

SATERN

A Guide To Emergency Net Operations

by

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INTRODUCTION

We hams have a very rich history of providing public service communications. In fact, our collective public service efforts provide the FCC with a reason to provide us with the continued opportunity to use the valuable frequencies upon which we operate. Without amateur radio operators' public service efforts, ham radio would, quite simply, cease to exist.

Emergency situations occur every day in every community, in every county, in every state, and in every nation. As used in this document, the term *emergency* refers to an unplanned event, series of events, or other circumstance which results in danger of or actual injury to people or property. At some point in our amateur careers, it's safe to say we have all either directly participated in or monitored others who were actively involved in emergency communications. SATERN's 1998 Hurricane Mitch experience which featured 19 consecutive days of 20 meter network operations is a prime example of amateur radio emergency communications (ECOM).

The Hurricane Mitch operation was noteworthy for a number of reasons, not the least of which was the successful petition of the FCC to declare a segment of the 20 meter band to be for emergency communications only - a SATERN first. SATERN received a lot of exposure and publicity from those 19 days of operations. After the ECOM net was secured, those stations who had acted as net control stations during that period were polled by Harry, W9IB, to obtain comments and suggestions for improvement of our operations. Shortly thereafter, the position of SATERN National Training Coordinator was created. This document was developed in an effort to address some concerns that were voiced in the after action survey and to improve SATERN's members' ability to provide ECOM.

THE BASICS OF COMMUNICATIONS

Communications, by definition, is a two way process. Successful communications involves a sender of information and one or more receivers of that information. If either of these parties

do not do their part in the communications process, their efforts will have been futile. Moreover, before the attempt to pass information takes place, ...we must determine exactly what it is we wish to transmit. . . and, . . . how to deliver it to the intended receiver. While that sounds pretty simple, the most effective way to communicate information will involve clear, concise words and phraseology. Condensing your thoughts into those few, clear and concise words often takes more than a bit of thought. Then, the method of transmission must be selected. On SATERN's voice nets, that choice would appear to be pretty straightforward. There are times and situations, however, that dictate that the information be sent in written form. Digital modes (including CW), then, may be called upon to provide those types of communications. Once the mode of transmission has been selected and the information sent, the onus now bears on the recipient. Did he or she not only receive the information correctly, but, was the message clearly understood? Was the message interpreted correctly? And, finally, there should be some sort of feedback system in place to ensure that the communication was in fact successful.

If any of these elements are missing from the two way communications process, we have not successfully conveyed information. How we perform these tasks and our collective attention to detail, then, define our success as communicators.

NET OPERATIONS OVERVIEW

The purpose of an amateur radio network is to provide the net's members with the opportunity to exchange information, messages, and, in some cases, to provide practice for emergency communications (ECOM) situations. SATERN's 20 meter network operation meets all of these needs. In it's most basic form, an amateur net consists of a net control station (NCS or NECOS) and net members.

All SATERN HF nets are DIRECTED NETS. This term refers to a type of amateur radio network operation where the conduct and operations of the net *and all transmissions during the net* are strictly controlled by the NCS. DIRECTED NETS can be of two types: OPEN and CLOSED nets. In most cases, SATERN's net operations will be OPEN nets, i.e., allowing non-members to check in. There may be times and circumstances, however, when a SATERN net may be operated in CLOSED fashion and only SATERN members or only stations with emergency and/or priority traffic allowed to participate. The decision as to whether SATERN's nets will be OPEN or CLOSED will be made by SATERN's senior managers, dictated by the circumstances of the emergency requiring the net's attention, and communicated to the NCS in advance of the net operation.

BEGINNING AT THE BEGINNING

Each amateur radio station has been assigned by the appropriate licensing agency of his or her government a unique callsign. To avoid confusion and enhance effective communications, during network operations, all station callsigns should be communicated phonetically. Only the International phonetic alphabet should be used:

ALPHA
BRAVO

NOVEMBER
OSCAR

**CHARLIE
DELTA
ECHO
FOXTROT
GOLF
HOTEL
INDIA
JULIET
KILO
LIMA
MIKE**

**PAPA
QUEBEC
ROMEO
SIERRA
TANGO
UNIFORM
VICTOR
WHISKEY
X-RAY
YANKEE
ZULU**

The International phonetic alphabet is used around the world and, in some cases, represents the only knowledge of the English language that some foreign operators possess.

