NWS Wakefield SKYWARN
Amateur Radio Support Team
WX4AKQ Wakefield, VA

SKYWARN NCO Training Manual

2016 Edition

Initial Release

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Position and Training Overview

The Net Control Operator

The SKYWARN Net Control Operator (NCO) serves perhaps the single most essential role in the entire SKYWARN program. The NCO is responsible for calling the SKYWARN nets, managing traffic flow during the net, collecting reports from Spotters, logging those reports, and sending certain reports to the National Weather Service. Without the NCO, there could be no amateur radio involvement in the SKYWARN program!

There are two documents you should review to get a good feel for what our Net Control Operators do for the team and what is expected of them. If you haven't looked at these yet, now's the time to do it. You can obtain these documents from the NCO Training page on the SKYWARN web site, at **http://www.wx4akq.org/train_nco_new.php**:

- Net Control Operator Realistic Job Preview
- SKYWARN Operations Manual – see the “Net Control Operator Job Description” section.

Please review those documents now.

Training Overview

Reviewing those two documents and this NCO Training Manual are the first steps to becoming a SKYWARN Net Control Operator. Further steps include registration and participation in a classroom training session, which will provide hands-on experience running a simulated SKYWARN net, logging reports, and handling radio traffic.

This training manual is intended to provide you with the basic knowledge required to serve as NCO. After reviewing the material here, you should have a good idea how to operate a SKYWARN net and effectively serve the National Weather Service as a SKYWARN NCO.

When you are ready to register for a class, visit the SKYWARN web site at **http://www.wx4akq.org/**. Classes are held periodically throughout the year, primarily in the late winter and early spring.

Training Prerequisites

There are a few assumptions that are being made about your experience and qualifications prior to working through this manual. For starters, we assume you have had at least Basic SKYWARN Spotter training within the last three years. Naturally, you must be a licensed amateur radio operator holding at least a Technician class license. Last but not least, you should have an interest in severe weather and emergency communications, otherwise you will probably be underwhelmed by your role in the SKYWARN program.

A full list of the NCO Requirements can be found on our Training portal at **http://www.wx4akq.org/train_nco_new.php**. Please review this information and make sure you meet those requirements before continuing with this training.

Team Structure

SKYWARN Amateur Radio Around the Country

If you were to take a look at SKYWARN amateur radio teams around the country, you would see that there are many different approaches to team structure and operating practices. Some things you might observe:

- Some SKYWARN teams are operated and coordinated directly by the National Weather Service office they serve. Others are operated by one or more independent or loosely affiliated groups of amateur radio operators.

- Some SKYWARN teams are set up to operate Net Control almost exclusively from the National Weather Service Forecast Office. Others operate almost exclusively from remote locations, employing the use of multiple nets to cover the entire County Warning Area.

- Some SKYWARN teams recruit and train their own pool of Spotters. This is common in the midwest. In most of the country, Spotter recruiting and training is handled directly by the National Weather Service.

- Some SKYWARN teams man their amateur radio operations almost exclusively with ARES/RACES personnel. Others maintain their own pool of volunteers, though there is often overlap between the two groups.

As you can see, there is no one-size-fits-all solution for how SKYWARN and its associated amateur radio teams are organized.

Our Approach

Our approach is a sort of a hybrid model:

- We operate as an extension of the National Weather Service Forecast Office in Wakefield, Virginia. Some of our operating procedures and policies are produced in collaboration with NWS, which maintains some degree of control over the team. We do, however, have our own internal leadership structure which is empowered to make most of the decisions as to how the team operates.

- The majority of our operations are distributed in nature. The 66-county Wakefield County Warning Area (CWA) is split into 9 SKYWARN Operating Areas, based roughly on repeater coverage. For most SKYWARN activations, local nets are operated in the impacted areas. For more significant events, we may also operate from the Wakefield Weather Forecast Office (WFO), and we maintain an amateur radio station, call sign WX4AKQ, for those purposes.

- Spotter training in the Wakefield CWA is handled by the National Weather Service. We do perform a number of outreach functions to promote the SKYWARN program within the communities we serve, and often serve as the interface between the amateur radio community and NWS.

- We enjoy a great relationship with ARES/RACES and other EMCOMM teams in our CWA. Many of our NCO's are members of ARES/RACES, VDEM-ARCA, and other groups. However, our team operates totally independent of any other emergency communications team.

This hybrid structure has worked very well since the team was organized in the summer of 2008. We are able to cover a large area with a modest pool of NCO volunteers while having the flexibility to operate from the WFO if needed. We have been given the authority and versatility to control many of our own operating policies and procedures without having to go through a lot of bureaucratic hoops with NWS or any other organization. And our partnership with ARES/RACES and other EMCOMM teams means we have many great resources to continue growing and developing the team.

Leadership Structure

The SKYWARN Operations Manual gives more detail about the specific functions of each of the different layers of the SKYWARN Leadership Team. Briefly, these are the main positions (as of January 18, 2014):

- SKYWARN Program Manager – Bill Sammler (NWS)
- SKYWARN Focal Point – Mike Montefusco (NWS)
- SKYWARN Amateur Radio Coordinator – Steve Crow KG4PEQ
- SKYWARN Area Managers
    - Ian Enterline N3UVV – Area 1/Richmond
    - Barry Evans N4WFU – Area 2/Southside Virginia
    - Howard Waxman KO4GS – Area 3/Williamsburg-Smithfield
        - Chris Hosman KC4F, Net Manager – Hampton
    - Rich Davis W4NMH and Curt Langston W5ARX – Area 5/Southeast VA
    - Scruff Harrison K4SDL – Area 7/Elizabeth City

Net Control Operators are assigned to a home Operating Area based on the location of their primary operating point (home, work, school, etc) but are expected to serve any neighboring area at any time, provided they can access the neighboring area's repeater(s).

While each Area Manager is assigned to one or more specific Operating Areas, understand that <u>any</u> Area Manager can assist you if you are unable to reach your assigned Area Manager. Also, the Amateur Radio Coordinator is always available to to provide information and assistance to any member of the team.

As a courtesy, please work through the Amateur Radio Coordinator when contacting NWS personnel, including the SKYWARN Focal Point and Program Manager.

When and How We Activate

Activation Forecasting

The SKYWARN team uses a number of official weather products from the National Weather Service and other agencies to assess the potential need for SKYWARN activations and amateur radio support, in many cases beginning several days prior to the onset of severe weather.

You don't need to have an understanding of all the products the National Weather Service publishes throughout the day. In most cases, being able to read the regular weather forecast and understand the issuance of a watch – what we call a WWA, for “Watch, Warning, or Advisory” – will give you some insight into the potential severe weather threats so that you can plan to serve as an NCO.

To make things easier, the SKYWARN Leadership Team – the Amateur Radio Coordinator, SKYWARN Program Manager, Area Managers, and others – keep an eye on the various NWS products for you and will condense all of the information into a product called a Risk Assessment Bulletin. The Risk Assessment will recap the expected severe weather threat as well as the specific times that SKYWARN and ham radio support may be needed. Once you join our team, you'll start getting these via e-mail.

It's important that you take a look over the Risk Assessment Bulletins – if nothing else, the “Amateur Radio Action Message” portion toward the bottom of the bulletin – to get an idea if and when we might need you to serve as a Net Controller.

Our Service Level Commitments

The SKYWARN Operations Manual outlines the specific conditions under which we will usually activate, called the Service Level Commitment (SLC). Of course, “gut instinct” is no small part of the activation forecasting process, so sometimes we will make the decision to activate for weather scenarios that don't fully meet the minimum criteria.

