2009
ARES Weather Net
Procedures and Protocols

146.640 Repeater
Dodge County, Wisconsin

Why…

The Weather Forecast Office Milwaukee / Sullivan (WFO MKX) has 20 counties in its County Warning Area (CWA) in Southern Wisconsin. That is a lot of territory -- about 138 miles by 105 miles (or 14,490 square miles); and a lot of weather events may occur at any given moment. Mother Nature rarely concentrates all the action in one small area, thus communication channels must be kept as clear as possible for efficient communication of Severe Weather information.

To achieve this level of efficiency, certain procedures and protocols have been developed. These procedures have been implemented on every active Severe Weather Net in the Milwaukee / Sullivan CWA.

DEFINITIONS OF TAIL MESSAGES ON THE 146.640 REPEATER

"Weather Alert" is activated when the NWS has forecast the threat of Severe Weather in the area. This would include; severe storms, damaging winds and/or large hail. The repeater remains open for normal traffic and periodic updates on the weather will be provided by NCS.

"Weather Watch" is activated when the NWS has issued a Watch Box which includes our area, or our area is in the path of known Severe Weather. This would include such events as; Tornado and Severe Thunderstorm Watches as well as wind and hail events. The repeater remains open for normal use. ***However, be sure to allow pauses in your transmissions to allow for updates or for stations needing to report a weather event.***

"Weather Warning" is activated when the NWS has issued a Severe Weather Warning for our coverage area, or reports meeting the criteria for Severe Weather have been received by NCS. ***A full Net is activated at this time and the repeater is restricted to reports meeting Severe Criteria only, unless otherwise requested by NCS.***

SPOTTER SAFETY

Individual spotters are responsible for their own safety at all times. Weather spotting can be a very dangerous activity and we do not encourage risk taking. Mobile spotters do so at their own discretion. As with any other activity, **you are ultimately responsible for your safety and actions**. Being mobile during severe weather leaves spotters vulnerable to the weather conditions with little or no shelter available as well as limited visibility to other drivers. Do not become a hazard for others using the road and follow all traffic laws. Always have an escape route planned in advance. ***IF YOU CHOOSE TO BE A MOBILE SPOTTER, YOU DO SO AT YOUR OWN RISK!!! We don't need your statistic if it causes you to become one!***

SEVERE WEATHER REPORTING CRITERIA

GENERAL REPORTS

General reports are to be given at the request of the NCS. General reports should be kept brief and include a summary of weather conditions at the Reporting Station's location. When making your general report, speak slowly and provide your report in a concise, clear manor using the proper reporting procedure. The NCS will provide periodic updates and indications of when conditions are expected to reach our coverage area.

SEVERE WEATHER REPORTING CRITERIA

The conditions in RED text (numbered 1 through 7) normally trigger or verify a warning (also called "Severe Conditions.") The conditions in BROWN text (numbered 8 through 13), although important, are considered residual (also called "Non-Severe Conditions.")
Conditions numbered 1 - 7 are to be reported immediately using voice channels.
Conditions numbered 8 - 13 should be reported using digital modes unless directed otherwise.

IMPORTANT NOTES!
The meteorologists may require reports for conditions that are not usually considered severe, or may not even be on this list. This need will be conveyed as required.

Severe Conditions - to be reported ***immediately*** using voice channels (in order of importance:)

1. Tornado or Waterspout

2. Funnel Clouds

3. Wall Clouds (*indicate if it is rotating)*

4. Heavy Damage
-- Loss of roofing material, large tree branches broken, some large trees uprooted
-- Mobile homes flipped to side or flipped over, bent light poles
-- Large roof sections removed, collapsed light poles
-- Home walls collapsed, partial destruction of masonry walls and strip malls
-- destruction of homes/shopping malls, steel buildings deformed

5. High Winds - 58mph or higher, (indicate if measured or estimated, but measured is preferred)

Severe. 58-74 mph

Large limbs break; shallow rooted trees pushed over. Semi-trucks overturned. More significant damage to old / weak structures. Shingles, awnings removed from houses; damage to chimneys and antennas; mobile homes, carports incur minor structural damage; large billboard signs may be toppled.

