

Net Operations

1. Introduction

To provide a basis for carrying out the mission of the Tippecanoe County, Indiana, Amateur Radio Emergency Service® (ARES®), guidelines must be in place to meet the communications requirements of Served Agencies. This document provides structured formats for use by Tippecanoe County ARES Net Control Stations (NCS) and Alternate Net Control Stations (ANCS), based on guidelines of the American Radio Relay League (ARRL), Incident Command System (ICS), and National Incident Management System (NIMS).

2. Responsibilities

The Assistant Emergency Coordinator for Operations and the Assistant Emergency Coordinator for Network Operations, jointly responsible for Net Management, are the authors and maintainers of this document.

Each member of Tippecanoe County ARES is responsible for thoroughly reviewing and following the procedures defined in this document. It provides an understanding of basic ARES net operations and defines Increased Readiness Conditions (Net Conditions).

3. Related Publications

NET 1-1	Net Management (Net Control Station Procedures)
NET 1-3	Net Frequencies
NET 1-4	Net Formats
OP PLAN 100	National Weather Service Support Plan (SKYWARN Operations Plan)

4. Definition of Terms

AEC	Assistant Emergency Coordinator
ANCS	Alternate Net Control Station
ARES	Amateur Radio Emergency Service (ARES® and Amateur Radio Emergency Service® are registered service marks of the American Radio Relay League.)
ARRL	American Radio Relay League
EC	Emergency Coordinator
FCC	Federal Communications Commission
ICS	Incident Command System
NCS	Net Control Station
NIMS	National Incident Management System
NTS	National Traffic System
Served Agency	An agency with which Tippecanoe County ARES has established a support agreement through the implementation of a formal Memorandum of Understanding.
SIT REP(S)	Situation Report(s)

5. Guidelines

5.1 Net Control

When required to support emergency situations or during routine training in net operations, most Tippecanoe County ARES nets will function as controlled, directed nets, using a Net Condition defined in Section 5.3 of this document, as appropriate to the situation. Instructions given by the Net Control Station (NCS) are to be followed by all net participants.

The decisions of the NCS must not be debated on the air unless a clear and present danger exists, which, if the direction of the NCS were followed, the result would be the loss of life, loss of property, or injury. In these cases, politely inform the NCS that you cannot carry out the request(s) and briefly explain why.

5.2 General Principles of Net Operation

5.2.1 Entering a Net

When asked to do so by the NCS, check into the appropriate net to advise the NCS of your availability. If your location has been assigned a tactical call sign, use the tactical call, remembering to close all transmission sequences with your own operator call sign to comply with FCC Rules and Regulations. Use the ITU phonetic alphabet the first time you give your call sign to ensure that the NCS clearly understands your identity.

5.2.2 Logs

All locations should maintain a log of events and messages handled. Logs should contain copies of all formal messages handled. Use form ICS 309 (Communications Log) to record the exchanges with each station, including the details of the communications, and basic “from” and “to” information. Record the time for each event. Use local time to preclude confusion if later correlation is required.

Record all incidents that impact operations at your location. Record the time the event occurs and the nature of the event. This information will assist in post-event discussions to implement changes that improve operations in the future.

5.2.3 Operations Nets

Operations nets normally involve tactical communications (short transmissions required to coordinate activities). Such nets are employed to assign personnel to locations, quickly and efficiently gather data, notify personnel of conditions that require immediate attention, and similar activities. The NCS will advise what type net you are entering.

5.2.4 Logistics Nets

Logistics nets are normally established for a specific mission during an event or in preparation for one. Typical applications for logistics nets are shelter management, supplies requests, the passing of health and welfare messages, and resource evaluation.

5.3 Increased Readiness Conditions (Net Conditions)

The Increased Readiness Conditions described below are protocols used in the operations of Tippecanoe County ARES. Most emergencies follow some recognizable build-up period during which actions can be taken to achieve a state of maximum readiness. These readiness conditions are used as a method of increasing the alert posture of ARES members. ARES nets will follow these designations to maintain a level of net discipline appropriate to the situation, and provide more effective communications. The descriptions below are for guidance purposes. Certain situations may require the handling of various net conditions in a manner that does not exactly fit these descriptions. Such decisions are the responsibility of the Net Control Station (NCS).

