Storm Spotting Operating Procedure

OVERVIEW

Volunteer severe storm spotters serve an important function in the system of severe storm warning in the Kansas City area. Dedicated ham operators, with their mobile and other communication capabilities do heavy lifting in the volunteer storm spotting service.

Spotter groups that make up our metropolitan regional area exist as part of city or county emergency management and/or ARES® group. The spotter groups report severe weather information to the governmental agencies that they serve. This remains their first responsibility. In addition, spotters providing information to the National Weather Service also have network connections to the National Weather Service office at Pleasant Hill. Spotter reports might come to the National Weather Service over the Metropolitan Emergency Radio System or MERS. The Metropolitan Emergency Management Committee operates this radio system. It is a committee of the Mid-America Regional Council or MARC. Several area police, fire, sheriff and emergency preparedness offices use MERS. MERS is a repeater system with an analog FM output on 154.130 MHz. Only authorized agencies may communicate over the MERS system.

The other radio storm reporting network available to the National Weather Service is the amateur radio operated Skywarn® Network. This network backs up the other electronic systems that an emergency preparedness office may use to contact the National Weather Service office. For some spotter groups, this network provides a primary means of contact with the National Weather Service. The Skywarn® Network operates in parallel with other communication methods employed by National Weather Service and spotter groups. The Skywarn® Net is intended for the use of National Weather Service. It is not intended for public reception of weather information. Other means exist to inform and warn the public. To function as an effective backup system, the Skywarn® Network activates whenever requested by the National Weather Service. If the Skywarn® Network is only activated upon failure of a telecommunication system, due to the brief nature of certain weather situations, it may not be possible to become operational in time to be of benefit.

The Skywarn® voice net normally operates on the KCØSKY 146.700 MHz. repeater. The KCØSKY 145.190 MHz. repeater can be used for Skywarn® operations in case the 146.700 MHz. repeater becomes unusable. Both KCØSKY repeaters employ a negative 600 kHz. offset and requires a 107.2 Hz. CTCSS tone for access.

WEATHER AWARENESS

A weather spotter should possess an awareness of the possibility for severe weather occurrence on a given day. Morning local and network TV news programs identify potential severe weather areas for the day during their weather segments. Most TV and broadcast radio weather forecasts at other times during the day should mention if severe weather is likely that day. The Cable Weather Channel carries information on prospects for severe weather once or twice an hour. Daily, about 6 A.M. the National Weather Service Pleasant Hill office issues a Hazardous Weather Outlook for the remainder of the day and the following six days. This forecast contains statements that predict the likelihood for severe weather, the possible weather hazards and the likelihood that weather spotters would be needed today. This forecast is available from many sources. Upon release, it is read over the MERS radio system on 154.130 MHz. The Hazardous Weather Outlook broadcasts over the NOAA Weather Radio station call sign: KID-77 on 162.55 MHz. The Emergency Managers Weather Information System or EMWIN captures these Hazardous Weather Outlook forecasts. These forecasts are also available on the Internet at https://www.weather.gov/media/eax/sitreport/SitReport1.pdf

One of the best methods of severe weather danger notification is by means of an alarm equipped weather radio. One may buy these radios at consumer electronics and Price Chopper grocery stores at reasonable prices. If you are contemplating purchase of such a radio, you might consider the models with the specific county messaging feature.

Television stations carry Emergency Alert System messages concerning the most dangerous weather conditions.

The Wireless Emergency Alert system sends location specific alerts to cellular phones involving imminent treats to safety and life.

The Cable Weather Channel carries repetitive announcements of watches and warnings following an alert tone. These statements usually follow by some minutes the alert available on KID-77.

The Pleasant Hill National Weather Service Office also has a Facebook page operating at https://www.facebook.com/US.NationalWeatherService.PleasantHill.gov/.

There are applications for mobile devices that provide weather information, radar information and weather warnings.

