

BAA Boston Marathon
Amateur Radio Communications

Communications Standards



Presented by the BAA Communications Committee

Amateur Radio Leadership Team

2016

History

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Scope and purpose

This document explains the communication procedures and vocabulary common to all Segments of the Marathon's Amateur Radio support operation, and the purposes and rationale behind them. Although these Standards and the principles they exemplify serve as a baseline, adaptations are expected based on conditions and mission, provided the goals set forth below are met.

Communication plans for the Event's organizational Segments (defined below) go into further detail on the procedures and assignments specific to those Segments.

Audience

All Amateur Radio volunteers, both on the air and in administrative and management roles, are required to familiarize themselves with these standards and apply them in their work. Next, familiarize yourself with the communication plan for your own Segment.

The procedures and examples are written as the Operators at the Field Stations would apply them. Most Amateur Radio volunteers are Field Operators. Operators at Net Control Operations Centers perform the complementary role, which should be clear enough from the text and the examples.

Changes this year

In response to many requests, the entire volunteer documentation set has been renewed with simplicity, reduced length and consistency in mind.

Procedural changes this year are modest. An evolution away from NTS-style directed Nets and a loose set of individual preferences toward standardized efficient methods continues. We've drawn lessons from the skilled legacies of Amateur Radio, air traffic control, and public safety communications. We will continue to refine and evolve as needs and experience require.

Decisions and Directions Policy

This policy statement is excerpted from the document [Decisions and Directions Policy](#).

Our principal Client is the Boston Athletic Association. BAA makes all decisions regarding the conduct of the Marathon, and works with public safety agencies to ensure the safety of participants, volunteers, and the general public. Our relationships with other BAA partners such as the Red Cross, EMS agencies, Police, Fire, Ambulance, commercial radio providers, are also client-centric. We approach each of these partners with the same attitude of service and a positive, helpful approach as we do the BAA.

Our task is to support the BAA and its partners with rapid and efficient communication. We make decisions only on the management of our communications teams, and only where such decisions have no bearing upon the Event. We are not decision-makers for the Event itself and should apply wise discretion to avoid stepping beyond our areas of responsibility and authority. Our overriding focus must be on immediate readiness to communicate. We communicate decisions, rather than make decisions. When we are uncertain, we ask. We work within the established Chain of Command, consistent with ICS principles, in all our duties. We defer to public safety and local authority in any role in which we serve.

General policy and how Amateur Radio fits into the larger Event organization is covered in the document [Decisions and Direction Policy](#). The key point to keep in mind is the division of responsibilities between the Client organization and the Amateur Radio support organization.

Our own Chain of Command runs up through the Net Control Operators to the Segment Coordinators in the Centers, and from there to Command for the Event as a whole. This is where our assignments and internal management will come from.

In the event of a course disruption or other contingency, Event management will transfer to public safety agencies. The Amateur Radio teams will fall under their direction, with our NCOC's continuing to provide services to all Field communications volunteers using the same Chain of Command.

Op Note: Procedures for a course disruption or other critical event are annotated on the Pink Page of your Flip Card set. Each Medical and Hydration Station and each communications volunteer will receive a Flip Card set which provides reminders and a handy reference to provide guidance for communications in both normal and contingency.

Things not to say on the air

- To comply with Medical confidentiality laws, don't transmit personal identifying information. This means no names, addresses, phone numbers, e-mail addresses, etc. Transmit only the runner's BIB number in an ambulance request or patient destination report. Only a Medical staff member can order an exception.
- Don't say actual frequencies or access tones. Use Channel names.
- Locations or proper names of NCOCs or other critical facilities
- Use discretion and good judgment before handing off your microphone to a Client, which can expose you to liability should profanity or other prohibited speech occur. If you are unable to correctly convey their message, ask for help from your team.

Operational Security

Amateur Radio communications is provided as a civilian-run system, yet given the nature of the communications supported, some care as to what we reveal on the air in any circumstance is a prudent pursuit. Your segment communications plan may provide more direction on this topic.

Principles

A large public service job is different in important ways from other typical Amateur Radio operations, such as rag-chewing, contesting, and traffic-handling Nets. The most important difference here is that we can't control the pace of communication; we must keep up with events as they happen in the real world and, to be on top of the game, we must anticipate and keep ahead of them. Most of the information we will pass is extremely time-sensitive, some of it safety-related, and there are times when the Channel gets very busy and air time is a limited and precious resource.

It's essential that all our Operators be able to get air time at the moment they need it. To accomplish that, we must use air time efficiently. We must communicate both clearly and quickly, and release the Channel for the next call. This requires cooperation and self-discipline. If we weren't experienced Radio Operators, we couldn't do it.

Key ideas:

- Organize your information and plan your words before calling.

- Say enough to express the intended meaning unambiguously.
- Say only the words that carry the information.
- Use context and standardized formats intelligently, to minimize the need for keywords and complete sentences.
- Use Tactical ID's (examples below) to identify who is speaking and who is addressed.
- Attach procedural meaning to the transmission of Tactical ID's and FCC call signs (explained in the basic procedure) so as to reduce the need for repetitive and unnecessary words and phrases.
- Answer calls immediately.
- Use plain English, never code-words or abbreviations (QSL, QTH, 10-4, etc.)
- *Don't hold up the horses. Release the Channel if you're not ready to communicate.*

Terminology

Before continuing, some definitions are helpful for clarity in this document. Others are valuable to help us understand each other on the air.