5.3.1 **Net Condition 4:** (Situational Awareness / Increased Readiness / OP PLAN Review)

Condition 4 is the lowest level of Increased Readiness. It indicates an increased potential threat above normal conditions, but poses no immediate threat to life or property in the area. It exists to provide a presence on the frequencies and serve as a structure for potential elevation into higher levels. It also serves as a means of notifying ARES personnel of the Increased Readiness Condition, allowing them an opportunity to review the appropriate operations plan and written procedures, check the status of their equipment, and otherwise prepare ahead of time for the potential threat. The net is conducted in an informal, non-directed fashion and is open to all reports concerning weather in the area, reports of non-emergency situations, or the status of responding stations. In weather related situations, Net Condition 4 is the equivalent of a National Weather Service “watch” condition. Situation Reports (SIT REPS) may freely be conducted during this condition.

5.3.2 **Net Condition 3:** (Escalated Vigilance / Pre-Event Preparation / Resource Reporting & Positioning)

Condition 3 identifies the situation where hazards may exist that present a greater potential or more immediate threat than Condition 4 to life and/or property. Open reporting, except in the case of emergencies or the existence of dangerous conditions, is ceased. The NCS will conduct the net in a directed, tactical format with all communications being managed under NCS guidance. The NCS is in control of the deployment and management of all communications resources that are to be used. In weather related situations, Net Condition 3 is the equivalent of a National Weather Service “watch” condition, but with an increased threat probability. Weather situations that have not been declared an official warning by the National Weather Service, but still pose a potential, imminent threat, are typical criteria for Net Condition 3 activation. A warning issued for severe weather in nearby jurisdictions, which has a high probability of impacting our county, is another example of validation to activate at Net Condition 3. SIT REPS may be taken during this condition, but without returning the net to background operation.

5.3.3 **Net Condition 2:** (Event Occurrence / Response Operations / Tactical Emergency Comms)

Condition 2 activation is warranted when a very hazardous situation exists that poses an immediate threat to life and/or property. The net is managed in a highly restricted format with reports being taken under NCS direction only, unless a true emergency exists. In weather related situations, Condition 2 is the equivalent of a National Weather Service “warning” condition. No unrequested communications should take place except by the permission of the NCS. The only exception to this would be the report of a situation where a threat to human life or major injury is eminent. If such a direct emergency communication is encountered, all other net operations will cease. The net will resume under Condition 2 after the life-threatening event is under control. The actions taken by the NCS in Condition 2 can, in a very real way, impact the safety of those involved in the situation and impact the responsiveness of emergency services to those in need. This is why net communication is limited to only responses and requests from the NCS, except in situations described above. The NCS cannot allow random and unrequested communications to take place during this condition. SIT REPS may be taken during this condition, but without returning the net to background operation.

5.3.4 **Net Condition 1:** (Disaster Operations / Emergency or Priority Only / Alternate Nets)

Net Condition 1 exists at a time when a major disaster **has just** occurred. The most extreme form of net discipline is required at this time. Only the highest priority communications will occur. Information being handled will fit either emergency or priority classifications. The net in this condition will not handle welfare or routine messages. Such messages will be delayed in their processing, or handled by another net established for that express purpose. If the situation allows, SIT REPS may be requested to gather specific information, as needed.

5.4 Interrupting a Net

The practice of saying “break” during a net to gain the attention of the Net Control is not acceptable. That word should only be used in its proper context, which is to separate certain elements of a formal NTS message.