It is hoped that, by being aware of weather situations, you will be able, in your personal circumstances, to be available for weather spotting. We understand that not every trained spotter may be able to participate every time. This is why we want as many ARES® members as possible to have recent spotter training. We need a large pool of spotters from which to draw.

PREPARATION

Be prepared to participate in severe weather spotting. It would be good to have some printed instructional, and reference information at hand. If you browse the Internet, check https://www.weather.gov/media/owlie/SGJune6-11(1).pdf. There is a Weather Spotter's Field Guide there. If you picked up printed spotter information at a spotter training session, use that material. The printed material once offered at spotter training is no longer being printed, so hold on to any printed material previously obtained.

Review your materials from time to time. I suggest you keep your materials near your radio. Some spotters recommend the use of binoculars and blue-light-filtering sunglasses to observe weather phenomena.

NET PROCEDURES

When you become aware of a severe thunderstorm or tornado watch, monitor our spotter frequency for announcements. We would normally use the frequency of 146.820 MHz. The backup repeater is the 146.970 MHz repeater.

Our ARES® spotter net may or may not activate during a severe thunderstorm watch or warning. Factors such as the location of the affected area may have a bearing on whether we activate. If the Skywarn® Net goes on the air, expect our spotter net to operate in some fashion. Our spotter net activation status probably will follow the lead of the status of Skywarn® net. If the Skywarn® Net activates and after about fifteen minutes of monitoring our net frequency, you do not hear a net control station, call for a net control station. A net control, if there is one, should respond. If no net control station responds, those stations on frequency should establish among themselves a net control station. Any ARES® station may activate the Jackson County ARES® storm spotting net.

If our ARES® net is not activated and you experience severe weather you feel needs reporting to the National Weather Service, there are non-radio methods for doing so. If you can do so safely, call your local law enforcement agency. Identify yourself as a National Weather Service trained spotter. Give your report and request your report be forwarded to the National Weather Service. You may also call the National Weather Service with your report to their toll-free telephone number. The number is 816-540-6126 or 1-800-438-0596. When offering a report by telephone, include all the information you would as if you were making a spotting report over the radio.

If you use Twitter, you can also send reports to @NWSKansasCity using the hashtag #mowx or #kswx. You can also incorporate photos with your Twitter report.

Following the issuance of a watch by the National Weather Service, there may be a time before the spotter net starts and spotters deploy. During such a period, the ARES® net is in standby status. If the Skywarn® Net is in standby status, our spotter net may also be in standby status. Consider the net on standby status as an alert period during which preparations are made for possible spotter activities. During standby status, normal repeater activity can continue without causing a problem to net activities. As repeater usage allows, the net control station should make periodic announcements concerning the net and weather status and may ask for stations to declare their availability for subsequent spotter duty.

NET CONTROL RESPONSIBILITIES

The responsibility of the net control station includes leading and organizing the spotter activity. When net control station requests spotters, report your availability status and location. The net control station will try to assign you to a spotter post at or near your current location. Due to the associated dangers with storm spotting at night, we discourage mobile spotting after sunset. If it appears we have a sudden need for more spotters than we have currently on the net, we may make mass contact attempts using telephone and/or text messages. In such case we would appreciate your help, but we understand if you cannot participate at this particular time.

The net control, or a designated operator needs to notify Kansas City Emergency Management when our spotter net is in operation. Do so by telephoning Craig Schley at 816-564-8725 and the Emergency Management Duty Officer at 866-417-6400. If you get voice mail, leave a message that the Jackson County ARES® spotter net is activated, the net frequency and the caller's telephone number. Follow the same procedure when the net is deactivated.