Remember: To maximize communications efficiency, your station's callsign should always be communicated phonetically. For example, THIS IS WHISKY FIVE BRAVO VICTOR BRAVO will, most likely, be copied correctly on the first try. Try saying that callsign without phonetics...you'll understand why the proper use of phonetics is not only desirable, but, in some cases, mandatory.

PROWORDS

To further enhance effective communications, we need to become acquainted with several prowords. The term "proword" is a contraction for "procedural word," and the prowords we'll be using were developed and still in use by US military forces. While the use of these prowords may, at first, seem awkward (and, in some cases, outdated), once you get used to using them, you'll find that they will dramatically enhance your station's ability to communicate - both as a transmitter and a receiver of information - more efficiently.

THIS IS: This proword is self explanatory. THIS IS@ should precede your callsign in every transmission during a DIRECTED NET operation. For example, W9FX replies to the net control station (NCS), K7JAD: A THIS IS WHISKEY NINER FOXTROT X-RAY. ROGER, etc.

OVER: This proword is used at the end of a transmission when additional communications is expected with another party. For example, Harry, W9IB, is communicating with Pat, WW9E. Here's Harry's transmission: WHISKEY WHISKEY NINER ECHO, THIS IS WHISKEY NINER INDIA BRAVO. DO YOU HAVE ANYTHING FURTHER, MAJOR PAT? OVER.

Harry's use of the proword OVER indicates that he expects a transmission from Pat. An NCS asking for check ins to a net would also use this proword to end his/her transmission: ADDITIONAL STATIONS FOR THIS NET, OVER.

OUT: This proword is used to indicate that no further communication is expected from the other party. Using the above example, Pat, WW9E replies: THIS IS WHISKEY WHISKEY NINER ECHO. NOTHING FURTHER. OUT. The proword OUT is similar to hanging up the telephone - the conversation between the parties has ended. This proword would also be used by an NCS to terminate net operations: A ALL STATIONS, THIS IS WHISKEY NINER INDIA BRAVO. THIS NET IS SECURED. OUT.

ROGER: This proword means that you understood the transmission of another station. This is not to be confused with answering a question in the affirmative. If you are asked a question and the answer is in the affirmative, use YES, or AFFIRMATIVE - not ROGER!

WAIT: There are two forms of use of this proword. A WAIT, or WAIT, OVER is used when an operator experiences a brief delay. For example, if you drop your pencil or have to reach into a drawer to retrieve a piece of paper or pen, transmit the proword WAIT or WAIT, OVER. The transmitter can be either be unkeyed or remain on the air during the delay. If, however, the delay is anticipated to be longer than a few seconds, transmit the prowords WAIT, OUT. Circumstance that might dictate the latter use of this proword include a visitor in the radio room, a telephone call, or other disturbance. In any event, the proword WAIT is similar to putting someone you're talking to on the telephone on hold. Just as you must take the person on the phone off hold to conclude your conversation, don't forget to finish your communication with the station to whom you transmitted WAIT. If you are not acting as NCS and you've used the prowords WAIT, OUT, be sure to once again obtain the permission of the NCS to resume your communications with the other station. By using the proword OUT, you terminated whatever communications were earlier taking place. "WAIT, OUT," releases the frequency for use by the NCS and other net members.

SAY AGAIN: In a perfect world, all communications would be understood by all parties on the first attempt. Alas, the world is not perfect (nor is 20 meter propagation), and repeats or "fills" of transmitted information will be required. The prowords A SAY AGAIN@ tell the other operator that you need a fill or repeat of information that was previously transmitted. If you're copying formal traffic, other prowords may follow. For example, A SAY AGAIN ALL AFTER xxxx tells the other operator that you need him or her to repeat everything in the message after a certain word or group of figures (xxxx). For example, you might transmit SAY AGAIN ALL AFTER SCHOOL, OVER. If you only missed a word or two or a short phrase, you can transmit the prowords SAY AGAIN FROM xxxx TO xxxx. This tells the other operator that you need all the information contained in the message FROM the word (xxxx) TO the word (xxxx). For example, SAY AGAIN FROM ELEPHANT TO MONKEY, OVER.

FIGURES: Routinely, in handling messages, we encounter groups of numbers B telephone numbers, latitude and longitude indications, street addresses, and so forth. In order to let the operator on the other end of the communication pipeline know that what we're about to transmit is a group of numbers, or, a mixed group containing both numbers and letters but beginning with a number, we use the proword FIGURES. Here's how it works: We need to transmit this telephone number: 800-3743-7279. We transmit that information as FIGURES EIGHT ZERO ZERO DASH THREE SEVEN FOUR THREE DASH SEVEN TWO SEVEN NINE.