Hurricane force. 75-89 mph

Widespread tree damage (trees either broken or uprooted).
Mobile homes may incur more significant structural damage; be pushed off foundations or overturned. Roofs may be partially peeled off industrial/ commercial/warehouse buildings. Some minor roof damage to homes. Weak or open structures (e.g. farm buildings, airplane hangars) may be severely damaged.

Significant severe. 90+ mph

Groves of trees flattened. Mobile homes severely damaged;
moderate roof damage to homes. Roofs partially peeled off homes and buildings.
Barns and sheds completely demolished.

6. Large Hail – 1 inch or greater (indicate if measured or estimated, but measured is always preferred)

7. Flooding / Flash Flooding

-- Major Structural Damage / Evacuations
-- River Banks Broken, Water Out of Bank
-- Roads , Bridges, or Railroads Washed Out
Non-Severe Conditions - to be reported via digital modes (Winlink, e-mail, eSpotter) unless directed otherwise (in order of importance:)

8. Small Hail – less than ¾ inch (indicate if measured or estimated, but measured is always preferred)

9. Minor damage to

-- Buildings (number, size, and extent)
-- Trees (health of tree, size, number of limbs)
-- Roads (type)
-- Power Lines (due directly to weather conditions)

10. Minor, inconvenient urban / small stream flooding

-- non-life-threatening / non-damaging water over curb
-- some water out of banks
-- some water on the roads

11. Visibility - less than 1/2 mile (indicate if due to precipitation or blowing dirt)

12. Rainfall amounts equal to or exceeding the rate of 1" per hour measured over at least 15 minutes (i.e. a rate greater than 1/4" per 15 minutes)

-- If possible, indicate start time and end time of measurement (i. e., “measured between 11:05am and 11:25am”)

13. Straight Line Winds 40 to 57 mph (indicate if measured or estimated)

Reports are needed at all times, prior, during and after a Severe Weather Watch or Warning has been issued. “After the fact” reports can be e-mailed to Net Control or forwarded by another means.

Using the T-L-C-S Format

All reports of severe weather should be made using the T-L-C-S format. What is T-L-C-S you may ask? It is simply **T**ime, **L**ocation, **C**ondition, **S**ource. When reports are made in the proper format it greatly improves the efficiency of the passing of information at all levels of the reporting system. Uniformity also simplifies the duties of all parties involved.

Therefore, please familiarize yourself with the proper location of your reporting point(s) ahead of time and learn to use the T-L-C-S reporting format to your advantage.

TIME
To the nearest time you observed the event. Not the time it was relayed!

LOCATION
Within your county determine how far you are from your city reporting point.
Do this for home, work and frequented mobile locations. Refer to Dodge County Reporting points listed in this document.
(IE if you are 1.2 miles SSW of the Juneau RP or 3 miles W of the Waupun RP)
GPS Coordinates are also accepted for this purpose.

CONDITION
Describe what you saw/experienced.
Example: Measured winds of 68 mph, 3 feet of water flooding Hwy 151, Rotating wall cloud, large groves of mature trees leveled, 1.5 inch hail measured, etc.

SOURCE of Report
For our purposes this must be your ham radio call.

SEVERE WEATHER REPORTING PROCEDURE

The following procedure is to be followed when making a Weather Report during any weather event on any frequency in South Eastern and South Central Wisconsin, including the 146.640 repeater for the Dodge County SkyWarn Program. ***The use of standard phonetics is strongly encouraged.***

1. Station calling: {"Call sign + Event"}
2. Net Control: {"(Call sign), go ahead"}
3. Station calling: {"Time, location, condition" (TLC)}
4. Net Control: {"Roger, all locations"}

Example:

1. Calling Station: ***"WB9 Alpha Bravo Echo -- HAIL"***
2. NCS: "WB9ABE, Go ahead"
   or "Alpha Bravo Echo, Go ahead"
3. Calling Station: ***"At 4:30 PM, 1.1 mile North Randolph Dodge County, (Hwys 33 & 73), Measured 1" hail"***
4. NCS: "ABE, I have your report of 1" measured hail 1.1 mile North of Randolph, Thank you"

Your Transmission is now completed, but be available for follow up information, as requested by the Net Control.