Term	Definition
AR	Amateur Radio
ARO (OPERATOR)	Amateur Radio Operator/Communications Volunteer
CLIENT	Any of the people and organizations managing the Event (along with public safety), that we support with communication services.
POST	A place where the Client and their supporting Radio Operators are located together. A Post can be stationary or moving.
SEGMENT	One of the four major branches of the Marathon organization, and of the Amateur Radio support organization. Segments are START, COURSE, FINISH and TRANSPORTATION.
MEMA	Massachusetts Emergency Management Agency. The lead agency which assists in the coordination of Boston Marathon public safety on the course, exclusive of START and FINISH.
MACC	Multi-Agency Coordination Center located at MEMA. Handles course-wide public safety coordination.
NCOC	Net Control Operations Center. There are three, one each for the START, COURSE, and FINISH Segments. TRANSPORTATION is managed from the COURSE NCOC. Each is staffed by Client officials, Operators at Radio positions, and various support personnel. NCOC's are linked through several Command Channels.
FIELD STATION	All other Amateur Radio positions.
NCO	Net Control Operator, an on-the-air radio position in an NCOC, typically one of several covering different Net Channels. <i>Op Note: The term "Net control" is a historical misnomer, left over from the days when the Event operated as a controlled Net. Today, NCO's</i>

	<i>communicate on behalf of their Client. They do not micro-manage the transmissions of other Stations and, of course, do not manage the Event itself.</i>
Field Station Operator	The Operator at any other Post.
Net	A collection of Stations assigned to maintain a strict listening watch on the same Channel.
Net Channel	The assigned Channel where the Stations in a Net listen for calls from one another.
Local Channel	Any Channel other than a Net Channel (example, a "Tactical" or "talk-around" Channel).
Tactical ID	Also often called "Tactical Call Sign" in Amateur Radio organizations that deal with public service and emergency operations. It's the identification we use during the Event to call other Stations and identify our own. <i>Op Note: Tactical ID's are assigned to the various Posts, and describe the Client functions they support. A reassigned (at the discretion of the NCO) Operator leaves the Tactical ID behind at the old Post and takes up a new one upon arrival.</i>
CTL	Communications Team Leader. The lead AR Operator at a Field Post staffed by more than one Operator. <i>Op Note: The CTL is the first point of contact for a Field Operator in the Chain of Command.</i>
Segment Coordinator	The Segment Coordinator is responsible for all Amateur Radio communications volunteers and the execution of the communications plan at their segment.
PROCEDURES	An AR position within each NCOC. PROCEDURES takes ownership of and acts upon requests which arrive through a Net. This Controller relieves NCO's from distractions and interruptions that would otherwise conflict with maintaining a continuous strict listening watch.
ACTIVATED	The Client at the Post are ready to perform their function.
DEACTIVATED	The Client have discontinued their function.
Check in	Operator begins a continuous listening watch on the Net Channel.
Check out	Operator discontinues listening watch.
In position	At the assigned location.
Toward Hopkinton	Expressing a direction of movement, toward the Start Line.
Toward Boston	Expressing a direction of movement, toward the Finish Line.
Left and Right	Expressing which side of the course, as seen by a runner moving in the natural direction toward Finish.

How to be an effective communicator

Maintain a strict listening watch

Organize your equipment and your relationship with your Client so that you're listening to your assigned Channel/s during the whole time your Post is open. If you're not ready to answer a call promptly, you're not serving your Client, and scarce air time will be wasted waiting for an answer that doesn't come.

Field Posts tend to be noisy. A noise-blocking headset or a speaker-mike can be very helpful. Lacking that, a simple cargo strap strung over your shoulder and secured with a turn around your belt can support your HT up close to your ear. This position also raises your antenna, a plus in marginal coverage areas.

Listen to exchanges between other Stations on the Net and develop a situational awareness. Pass on anything of interest to your Client. As you gain more experience you'll learn what's of value.

Conversations with your Client or the public will be necessary at times, but you should keep them brief. You may need to hold up a hand and point to your ear when there's something on the Net that you need to hear.

If possible, lock your HT's controls so it stays on your Net Channel. If you don't hear anything for a while, check the display. If in doubt, ask NCOC for a signal report using the standard COMM CHECK request.

At every Post, there should be at least one Operator at all times monitoring the Net Channel/s and that Operator should be visible and immediately accessible to their Supervisor/Captain. A spare HT is useful for monitoring an additional Net for situational awareness, for communicating with another Station on a local Channel without contending for time on the Net Channel, or just for backup in case of equipment problems.

Plan before calling

First, gather and organize the information your Client wants you to communicate, or whatever report or request you intend to originate yourself.

If it's information that must be delivered exactly, such as runner numbers or supply requisitions, write it down in your notebook or on the appropriate form. If possible, have the Client check it before you call.

The Client directing you to send or request information is the final authority on destination (not to be confused with message routing) and content. If anything looks unclear or ambiguous, ask questions. Make sure you fully understand what the Client needs (you may not necessarily comprehend *why*, and that's OK.) If appropriate, identify the authorizing official by name or title in your radio traffic.

