpole repeater. See Frequency Usage listing at end of document
- We will pass a voiced radiogram message requesting needed site resources using an ARRL Radiogram form.
- It is suggested that you have printed copy of radiogram form for transcribing messages. A printable copy of a radiogram form is available at:
<https://www.arrl.org/files/media/Group/Fillable%20Radiogram%20Form.pdf>

10:30 – 11:30M HF NBEMS net

- see Frequency Usage listing at end of document
- We will send an ICS-213 form in FLMSG listing the available site resource items. Each station will then use the ICS-213 form Reply function in FLMSG to request three of the available items for their site location.

11:00 – 11:30AM: Check-in to HF Voice nets (optional)

- Note that the HF Voice nets are being held open until 11:30 AM to allow check-ins from the Norfolk team
- 75 meter voice net - see Frequency Usage listing at end of document
- 60 meter voice net - see Frequency Usage listing at end of document
- 6 meter FM voice Mt. Wachusett repeater - see Frequency Usage listing at end of document

11:30AM – Noon: VHF net:

- Walpole Repeater - see Frequency Usage listing at end of document
- Norfolk County Team discussion of exercise, review of issues and general debrief.

11AM – Noon: HF Winlink P2P

- See separate section on HF Winlink P2P Operations

Noon – 8:00PM: Winlink using any Winlink non-P2P mode (including telnet) (optional)

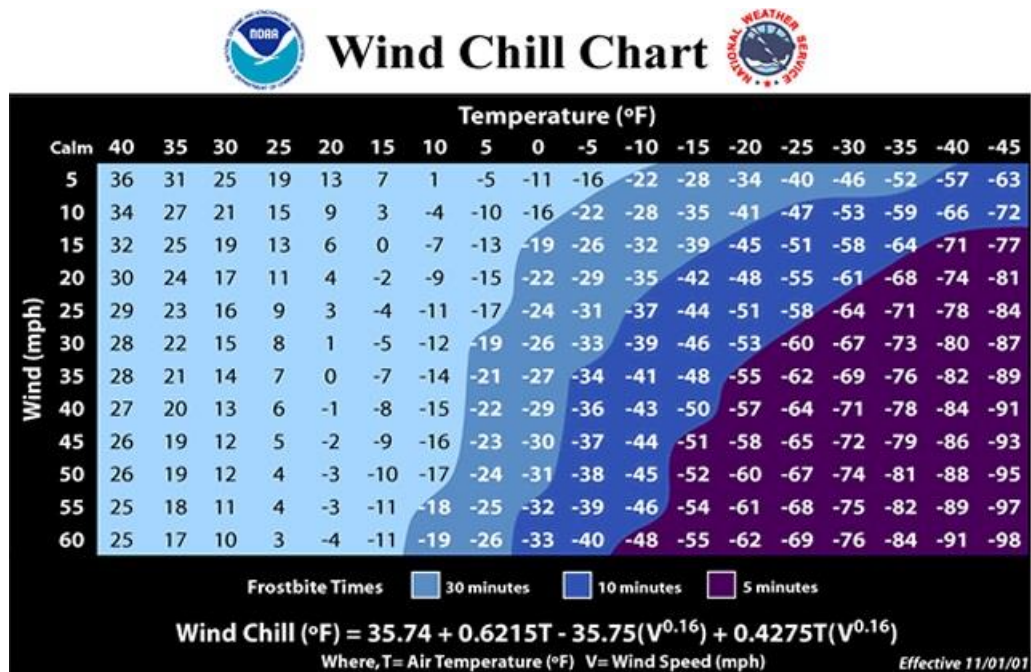
- Send RRI ICS-213RR radiogram form requesting three of the items offered in the NBEMS net on VHF net via Winlink to KF1D

9:00 AM – 8:00 PM: APRS activity (optional)

- Send APRS beacon to locate your station on the map of APRS stations (<https://aprs.fi>)
- Send an APRS message to: ANSRVR with message of form:
 - CQ ARESEMA <call sign> <location> <message text> :
 - Example: CQ ARESEMA AB1PH Walpole MA Testing for SET

Reporting of the low temperature at your location

As a late addition to the exercise due to weather extremes, we will be asking all check-ins if they have an actual low temperature to report from their location. If you know your wind value, you can also report your wind chill value (chart below). If you do not have your wind speed available, just report your temperature. This report can also be sent to KD1CY by Winlink if you have Winlink capability.