Important points to remember when making a report;

1. **Be sure of your observation (use measured reports when available).**
2. **Take a moment to formulate your report before keying the mic. (Be sure you have all the required information).**
3. **Be sure to include the type of event you are reporting during your initial contact. This helps NCS prioritize reports that may come in at the same time. (Example "WB9 Alpha Bravo Echo -- Hail")**
4. **If mobile, know your location at all times. This is as much for your own safety as it is for reporting accuracy.**
5. **Speak slowly and clearly. Remember the NCS and Relay Stations need to copy the information. *Accuracy first, speed second.***
6. ***We need and want your reports! Don't be shy if you observe weather meeting the criteria; report it! Without the spotter, the Net is non-existent.***

***** It is important that your reports follow the event criteria as requested by the NCS. General criteria reports are "normally" allowed during an Alert or Watch, but not allowed during a Warning unless requested by the NCS. Secondary sources, i.e. scanners, TV, broadcast radio, are not allowed at any time; only reports you witness personally or reports that are being relayed from another Amateur Radio Operator to the Net. *****

REPORTING LOCATION

All Severe Weather reports relayed to the NWS meteorologists at the Milwaukee / Sullivan Weather Forecast Office by Amateur Radio Operators will utilize the following standards to describe the location of the weather event.

This format is used because radar information in NWS warnings and associated follow-up statements is based on distance from the center of cities / villages. In addition, post-storm information written in the Local Storm Reports sent to all media outlets and 'StormData' publications use this notation.

DISTANCE (in tenths of a mile) from the recognized **center** of a city / village (not the edge or limits of the city / village). This may be an intersection of major roads considered the center, or a cluster of administrative buildings.

Cities that can be used are found on the State of Wisconsin road map, and are given below. The report shall also be referenced with one of 16 compass points (N, NNE, NE, ENE... E, ESE, SE, SSE... S, SSW, SW, WSW... W, WNW, NW, NNW).

Additionally, the county from which the report is originating from is required, as some cities overlap two county lines.

Examples:

2.2 E Jefferson, Jefferson Co.
2.4 NE Waupun, Fond Du Lac Co.
0.5 E Cobb, Iowa Co.
5.5 WSW Madison, Dane Co. (still in the city limits)

References for Dodge County

Reference Name	Reference Location	Lat. (N) Long. (W)
Ashippun	Intersection of STH 67 & CTY O	43.2118 88.5163
Astico	Intersection of CTY T & Alto Dr.	43.3325 88.9404

Atwater	Intersection of CTY C & railroad tracks	43.5607 88.7346
Beaver Dam	Western Inters. of STH 33 & bus 151 (s center st and front st)	43.4563 88.8396
Brownsville	Intersection of STH 49 & Clark St.	43.6157 88.4913
Burnett	Intersection of STH 26 & Main St.	43.5047 88.7084
Clyman	Intersection of Main St. & CTY J	43.3121 88.7193
Danville	Intersection of CTY T & CTY TT	43.3197 88.9563
Fox Lake	Intersection of STH 33 & STH 68	43.5662 88.9067
Horicon	Eastern Intersection of STH 33 & CTY E	43.4516 88.6299
Hustisford	Intersection of CTY E & Highland St.	43.3455 88.6036
Iron Ridge	Intersection of Main St & E. Pleasant St.	43.3976 88.5321
Juneau Dodge Airport (UNU)	Intersection of two runways or as an alternative the intersection of STH 26 & Saint Ann Rd.	43.4274 88.6994
Juneau	Intersection of STH 26 & STH 115	43.4063 88.7033
Knowles	Intersection of CTY Y & CTY AY	43.5731 88.5001
Le Roy	Intersection of CTY Y & CTY YY	43.5735 88.5610
Lebanon	Intersection of STH 109 (R) & CTY MM	43.2554 88.6267
Leipsig	Intersection of CTY G & CTY S	43.4007 88.8638
Lomira	Intersection of Sterr Park & Pleasant Hill St.	43.5889 88.4447
Lowell	Intersection of CTY G/GI & Dodge St.	43.3378 88.8209
Mayville	Intersection of STH 28 & CTY Y	43.4982 88.5462
Minnesota Jct.	Intersection of Center St. & North St.	43.4523 88.6961
Neosho	Intersection of STH 67 & CTY NN	43.3097 88.5178