I SPELL: Here again, we rely on the International phonetic alphabet. Many words in the English language sound alike but have entirely different meanings. To, too, and two, for example, sound exactly the same. In order to make certain that the recipient of information understands what word we're using, when we encounter words we cannot pronounce, words that sound like other words, or uncommon words, we phonetically spell them out. In order to use this proword, we *SAY THE WORD, SPELL THE WORD PHONETICALLY, and then, SAY THE WORD AGAIN.* Here's how it sounds in practice: I AM GOING TO I SPELL TANGO OSCAR TO SEND YOU TWO I SPELL TANGO WHISKEY OSCAR TWO FORMS COMMA TOO I SPELL TANGO OSCAR OSCAR TOO PERIOD

MIXED GROUPS: You will, from time to time, encounter groups of letters and numbers that, taken together, represent a single group. Ham call signs are a very good example. The rule for transmitting mixed groups by voice is very simple: If the group starts with a letter, use the proword I SPELL. For example: I SPELL WHISKEY FIVE ALPHA BRAVO. If the group starts

with a number, use the proword FIGURES. Example: AFIGURES SIX ONE FOUR SIX ALPHA.

CORRECTION: We all, occasionally, make errors in our transmissions. When an error is made, the proword CORRECTION should be communicated, followed by the correct information. Example: THIS IS WHISKEY FIVE CORRECTION WHISKEY EIGHT ALPHA INDIA. OVER

NET CONTROL STATION RESPONSIBILITIES

As noted previously, the net control station (NCS) of a SATERN net is completely in charge of that net's operations. The NCS is responsible to see that traffic listed during the course of the net is handled in the most efficient manner possible. Additionally, the NCS is responsible to assign stations to net duties (more about those later) and to maintain firm control of the net during his or her tenure as NCS.

Every NCS should keep a written log of the net's activities. This is especially important during emergency network operations. Things can become pretty hectic during an actual emergency. Stations check into the net, leave the net, list traffic for other stations or individuals, leave messages for other net members, etc. Trying to keep up with all of these activities without a written (or computerized) log is, simply, impractical, and, in many cases, impossible. The NCS log should contain, at a minimum, the date and time the net commenced (or when the NCS took control of the net), the net's operating frequency, the stations checked into the net, a listing of traffic and by whom passed during the net, and when the net ceased operations (or the NCS was relieved by another NCS operator). Ideally, this log should be retained for a period of time after the emergency has abated. Review of the NCS logs by the NCS and/or senior managers can later be undertaken to further improve future net operations. And, having a written record of what happened on '>your watch' is always of value.

IDENTIFYING THE NETWORK

As noted previously, all SATERN nets are DIRECTED NETS. As such, stations should only be recognized into the net when an invitation is extended to them. Before commencing operations, the NCS should equip him- or herself with a written "script" or "preamble". This script should be kept at the operating position so that every time the net needs to be identified, the NCS can simply read the script. From experience, I can tell you that having the information in front of you can avoid some very embarrassing moments. The script does not need to be poetic or high prose. A simple statement of what the net is about, why it's being held, and what you, as NCS are looking for (check ins, traffic, etc.) at this time will suffice. Here's what I used during the Hurricane Mitch/Honduras Operation - and I include this only as an example, not as a boilerplate script that should be copied by all:

ALL STATIONS, THIS IS WHISKEY NINE FOXTROT X-RAY, NET CONTROL STATION FOR THE SALVATION ARMY TEAM EMERGENCY RADIO NETWORK, SATERN, EMERGENCY NET. THIS IS A DIRECTED NET ESTABLISHED TO HANDLE EMERGENCY AND PRIORITY TRAFFIC BOTH INTO AND OUT OF CENTRAL AMERICA IN THE WAKE OF HURRICANE

MITCH. STATIONS WITH TRAFFIC FOR THIS NET, OVER.

Note that this version of my script does not invite stations with general information or comments into the net. Only stations with traffic are being invited into the net. Had I been interested, at that time, in opening the net to the general amateur population, I would have changed the last line to read: ADDITIONAL STATIONS WITH OR WITHOUT TRAFFIC FOR THIS NET, OVER.