The net control station needs to appoint a station to liaison with Skywarn® Net. We always seek a station to perform liaison duty when we operate a spotter net. The liaison must be able to receive the Skywarn® Net and our spotter net simultaneously. A fixed station ideally carries out this responsibility. The liaison station shall relay important reports to the Skywarn® Net from our spotter net as directed by Jackson County ARES® net control. The liaison station also reports information from the Skywarn® Net back to the Jackson County ARES® storm spotting net. The liaison station therefore operates under the direction of two net control stations. The liaison station should act as liaison for our spotter group only and not attempt to be liaison for other groups as well. The liaison station enters the Skywarn® Net by identifying as the liaison from Jackson County ARES® and by reporting the status of our spotter operation. Thereafter, the liaison should inform the Jackson County ARES® net of any specific reporting requests made by SKYWARN®.

The net control also needs to assign a station the responsibility of recording our net. A voice-operated tape or digital recorder would be best for this purpose. Alternatively, a recorder continuously running or turned on and off to record transmissions will do. Recordings are desired in case transmission content is questioned and for critique purposes. Recordings need only be kept for a week. The station doing the recording, like Skywarn® liaison, should ideally be with the net for the duration of operation.

A function of our spotter group activity with the National Weather Service is to assist in the issuance of warnings and advisories. The National Weather Service has a mission to save lives and reduce property damage through the issuance of warnings and forecasts. It is the intent that weather warnings are issued with sufficient time to prepare and with enough information to motivate those in the storm's path to seek shelter. The Pleasant Hill office issues warnings for 43 counties besides Jackson County. If the National Weather Service issues warnings for our county, the focus of our spotter activities may change. For example, during a tornado warning, the net may be suspended so participants in the warned area may take cover. Following a tornado or severe thunderstorm warning, spotters may be asked to provide storm damage information damage. If sufficient rain falls during a storm, we may ask spotters to observe locations suspected to be prone to flooding and report flood situations.

SPOTTER SAFETY PROCEDURE

Volunteer spotters carry out spotting activity at their own risk. In the interest of safety, the National Weather Service recommends two spotters per vehicle. The personal safety of the spotter is of utmost importance in selection of your spotter location. If mobile spotting, avoid being near overhead electric power lines or trees that could attract lightning or be blown onto your vehicle. Be sure you have multiple exit routes from your spotter location. Avoid cul-de-sacs and dead-end streets. Don't park your car where other vehicles might block your exit. Be aware of sites affording protection from hail, such as covered parking or drive-through teller lanes. When parked, point the car into the wind to avoid being struck broadside by wind gusts.

Always be observant of the local environment. When near a thunderstorm, keep a three to four mile "buffer zone" between you and the storm. Do not drive into the north or west side of a supercell storm. For best visibility and safety, it is best to stay on the south side of the storm with an eye to the north. Frequently check the sky overhead and behind to ensure against unexpected events such as a new tornado development. It is easy to become engrossed in developing weather phenomenon to the disregard of the total weather environment. Even during severe thunderstorm watches, tornadoes may develop. Spotters should always be on guard for tornado development.

Electrical hazard is the most common danger facing the spotter. All thunderstorms produce lightning. The mobile spotter can have a lightning strike exposure due to their position in an area such as a hilltop clearing. Whenever possible, remain in your vehicle to minimize the chance of being struck by lightning. If you must leave your vehicle, maintain a low profile when lightning is nearby. Remember lightning can strike some 10 miles from a thunderstorm cloud. If you can hear thunder, you are close enough to the storm to be hit by lightning. It is recommended to stay inside a vehicle or structure 30 minutes after the last flash of lightning. Do not drive over downed electrical power lines.

If a tornado approaches your location you might be able to drive away from the tornado. But do so only if you are in open country, if the location and motion of the tornado are known and if you are familiar with the local road network. If you are in an urban area and escape is not possible for some reason, abandon your vehicle and seek shelter in a reinforced building. If a reinforced building is not available, get into a culvert, ditch or other depression in the ground not prone to flooding. Protect your head with your arms.

Never drive through water of unknown depth. Flowing water, exceeding a foot in depth, is capable of moving a vehicle off the pavement with a force of 1500 pounds.