There are two different sets of criteria which are of concern to the Net Control Operator – daytime and nighttime. Which brings us to a very important point: it doesn't happen often, but at some point in your career as a Net Control Operator you will be asked to run a net late at night or very early in the morning. Under certain rare conditions, such as late night/overnight particularly intense severe weather outbreaks, as well as tropical events, we may be active overnight. Since 2008, it's happened less than a half-dozen times, but it does happen and you may be called on to run a net during those hours.

Experience has shown us that the types of weather event described in the SLC are the most productive for us. That is, they tend to produce the highest levels of participation in our nets and generate the most reports. Put another way, they produce the “biggest bang for the buck” and by focusing on these types of events we minimize the dead air time and burnout that comes from over-activating.

Please take a few minutes to read through the sections in the SKYWARN Operations Manual that talk about Service Level Commitments. Pay particular attention to the times of day and the types of weather events that will trigger an activation.

Net Control Operator Authority to Start a Net

As a trained SKYWARN NCO, you have the authority to start a SKYWARN net any time you think one is

necessary, any time of the day or night. You don't need permission from anyone to do it. If weather conditions in your area are significant enough to warrant a net and you have the time to do it and can do it safely, then start a net! We have lots of forecasting mechanisms and activation triggers in place, but nobody knows better what's happening in your area than you do, and we recognize that by extending activation authority to our Net Controllers.

Before the Activation

The Daily Life of a Net Control Operator

A SKYWARN NCO is always “on call.” It's like joining a volunteer rescue squad or fire department. You could receive the request to respond at any time. Usually if you're in the habit of keeping an eye on the weather forecast you'll have a pretty good idea when to start paying really close attention to our internal communications.

Most people nowadays carry around a smartphone, tablet, or some other device that is capable of receiving e-mail on the go. Because of our modern-day “always on” society, this is how we handle the overwhelming majority of our internal communications: e-mail. Your Area Manager may communicate with you via e-mail, text message, instant messaging/chat, or perhaps even by conventional phone call. However, virtually all of our activation forecasting and other activation-related communications will come to you via e-mail.

You will be issued an official Wakefield SKYWARN e-mail address, which is what we will use to communicate with you. This e-mail is provided by Google at no cost to you. You do not need to log in to our e-mail system on your computer; you can opt to have the messages delivered to your mobile device, or forwarded to an existing e-mail address if you prefer.

You should get in the habit of checking your SKYWARN e-mail at least once daily around 11 AM. If you suspect a severe weather event might be brewing but you haven't heard anything from us, keep checking back. Sometimes we're waiting on more up-to-date weather data or other information from the National Weather Service and may be holding off on issuing a notification.

Volunteering for NCO Duty

When you join our team you'll be asked to furnish some information for the Team Roster which includes your contact e-mail address, phone number(s), and your basic availability. Please keep this information up to date as it provides your Area Manager a starting point for building a Net Control team for activations. You can view and update the roster on our internal web site, the Ops Portal.

After you review a Risk Assessment Bulletin you should let your Area Manager know right away if you are available for Net Control duty. Send an e-mail, text them, make a phone call, or call them on the radio. Let them know the specific times you will be available to run the net. Your Area Manager will use this information to schedule you for a time slot as NCO if it turns out your services are needed.

If an adequate number of NCO's don't volunteer in a relatively short period of time, Area Managers will begin contacting individual Net Controllers by telephone. There's no specific order in which NCO's are called, but in the interest of efficiency most Area Managers will go directly to those NCO's that have run nets most frequently. Don't take this as any sort of signal that you're not wanted or needed, because you are! You should volunteer for Net Control duty. If you feel like you're being passed over for some reason, talk it over with your Area Manager or the Amateur Radio Coordinator. You're an important part of the team, and you shouldn't feel left out of the fun.

Minimum Net Staffing

You won't be alone on the air.

As a standard policy we try to run our nets with two Net Controllers. The second is usually lurking in the background somewhere and only makes an appearance when the primary Net Controller needs help with something like calling in a report to the WFO or helping with the logging.

When you first get started as a Net Controller you might want to serve specifically as the backup NCO. Listen to the net and jump in to help when asked, backing up the primary NCO when things get busy. Pay attention to how the net is run and take some mental notes to prepare you for the first time you run the net.

Overnight nets are a different story, and will probably be run with just one Net Controller. These are also a great way to get started as an NCO. There usually aren't many reports to take and there's lots of opportunity for friendly chatter on the repeater. Things can be a lot more relaxed overnight. Plus, there's the added bonus that if you *do* happen to mess something up, there won't be many people listening!

Getting Ready to Go

You should put together your own set of SKYWARN supplies and keep them with you wherever you might serve as Net Control. A bright red binder makes an easy-to-find place to file copies of important paperwork. Keep a copy next to your radio at home, and maybe keep a set in the car so they're with you wherever you happen to be. At a minimum you should have printed copies of:

- A recent copy of the SKYWARN Team Roster. You can print this right off our internal web site, the SKYWARN Ops Portal.
- 15 to 20 copies of the paper log sheet. This is also available from Ops Portal.
- A SKYWARN frequency list for your area and surrounding areas.
- Current net scripts. You will also find these (you guessed it) on the Ops Portal.

If you have trouble finding these documents, check with your Area Manager. You should also have a few pens or pencils handy, and maybe a few sheets of scratch paper for scribbling down notes. Make sure the phone number to the Wakefield WFO is programmed into your cell phone so you'll have it available if you need to phone in a report. It's **1-800-737-8624**.

As always, your radio equipment should be kept in good working order. Perform some basic system checks well prior to the start of the activation. It's best to do these checks at least weekly if you're not already. Make sure your primary power supply works. Check your backup battery or other power source. Do audio checks to make sure you can hear and be heard. How about your backup radio? Do you even have a backup plan in case your radio stops working, your antenna blows over, or your power goes out?

Backup power is a requirement to be a SKYWARN Net Control Operator. Reach out to your local amateur radio club or your SKYWARN Area Manager if you need some assistance in designing and building a proper backup power supply for your station.

Net Basics

Use Approved Frequencies

We have a specific set of frequencies utilized for SKYWARN operations. The repeaters have been chosen by the SKYWARN Leadership Team in consultation with the repeater trustees and have been determined to best suit the needs of the SKYWARN program. Most areas have exactly one primary SKYWARN repeater and one or more backup repeaters. The primary repeater should be used whenever possible.

If it becomes necessary to move a net to the backup repeater, you should work with your Area Manager to coordinate the move. Usually we will only move a net to a backup repeater if there's a major technical issue with the primary repeater. Simply having another net in progress on the primary repeater typically isn't a good reason to move SKYWARN operations elsewhere. We've found that we are able to work alongside other EMCOMM groups – such as ARES/RACES – and since our Spotters know to look there first, we should be on the primary repeater.

If none of the backup repeaters are available, the Area Manager will work with the Amateur Radio Coordinator if necessary to make arrangements to hold SKYWARN operations on another frequency.

Net Controllers should adhere to the published frequency plan unless directed by their Area Manager or the Amateur Radio Coordinator to make changes. Frequency changes only confuse Spotters and use of repeaters for which SKYWARN is not specifically authorized may disrupt other EMCOMM teams' plans or upset the repeater trustees.

Use Scripts

When you first start out as a SKYWARN NCO, you'll want to use our Net Scripts to help you run the net. You don't have to read them word-for-word, and once you get the net going you'll develop your own flow and can toss the scripts aside. The important things to remember are that you need to be periodically calling for check-ins and that you must provide a recap of the severe weather threats every 10 to 15 minutes.

If you don't like the wording of our official scripts, you are free to develop your own, as long as they meet the minimum criteria required for a SKYWARN net. There's a section in the SKYWARN Operations Manual that talks about the mandatory script content – what any SKYWARN net script must have – so it would be a good idea to check there for information first.

Be Friendly!