Randolph	Intersection of Stark St. & Columbus St.	43.5378 89.0022
Reeseville	Intersection of CTY G/GI & Suncrest Dr.	43.3059 88.8451
Richwood	Intersection of CTY Q & Link St.	43.2412 88.7847
Rubicon	Southern Intersection of CTY N & CTY P	43.3399 88.4584
South Beaver Dam	Intersection of CTY DE & CTY D	43.4408 88.8898
Theresa	Intersection of STH 175 & Henni St.	43.5178 88.4527
Watertown (Dodge Co)	Intersection of S. 1st St. & Dodge St.	43.1916 88.7249
Waupun	Intersection of STH 49 & Drummound St.	43.6333 88.7335
Woodland	Intersection of N. CTY WS & Woodlawn Rd.	43.3705 88.5194

HAIL REPORTS

Ideally, ALL HAIL REPORTS SHOULD BE MEASUREMENTS, regardless of the fact that it was an estimate or measurement of size. Sending a report with a specific numerical size leaves no room for confusion. Consider the following example;

" We have marble sized hail at…"

Since marbles come in different sizes this report would require a clarification. A better approach would be to have a hail size conversion chart, or a ruler or calipers with the Spotter and at the Relaying Station(s).

When measuring hailstones, do so only when it is safe to gather them. Measure the stone along its longest axis; i.e., if a stone measures 2 x 3 inches, report it as 3 inch hail. If the hail covers the ground in sufficient quantities and depth, report that as well. If you observe real time large hail damage, report it immediately, along with injuries or other significant damage.

Most people tend to over estimate hailstone sizes, and this condition is worse during night spotting. When making estimates keep in mind… as the distance between you and the stone increases, YOUR accuracy decreases!

ALL reports should be qualified as either "MEASURED" or "ESTIMATED", in inches. The following Hail size conversion chart will assist you in estimating the actual size of hailstones.

HAIL SIZE CONVERSION CHART

What You See	Estimated Report Size
Pea	¼"
Marble	½"
Penny/Dime	¾"
Mothball/Nickel	7/8"
Quarter	1"
Half Dollar	1.25"
Ping Pong Ball	1.5"
Golf ball	1.75"
Hen Egg	2.0"
Tennis Ball	2.5"
Baseball	2.75"
Tea Cup	3.0"
Grapefruit	4.0"
Softball	4.5"

Anything in red will trigger a Warning.
Remember to consider your observations carefully and objectively, ***and then make your report in inches***, NOT IN REFERENCE TO ANY OBJECT.

WIND SPEED REPORTS

Without a fixed or portable wind speed indicator (anemometer) it is sometimes difficult to accurately judge wind speed. In a worst case event when the storm spotter has little or no training on wind estimates, he should describe/report the winds effects on man-made or natural objects: "A 12 inch tree trunk has been broken, 8 inch tree limbs are across the road, numerous electric poles have been snapped, a 4 foot brick chimney has been toppled, metal garbage cans are airborne, the 10 X 16 foot highway billboard has been toppled", etc.