There are only three acceptable words used to interrupt a net:

- **Emergency** - Only to be used to indicate a life threatening, or property damaging, situation
- **Priority** - Used to indicate an important, but non-life threatening, situation
- **Your Call Sign** - An indication that you can wait, and does not require the immediate interruption of the ongoing communications. Use of this tag is an expectation to be put on hold and in queue. The NCS will often respond to your call sign right away, unless there are higher priority, or more immediate, concerns. Prefacing your call sign with “Net Control” is acceptable, and even desired in most situations, as it serves to gain the attention of the NCS prior to hearing your call sign.

5.5 Message Handling

When ARES personnel are given a message to deliver, a decision must be made as to the type of message format to use: tactical or formal.

Tactical messages are normally rapid exchanges of critical information required to support an operation. Such messages generally involve matters of safety to life and property. SKYWARN nets operate in a tactical mode due to the time-critical nature of the information they must provide to the National Weather Service, and the potential impact to life and property. By the time it takes a formal message to be prepared, passed, and read, the information may be useless to weather forecasters. Tactical messages are usually associated with Operations Nets.

For all messages **not** involving time-critical matters of safety to life and property, and have been originated by a Served Agency, a formal message format should be used. This is crucial to provide an authority for releasing messages submitted for transmission, and for documenting a variety of elements in an emergency situation or exercise. The use of formal messages encourages accuracy, and relieves ARES members involved in passing messages from interpreting information. Message handlers still must exercise care in making sure that the information received for transmission is accurately transferred to the recipient. Formal messages are usually associated with Logistics Nets and NTS nets.

5.5.1 Tactical Messages

A log of tactical message details should be maintained by the NCS (and ANCS) and all stations involved in the transfer of information, unless that station is not in a posture that allows the recording of information. Such logs may be necessary to recreate critical situations in a manner similar to using formal message records to recreate events. ARES operators will use form ICS 309 (Communications Log) to record all tactical communications.

5.5.2 Formal Messages

Use NTS (ARRL Radiogram) or ICS (ICS 213) message formats for all formal messages. Insure that you have an adequate supply of message forms available. Verify that the message precedence is appropriate to its content, and that the net is supporting the type of message you wish to pass. A separate logistics net may be established to handle welfare messages. No routine messages will normally be processed during an emergency condition.

All formal NTS messages in the ARRL Radiogram format and entered as traffic into the NTS system, will use UTC for the time filed, and indicate such (Z) on the form. All other message formats should use local time to preclude confusion by served agencies.

5.6 Hints and Kinks

The following tips and guidelines are taken from various emergency communications training materials, particularly from the ARRL Emergency Communications courses.

5.6.1 Net Protocols

5.6.1.1 Legal

Legal requirements within nets are the same as at any other time or circumstance. ARES net participants must properly identify and only operate on frequencies for which the licensee is authorized. The FCC tells us that you **MUST** identify at 10 minute intervals during a conversation and in your last transmission. During periods of heavy activity in event nets it is easy to forget when you last identified.

This does not mean that all net participants must identify every 10 minutes! Only those stations actively involved in conversations must meet that requirement. If you legally identified during your most recent transmission, there is no need to identify again. If you have made transmissions without identifying during the previous 10 minutes, then it is imperative you do so to satisfy the legal requirements.

The easiest way to insure you comply with FCC identification requirements during an event net is to identify with your FCC issued call as you complete an exchange. This serves two functions: 1) Tells NCS you consider the exchange to be complete without having to use extra words (saves time) and, 2) Fulfills all FCC identification requirements.

5.6.1.2 Customary

Customary protocols are sometimes used in non-emergency nets. They may include such practices as identifying with the FCC call of both stations on each transmission, giving the call sign of the next person to talk, or many other variations.

This is not a practice that Tippecanoe County ARES will use as standard procedure, but can be a possibility under certain circumstances. Please listen to the net instructions given by the NCS before joining. Customary protocols will easily stand out.

5.6.1.3 Tactical Calls – when and how to use them

Tactical calls are used to identify a location or an asset during an event, regardless of who is operating. This is an important concept. The tactical call allows you to contact a location without knowing the FCC call of the specific operator(s) there. It also virtually eliminates confusion at shift changes and when a person takes a break from operating.