The NCS is perfectly within rights to ignore stations who attempt to check in at times when such have not been invited. Having said that, however, remember that the net should be identified - and additional stations invited to join the operation - at frequent intervals. *A net ID/invitation should be transmitted by the NCS on approximately 5 minute intervals.*

BREAKING INTO A NET

There is only one occasion when a station should be allowed or attempt to break into a net, and that occasion arises when the station breaking into the net has higher precedence information or traffic than that which the net is currently handling. *The use of the words BREAK or, BREAK, BREAK have no place in directed net operations.* To break into a network, a station should transmit the callsign of the NCS followed by the prowords THIS IS and his or her callsign, followed with the proword OVER. Stations trying to "help" by providing relay of information should be discouraged from transmitting until and unless help is requested by the NCS.

NCS REQUESTS A RELAY

Circumstances will arise when the NCS cannot hear a station. On those occasions, the NCS should invite stations to relay information to the net. This is done as follows:

THIS IS WHISKEY WHISKEY NINE ECHO. MAY I HAVE A RELAY, PLEASE. OVER

The NCS should choose one of the responding stations, recognize him or her, and ask that he or she relay the necessary information.

RELAY BETWEEN STATIONS IN THE NET

Circumstances will arise when two stations, both checked into the net, need assistance in communicating as they cannot hear each other. On those occasions, the NCS may act as a relay station, or, may assign another, third station to handle those chores. Here are two examples:

NOVEMBER FIVE FOXTROT MIKE, CALL KILO SEVEN JULIET ALPHA DELTA. RELAY HIS TRAFFIC TO HOTEL ROMEO EIGHT ROMEO CHARLIE PAPA. OUT

or, the NCS chooses to handle the relay:

KILO SEVEN JULIET ALPHA DELTA THIS IS WHISKEY NINE FOXTROT X-RAY. SEND YOUR TRAFFIC TO THIS STATION. I WILL RELAY. OVER

STATIONS WHO WANT TO "HELP"

Most amateur radio operators, in times of emergencies, truly want to be part of the "action." They want to help. Sadly, most have never been exposed to disciplined radio communications. Every emergency net I've ever heard or participated in has had offers of such help...Just wanted you to know that we're riding along...here if you need us...can relay if you need me..., etc. These folks are well meaning (and may be potential new members of SATERN!) but should be courteously and tactfully discouraged from transmitting unless asked to do so. The best way to handle these folks is to thank them for their offer of help, encourage them to monitor the frequency, and that you will call them if you need their assistance. Depending upon the net's traffic load and propagation, you may or may not, as NCS, want to log these operators' names and locations. And, occasionally, you may well find yourself in a situation where you do, in fact, call upon them to provide services as a relaying station. In any event, do not generate controversy by berating them or acting officious. And, do not ignore them. As a rule, until they are recognized, they will not go away. They will only tie up the net as they repeatedly attempt to check into the operation. **Remember:When you're operating in a SATERN net, you are representing the Salvation Army to the amateur and SWLing world.** You want to leave a favorable impression with all concerned of both SATERN and the Salvation Army!

HANDLING INTERFERENCE

It is important to note that while the SATERN net has operated for a considerable length of time on the same frequency, SATERN has no more right to "claim" any frequency than any other amateur operator. We - all amateur operators - share our frequency spectrum on a Federally mandated, non-interfering basis. Our net operations are important to us but may be of little or no consequence to other users of the amateur bands. All net members should strive to achieve peaceful coexistence with other amateur band users - and, during normal net operations, be willing to move the net a few kHz, if necessary, to avoid interfering with other amateur stations.

On most occasions, other amateurs will respect the net's operation and steer away from - if not clear of the net. There are occasions, however, when unintentional and, sadly, intentional interference to the net will occur. The best way to handle unintentional interference is for the NCS or a station appointed by the NCS to establish communications with the interfering station, explain the situation, and politely request that he or she change frequencies. In most cases, that's all that's required. If the station, however, refuses to move, do not engage in an on the air argument. Such activities reflect poorly on all concerned, including SATERN. The net can be moved, too - something which the NCS will need to keep in mind when these unpleasant situations crop up. If the interference is unidentified and obviously intentional, the interfering station should be completely ignored by all net members. No comments regarding the interference should be made. In most cases, lacking the ego stoking complaints, jammers will simply go away - probably to find someone else to annoy.