Frequency Usage

2 meter Local Voice nets: - The following is a list of key frequencies with any additional frequencies at the discretion of local ARES Group

147.000-Dartmouth Repeater (PL: 67.0 Hz)
146.895-Walpole Repeater (PL: 123.0 Hz) (Echolink AB1PH/R)
146.955-Westford Repeater PL: 74.4 Hz
147.435-Western Middlesex ARES Simplex (PL: 110.9 Hz)
146.580-Cape Cod ARES Simplex (No PL)

2 meter NTS nets:

Local nets - Frequencies at discretion of local ARES Groups
Section Nets – the MMRA Repeater Network will be utilized for section NTS traffic

The MMRA Repeater Network will be utilized at the section level. The linked repeaters can be found at http://www.mmra.org/repeaters/repeater_index_by_linkstate.html

Echolink: NEW-ENG3 node 9123 IRLP: 9123

UHF Voice and/or NTS net: Frequencies at discretion of local ARES Groups

VHF/UHF NBEMS: Frequencies at discretion of local ARES Groups

6 meter FM voice net will be set up on the 6m Mt. Wachusett repeater. The frequency is 53.310 MHz receive, 52.310 MHz transmit with a PL encode 71.9Hz. Notice that the shift is a *minus 1 MHz offset*. Any station in the section is welcome to try to hit this repeater for the purposes of this exercise.

HF NBEMS: 3584.5 KHz dial, 1500 Hz waterfall center frequency, USB, Thor 22 check-in

Primary 75m HF voice operations: 3930 kHz LSB

Primary 60m HF voice operations: 5330.5 kHz (USB), fall back to 5371.5 kHz if needed. Note that newer HF radios that have 60m as a standard feature often have the frequencies displayed as channelized (center frequencies) whereas radios that have been modified for 60m operation often display the dial frequencies. Power limit is 100 watts ERP.

Center	'Dial' Frequency (USB)	'Unofficial' Channel Designation
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Winlink Express VHF (non-P2P): 145.090 FM frequencies –

Local VHF RMS Stations – Some stations offer both Packet and VARA FM modes

AB1PH-10 connect direct or via digipeaters WA1PLE-2, W1STR-3 or BROCK
W1SHS-10 connect direct or via digipeaters WA1PLE-2, W1STR-3 or BROCK
KF1D-10 connect direct or via digipeaters WA1PLE-2, W1STR-3 or BROCK
W1SGL-10 connect direct or via digipeaters WA1PLE-2, W1STR-3 or BROCK

Or other VHF RMS stations available from Winlink Express station lookup.

Also see http://www.n1xtb.net/EMA_packet_map.html for locations of local RMS stations

Telnet may be used if available and necessary.

HF Winlink stations (Non-P2P):

Local HF RMS stations - VARA HF Preferred mode

W1EO: 3937.900 KHz center, 3936.4 KHz dial
KF1D: 7101.3 KHz center, 7099.8 KHz dial
W1EO: 7102.5 KHz center, 7101.0 KHz dial

Or other HF RMS stations available from Winlink Express station lookup.

Also see http://www.n1xtb.net/EMA_packet_map.html for locations of local RMS stations

Telnet may be used if available and necessary.

HF Winlink P2P Operations

Backup frequencies designated below will be used in the event of QRM on the primary frequency.

Target Station	Primary/Backup	Center Freq KHz	Dial Freq KHz (USB)	Mode	Bandwidth
11:00AM-Noon					
W1SHS	Primary	7071.500	7070.000	VARA HF	500Hz Preferred
	Backup	7081.500	7080.000	VARA HF	500Hz Preferred
11:00AM- Noon					
KE5BM	Primary	3581.500	3580.000	VARA HF	500Hz Preferred
	Backup	3591.500	3590.000	VARA HF	500Hz Preferred