Brevity

Choose your words to make the meaning clear with no unnecessary wordage. Brevity is essential, but when in doubt a few extra words are better than too few. Please avoid pompous officialese such as "be advised" and "at this time" -- it burns up scarce air time and doesn't carry information. However, there are occasions where an emphasis needs to be placed on your traffic. Use plain English:

(example) "From the Station Captain: We need the assistance right now. Time is of the essence." Also, never say "The patient's BIB Number **is going to be** 3485", which may prompt the question, "when is it going to be 3485?" "Patient BIB Number 3485" is the preferred construction. It is direct, simple, and of course brief. When transmitting long lists use the phrase MORE TO FOLLOW.

Clarity

Speak clearly, at a pace that allows the receiving Operator to keep up, particularly when passing information that must be transcribed. Keep transmissions short, to give the other Operator a chance to ask for fills, and to allow other Stations to break with more urgent traffic. Use phonetics if you need to, but apply common sense.

Clarity also means that we must use ordinary English words. Q signals, 10-codes, and in-group jargon are out, even among public safety agencies nowadays. On a voice Channel it's at least as quick to say "Where are you?" or "I'm at", than QTH. Any Amateur Radio listener unfamiliar with AR vocabulary will understand plain language, and being understood is one of our goals. Where we do formally define keywords or phrases for this job, they're short words in common English.

Accuracy

If you're receiving anything but a routine status report, write it down as you receive it, and don't hesitate to ask for a fill or a repeat if you're not certain of what you heard. If it's critical information, read it back. If you need confirmation that your traffic was received verbatim and understood, request a READ BACK.

Medical or Public Safety traffic is critical information. Write down what you're told to send, get it checked if the Client can give you a moment to do it, transmit it verbatim, and get a read back.

Efficiency

- When you call, be ready to transmit your information with no wasted time. Don't ramble or still be searching for words when your finger is on the button.
- When you answer, be ready to copy.
- Don't repeat anything unless the receiving Operator asks you to.
- Don't repeat back things said to you, unless it's critical information that must be checked for accuracy or the response to a READ BACK.
- Don't say things you already said earlier.
- Don't say things the Operator you're addressing already knows. Just be careful to avoid assuming they know!
- Use good judgment as to when it's worthwhile to spell out something with phonetics.
- This is VHF/UHF FM, much of it on repeaters, and everybody is maintaining a strict listening watch. Don't repeat another Station's transmission unless you're dead certain the Operator you're addressing missed it. This would happen only in the unlikely case of simplex relay.
- *Get the communicating done, and release the Channel for the next call.* Don't make other Stations wait.

The Radio Procedure Model (RPM)

Our communication procedures are based upon the concept of an exchange of transmissions between two Stations, analogous to a telephone call. Two subsets of RPM will be presented below, the Full Exchange, and the Rapid Exchange.

The Full Exchange is often used where communications are marginal and where there's a need to add assurance that communications goals are met. The Rapid Exchange may be applied to dispatch operations such as those found in the TRANSPORT Segment, or where communications conditions are excellent and goals do not need buttressing.

Basic procedure -- full exchange

The basic procedure is pretty much the same as in previous years, with only minor revisions to improve efficiency. The Full Exchange is used where radio and/or operational conditions are less than ideal. It reduces doubt as to who each station is communicating with and improves situational awareness across the entire communications net.

A **full exchange** has four phases:

- Call
- Answer
- Communication
- Ending

Call

- To call another Station, transmit the other Station's Tactical ID followed by your own. **Field units only: end the calling sequence with the ID of the Channel or system you're on, as NCO's may be guarding several systems or Channels at one time.**
- You *may* attach up to 5 words of communication to the call, *if* it doesn't need to be copied exactly. This is a good way to announce the subject of the call. (The receiving Operator will usually catch it. On average it saves more time than the occasional request for a repeat consumes.)
- **If the call isn't answered within 5 seconds, the call expires and the Channel is free for the next call.**

Answer

- Answer by transmitting your Tactical ID followed by "ANSWERING" and the Tactical ID of the calling Station.
 - NCO calls a Field unit: "MIKE 13, NET".
 - Field unit answers: "MIKE 13 ALFA ANSWERING NET".
 - NCO replies: "MIKE 13 ALFA.." and continues the exchange.
- The NCO will reply by transmitting NET ANSWERING [your Tactical ID].
- There is no wordage limit on communication attached to an answer. (The caller is expecting a response, and is supposed to be ready to copy.)

*Op Note: Using the keyword **ANSWERING** may seem obvious and superfluous, but even in the best communications environments, such as those found in public safety, it is frequently used. Sometimes we need to state the obvious, simply to make absolutely certain our intent is understood. In the noisy, often marginal environment found at the Marathon, this simple addition will reduce confusion and thereby improve reliability and efficiency. Try it. We think you'll like it.*

Communication

Communication consists of questions, information, and acknowledgments.

- To reduce the risk of confusion and the potential that a message for one Station may be interpreted to be for another, begin every transmission with your Tactical ID if you are a Field unit. NCO's should begin each transmission with the Tactical ID of the Station/s they are addressing.
- The NCO will begin each transmission with your Tactical ID.
- Wait for the answer before transmitting critical information, or anything that must be copied exactly.
- Begin your transmission with your own Tactical ID and transmit just the words and numbers that express the information or the question. Include keywords when needed to make the intent clear -- use common sense.
- Read back critical information.
- Keep individual transmissions short -- 10 seconds or less. Wait for the acknowledge before resuming.
- If you can't immediately answer a question or provide requested information, say you'll call back. *Don't hold onto the Net Channel if you can't communicate immediately.*

Ending

The calling Operator knows the purpose of the exchange, and therefore knows when it's completed. Since the FCC requires a Station to identify with its official call sign "at the end of an exchange of transmissions," we make that the *signal* that the exchange is ended and the Channel is free for calls.