Serving as a Net Controller is a serious job. You're collecting information on behalf of a US Government agency... information that plays a direct role in improving forecast accuracy and issuing or canceling warnings that save lives and protect property. That's a big responsibility, but it doesn't mean you need to have a serious tone or unfriendly attitude during your nets. Keep things light. Call your Spotters by name if you know it. It's okay to have a quick back-and-forth exchange if time (and weather conditions) permit. This type of behavior is encouraged, and it consistently brings out more Spotter participation in our nets.

If you're not feeling chatty, that's okay, too. Just be courteous and extend a sincere “thank you” to each station that calls in a report and encourage them to check in with us in the future.

Be Professional

Remember that to our Spotters, you *are* the National Weather Service. Many Spotters won't know the difference between Joe Hamm sitting at home taking reports in his underwear and a degreed forecaster sitting behind the microphone of a radio inside the forecast office! You are the “voice” of the National Weather Service to our Spotters and you must maintain a professional disposition on the radio at all times.

Easier said than done, though. We get it. Things get stressful. The majority of your SKYWARN nets will be in an informal format with light to moderate radio traffic. There are obstacles you'll come across – interference, very weak signal, poor communicators, repeater problems, computer problems. You will run into challenging situations at various points. When this happens, stop for a moment, take a deep breath, regain control of the situation, and keep plugging away.

Remember that in most cases you will have a backup NCO on the air with you. You may hand the net over to them for a few minutes if you need to take a break, stretch your legs, grab a snack or some fresh air.

More than anything, remember this: **you can do it!**

Be Safe

If you're talking in to a microphone connected to a lightning rod high in the tree tops, it might not be a good idea to be on the air when a storm is nearby. Remember that if you can hear thunder, you (and your antenna) are close enough to be struck by lightning. Don't rely on radar: use your ears!

Back in 2009, the Wakefield WFO issued a rare Special Weather Statement based on lightning – which as you'll recall from your Spotter training class *isn't* one of the criteria for a severe thunderstorm. In this particular storm, lightning was occurring *many miles* ahead of the thunderstorms. The lightning strikes were numerous and intense. Lightning strikes and thunder were observed in the Stratford Hills community in south Richmond a full 40 miles ahead of the approaching thunderstorms! This same storm sparked many structure fires nearly an hour before the associated rain ever arrived. It also struck the Wakefield WFO, doing damage to computers, telephones, and amateur radio equipment, and knocking the Wakefield radar out of service for weeks!

Severe weather has crept up on our Net Controllers before.

Also in 2009 one of our Net Controllers was participating in a SKYWARN Net in Area 5 when a tornado struck her Chesapeake neighborhood, doing damage to her home. As a SKYWARN Net Controller you're in a unique situation of having access to a wealth of real-time weather data, but you must be able to comprehend this information and make smart decisions about when to abandon the net and look out for yourself. Our Net Controller did just that and escaped without any physical harm.

In October 2010 our Amateur Radio Coordinator was running a SKYWARN net from his workplace in Mechanicsville as an EF1 tornado approached the area. He was in contact with a Spotter less than a mile away who was observing the storm. The SKYWARN net was taken off the air for several minutes while customers and employees were moved to safety in the store's bathroom. Once the storm passed, the net resumed and continued to take reports of the tornado for another hour as it moved into King & Queen County.

BOTTOM LINE: IF YOU FIND YOURSELF IN THE PATH OF A TORNADO OR OTHERWISE FEEL THREATENED BY WEATHER, DROP THE MICROPHONE AND TAKE SHELTER IMMEDIATELY. YOUR BACKUP NET CONTROLLER WILL TAKE OVER, OR THE NET WILL WAIT. DO NOT JEOPARDIZE YOUR SAFETY FOR SKYWARN. YOU CANNOT BE REPLACED.

Calling the Net

Securing Access to the Frequency

Before calling a SKYWARN Net, you need to check to make sure the frequency isn't already in use. Just because you listen for a couple of minutes and don't hear an active conversation doesn't mean another Net Controller from another group isn't sitting on the sidelines waiting for traffic for his own net. You should announce “this is SKYWARN Net Control, is this frequency in use?” Repeat the call once or twice and if no response is heard, proceed to call the net.

If another net is in progress, check with your Area Manager for guidance on how to proceed. In most cases we can successfully operate alongside the other net on the same frequency, but sometimes the decision will be made to move the net to another frequency. Don't try to work out these arrangements on your own. If your Area Manager can't be reached right away, call another Area Manager or the Amateur Radio Coordinator. If that doesn't work, make an “executive decision” to move SKYWARN operations to a designated backup repeater. Be sure to notify the Net Controller of the other net that SKYWARN is normally active on this repeater but is moving to an alternate frequency. Provide the frequency and ask that Spotters looking for SKYWARN be directed to the backup repeater.

If you come across a non-net conversation in progress and it doesn't seem like it'll be ending anytime soon, use good operating practice to break into the conversation. Simply announce your call sign between transmissions and wait to be recognized. Identify as “SKYWARN Net Control” and let the stations know that a SKYWARN net needs to activate on that frequency and ask if you may use the frequency. Remember that nobody “owns” a frequency – the stations using the frequency are well within their rights to continue using it for their own purposes and are under no obligation to yield to SKYWARN. Ask nicely and most stations will give up the frequency without question.

Remember: Do not use “break” to interrupt an existing conversation unless you have emergency traffic. The proper procedure is to simply insert your call sign between transmissions. If you hear a station announcing “break” you should assume they have emergency or priority traffic and acknowledge them as quickly as possible.

Taking Check-Ins

As part of calling any net, you should call for stations wishing to check in to the net. You need to know which stations have traffic for SKYWARN and which ones are simply “out there” so be sure to ask stations to indicate if they have any specific traffic for SKYWARN. You want to make sure you handle those stations with traffic first.

When getting check-ins you should get the call sign, first name, location, and direction of travel (if mobile). Make a note of these on a piece of scratch paper.

It's obvious why we get check-ins from stations with traffic: so we can call on them and take those reports. However, many seasoned SKYWARN Net Controllers don't see a point to taking check-ins from stations that don't have traffic. The reason is simple: so we can call on them when we need reports from their area!

If a net runs kind of long, it may be a good idea to periodically do a “roll call” and see which stations are still checked in. Run down the list of prior check-ins one at a time and see if the stations are still out there and if they would like to remain checked in. It's up to you to decide whether and when to do this.

Periodically Recapping the Severe Weather Threat

It's important that the flow of information on our nets go two ways. First and foremost we're here to collect reports of severe weather from Spotters and relay those reports to the National Weather Service. That's job number one. We also have a secondary obligation to keep our Spotters and the rest of the amateur radio community appraised of the severe weather situation.

Our computer systems provide you with a nearly real-time feed of severe weather products from the National Weather Service. In most cases these are pushed directly to your e-mail, so you should have that open while running a net. There are a number of third-party software packages available to keep track of current watches and warnings, too. You can use any of these to provide periodic recaps of the severe weather threat. Our NCO Dashboard, used to log Spotter reports, also provides critical weather information for the Operational Area you are logged in to.

Summarizing Watch and Warning Products

When going over the active watches and warnings, *do not* read them verbatim. Boil it down to a few sentences. A full tornado warning product can take three or four minutes to read over the air. Rather than read the whole thing, you could just say “there is a tornado warning for eastern City of Richmond and southeastern Hanover County until 5:15 PM.” Instead of reading the full text of a watch, you could say “a Severe Thunderstorm Watch is in effect for most of central and eastern Virginia until 8 PM this evening.” You should be specific with warnings, less so with watches.