Remember that you never need net control's approval to take self-protective action. Take care of your safety first. Inform net control of your situation when you can do so safely.

SPOTTER PROCEDURE

Mobile spotters should adjust your position to have good lines of sight. Remember visibility to the northwest and west is the most desirable.

When you are ready to spot, notify net control of your location and the current weather condition. Report whenever your weather condition changes. At some point in a spotter operation, the net control may ask for reports of severe weather only. Thereafter initiate only reports of severe weather as follows.

- Report hail occurrences when the hailstones have a diameter of a ¾" or larger or if the hail covers the ground regardless of size. Always report the largest size hail observed.

- Report wind gusts when their speed exceeds 50 miles per hour and what wind damage you observe as a result.

- Obviously, one should report tornadoes and funnel clouds. If a funnel cloud reaches more than half of the way to the ground, report it as a tornado.

- Pre-tornadic phenomena such as rotating wall clouds should be reported.

- Report rainfall exceeding an inch per hour with amount of rain over what period of time or resulting flash flooding with standing or flowing water depth of 6" or more. Report any storm or water damage.

- Report lightning resulting in damage.

When reporting, cover the following points:

1) Time of observation

2) Type of severe weather phenomenon

- In the case of a tornado or funnel, cloud report speed and direction of travel
- In the case of a wall cloud, report existence of rotation and speed and direction of travel and the length of time you have observed
- In the case of hail, report size using size descriptors in your spotter guide
- In the case of wind, report speed and direction and if speed was measured or estimated
- Any physical damage observed
- In the case of heavy rain, the amount of rain over what period of time and if it was measured or estimated
- In the case of flooding, the current extent of the flooding.

3) Location of the spotter including name of county

4) Location of weather phenomenon (cross street or well-known landmark) or distance and bearing from observer.

This information constitutes a complete report. Take time to formulate a complete severe weather report. If necessary, take a few moments to outline your observations on paper. From time to time, net control may request reports on current conditions.

If you are not certain of weather phenomenon you are seeing, observe it for a little longer before making your report. If you do make a report and remain uncertain of what you observe, always describe the uncertainty in your report. Perhaps another spotter can confirm your report.

If you report something on the spotter net overheard on another radio frequency or something you didn't see with your own eyes, report the source of the information. We wish to avoid confusion over whether a report on the net is a live observation from one of our spotters or a hearsay report.

Important Frequencies

Jackson County ARES®	Primary	146.820 MHz⁻ (-) (151.4 Hz.)
	Secondary	146.970 MHz. (-)
MERS		154.130 MHz
SKYWARN®	Primary	146.700 MHz⁻ (-) (107.2 Hz. CTCSS)
	Alternate	145.190 MHz⁻ (-) (107.2 Hz. CTCSS)
KID-77		162.550 MHz

HAIL DIAMETER SIZE DESCRIPTION

1/4"	Pea Size
1/2"	
11/16"	Dime Size
3/4" (Reportable size)	Penny Size
7/8"	Nickel Size
1" (Severe Criteria)	Quarter Size
1 1/4"	Half Dollar Size
1 1/2"	Walnut or Ping Pong Ball Size
1 3/4"	Golf Ball Size (often accompanies tornadic conditions)
2"	Hen Egg Size
2 1/2"	Tennis Ball Size
2 3/4"	Baseball Size
3"	Teacup Size
4"	Grapefruit Size
4 1/2"	Softball Size

WIND SPEED ESTIMATE	DESCRIPTION
25-31 mph	Large branches in motion; whistling heard in telephone wires
32-38 mph	Whole trees in motion; resistance felt walking against the wind
39-54 mph	Twigs break off trees; wind generally impedes progress
55-72 mph	Damage to chimneys and TV antennas; pushes over shallow rooted trees
73-112 mph	Peels surfaces off roofs; windows broken; light mobile homes pushed or overturned; moving cars pushed off road
113-157 mph	Roofs torn off houses; cars lifted off ground

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