- Transmit your FCC call sign at the end of an exchange to indicate you're finished. Sometimes this does not quite work out, so be sure to ID within 10 minutes of a transmission or series of transmissions to meet FCC rules.
- If NCOC is the caller, NCOC will transmit its FCC call sign, then the Field Station must transmit its FCC call sign.
- If the call was between Field Stations, the caller identifies first, then the answering Station.
- NCOC's should avoid the compulsion to end each exchange with "This is W1M, Net Control for the 2016 Boston Marathon" and other such speeches. This wastes valuable time. Simply say "W1M" and heed the FCC rule which requires transmission of your personal call sign every 60 minutes.

Basic procedure -- rapid exchange

A rapid exchange is one in which the information or question fits within the 5-word limit of the call, and the response fits within the answer. This is a very common situation for routine status reports, observations and Dispatch Centers. The rapid exchange saves a great deal of time. Common examples:

- Checking into and out of the Net.
- Reporting Post activation and deactivation.
- COMM CHECK requesting a signal report.
- Reporting a status when requested, such as passage of the first runner.
- Routine dispatch "only on request".

Op Note: When your Net is operating in a relaxed or Hybrid (as opposed to a Directed) format, do not ask for permission to call another Station directly or to use another frequency if you can do so and maintain your assigned listening watch (you have two radios, or a radio with two receivers). Asking for permission to call another Station is an unnecessary time-waster.

You don't need permission to interrupt an exchange in progress with the keyword URGENT. But do so only when absolutely necessary, and preferably when the Channel is free. Your NCO will answer and give you the Channel. Otherwise, as at Town Meeting, when your NCO is active, they have the floor.

Your Channel is a valuable resource. Use it wisely to avoid the time-consuming necessity of a **Directed Net**.

*Op Note: The Net automatically becomes a **Directed Net** when **Urgent** traffic is declared, or operations have transferred to public safety control.*

The Rapid Exchange is the same as the Full Exchange, except that there is no separate communication phase.

Call

- Call as above.
- Immediately follow with the communication content: the information, question, or request.

Answer

- Answer as above.
- If the call requires a response other than a bare acknowledgment, immediately follow with the requested information.

Ending

- End the exchange as above.

Net procedure examples

Full Exchange, NCO is the caller

Station speaking	Transmission	Illustrates these procedure rules:
NCO	HOTEL ONE NINER RIGHT, NET.	To CALL, transmit the other Station's Tactical ID, then your own.
H19R	HOTEL ONE NINER RIGHT ANSWERING NET.	To ANSWER, transmit your Tactical ID. (NCOC would answer with the Field Station's Tactical ID.)
NCO	HOTEL ONE NINER RIGHT, can you move to Hotel One Seven Right?	NCOC begins each transmission with the Tactical ID of the Station being addressed.
H19R	HOTEL ONE NINER RIGHT, affirmative, if I can get there before the first runner. I'd have to drive up-course.	Begin each transmission with your Tactical ID.

NCO	HOTEL ONE NINER RIGHT, first runner is about twenty minutes away. Plan accordingly.	
H19R	HOTEL ONE NINER RIGHT, will do. Moving in five minutes.	
NCO	W1M at 1245 hours.	To END the exchange, caller transmits FCC call sign. NCO's are encouraged to state the time occasionally. This serves situational awareness and logging.
H19R	N1ABC.	Field Station must transmit FCC call sign to stay legal. Channel is released for the next call.

Rapid Exchange, Field Station is the caller

Station speaking	Transmission	Illustrates these procedure rules:
M18A	NET, MIKE ONE EIGHT ALFA ON CHARLIE THREE. Station activated. ACKNOWLEDGE.	When calling your NCO state the calling Channel or system name you are using. You may attach up to 5 words of communication to the call.
NCO	MIKE ONE EIGHT ALFA, NET, ACKNOWLEDGED.	You may attach return communication to the answer; in this case, an acknowledgment.
M18A	KA1DEF.	Field Station's FCC call sign ends the exchange.
NCO	W1M.	<u>Optional</u> and generally not required when Field Station is the caller. "NCOC W1M Optional"

Rapid Exchange, NCOC is the caller

Station speaking	Transmission	Illustrates these procedure rules:
NCO	MIKE ONE EIGHT ALFA, NET. Bus ETA two minutes, ACKNOWLEDGE.	You may attach up to 5 words of communication to the call.
M18A	NET, MIKE ONE EIGHT ALFA, ACKNOWLEDGED.	You may attach return communication to the answer; in this case, an acknowledgment.
NCO	W1M.	Caller's FCC call sign ends the exchange.
M18A	KA1DEF.	Field Station must transmit FCC call sign to stay legal.

Authenticating the Authority for a Command or Request

An essential part of our communication service is relaying messages, commands, and requests from BAA and their partners. A request from your NCO to “Move the Tent to the west and hold for further instructions” should, even in a circumstance where this is consistent with the situation at hand, raise your curiosity and produce a reply, “**NET, MIKE 23 BRAVO, SAY issuing authority.**”

Communication volunteers on both ends of the radio link should therefore preface commands, requests, or any traffic where including the originating authority seems prudent, with the Originator by name or title. If at all possible write down all such messages and transmit verbatim.