Take a look at the sample Severe Thunderstorm Warning here:

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BULLETIN - EAS ACTIVATION REQUESTED
SEVERE THUNDERSTORM WARNING
NATIONAL WEATHER SERVICE WAKEFIELD VA
356 PM EDT MON MAY 23 2005


THE NATIONAL WEATHER SERVICE IN WAKEFIELD HAS ISSUED A


* SEVERE THUNDERSTORM WARNING FOR...
  CHESTERFIELD COUNTY IN CENTRAL VIRGINIA
  CITY OF RICHMOND IN CENTRAL VIRGINIA
  HENRICO COUNTY IN CENTRAL VIRGINIA


* UNTIL 445 PM EDT


* AT 354 PM EDT...THE PUBLIC REPORTED A SEVERE THUNDERSTORM CAPABLE
  OF PRODUCING NICKEL SIZE HAIL...AND DAMAGING WINDS IN EXCESS OF 60
  MPH. THIS STORM WAS LOCATED NEAR TUCKAHOE...AND MOVING SOUTHEAST
  AT 40 MPH.


* THE SEVERE THUNDERSTORM WILL BE NEAR...
  DOWNTOWN RICHMOND AND LAKESIDE BY 405 PM EDT...
  EAST HIGHLAND PARK BY 410 PM EDT...
  RICHMOND HEIGHTS... MONTROSE... BENSLEY AND DREWRYS BLUFF
  BY 415 PM EDT...
  RICHMOND INTERNATIONAL AI BY 420 PM EDT...


PLEASE SEND YOUR REPORTS OF HAIL AND/OR WIND DAMAGE...INCLUDING TREES
OR LARGE LIMBS DOWNED...BY CALLING NOAA'S NATIONAL WEATHER SERVICE
TOLL FREE AT...1...800...7 3 7...8 6 2 4.
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How would you summarize this when reading it over the air? You want to condense it down to just a few sentences, but still get the important details out over the air. How about this: *“There is a Severe*

Thunderstorm Warning for Chesterfield, Henrico, and the City of Richmond until 4:45 PM. At 3:54 PM, radar indicated a storm capable of producing nickel size hail and winds over 60 MPH near Tuckahoe, moving southeast at 40 MPH." Follow that with the list of localities the storm has not yet reached. If it's 4:15 PM, you wouldn't need to mention that the storm will impact Downtown Richmond, Lakeside, and East Highland Park, since it will have already reached those areas. You would still mention the remaining communities.

You should be able to get that message out over the air in 20 seconds or less, which is pretty much the maximum amount of time you want to be transmitting without at least giving a brief pause for any emergency or priority traffic.

The SKYWARN NCO training page, **http://www.wx4akq.org/train_nco_new.php**, has a package of sample EMWIN products you can look at to practice summarizing some of the more common warnings. (EMWIN is the Emergency Managers Weather Information Network, which a common mechanism used to disseminate text and graphical weather products from NWS.)

Working with Radar

Reading and understanding radar is a valuable skill for any SKYWARN NCO, but it's also entirely optional. If you don't have training and experience reading the most common radar products (reflectivity, velocity, and storm total precipitation) then you should not be practicing doing so in the middle of a SKYWARN net!

The SKYWARN NCO training page, **http://www.wx4akq.org/train_nco_new.php**, has links to some radar training resources from the National Weather Service and the University Corporation for Atmospheric Research (UCAR). While not a required part of your NCO training, these are great programs and you should consider checking them out. Basic radar skills are also covered in the Advanced SKYWARN Spotter class.

If you're comfortable (and good at) reading radar, participants in our nets always appreciate knowing how they are *personally* going to be impacted. You might specifically call a station in Mechanicsville and say, "it looks like you're in the path of some very heavy rain, maybe some hail, in about the next 5 to 10 minutes; be alert and check in with me with any hail or damage reports once it has passed." You'll get the gratitude of the station you called on and they will be much more likely to participate in our nets in the future!

Keep it Informal

The majority of SKYWARN nets are handled as what we call informal nets. There's a Net Controller and check-ins are taken, but the repeater remains open for regular amateur radio use. Stations are encouraged to continue using the repeater for their routine traffic but are urged to keep individual transmissions short and leave breaks between each transmission to allow SKYWARN traffic to be passed. Stations do not need to request permission to make contact with another station, but they often will make the request anyway.

Why do we insist on informal nets? First, our repeater trustees don't want us (or any EMCOMM group) needlessly monopolizing the repeater. If there's traffic to be passed or warnings to announce, we should do it, but if we're not actively using the repeater, their philosophy (and ours, too) is that the repeater should be kept open for routine, non-SKYWARN traffic. Second, most of the time there is absolutely no reason to go with a directed net. We don't often handle such an exorbitant amount of traffic to warrant locking down the frequency with a directed net.

Going Directed

Directed nets give us a tighter control over the radio traffic by requiring that all transmissions be at the direction of Net Control. The repeater is considered “closed” to non-SKYWARN traffic.

There are exactly two circumstances in which we will start a directed net. The most common trigger is a tornado warning. **Any time there is an active tornado warning within the Operating Area, the frequency should be locked down for SKYWARN traffic only.** An announcement making the switch might sound something like *“a tornado warning has just been issued for the storm over Caroline County, so at this time Net Control is shifting into a directed net and requests that all non-emergency traffic please be held for the duration of this warning.”*

Locking down the frequency during a tornado warning ensures that we can quickly get reports associated with that storm, and also means that emergency traffic related to the tornado – whether or not the traffic is related to SKYWARN – can be passed efficiently. It may be necessary to handle general emergency traffic including requests for emergency aid which need to be relayed to 911.

The decision to take a non-emergency SKYWARN report during a directed net is entirely up to you as the Net Controller. Some Net Controllers will still handle any SKYWARN reports during an active tornado warning, regardless of whether those reports are associated with the storm that triggered the tornado warning. Net Control should occasionally announce something like “any stations with emergency traffic at any time announce break between transmissions to be immediately recognized.”

When running a directed net because of something major like a tornado warning, stations with non-emergency traffic really should be encouraged to hold their traffic until the emergency passes. You might ask “is your traffic related to the tornado warning?”

Another trigger that will throw us into a directed net is simply having too much traffic to handle otherwise. We might run into this are during major snow events when everyone comes out of the woodwork wanting to report their snow measurements. Hurricanes and tropical storms also produce a lot of reports. Calling a directed net emphasizes the need for traffic control and brings out a little different mentality in the stations that are participating which may minimize the extraneous chatter that might otherwise take place.

As a new SKYWARN Net Controller, you may find that you prefer the idea of running a directed net over an informal net because it adds structure to the operation. Starting out, if you want to run a directed net in a situation where we would normally use an informal net, that's perfectly fine. Because many of our Spotters are not accustomed to hearing directed SKYWARN nets, it might be helpful to announce why you're doing it. Reminding folks “I'm new at this, bear with me” really does go a long way to making things run smoother!

SKYWARN Logistics and Administrative Traffic

All logistical traffic – that is, internal chatter amongst SKYWARN personnel – should be handled “out of band” via e-mail, telephone, or chat. Unless there is absolutely no other way to convey information amongst ourselves, Net Controls should not be volunteering for Net Control Duty on the air in the middle of a net.

Occasionally the Primary Net Control may need to talk to the Backup Net Control, particularly when coordinating a move to another frequency (i.e., to collect a report from a distant Spotter), but otherwise this type of communication should be handled off the air.

Handoffs to Another NCO

Before handing a net over to another NCO, be sure they are logged in, settled, and ready to go. Make a brief announcement about the handoff, and monitor the frequency and our out-of-band communications channels (e-mail, chat, telephone) for several minutes to ensure a graceful transition.