All wind speed reports should be qualified, that is they are either an **ESTIMATE** of speed, or an actual **MEASURMENT** of speed. If wind direction is requested, remember the direction is FROM which way the winds are blowing.

Storm Spotters must also keep in mind that during a Severe Weather Event, Stress, Excitement, and Tension levels are running high. This is called the SET effect, and it can alter your logic and reasoning abilities. Because of it's presence it is often very easy to over estimate wind speed reports…

> A wind gust of 40 MPH on a fair weather day will not cause any great concern, and may in fact feel rather pleasant. However, this same wind gust, when experienced during severe weather may seem like 55-65 MPH because of the SET effect.

When in doubt about your estimate, re-think it and try to remain calm and objective. Our goal is to pass real time observation in an organized procedure, with accuracy, speed and professionalism.

NCS Procedure

We all have our own personalities and style in running a Net, and with that in mind, the procedures for NCS are flexible. NCS is an extremely important role, however it should be comfortable enough that anyone will participate without the fear of doing something wrong. It is assumed that mistakes do and will happen, but the greater good of the mission takes precedence and participation is key to the safety of our observers and the general public.

This does NOT mean you can do whatever you want. We still need to follow standard EMCOM training and adhere to certain standards of conduct. The information provided below is intended to be a guideline for all NCS operators.

Net Operation suggested outline

Gather info and get ready to operate as NCS.
Place repeater tail message in proper mode.
Give opening announcement and reason for net.
Take check-ins and keep log of participants.
Info announcements as necessary until Warning is issued.
Change repeater tail message when necessary. Watch to Warning for example.
Assign relay operator or check-in on backbone with WX9MKX.
Take reports and relay by appropriate method.
    Critical info (severe criteria) via radio.
    Non-critical via e-spotter or electronic means.
Return repeater to normal mode after event.
Wrap up statement.
    Thank all participants and RRRC for use of repeater.
E-mail event info to k9bjk@yahoo.com or bring written records to next club meeting.

    Info to be tracked for each event is:
        Net start time
        Number of participants
        Number of reports taken
        Net secure time
        Record of who was NCS and Relay operator

Relay Operator

The most critical part of severe weather operations is the link between the local net and the offices at the National Weather Service in Sullivan. The whole principal of our operations is to get critical information from spotters to the meteorologists that issue warnings for our area. Information gathered but not sent to where it needs to go is not very useful.

As a NCS you need to appoint someone to fill this position. The relay operator needs to have a strong clear signal into one of the three repeaters used to relay traffic. These relays are called the backbone and are used for transferring information to and from the Sullivan office. These repeaters are not used for direct reporting of events except in cases of emergency.

Frequencies

The three backbone repeaters are MKX West, Central and East.

East (MKX E) – Primary and Backup
The MKX E primary repeater is the **145.13** (T127.3) (N9LKH) repeater owned and maintained by the Milwaukee Area Amateur Repeater Society (MAARS.) The MKX E backup repeater is the 146.82 (T127.3) (K9ABC) repeater owned and maintained by the Southeastern Wisconsin FM Amateur Repeater Society (SEWFARS.)

Central (MKX C) – Primary and Backup
The MKX C primary repeater is the **145.45** (T123.0) (WD9ACY) repeater owned and maintained by the Rock County Repeater Association (RCRA.) MKX C backup at this time is on simplex frequency 146.580 with a CTCSS tone (TPL) of 156.7Hz.

West (MKX W) – Primary and Backup
The MKX W primary repeater is the **147.315** (T123.0) (WB9FDZ) repeater owned and maintained by the Yellow Thunder Amateur Radio Club (YTARC.) The MKX W backup repeater is the 145.37 (T123.0) (KC9FNM) repeater owned and maintained by Richard Green/Empire Tower.

Administration

A 2-meter simplex frequency is used to handle administrative issues. The administrative frequency for Sullivan Weather is **147.480 MHz with a T of 127.3**. The administrative frequency (also called MKX F1) is also used as a backup for point-to-point backbone operations in case of widespread repeater malfunction.