Example:

MIKE 23, NET, FROM INCIDENT COMMANDER, MOVE YOUR TENT TO THE WEST AND HOLD FOR FURTHER INSTRUCTIONS. READ BACK.

This command leaves no doubt as to the command’s Originator.

More on FCC call signs

The FCC rule is that a Station must identify at the completion of an exchange, or no less than every 10 minutes during an ongoing series of transmissions. Since Field Stations typically go long periods without transmitting, and transmit for only a few seconds, identifying at the end meets the requirement. NCO’s, on the other hand, will consume much less air time by identifying every 10 minutes than by identifying at the end of every exchange.

Each NCO, on each Channel under their listening watch, will use the Special Event call sign W1M. The rule for Special Event call signs requires transmitting the Operator’s personal FCC call sign once an hour. NCO’s should refer to the NCOC procedures documentation for details.

Note that your Tactical ID takes effect when you arrive at your Post, and stays behind when you leave. It remains active if you’re on duty and only temporarily away. If you don’t currently have an assignment, or you haven’t yet arrived at your Post, your FCC call sign is your only ID. Your NCO will understand when you use it to call or answer.

More on acknowledging

We list ACKNOWLEDGED as the preferred keyword. There are several other keywords most of you will immediately recognize as an acknowledgment. We’re not going to make a fuss about which one you use. However, shorter is better and following standards with consistency makes us all look and sound great. One syllable saved really matters, especially if it’s saved 10,000 times a day! Just keep in mind that saving a few syllables, if doing so impacts our mission negatively, may expend more time than they save.

Never use OKAY, GOT IT, RECEIVED, QSL, 10-4, or similar language to acknowledge a transmission. These may be quaint, but they can have other meanings than “acknowledged.” Don’t take the chance. Simply say ACKNOWLEDGED. In all circumstances you’ll find this response is both clear and efficient.

Precedence levels

The term Precedence comes from age-old message handling protocol. The purpose is to identify which traffic has to move first. Precedence influences Net protocol and message handling. In these standards there are three levels: Routine (default), Urgent, and Emergency.

- **Routine** - Net housekeeping such as checking in, checking out, setting up contact on a local Channel, requesting a COMM CHECK, etc. Some Client communication such as hourly status reports and supply requisitions may be routine.
- **Urgent** - most communication on behalf of a Client concerning real-world events, including all Medical Requests.
- **Emergency** - communication concerning immediate danger to life, if not handled through EMS or public safety systems.

In general, we won't need to use these words on the air, because it's almost always obvious from context.

We don't use the word PRIORITY at all, because that has specific meaning to the Medical services.

EMERGENCY may be declared on air when the situation is really major, at the level of a course disruption (such as the 2013 bombing) where loss of life is imminent. We note that EMERGENCY is not commonly used in public safety settings. To remain consistent and to be interoperable and integrated with these and other partners, we reserve this word for only the most extreme circumstances.

It should rarely be necessary to interrupt an exchange in progress, if everyone is following the planned Net procedures. If you do have something that is important and more time-sensitive than what's in progress, say **URGENT** twice and your Tactical ID. NCOC will immediately answer.

Net management and discipline

The Tactical ID of your NCOC is NET. Use NET, not NET CONTROL.

The term Net Control has a variety of interpretations. At the Marathon our NCO's serve as part of a larger system that exists to communicate on behalf of our Client. NCO's do not control the event. Instead, they serve as a resource center. The flow of communications is managed, rather than controlled, assuring that channels are efficiently used.

As we move from the control model, greater efficiency is achieved through the use of the Hybrid Net operational mode.

A Hybrid Net format reduces procedural overhead. In this method a focus on communicating information necessary to manage the conduct of our resources in the furtherance of the communications mission is emphasized. For example, asking for permission to make a call to another unit wastes time. Unless URGENT traffic is in progress, we trust each Field Operator to self-manage. The Hybrid Net format is fully described in the [Net Control Operations Center Communications Plan](#). Each center may tailor the Hybrid Net format to meet individual mission requirements, however such format should be a baseline for all NCO operations.

Consistent application of standards eases the management burden. Team and system performance relies on individual excellence. There may be no one right way to operate our Nets, but there is one wrong way: inconsistency. Where uncertain, follow the lead of your NCO.

Hybrid Format: Getting Permission

- The *only* thing that requires permission from your NCO is interrupting your listening watch on the Net Channel. (There might be something about to come through the Net.) If the NCO allows you to change to another Channel, they need to know where to find you.

Outside of that:

- If you need to call another Field Station, just do it when the Channel is free, but keep it brief.
- If you want to talk to another Station on a local Channel using a second radio, you don't need permission from your NCO, *as long as* you keep up your strict listening watch on your assigned Net Channel.
- If you need more talk time with a Field Station, establish contact and use the SWITCH AND ANSWER keyphrase sequence.
- If you are the Field Station who was asked to SWITCH AND ANSWER, and by switching you will lose your listening watch on the Net, request NCO permission before proceeding. *See example below.*
- If you want to set up local Channel contact with another Operator from your Post who is being sent on an errand, you don't need to bother the Net about it. But there must be at least one Operator at your Post who maintains a strict listening watch at all times.
- If you absolutely have to hand the mike to a Client (to be avoided if at all possible), set up contact on a local Channel first. A Client may need a lot more air time than we can afford on the Net Channel.