Taking Reports

We Take (and Log) Everything

Our Net Scripts are designed to remind Spotters what sort of reports we are looking for by providing a list of the reporting criteria for that particular event. Invariably you will have a station call in with a report that doesn't meet the criteria. Your job as the Net Controller is to filter out the reports that do not meet the reporting criteria and keep those from going to the National Weather Service, but you must still maintain a record of those reports in our log. **You are required to take all reports received and you must log them in the official net logs, with only two exceptions.**

The two exceptions are certain third-party reports and your own reports.

The types of third-party reports we can't take are reports overheard on a scanner, broadcast radio or television, or on a public safety radio. Those types of reports will make their way to NWS through other channels. Reports should come straight from the source, or from someone the Spotter knows personally, such as a friend, relative, or neighbor. If a Spotter overhears a stranger talking about trees down across town while they're checking out at the grocery store, we aren't interested in that report.

You also cannot submit your own reports directly into the log. If you are driving around town and have a report to call in to the net, please do, and your report will be logged by Net Control. However, you cannot enter your own report into the log. Our focus is on logging and relaying reports collected via amateur radio. Your own reports which are not called in to one of our nets should go through a standard reporting channel, such as e-mail, e-Spotter, telephone, or social media.

Elements of a Good Report

A good report has four key elements:

- **Description** of the event, including any quantitative measurements or estimates.
- **Location** – as exact as possible, coordinates if available.
- **Time** – as precise as possible, estimates OK for past events.
- **Identification** – who filed the report (call sign, Spotter ID/Trained Spotter status, contact number, etc).

We need to get as detailed a description of the event as possible, with as accurate a time and location as possible, along with identifying information that allow us to get back in touch with the Spotter if necessary.

Here are two reports. Which one is better?

1. “I am at the intersection of Route 360 and Route 30 in King William County and I see a large rotating wall cloud approaching from the west. The tree line is pretty high so I can't tell if there is a tornado on the ground, but leaves are falling from the sky overhead. My Spotter ID is VHVR024.”
2. “There is a tornado near the ground in Central Garage.”

Report #1 is obviously the superior report. It clearly conveys exactly what is being seen, where it's happening, when (right now), and it identifies the Spotter. Report #2 would only be marginally helpful, since

it's not clear (a funnel cloud only becomes a tornado when it reaches the ground, so a tornado can't be “near the ground”) and someone at the WFO might be unfamiliar with the village of Central Garage. The major intersection provided in report #1 would be helpful.

Many reports will start off much like report #2 did but can be developed into a much more complete and useful report by asking a few quick questions.

Identifying Bad Reports and Building Better Reports

Spotters give us some great reports. They have also been known to give us some *hilariously bad reports*. The bad reports usually aren't intentional and are rarely malicious. You should be able to readily identify the “el toro poo poo” that comes across the radio and we have procedures in place for dealing with that which we'll get to in a few minutes. You also need to know how to deal with the less-than-usable reports that come from some un(der)educated Spotters.

Take a look at these reports and decide for yourself if it's a good report or a bad report. As you read each one, think about the four components of a good report. Does it have **description, location, time,** and **identification**? What would you do to try to salvage it and turn it into something usable?

1. “I see a tornado headed straight for my house! I gotta go!”
2. “The road's blocked right where Luck's Farm used to be.”
3. “We've got marble-size hail here. I'm about two miles from the old fire tower.”
4. “The wind's blowing a good 50 or 60 MPH.”
5. “We have about two inches of snow here.”
6. “Got lots of dark clouds off to the west.”
7. “It's raining awful hard here.”

For each of these reports, you might ask:

1. If anyone knows where the station is located or where the tornado might be (we're obviously not going to ask that someone in the path of a tornado stay on the air to give us this information... let them go take shelter!)
2. Where was Luck's Farm? Address? Cross-street? What's blocking the road? Trees? Power lines? How big are the trees? Were they snapped or uprooted? Are there injuries? Do we need to notify law enforcement?
3. Marbles come in many different sizes, can you estimate the size? Dime size? Nickel? Quarter? What's your exact location (address or cross-street)?
4. Are the winds causing any damage like downed trees or tree limbs or any structural damage?
5. Is that snow depth on hard surfaces or grassy areas? Can you take a measurement? How are the roads? When did the snow start? How much snow did you get in the last hour? Can you check back in with us in an hour, or when you get another inch?
6. Do you see any rotation in the clouds or debris in the air?

7. Are you noticing any significant ponding of water or any flooding? Do you have a rain gauge?

When taking reports, we need to know if any quantitative information provided is a measurement or an estimate. Estimated figures can be way off base, so it's important to distinguish between the two. Listen for keywords like “about” or other audible cues that the Spotter is taking a guess.

Hail size comparisons to coins, fruit, or other objects are inherently estimates. We don't like estimated wind speeds – they are way wrong most of the time! If the Spotter has an anemometer and can give us a measured speed, we'll take that, otherwise we want to focus on the effects of the wind. Are tree limbs or branches coming down? Are shingles blowing off houses? Those are significant, reportable events.

Before you wrap up your contact with any Spotter, read over the report and ask yourself “is this the best report I can get?” Are there any unanswered questions? It's a lot easier to get every possible detail on the initial contact than it is to try to get back in touch with a Spotter later to get more details.

Handling Suspicious or Fraudulent Reports

The SKYWARN report logging methods (electronic and paper) both provide a mechanism for identifying a suspicious report. We identify these reports as “flagged” and it's a simple cue to the receiving end that we believe something is wrong with the report. Does the report simply not fit the situation? Do you have some reason to believe the report is false or intentionally malicious? If so, “flag” the report in the logs.

Our electronic logging system will highlight the flag for NWS employees automatically. If you are relaying a report over the air, it is important to state simply that the “this report is flagged.” Do not go into details over the air. If you are calling the report in to the WFO by telephone, you may use plain language with the NWS employees to communicate the concern.

An example of conveying this flag when relayed over the air from a local net to WX4AKQ might sound something like, “Report from AB4CD, received 17:10 hours, flagged, location I-95 1 mile south of Ashland, reporting a tornado on the ground.” It's simple and inconspicuous.

Remember that just because the report *sounds* suspicious does not mean it's fake, and we don't want to be perceived as accusing the Spotter of any wrongdoing over the air! Never make an accusation about the integrity of a Spotter's report over the radio. Be sure to ask appropriate probing questions to try to gain an understanding of what's being reported and see if there is any valid data in the report, but do not do it in such a way as to criticize the Spotter or accuse them of being deceptive.

The Amateur Radio Coordinator will review all flagged reports after the activation concludes and will work with the SKYWARN Program Manager to resolve any recurring issues with report integrity from a Spotter.

Logging Reports

Electronic Logging

The majority of reports you receive will be logged directly into our electronic logging system. This Internet-based system maintains a permanent record of all reports received into the SKYWARN ham radio communications network and is able to automatically relay reports to the WFO via both Internet e-mail and Winlink 2000.

If Internet access is available where you are running the net, electronic logging should be used.

Our log system is a proprietary, purpose-built system called the SKYWARN Report Management System, also known as SKYWARN RMS (and sometimes “SWARMS”). You will learn more about how to use RMS during your classroom training session.

Manual Logging

If no Internet access is available, your reports should be logged on paper. A PDF version of paper log sheets is available on the SKYWARN Operations Portal web site and these should be printed in adequate quantities well in advance of any SKYWARN activation. Keep copies of the paper log sheets at each location from which you might serve as Net Control.

Upon restoration of Internet access, all information from the paper logs must be entered into the permanent records via the electronic log system. Enter the reports as you always would but be sure to indicate that the report has already been handled so another copy isn't needlessly sent to the National Weather Service. Your Area Manager can help you with this process. You may also be able to mail or fax your log sheets to the Area Manager or Amateur Radio Coordinator for processing.

Print legibly! By the time you go to enter the report into the electronic logging system, the station which called in the report will be long gone!