Tactical calls should be used for all Emergency nets once there are more than just a few designated locations, and for most public service nets if there is more than minimal activity.

Net control will assign the tactical call as each location is opened. It will normally be some unique identifier that indicates its location or the function it serves. Some examples are:

- SHELTER-1 - first shelter established, or the shelter in a particular region
- CHECKPOINT-1 - first check point in a public service event
- COMMAND POST - event command post
- SHADOW-1 - operator following a non-ham to provide communications

Proper use of tactical calls can best be explained by example:

- Initiating a call

If you were at shelter three during a directed net and wanted to contact Net Control you would say "NET CONTROL, SHELTER 3." If you had an emergency you would simply say "EMERGENCY," or for priority situations, "PRIORITY." NCS should immediately acknowledge when these words are used. Notice how you have quickly conveyed all information necessary without using any superfluous words.

If you need to make contact with another location, such as checkpoint two, you would say "NET CONTROL, SHELTER 3." Upon being acknowledged by the NCS, you would say "SHELTER 3 requesting contact with CHECKPOINT 2." This tells NCS everything needed to handle the call. NCS will then call checkpoint 2 with "CHECKPOINT 2, go direct with SHELTER 3," if there are no other stations holding.

Notice that, so far, there have been no FCC call signs used. At this point, none are necessary.

- During a call

Tactical calls will normally not be used during the contact unless a separate location is mentioned in the message.

- Completing a call

To complete the call from SHELTER 3 after the exchange with CHECKPOINT 2 is done, you would end your last transmission with "(your call), SHELTER 3." This fulfills your identification requirements and tells NCS that you believe the call to be complete. CHECKPOINT 2 would end their last transmission similarly with "(call sign), CHECKPOINT 2."

The above procedure is the same for all participants in most directed nets.

5.6.1.4 Participating in a Net

DO . . .

- Enjoy yourself - Amateur Radio public service is fun!
- Prepare yourself. Are your batteries charged? Are you on your best antenna for the frequency or repeater you will be on? Do you have pencil, paper, and other items you think you will need?
- Listen. If you are there at the start of a net or join one in progress, LISTEN before you check in. NCS will announce or ask for what they want.

- Follow NCS Instructions. NCS will ask for specific stations or categories of stations as they are needed. **Follow instructions.**
- Speak clearly. Do not slur your words, but speak in a clear crisp voice. Do not try to sound like a radio or TV commentator, but speak to be understood by anyone listening.
- Plan your transmission. If you have more information than just your Name and Call, then write it down. This promotes clear, concise communication.
- Let NCS know when you leave or if you need to leave before the close of the net. This is referred to as “check out”. There is generally no need to go into details of why.
- Obey the orders of those in authority. During an event, if the authorities ask you to move, do so immediately and without comment. Then notify the NCS of your change in status as soon as you can. If an on-scene authority requests that you shut your radio off, or that you not transmit, **do what they ask immediately and without question.** This is one circumstance where you do not notify the NCS of a change in your status. (*This deserves a little explanation:* This would normally occur only if there is a presence of explosives or explosive chemicals or vapors, and there is the possibility that a spark producing electronic device may be triggered by an RF signal.)
- Be patient with the NCS. An NCS operator is under high stress. His or her questions and requests should be clear and crisp; but as he/she begins to tire, there may be a tendency to become rather terse. Typically, there is a whole lot going on at an NCS that the field operators never know about.
- Ask SPECIFIC questions, give SPECIFIC answers! You can make it much harder on yourself and others with vague questions and vague responses to information requests.
- Read your owner’s manuals and understand how to operate the main functions of your equipment. Know how to program both simplex and split frequencies into the VFO of your radio, including the use of CTCSS, both on transmit and receive. Program commonly used and pre-designated tactical frequencies into the memory channels of your transceivers ahead of time. If a particular memory channel scheme is being used by several of your fellow ARES members, consider programming your radio in the same fashion to promote equipment interoperability.
- Know how to properly use your microphone. The worst sounding net participant is one that cannot be heard or sounds like a train huffing and puffing in the microphone as they speak. From the ARRL Field Resources Manual: Articulate, don’t slur. Speak close to your mike, but talk across it, NOT into it.
- Keep transmissions as short as possible. Resist the tendency to rag chew or ramble.
- Transmit only facts! If there is need to make an educated guess or speculate, make sure it is VERY clear that it is speculation. First choice is to not speculate at all.