Issuing Net instructions -- the NCO might remind other Operators of efficient procedure if necessary, and if it will save more time than it consumes. Otherwise, we don't intend to be picky about little things. Don't be surprised if, in reply to "Permission to call MIKE 03", you hear, "MIKE 03, Make your call according to published procedures. No permission required."

On arrival at your Post

- Upon arrival at your assignment and again when ready to begin your listening watch, report your status to your NCO.
- Introduce yourself to your Communication Team Leader and your Client, as applicable. Ask to be briefed on their specific communication needs. Tell them the capabilities your Net offers, and the resources reachable through NCOC. (Some of them know more about this than others.)
- Arrange your outer clothing and your gear around your body the way you want it. Ask your CTL or Captain where to stow anything you don't intend to carry around all day. (Note, there may not be a secure place to stow your gear, so plan ahead accordingly).

Op Note: Contrary to our Net procedure, start out by asking permission from your CTL or Captain for everything. A little initial deference and respect will win you a prized relationship with your Client and team.

- Once you check in with the NCO, then your listening watch begins.

Leaving your Post

Physically leaving your Post falls under the discretion of your CTL or Station Captain. You should make it known before going out of sight, especially if you're the only Operator assigned (porta-potty breaks, etc.) Never bother the Net with this information as long as you are able to maintain your listening watch. Maintaining your listening watch whether you're on Post or not is the expected norm.

NEVER leave the Post until it deactivates, and then only with appropriate approval. Within a secure environment at the Marathon, unexplained absence from your Post may trigger an inquiry from Police or other security authorities.

Check out with your NCO before departing, since you may be reassigned to a new Post.

Deviating from plan

A well-thought-out plan saves us from having to figure out everything on the fly, but no plan can cover all possibilities.

In a situation that isn't covered, deviate if necessary, but not more than necessary. Try to avoid doing things that confuse the other Operators on the Channel, or anyone else.

The key is to communicate in cases where not doing so will lead to difficulty.

Judgement and discretion are the developed skills of a mature Operator in the public service environment. If you're not sure, ask.

Appendix

Keywords and standard phrases

It's useful to standardize certain words and phrases for use on the air, to speed and clarify communication. Study and then use these in your work for a more professionally sounding and efficient net.

Keyword	Meaning
URGENT	Important, time-critical material. Pause exchange in progress. NCO or Station called will answer. <i>Op Note: All EMS Requests are URGENT.</i>
EMERGENCY	Life-threatening immediate situation. Pause exchange in progress. NCO will answer. <i>Op Note: Only life-threatening situation, such as that of the 2013 Marathon bombing, qualifies for the EMERGENCY keyword.</i>
INFO	Caller has information concerning exchange in progress or previous request.
COMM CHECK	What is my intelligibility and signal strength?
LOUD AND CLEAR WEAK BUT READABLE UNREADABLE	Reply to COMM CHECK request.
STAND BY {UNLESS URGENT}	Wait (until I'm ready to continue.) Don't say this unless you really, really have to. It brings the whole Net to a halt. Preferably, say you'll call back, and release the Channel. NCO's: add "UNLESS URGENT" if you are already working URGENT traffic or need to add emphasis to the Net that it should stand by.
SAY AGAIN {ALL AFTER}	In the event you did not hear the entire message, state SAY AGAIN. Example: "NET, unable to copy. SAY AGAIN your last". In the event you did not hear a portion, say "NET, SAY AGAIN ALL AFTER contact Supervisor ".
SAY	Answer a specific request. Example "MIKE ZERO THREE, SAY PRESENT TEMPERATURE".
Either of: PREPARE TO COPY SAY WHEN READY TO COPY	Get pencil and paper ready. (Generally better to say what type of communication follows instead, so the Operator can pick up the proper form.)

ACKNOWLEDGE	<p>Place ACKNOWLEDGE at the end of your transmission when you wish the receiving Station to state they have received and understood your transmission. Use ACKNOWLEDGED to respond. NCO's are welcome to use PLEASE before their request to set a friendly tone, but only where this does not add to the overhead.</p> <p>Sender: "MIKE ZERO THREE BRAVO, remain on Station. ACKNOWLEDGE" Reply: "MIKE ZERO THREE BRAVO, ACKNOWLEDGED".</p>
ACKNOWLEDGED	<p>Transmission received and understood. Stating that you acknowledge the sender is good practice but is best reserved where communications conditions are imperfect or where you believe it will be helpful for the sender to know you received and understood the transmission.</p> <p>It is a mandatory response when the calling Station includes ACKNOWLEDGE as part of their request. Of course, if you cannot answer ACKNOWLEDGED, then say "REPEAT YOUR LAST" or "REPEAT ALL AFTER [specific portion of last transmission]".</p>
WILL DO	Will perform the requested action. This specifically means <u>future</u> tense.
IN WORK	The action is being performed. This specifically means <u>present</u> tense.
UNABLE	Can't perform the requested action.
EN ROUTE	For dispatch situations. This indicates that the requested movement is being performed.
Either of: ARRIVED or AT LOCATION	At the assigned or requested location.
READ BACK	Repeat the transmission back to check correctness.
CORRECTION, ...	There was an error. The correct information is ...
SAY (Item)	Transmit the requested information item.
[I] SAY AGAIN (Item)	<p>Repeat (item) or the whole transmission.</p> <p>I SAY AGAIN is used to repeat a critical portion of a message, or in response to SAY AGAIN. Example "MIKE ZERO THREE BRAVO, NET, contact your CTL immediately, I SAY AGAIN, contact your CTL immediately. MIKE ZERO THREE BRAVO, ACKNOWLEDGE".</p>
AFFIRMATIVE	Yes. (Easier to understand in noisy conditions.)
NEGATIVE	No. (Easier to understand in noisy conditions.)
SWITCH AND ANSWER/CALL (Channel name)	NCOOC directs you to change to (Channel name.) You're not expected to continue monitoring the Net Channel.