Relaying Reports to NWS

Electronic Relay

The majority of the reports you collect will be entered into our electronic logging system. As part of the logging process you will specify whether or not each report should be automatically transmitted to the National Weather Service. Spotter reports meeting the reporting criteria for the weather event should be sent electronically whenever possible. This is the most efficient means of communicating *most* reports to the National Weather Service.

Our policy under agreement with the National Weather Service is that urgent reports will also be called in by telephone directly to an NWS employee immediately upon receipt. Urgent reports typically are limited to tornadoes, funnel clouds, waterspouts, significant wind damage, or any injuries or death directly attributed to weather.

In the event of a communications outage at the WFO, reports will need to be relayed by some other means. You may be able to route them to an amateur radio volunteer at the SKYWARN Radio Desk using Winlink (which our electronic relay system can do for you) or you may need to call in all reports or send them via radio.

Relay via WX4AKQ

If the SKYWARN Radio Desk is staffed with a Responder, WX4AKQ can take your report via the repeater, another VHF or UHF frequency, HF, or packet. As long as you have Internet access at your location, our electronic log system will give you the option to automatically send a copy of all reports to WX4AKQ via the Winlink radio e-mail system. This is by far the quickest and easiest way to relay messages to the WFO via amateur radio.

If you are without Internet access, or if the packet system at the WFO is unavailable for some reason, you will need to relay your reports to WX4AKQ or the WFO over a voice communication channel. This could be by telephone or radio. If phone service is available at the WFO, it makes the most sense to triage your reports and send the most important ones by telephone directly to the SKYWARN Spotter Hotline. There is little sense in trying to get them to WX4AKQ first. Lower-priority reports can be sent to WX4AKQ by radio if requested by the Responder at the WFO. If no telephone service is available, WX4AKQ will communicate the type of reports needed and the subset of your reports meeting those criteria should be relayed to WX4AKQ.

In some cases, the WX4AKQ Responder will camp out on your frequency and will copy reports directly.

Other Relays

If you have a packet station and access to Winlink 2000 but do not have a working Internet connection, you can type up your reports and send them directly to **SMTP:AKQ-Report@NOAA.gov**. If telephone service is available, you can call them in to the SKYWARN Spotter Hotline, **1-800-737-8624**.

Relaying to Other Offices

Our electronic log system is capable of communicating directly with all of our neighboring NWS offices –

Raleigh, NC; Mt. Holly, NJ; Sterling, VA; Blacksburg, VA; and Newport/Morehead City, NC. Simply route the report to the appropriate office when specifying the message handling.

If you are relaying reports manually via Winlink 2000, you can either e-mail the office directly if you know the appropriate e-mail address, or send the message to WX4AKQ and request that it be forwarded to the appropriate office.

You can also call the SKYWARN Spotter Hotline. Let the NWS employee know that you are a ham radio Net Controller for Wakefield and you have a report for another office. The NWS employee can relay the message for you, or may provide you with the appropriate phone number to dial directly.

Net Control Challenges

Loss of Repeater

Most SKYWARN repeaters have a layer of backup power to keep them on the air for a short while during power failures. Many of these repeaters may reduce their output power while running on emergency power, and this will adversely affect coverage into fringe areas. Some repeaters sound a special tone, use a different courtesy tone, or make a periodic announcement to indicate the use of emergency power.

Net Controllers should check with their Area Manager for guidance on how to identify and respond to these situations. Since most repeaters rely on batteries – not a generator – for emergency power, SKYWARN nets will need to shift into a low traffic mode, minimizing transmissions on the repeater and taking only the most severe reports.

If a repeater goes off the air due to loss of power or any other technical difficulty, the net should immediately be moved to the backup repeater. One Net Controller should stay behind to monitor for the return of the repeater. Someone should monitor the repeater's input for calls as well, if sufficient resources exist to do so.

The first priority in maintaining continuity of operations following the loss of a repeater is to ensure the net gets on the air on another frequency in a timely manner. Notification of SKYWARN leadership about a change in frequency is secondary.

Loss of Link System

In some areas a linking technology like Echolink, IRLP, or an RF link system is used to bridge multiple repeaters together. How the loss of a link is handled will depend on the nature of the severe weather event and the link itself. As a general rule:

1. If the link system was bridging together repeaters in multiple Operating Areas, for example, Richmond and Smithfield, a backup Net Controller should have been monitoring in each area and should be able to resume the net in the area that was severed from the link.

2. If the link system was bridging together multiple repeaters within the same Operating Area, for example, two repeaters within Richmond, the net should continue on the primary SKYWARN repeater. If the coverage benefit of the second repeater is needed, a second net controller should monitor that repeater to collect reports.

In all cases, the Area Manager should be consulted to help make a decision on how to handle this situation.

Loss of Internet Connectivity

Loss of Internet connectivity should not adversely impact our ability to serve the National Weather Service. We have sufficient procedures in place to deal with the loss of connectivity at the local level, at the WFO, and a total loss of connectivity at multiple points in our communication network.

Reports are typically logged and relayed electronically in the interest of efficiency. If the sender and/or receiver are without Internet access, an alternate relay method must be used. We have already talked about the different ways reports can be relayed and how to use paper logging. Go back and review those

sections and consult the appropriate portions of the SKYWARN Operations Manual for more details.

Malicious Interference

For whatever reason, malicious interference occasionally creeps into SKYWARN activities. When this happens, don't take the interference personally; just remember that somewhere out there, a village is missing its idiot. Don't acknowledge the actions of the interfering station – doing so only provides motivation for them to continue!

A commonly proposed solution is to move the net to another frequency. This is not a good idea. The SKYWARN net should not be moved to another frequency on account of malicious interference because the interfering party can change frequencies just as easily as we can and they will likely follow the net to the new location. Furthermore, changing frequencies only confuses Spotters who are accustomed to looking for us on our designated primary repeater and can disrupt the communication plans of other EMCOMM organizations with whom we share frequencies.

If possible, make a note of any identifying characteristics of the interfering signal, and note any patterns to the abusive behavior. If an audio recording device is available, use it to capture samples of the interference. When possible, notify your Area Manager that the activity has occurred. Your Area Manager can escalate the matter, and the team is able to take advantage of resources within the National Weather Service to deal with interference to government operations.

Conflicts with Other Nets

Earlier, we learned about dealing with situations in which SKYWARN needs to go on the air using a frequency already being occupied by other activities. Become familiar with the ideas discussed in those sections and be sure to consult your Area Manager for guidance if any of these situations arise. The SKYWARN Operations Manual also has information on how to deal with these situations.

You may also encounter a situation in which another net needs to go on the air while SKYWARN is already on the air. Quickly and professionally work with the other net's controller to allow both nets to work alongside one another. Something as simple as requesting that stations call for a specific net control (“SKYWARN Net Control” vs. “ARES Net Control”) and agreeing to consult each other for access to the frequency prior to making calls (as any station participating in any directed net would do) would go a long way to ensuring both nets can operate on their preferred frequencies with a minimal disruption.

As always, your Area Manager is the best resource for working out these conflicts and you should consult your Area Manager anytime these kinds of scenarios come up.

Next Steps

Read the SKYWARN Operations Manual

Several times during this training you've been referred to the SKYWARN Operations Manual for more detail on various topics, so by now you should have a copy of it handy and should be familiar with its basic layout.

You should set aside some time – a couple of hours – to sit down and review the manual. It's huge (about 70 pages) and a lot of it is very dry. Some of it is information you honestly may never need to know, since it pertains to the Leadership Team or other aspects of our operations that don't apply to Net Control. It's good to be familiar with those aspects of our operations, but primarily focus on those sections which relate to the Net Control Operator role, activation processes, and net procedures. There is a Table of Contents at the beginning to help you locate sections of interest.