If, as happened during the post-Hurricane Mitch operation, the FCC has declared a portion of an amateur band to be for emergency communications only and if the SATERN net is engaged in those emergency communications, interference, is handled a bit differently. As a rule, the FCC declares a center frequency and the range of frequencies 3 kHz above and below the center frequency to be off limits for non emergency use. Not all amateur operators

receive W1AW/ARRL bulletins and will not be aware of the FCC's declaration. On those occasions when stations not engaged in emergency communications engage in transmitting within the emergency subband, the NCS (or a designated representative of the net) should politely and tactfully inform the interfering station of the FCC's declaration and ask them to move their operations out of the emergency communications subband. If deliberate interference or belligerent operators are encountered, the NCS should immediately contact one of the SATERN Net Coordinators who will take the appropriate actions to initiate FCC enforcement.

In any event, no member of a SATERN net should ever engage in any on the air verbal battles with other operators.

COMMAND/CONTROL AND TACTICAL NETS

These terms come directly from military communications manuals. The military command and control net is a network where the bulk of business is conducted, i.e., the primary network operation. Tactical nets may be established on other frequencies and stations assigned to them to handle point-to-point communications and/or meet a specific need. In SATERN's terms, our command and control net would be the primary network operation on 14.265 MHz. If the traffic load is so heavy as to create a backlog of messages waiting to be passed, the NCS may direct two or more stations to move to a different frequency and establish a secondary, or "tactical" net for the purposes of moving some of the backlog of traffic. If the creation of a tactical net is accomplished, the NCS should name one of the stations remaining on the primary frequency to be a LIAISON station. This station should be informed that he or she may be called upon to take messages from the primary, or command and control, net to (one of) the tactical networks. Until told to leave the primary net frequency, the LIAISON station should remain on the primary net frequency. Here's how the assignment is accomplished:

WHISKEY SEVEN LIMA X-RAY ROMEO, THIS IS WHISKEY NINE FOXTROT X-RAY. YOU ARE ASSIGNED AS A LIAISON STATION. REMAIN ON THIS FREQUENCY UNLESS OTHERWISE DIRECTED. OVER

And, when the time comes for the need for a LIAISON station to move to another net:

WHISKEY SEVEN LIMA X-RAY ROMEO, THIS IS WHISKEY NINE FOXTROT X-RAY. SECURE OPERATIONS ON THIS FREQUENCY. MOVE TO FIGURES ONE FOUR TWO FIVE FIVE KILOHERTZ. INFORM THE NET CONTROL STATION OF THAT NET THAT THIS NET IS SECURING OPERATIONS IN FIGURES THREE ZERO MINUTES. REPORT BACK INTO THIS NET UPON COMPLETION OF YOUR COMMUNICATIONS. OUT

Tactical networks can be of great benefit to an NCS, especially in circumstances where a heavy traffic load of health and welfare traffic is being listed. The NCS, in this circumstance, would be well advised to establish a tactical net for the purpose of gathering the outbound messages. Another tactical net (or digital operation) might be established, then, to send the gathered messages on to the disaster site.

MANAGING THE MOVEMENT OF TRAFFIC

Stations should list their traffic when checking into the net, i.e., I LIST ONE EMERGENCY FOR TEGUCIGALPA HONDURAS. Or, I LIST ONE PRIORITY CHICAGO ILLINOIS. Messages should be handled according to their precedence B Emergency precedence messages should always be handled first, followed by Priority precedence messages, and so on. It's up to the NCS to make sure that the messages listed on his/her net are handled properly. Again, in a directed net, the NCS directs the flow of information at all times. So, in order for a message to be transmitted, the NCS must give permission to the transmitting station and tell him or her to whom to transmit the message:

NOVEMBER SIX WHISKEY X-RAY TANGO THIS IS WHISKEY BRAVO NINE ROMEO ROMEO LIMA. CALL KILO NINE SIERRA TANGO PAPA AND PASS YOUR PRIORITY CHICAGO TRAFFIC. OUT.

ADDITIONAL RESOURCES

While the foregoing information presents the fundamentals of ECOM operations, it is by no means an extensive nor exhaustive discussion of the topic. Many additional resources are available to the radio amateur. One resource that is highly recommended to all operators is the ***ARES Field Resources Manual, A Quick Trainer and Field Resource Guide For the Emergency Communicator***. Published in December, 1995, by the American Radio Relay League. This inexpensive (\$5) manual contains NTS nets schedules and frequencies, information regarding how to originate NTS messages, and a host of additional ECOM related information. Copies of this manual are available from the ARRL. For those seeking more in depth discussions of emergency communications, net operations, and traffic handling procedures, the ARRL has other publications, as well, including:

- ***The ARRL Operating Manual***
- ***ARRL Emergency Coordinator=s Manual***
- ***Public Service Communications Manual***