ON (Channel name)	I am transmitting on (Channel name.) Use when necessary to inform the other Station how to answer.
DUAL RECEIVE	Station is capable of maintaining listening watch on assigned Net Channel while communicating on another Channel. Doesn't necessarily mean any individual Operator at the Station can do this, but the Station communication team as a whole can.
(Channel name)	If attached to a call, I request communication on (Channel name.) If attached to an answer, I agree to communicate on (Channel name.) If this involves interrupting the listening watch on your Net Channel, get permission from NCOC first. If it doesn't, don't. <i>Op Note: Express Channels by name, not by actual frequency. See the ICS 205 form for Channel names.</i>
OVER	End of transmission, go ahead. Very rarely used in VHF FM; only necessary if conditions are too noisy to hear the carrier drop.
OUT	Distinguished from the old NTS term CL (Closing Station), OUT means "I am done... for now". Very rarely used in VHF FM; only necessary if conditions are too noisy to hear the carrier drop. May also be used by an NCO to indicate that they have nothing further to say.
AVAILABLE	Can accept a new assignment or task.
NOT AVAILABLE	Not ready to accept a new assignment or task.
IN/OUT OF SERVICE	Used to indicate the status of a functional unit, such as a bus or Medical Team. "WALKING TEAM THREE IN SERVICE, AVAILABLE" or "WALKING TEAM THREE OUT OF SERVICE. 10 MINUTES".
MORE TO FOLLOW	Indicates that you are dropping the carrier (pausing) but have more information to pass. <i>Op Note: The expected response is for the receiving Station to wait or read back, but a break in a long transmission, such as statistical data, provides an opportunity for others to cut in with more urgent requests.</i>
NOTHING FURTHER	I have no more traffic for you
DO NOT ANSWER	The transmission is intended as one-way and does not require acknowledgment. Used both at the beginning and end of a transmission: "ALL STATIONS, ALL STATIONS THIS IS NET. DO NOT ANSWER. STAND BY FOR AN ANNOUNCEMENT {pause} ALL STATIONS, ALL STATIONS THIS IS NET, FIRST RUNNER RELEASED. DO NOT ANSWER. TIME 1000. OUT"

Appendix

Net and Channel plan

Each Segment of the AR support operation has several Nets, each with its assigned Primary and Secondary Channels. This separation into multiple Net Channels is necessary, both because of the volume of communication in most Segments, and because there is no single repeater that can provide coverage over the whole extent of the course.

The ICS 205 form lists various frequencies, access tones, and Channel names for the AR support operation. Each Segment Communication Plan lists the Primary and Secondary Channel names to be used for each Net. The course Segment is divided into zones, each covered by a Primary repeater and Secondaries.

Before race day, course Station Operators **MUST** load their radios with the Primary and Secondary Channels for their zone, and the course-wide simplex Channel. It would be advisable to load the Channels for the neighboring zones toward Hopkinton and toward Boston as well. It would be best to load in all the Channels for your Segment, in case there's a need for reassignment to a different Post, or in case a Channel becomes unusable. And it's required that, where your assignment has a **fallback plan**, the Channels and frequencies assigned are programmed and ready for use.

Never say actual frequencies and tones on the air. Use the published Channel names (ie. B1, C3, etc.).

Appendix

Tactical ID plan

Tactical ID's begin with a word or ICAO letter phonetic that identifies the type of Post. If there's more than one Post of that type in the Segment, a number follows. Post numbers less than 10 are expressed with a zero preceding the number. For example, MEDICAL 1 is expressed MIKE ZERO ONE. If there's more than one Operator at that Post (in the same Net,) a letter phonetic follows, starting at ALFA for the CTL. Single Post Operators do not need a letter designation added.

Some of the Tactical ID's are used interoperably. These may be Client-assigned. Never deviate from the Tactical ID as doing so disconnects our service from its interoperability and therefore is a disservice to our Client.