We keep the SKYWARN Operations Manual up-to-date and new versions may get pushed to our web site as little as once every year to as often as several times a week. Announcements will go out to the team when a new version is posted. You may keep a copy on your computer, but periodically check to make sure it is up to date.

Check Your Knowledge

The next several pages ask questions you can answer by consulting this manual, the SKYWARN Operations Manual, the WX4AKQ.org web site, the SKYWARN Training Portal, and the Basic Spotter's Field Guide, which is available for download from **http://www.wx4akq.org/train_nco_new.php**.

Register for a Class

Once you have checked your knowledge on the next several pages and are comfortable with the material, go to the SKYWARN Training Portal web site and sign up for the next Net Control Operator training class. You may need to travel a bit to get to one, but we promise it's worth it!

Check Your Knowledge

Check your knowledge with the following questions, which you can answer by consulting this manual, the SKYWARN Operations Manual, the WX4AKQ.org web site, the SKYWARN Training Portal, and the Basic Spotter's Field Guide, which is available for download from **http://www.wx4akq.org/train_nco_new.php**. Answers are provided in the next section.

1. What are the two internal notification products used to discuss potential activations and to notify team members of an activation?

2. When and how often should you check your SKYWARN e-mail?

3. What process should be used if an activation request is received and you are available to volunteer for Net Control duty?

4. You are running an informal net and a tornado warning is issued for your Operational Area. What do you do?

5. You are away from home and local weather conditions suddenly deteriorate. You feel the weather is bad enough that a net might be needed. What can you do?

6. You are an NCO in the eastern part of Area 1 and can access the primary Area 3 repeater. SKYWARN activity has wrapped up in Area 1 as the storms move east, so you are no longer needed as an NCO in Area 1. Should you offer to help in Area 3? How?

7. A Spotter contacts Net Control with the following report: “I am on I-95 near Petersburg and I see a tornado not too far in the distance.” What questions might you ask to turn this into a usable report?

8. How do you handle that report?

9. You're in the middle of a net when your power goes out. What do you do?

10. You're from Richmond and are vacationing in Virginia Beach. Severe weather is expected. Can you volunteer as a Net Control in the Virginia Beach area?

11. A Spotter is trying to call in a report to the net but he is on the fringes of the coverage area and his signal is weak and too noisy to pull everything out. You believe you have his location, and you know there's another repeater that's closer to him. How can you get that report without leaving your net?

12. Are you required to use our official net scripts?

13. You are running a net and you believe you are directly in the path of a possible tornado. What do you do?

14. Are you required to use our online log system?

15. A Spotter calls in this report: “I'm listening to the scanner and there are trees down all over Goochland County.” What can you do with this report?

16. Someone calls Net Control with a report, but they say they are not a trained Spotter. Can we accept the report? If not, what do they need to do with their report?

17. A Spotter has called us twice with reports that don't meet reporting criteria. Now he is calling just to let us know “it stopped raining about 5 minutes ago.” How should you handle this report?

18. A storm has done considerable damage in one of your counties and the local ARES team is being activated. During your net, you are contacted by the ARES Emergency Coordinator (EC), asking permission to use the repeater for ARES. How do you handle this?

19. During your net, an unknown mobile station accidentally sits on his microphone and is transmitting dead air into the repeater. What is the best course of action for this situation?

20. You are running an informal net, so the repeater is open to regular amateur radio use. Two stations get into a long-winded rag chew and one of them actually timed out the repeater briefly. What is the best way to handle this situation?

21. About how often should you provide a recap of current watches, warnings, and advisories?

22. It appears that a Spotter who has checked into your net may be directly in the path of severe weather. What might you do?

23. You have not yet actually run a SKYWARN net and really want to, but you're nervous about picking up the microphone and actually calling the net. What can you do?

24. Where can you look for current severe weather watches, warnings, and advisories?

25. Where do we keep team member contact information, and who can update this?

26. How often must an NCO be re-certified as an NCO? How about as a Spotter?

27. What call sign do you use when running the local SKYWARN net?

28. You personally observe reportable severe weather. How do you get that report to NWS?

29. What is the maximum recommended amount of time you should be transmitting before pausing to allow passage of emergency or priority traffic?

30. You hear a station cut in between transmissions and say “break break.” What does this mean?

Answers

1. What are the two internal notification products used to discuss potential activations and to notify team members of an activation?

   SKYWARN Risk Assessment Bulletin and SKYWARN Activation Notification.

2. When and how often should you check your SKYWARN e-mail?

   At least once daily around 11 AM; more frequently if severe weather is anticipated.

3. What process should be used if an activation request is received and you are available to volunteer for Net Control duty?

   Immediately contact your Area Manager. Indicate the time you expect to be available and how long you are willing to serve as Net Control.

4. You are running an informal net and a tornado warning is issued for your Operational Area. What do you do?

   Transition to a directed net. Make an announcement similar to "a tornado warning has been issued, so we will now transition to a directed net and all transmissions must be at the direction of Net Control." Provide a brief summary of the tornado warning, including the location of the storm and impacted communities. Once all tornado warnings have expired, transition the net back to an informal net.

5. You are away from home and local weather conditions suddenly deteriorate. You feel the weather is bad enough that a net might be needed. What can you do?

   Start a net. You do not need an Area Manager's permission to start a net, though you should try to let them know you are starting one so they can arrange for a backup NCO if necessary. Since you are away from home, you may not have Internet access. Always keep a supply of our paper log sheets in your vehicle, along with pens/pencils and any other references you feel you might need. You will need to call your reports in to the National Weather Service as they are received. Remember to enter your reports in the electronic log as soon as you have access.

6. You are an NCO in the eastern part of Area 1 and can access the primary Area 3 repeater. SKYWARN activity has wrapped up in Area 1 as the storms move east, so you are no longer needed as an NCO in Area 1. Should you offer to help in Area 3? How?

   Absolutely. Send an e-mail or make a phone call to the Area 3 Manager and offer your assistance. Do not attempt to work this out over the air.

7. A Spotter contacts Net Control with the following report: “I am on I-95 near Petersburg and I see a tornado not too far in the distance.” What questions might you ask to turn this into a usable report?

   Try to determine the Spotter's location, or at least get more specific. Are they north or south of Petersburg, and how far? Approximately where or how far away does the tornado appear to be? Does it extend all the way to the ground? (It's only a tornado if it does reach the ground, otherwise it is a funnel cloud, but be careful – the condensation funnel may not always be visible near the surface, so inquire as to whether any debris is visible in the air.) Which way does the tornado appear to be moving?

8. How do you handle that report?

   Find out if there are any other stations in the immediate area who can verify or provide additional information. If you are not already running a directed net, ask that all stations not in that immediate area please hold their traffic to allow uninterrupted communication. Either you or your backup NCO should <u>immediately</u> telephone the WFO via the Spotter Hotline and pass along the report (<u>in addition to</u> putting it in our log system). Gather as much information as you can from the NWS employee; they may want additional specific information from the Spotter, too.

9. You're in the middle of a net when your power goes out. What do you do?

   You are required to have a proper emergency power system for your station. If that emergency power system includes a battery, you shouldn't miss a beat. The paper log sheets should already be printed out and kept at your station, and you can use those to take reports. You can also turn things over to your backup NCO if you need to step away for a few minutes to start a generator or make other power configuration changes.

10. You're from Richmond and are vacationing in Virginia Beach. Severe weather is expected. Can you volunteer as a Net Control in the Virginia Beach area?

    Absolutely. We use the same procedures across our entire 66-county footprint. Contact the Area Manager responsible for your location if you are traveling and wish to volunteer for Net Control duty.