- When necessary, use standard ITU phonetics, and **only** standard ITU phonetics. Send all numbers individually, e.g., 334 is three three four, not three hundred thirty four.
- Use phonetics only when needed. Do not over-use them. Use them for your call sign only when checking into a net for the first time. The NCS now knows your call sign. After that, you should only use phonetics for your call sign if asked, or for clarification. Avoid the bad habit of using phonetics for your call sign excessively.
- Do use plain English on voice nets. Avoid “Q” signals, 10-codes, and other radio “slang”.

DO NOT . . .

- Do not editorialize. "This is Fred over on the east side, down along Wildcat Creek where it is raining, but it was just cloudy five minutes ago when I came in from feeding the birds, dogs, and hamsters, but it's really coming down right now and it looks like it could keep it up for a while - just checking in" is unnecessary AND unwanted. This ties up the net and does nothing to add usable information. Check in with your CALL SIGN. Add other information only as requested by NCS.
- Do not check in as "short time" or "for the count". Check in ONLY if you are going to be an active participant in an emergency net. Those passively monitoring will be given an opportunity to check in once the emergency threat is over at the close of the net.
- Do not check in using the phrase "This is", followed by your call sign. That may be done on some non-emergency nets, but it is unnecessary chatter and causes delays.
- DON'T THINK ON THE AIR! If you need a moment to consider what to say next, or how to say it, simply say "stand by" if you are in the middle of an exchange and un-key your microphone.
- Do not over-identify! Unless your transmission is longer than ten minutes, you need only identify near the end of your last transmission or exchange of information. There is also no need to announce the other station's call sign, unless you are making an initial call to them. You should not waste valuable net airtime by continually giving the other station's call sign, followed by your own. This format of identifying has not been a requirement for many years, and generally serves no valid purpose, particularly in a directed net.
- DO NOT acknowledge jammers! If someone is clearly jamming, or deliberately causing interference, **do not** acknowledge their presence on the air. Continue net operation as normal, even if that means asking stations to repeat. In such a situation, the NCS may make use of relays, or temporarily utilize alternate frequencies. Under **no** circumstances should you make any reference about the jammer, or discuss the effectiveness of the interference, on the air. **Absolute silence about the issue**, and **zero recognition on the air**, is the recommended way to handle this type of situation. It may not immediately resolve the problem, but following these guidelines will certainly not encourage the interfering station to continue.

DO BE WILLING TO SERVE . . .

- Hams are patriotic, independent people and they are volunteers. The attitude among a few hams is that “Volunteers don't have to take orders.” And that is absolutely correct! We don't **have** to take orders. But if you are not ready to follow instructions to be part of the team, *you may want to do something outside of ARES.*

5.6.1.5 Leaving a Net

You will most likely leave a net for one of five reasons:

1. The location to which you have been assigned is closing.

If NCS has given you directions to close the location, simply identify with your FCC issued call, the location tactical call, and the word "CLOSED." The NCS will tell you if anything else is needed.

2. You have turned the location over to another operator. You should notify NCS of the change of operators. If there are specific instructions from NCS then follow those instructions.
3. You need a short break and there is no relief operator. Tell NCS that "I will be away from the radio for (number of minutes)," and end with "(your call), (tactical call)."
4. You need to leave (long-term) for personal reasons and there is no relief operator to take your place. Notify NCS of the situation as soon as you aware that you will need to leave. Please follow the instructions of the NCS, if at all possible.
5. The net is closing. Once the NCS terminates net operation, all participating stations are automatically relieved from their duties. There is no need to identify or check out, unless you have not previously made yourself known to NCS and he/she is taking check-ins from net participants. This is often done by NCS at the close of SKYWARN and other operations nets.