A second admin channel used is on the UHF frequency designated MKX F2 at **446.200 MHz with a Tone PL of 136.5**. Please make sure you are transmitting the tone or you will not be heard.

Relay Operator Procedures

Local net operations are independent of Sullivan operations and so we do not need to wait until Sullivan Weather is on the air to start our net. Start the local net whenever it is needed, but designate someone as relay operator as soon as possible. If no one volunteers or is able to be relay operator, you can serve as both NCS and relay operator until help shows up. This should only be done by experienced NCS operators capable of monitoring both the local and backbone frequencies at the same time.

Check-in

Relay operator will call WX9MKX Sullivan Weather on the appropriate backbone frequency to check-in. Dodge County can check-in on any one of the three backbone repeaters. Just identify yourself so Sullivan Weather knows you are the 64 relay.

Ex: "WX9MKX Sullivan Weather….KB9NUM Dodge County checking in as 64 relay"

Remember after every report to use the tactical call sign 64 relay and your call sign.

Message Relay

The NCS and Relay Operator must work together to send a properly formatted message to NWS Sullivan. Some reports taken on the local net do not need to be sent by voice and can be sent via e-spotter or other means. Examples of reports that should not be sent are reports that do not meet the severe criteria after a warning is issued. Exceptions to this would be for info requested directly from NWS Sullivan. The NCS has to decide if a report is critical enough to send if the backbone is busy.

Remember there are 2 operators at NWS Sullivan to take reports from all the counties in Southern and Southeast WI. If they are busy working a tornado in Waukesha County, a small hail report in Dodge may not be that critical of a report.

All reports sent to NWS Sullivan must be in the TLCS format. Distance from a city reference point is important. As a local net we can use whatever format we chose, but reports sent via the backbone need to be properly formatted.

Ex: Relay operator "Sullivan Weather 64 relay hail report"
Sullivan weather "64 relay go ahead"
Relay operator "1645 (**TIME**), 1.5 miles NE Clyman, Dodge County (**LOCATION**),1.25" measured hail (**CONDITION**), KB9XXX reporting station (**SOURCE**)"
Sullivan "Roger 64 relay…WX9MKX"
Relay operator "64 relay KB9XYZ clear"

Check-out/switching Relay Operators

NWS Sullivan does not control local net operations. A relay operator can check in or out whenever they see fit. If you have to leave you can do so at any time. NWS will only control their operations and will notify all operators when they secure operations at NWS Sullivan. They do however, request you inform them when you switch operators or check-out.

Ex: Relay Operator "Sullivan weather 64 relay operator change"
Sullivan weather "Go ahead 64 relay"
Relay operator "KB9XYZ switching operators, KB9YYY new relay operator"
Sullivan weather "roger 64 relay… WX9MKX"
Relay operator "KB9XYZ clear"

Ex: Relay Operator "Sullivan weather 64 relay checking out"
Sullivan weather "roger 64 relay...WX9MKX"

Remember to keep track of the statistics previously mentioned and send them to k9bjk@yahoo.com for reporting to NWS Sullivan. Attend spotter training each year if possible. Relay operator is critical to the success of our program and may save someone's life if a warning is issued from your report. Any questions or concerns please bring them to the EC or AEC's attention.

IN CASE OF REPEATER FAILURE

In the event of repeater failure during a weather net it has been decided that voice communications may continue on the output frequency of 146.640 Mhz with the PL tone of 123.0. Remember to turn off your offset feature to do this. It is understood that communications may be limited due to simplex communications, therefore spotters may have to resort to other methods (phone, etc) and may choose to contact Dodge County Communications or NWS Sullivan directly by phone to relay their report.

To contact NWS Sullivan by phone: 262-965-2074

To contact Dodge County Communications by phone: 920-386-3726
*Be sure to request your report be forwarded to NWS Sullivan

*** Remember whatever method you are using to properly format it in T-L-C-S.**

Thank you for being a valuable asset to our Team!