11. A Spotter is trying to call in a report to the net but he is on the fringes of the coverage area and his signal is weak and too noisy to pull everything out. You believe you have his location, and you know there's another repeater that's closer to him. How can you get that report without leaving your net?

    Briefly determine if you or your backup NCO can reach the other repeater. If one of you can, give the frequency and PL information to the Spotter over the air, several times (and slowly). Then, either you or your backup NCO should temporarily switch to that repeater to try to collect the report. If you, as the primary NCO, are making the switch, the backup NCO should temporarily continue the net for you on the main repeater.

12. Are you required to use our official net scripts?

    No. They are very helpful for new NCO's, but you are welcome to develop your own (or if you're really good, just “wing it.”) There are certain things that you must cover during each net, including a recap of weather events, so check the SKYWARN Operations Manual to ensure you are following the required procedure if using your own scripts (or none at all).

13. You are running a net and you believe you are directly in the path of a possible tornado. What do you do?

If you have a few seconds, make a quick announcement that you are in danger and need to sign off. Your backup NCO will take over. If for some reason your backup NCO is not available, don't worry about it. Your safety is more important. Drop the microphone and take cover.

14. Are you required to use our online log system?

Yes. All reports must go into the online log system. If the system is unavailable due to a utility outage, system issue, or if you are operating from a vehicle or other location away from a computer, you must log all reports on paper and enter all of the reports into the log system as soon as you have access.

15. A Spotter calls in this report: "I'm listening to the scanner and there are trees down all over Goochland County." What can you do with this report?

We do not accept reports that come from scanners, public safety radios, or broadcast media. However, you may still be able to get some useful information. Find out where this Spotter is located if you don't already know. You might make a note of that information on your check-in list. If he is in that same area, find out if he has experienced any storm damage. Or, if he's in the path of the storm, advise him to take shelter and then check in with us once the storm has passed so we can collect a report of any damage he experiences first-hand. You should tactfully let him know that we do not take reports from scanners and invite him to let us know if he personally observes any reportable weather events.

16. Someone calls Net Control with a report, but they say they are not a trained Spotter. Can we accept the report? If not, what do they need to do with their report?

Yes. Amateurs do not need to be trained Spotters, nor do they need to have been trained by the Wakefield office specifically. In the log system, you would leave "Trained Spotter" unchecked. Take their report as you would any other.

17. A Spotter has called us twice with reports that don't meet reporting criteria. Now he is calling just to let us know "it stopped raining about 5 minutes ago." How should you handle this report?

You may ask if the spotter has a specific rainfall measurement, or if he has observed any flooding or other storm damage. A friendly reminder of reporting criteria may be in order if time permits. In any event, thank him for the report and invite him back in the future.

18. A storm has done considerable damage in one of your counties and the local ARES team is being activated. During your net, you are contacted by the ARES Emergency Coordinator (EC), asking permission to use the repeater for ARES. How do you handle this?

If ARES is activating, it's likely that you are coming up on the conclusion of the SKYWARN net, simply due to differences in activation timing between the two groups. Determine when your net may be terminating and communicate that to the ARES EC. See if both groups can coexist for a short while (ask stations to call specifically for "SKYWARN Net Control" or "ARES Net Control" depending on who they are trying to reach). Contact your Area Manager or provide your Area Manager's contact information directly to the ARES EC for off-the-air coordination of activities.

19. During your net, an unknown mobile station accidentally sits on his microphone and is transmitting dead air into the repeater. What is the best course of action for this situation?

If either you or your backup NCO are able to transmit over top of the offending station, make a quick announcement with the frequency of the backup repeater, and advise that the net will move there if the interference continues or if the repeater times out. If you can't transmit over it, just move to the backup repeater. One NCO should stay behind on the primary repeater, even if it times out, to direct traffic once the repeater is back on the air. You should notify your Area Manager of the situation as soon as possible.

20. You are running an informal net, so the repeater is open to regular amateur radio use. Two stations get into a long-winded rag chew and one of them actually timed out the repeater briefly. What is the best way to handle this situation?

Break into the conversation by announcing your call sign in between their transmissions and wait to be recognized. Politely remind them that SKYWARN is active and you would appreciate it if they would shorten their transmissions and leave longer pauses in case someone needs to reach SKYWARN. If the conversation begins to interfere with SKYWARN operations, you may need to ask them to move to another frequency.

21. About how often should you provide a recap of current watches, warnings, and advisories?

This should be a part of your net script (if you are using one) and should be done once every 10 to 15 minutes. If a new watch, warning, or advisory is issued, it should be announced immediately.

22. It appears that a Spotter who has checked into your net may be directly in the path of severe weather. What might you do?

Contact them over the air and let them know. They may be unaware. Advise them to seek shelter and ask them to check back in with us once the severe weather has passed.

23. You have not yet actually run a SKYWARN net and really want to, but you're nervous about picking up the microphone and actually calling the net. What can you do?

Talk to your Area Manager about running a practice net on simplex, via FRS/GMRS or some other low power/limited coverage radio. It may also be helpful to partner with an experienced NCO and sit next to them during a SKYWARN activation.

TIP: We have all been there! The first transmission is always the hardest to make, and 30 minutes into the net, you'll be a lot more relaxed. The only way to overcome your fear is to face it head-on!

24. Where can you look for current severe weather watches, warnings, and advisories?

The NCO Dashboard, which is part of the SKYWARN Report Management System (RMS) has a "Current WWA" screen which displays recent watches, warnings, and advisories for the Operational Area you are currently signed in to. The NWS Wakefield web site is another good source.

25. Where do we keep team member contact information, and who can update this?

The Team Roster, located on the SKYWARN Ops Portal, is initially populated with your information by your Area Manager when you join the team, but you are responsible for keeping it up to date. If your contact phone number, e-mail address, availability, or other roster details change, please update it and send your Area Manager an e-mail to let him know you have made a change.

26. How often must an NCO be re-certified as an NCO? How about as a Spotter?

Both NCO and Spotter certifications are good for three years. Sometimes we may require Net Control training before three years is up, especially if we have made considerable changes to our operating procedures, or if your performance indicates additional training may be needed. You do not need to wait the full three years, and can choose to take the training as often as you wish. Spotter training can also be taken as often as you would like. When you take Spotter training, let your Area Manager know so we can update your training records. Either the Basic or Advanced Spotter training can serve as your 3-year renewal training.

27. What call sign do you use when running the local SKYWARN net?

Your personal call sign. The WX4AKQ call sign is reserved for use by the SKYWARN Radio Desk at the National Weather Service Forecast Office.

28. You personally observe reportable severe weather. How do you get that report to NWS?

You can call it in to your local SKYWARN net and have it logged that way, or send it through e-mail, e-Spotter, the Spotter Hotline, social media, or any other appropriate reporting channel. Our log system is intended for logging reports which are called in to our nets, so it will not allow you to enter your own report.

29. What is the maximum recommended amount of time you should be transmitting before pausing to allow passage of emergency or priority traffic?

Approximately 20 seconds. If you are reading a longer message and need to pause, simply announce "break" and un-key the microphone. Let the repeater's courtesy tone sound, allow another second or two, and then resume your transmission. Repeat until the message has been sent. This practice allows adequate opportunities for stations to break in with emergency or priority traffic. It can also help keep your transmission from being covered up by a NOAA Weather Radio broadcast on the repeater.

30. You hear a station cut in between transmissions and say "break break." What does this mean?

"Break" or some form thereof ("break break" or "break break break") transmitted by itself in between transmissions is an indicator of emergency or priority traffic. Immediately acknowledge the transmission ("go ahead break") and handle their traffic.

How did you do? Go back and review any topics you feel you need more work on. Be sure to bring your answers, along with a list of your own questions and concerns to the classroom session. The first part of the class is dedicated to answering your questions and clarifying any confusion on our basic operating policies and procedures.