5.6.2 Don't Over-Identify

There is usually nothing that will expend more time, needlessly, than over identification. Someone that uses their FCC issued call in every transmission is usually a person that is unsure of them self or, worse yet, someone that is more interested in having their call known to everyone at the event. In the latter situation, help them find work elsewhere.

The FCC tells us that you need only identify at 10-minute intervals during a conversation (NOT during a net unless you talk for more than ten minutes) and during your last transmission.

You should end each exchange with your call sign. An exchange is a limited conversation (a number of transmissions) with one or more specific stations. The word “exchange” does **not** refer to each transmission you make, unless that one transmission is your only participation in the conversation.

If you end each exchange with your call, that tells everyone that you are of the opinion the exchange is complete, and you simultaneously fulfill all FCC requirements.

5.6.3 Write It Down

The easiest way to minimize what you say during a net is to write down everything before you key the microphone. Since very few of us like to write lengthy notes, this will promote brevity.

An excellent place to keep this information is in the log for your location. This serves two purposes:

- 1) You will have a complete log of everything that came from your location.
- 2) Your transmissions will become very brief.

5.6.4 Reporting Emergencies and Non-Emergencies

Situations requiring emergency services should be reported to 911 **by the reporting station, if at all possible**. 911 dispatchers prefer to speak directly with the person at the scene of the emergency, rather than having information relayed through a third party (like the NCS). If the reporting station has no immediate means of safely calling 911 themselves, then the NCS should act on their behalf and initiate the emergency call, or appoint another station to do so. However, this should only be done for true emergencies, reportable through the 911 system.

Situations such as power outages, downed trees, stoplights not functioning, and even blocked roadways are usually not critical enough in nature to warrant a call to 911. Events such as these, unless they are also part of a more severe, life-threatening situation, should be reported through normal, day-to-day channels, by the initial reporting station if at all possible, rather than through the NCS. The NCS should not be expected to change their focus of running an emergency net to relay non-emergency reports.

If the originating station has a practical means of reporting the non-emergency situation themselves (i.e., via telephone, cell phone, or other means) they should do so. If this is not possible to accomplish in a safe or timely manner, someone may volunteer to relay the report, if they have the resources available, and their assistance would not detract from their participation in the emergency net. Anything dealing with non-emergency reports that need to be relayed to the proper authorities, should be immediately moved to an alternate frequency and handled by someone other than the NCS, ANCS, or liaison stations.

6. Release Information

The date of publication for this document is 05 DEC 2011.

Change log:

05 DEC 2011	Minor changes in terms and wording throughout the document. Elimination of references to “break tags” and “traffic,” except where applicable. Some changes and clarifications of various net protocols throughout the document.
03 JAN 2010	Minor clarifications throughout the document. Sentence spacing increased to improve readability. Removed a reference to a related publication.
11 NOV 2008	Added a reference to NET 1-4, Net Formats, in section 3.
01 SEP 2008	Minor changes to section 2, “Responsibilities”. Re-titled section 5.3 to “Increased Readiness Conditions (Net Conditions)” to more accurately reflect the content and maintain continuity with other ARES documents and guidelines. Changed portions of all subsections in section 5.3 to further define Net Conditions, and how they relate to the Increased Readiness Condition protocols.
31 AUG 2008	Changed portions of sections 5.3.2 (Net Condition 3) and 5.3.3 (Net Condition 2) to clarify wording that describes the operational concepts. Changed order of two points in section 5.6.1.5, “Leaving a Net”. Added section 5.6.4, “Reporting Emergencies and Non-Emergencies”.
27 AUG 2008	Updated example in section 5.6.1.3, “Tactical Calls – when and how to use them”, to reflect procedures listed in section 5.4 pertaining to the use of “break tags”. Added a bullet point to section 5.6.1.4, “Participating in a Net”.