Tactical ID	Function
START	START liaison Operator.
FINISH	FINISH liaison Operator.
MACC	MEMA Multi Agency Command Center operator
NET	An NCOC Station Operator, all BAA Operations Centers, all Nets.
MIKE [01-26]	Medical Stations 01 through 26.
MIKE [01-26] [ALFA-CHARLIE]	<p>Individual and distinct Field Operators servicing a Medical Station. Where more than a single Field Operator is serving at one Medical Station (there may be up to three), your Tactical ID should include ALFA, BRAVO, or CHARLIE to distinguish you as a specific Field Operator. This Tactical ID begins with ALFA as the Communication Team Lead, or where a single Field Operator is on duty. Operators need not identify with their individual Tactical ID's unless specifically called as such.</p> <p><i>Op Note: In almost all cases your distinguishing Tactical ID will be pre-assigned. In the event it is not, your CTL will inform your NCO, or direct that you inform the NCO, of your FCC call sign and unique Tactical ID.</i></p> <p>Example 1: NET calls for any Field Operator at a Medical Station: "MIKE ZERO THREE, NET" "MIKE ZERO THREE BRAVO ANSWERING".</p> <p>Example 2: NET calls a specific Station Operator: "MIKE ZERO THREE ALFA, NET" "MIKE ZERO THREE ALFA ANSWERING".</p> <p><i>Op Note: At a Medical Tent, if you're the only Field Operator assigned, there is no need to add ALFA to your Tactical ID. Your NCO is aware of staffing at each Field location.</i></p>

	<i>Op Note: At a Medical Tent, where more than one Field Operator is assigned, rely on your CTL to make sure that responding to a call is delegated. They will make sure there is a rotation in this duty to prevent Operator fatigue, or to meet exigent needs.</i>
HOTEL [01-26] [LEFT or RIGHT]	Hydration Stations 01 through 26, Left or Right of course. (Left and Right Hydration Stations are physically separate. Each has a Field Station Operator.)
BUS [01-31]	Non-medical transport bus 01 through 31.
ELITE BUS [1-4]	Elite Runner non-medical transport bus 1 through 4.
ALL STATIONS	Tactical ID for entire Net. All Stations must listen to following transmission. May be preceded by an alert tone.

The following Tactical ID's are used mostly around NCOCs on local simplex Channels, and are rarely heard on the Nets. Most of these are Communication Assistants (C/As) serving a Client official.

Tactical ID	Function
CHRIS	Medical Event Manager, Chris Troyanos.
DAVE	BAA Race Director, Dave MacGillivray.
DOUG FLANNERY	BAA Event Director Doug Flannery.
DIVISION [1-4]	BAA Division Managers.
BAA MEDICAL	BAA Medical liaison.
SEGMENT COORDINATOR	AR Segment Coordinator. In case of ambiguity, state the Segment.
NETWORK	AR technical infrastructure support person in an NCOC.
PROCEDURES	AR PROCEDURES controller (see NCOC guide).
INFO	AR INFO controller (see NCOC guide).

Appendix

ICAO phonetic alphabet and punctuation

ALFA	INDIA	QUEBEC	YANKEE
BRAVO	JULIETT	ROMEO	ZULU
CHARLIE	KILO	SIERRA	
DELTA	LIMA	TANGO	
ECHO	MIKE	UNIFORM	DASH
FOXTROT	NOVEMBER	VICTOR	SLANT
GOLF	OSCAR	WHISKEY	DECIMAL
HOTEL	PAPA	X-RAY	COMMA

Time of day

Time of day is expressed as local time in 24-hour format.

Op Note: NCO's should state current time at the end of their messages where possible.

Spoken numbers

Numbers in Tactical ID's (and everywhere else except time-of-day) are spoken digit-by-digit. TWO THREE, not TWENTY-THREE.

Leading zeroes are spoken in two-digit numbers below 10, such as in Tactical ID's. MIKE ZERO SEVEN BRAVO, etc.

Op Note: ALL Tactical ID's for Medical and Hydration Stations less than 10 are spoken with ZERO before the Station digit. Example Medical Station 3 is expressed MIKE ZERO THREE.

It is fine to use NINER in place of NINE and other ICAO numeric phraseology where it will improve understanding.

Decimals are expressed with the keyword DECIMAL. (example: "TEMPERATURE IS NINER EIGHT DECIMAL SIX.")

Appendix

Optional time-savers

To cut down on non-communication overhead as much as possible, we allow several shortcuts cribbed from Air Traffic Control radio procedure. Their use is based on your judgment that the communications facilities provide **solid copy**, with assurance that transmissions will be heard in their entirety. These techniques are especially useful for routine messaging or non-medical dispatch modes which may judiciously trade added efficiency for an occasional repeated message.

These are not mandatory, but recommended for use in your work. If you're familiar with ATC procedures, we believe you'll find that these are available options.

Keep these principles in mind:

- The vast majority of exchanges are between a Field Station and its NCOC. Therefore we make it the default. If a Field Station calls by transmitting only its own Tactical ID, the NCOC will answer. If the NCOC calls by transmitting only a Field Station's Tactical ID, that Station will answer.
- A pinnacle of ATC procedure is to read back every instruction. Unless otherwise mandated, read back is at each Operator's discretion.
- Unless communication conditions are rock solid, it's best to include ACKNOWLEDGED in your response where appropriate to do so. Assuming that your message got through is not advised.

Rapid Exchange with ATC-style time savers, Field Station is the caller

*Op Note: Again, **ONLY** use these where communications conditions are excellent and there is no chance of confusion from other Stations, or in non-critical dispatch environments.*

Station speaking	Transmission	Illustrates these procedure rules:
M18A	MIKE ONE EIGHT ALFA, activated.	To CALL NCOC, transmit your Tactical ID. The complete Tactical ID is required in the call. Note that the ID of the Channel or system has been omitted.
NCO	MIKE ONE EIGHT ALFA [ACKNOWLEDGED].	NCO will ANSWER with your Tactical ID. Use of ACKNOWLEDGE is optional.
M18A	KA1DEF.	Transmit your FCC call sign to END the exchange.