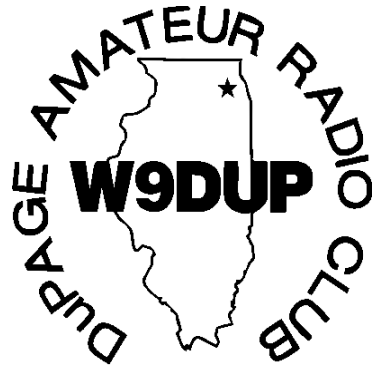


# DuPage Amateur Radio Club (DARC) DuPage County, Illinois



## SKYWARN Standard Operating Procedures (SOP) And Reference

## Table of Contents

Table of Contents.....	2
1. Change Record.....	3
3. Operating Frequencies (Primary – Liaison – Other) .....	5
4. Skywarn/Emergency Net Activation.....	6
5. Net Responsibilities.....	6
5a. Net Control Station (NCS) .....	6
5b. Net Administrator (NA) .....	6
6. Net Control Scripts .....	7
6a. Skywarn Net Activation.....	7
6b. Truncated Skywarn Activation Script.....	9
6c. Training Net Activation.....	10
6d. Net Standby Activation .....	12
7. Net Protocol.....	<b>Error! Bookmark not defined.</b>
8. Spotter Check-In Script .....	12
9. Spotter Procedures .....	13
10. Wind Specifics .....	14
11. Hail Specifics .....	16
12. Spotter Quick Reference Guides.....	17
13. Supplemental References.....	17
13a. Spotter Do's & Don'ts .....	17
13b. Spotter Safety Procedures .....	18
13c. Night Spotting.....	19
14. Myths .....	20
15. References .....	22



## 2. Watch/Warn Area

DuPage (Primary)

Cook (Collar)

Kane (Collar)

Will (Collar)

Other (As Occur)

### 3. Operating Frequencies (Primary – Liaison – Other)

STATION	FREQUENCY	CTCSS	CALL SIGN	DESCRIPTION
BARS (Will)	147.330 MHz	107.2 PL	W9BBK	BARS Weather Spotters
DARC (Du Page)	145.430 MHz	107.2 PL	W9DUP	DARC Weather Spotters
	442.550 MHz	114.8 PL	W9DUP	WX9LOT Tertiary Liaison
DeKalb Co. OEM	146.730 MHz	100.0 PL	K9HGX	
DuPage Co. OEM	147.450 MHz	No PL		OEM Ham Station
ESMARN	155.025 MHz	Simplex		No. IL Multi-County SKYWARN
FISHFAR (Cook)	442.900 MHz	114.8 PL	WA9VGI	WX9LOT Primary Liaison
FISHFAR (Cook)	442.975 MHz	114.8 PL	WA9VGI	WX9LOT Primary Liaison
FISHFAR (Will)	442.925 MHz	114.8 PL	WA9VGI	WX9LOT Primary Liaison
Frankfort (Will)	444.550 MHz	114.8 PL	WW9AE	RACES WX, ARES
FROGFAR (Kane)	443.200 MHz	114.8 PL	N9EAO	WX9LOT Secondary Liaison
Grundy County	147.270 MHz	107.2 PL	KB9SZK	Grundy County ARES
Joliet (Will)	146.820 MHz	107.2 PL	W9OFR	
Kane County	145.470 MHz	103.5 PL	KC9OEM	Geneva
Kane County	444.525 MHz	114.8 PL	W9DWP	
Kankakee County	146.940 MHz	107.2 PL	W9AZ	KARS WX9LOT Direct
	444.800 MHz	114.8 PL	W9AZ	KARS
Lake County	147.180 MHz	127.3 PL	W9FUL	Lake County Races
La Salle County	147.120 MHz	103.5 PL	W9MKS	La Salle County ARES
McHenry County	145.835 MHz	91.5 PL	N9HEP	McHenry County ESDA
Morris (Grundy)	442.325 MHz	114.8 PL	KB9SZK	GARC WX9LOT Direct
Oregon (Ogle)	147.165 MHz	146.2 PL	N9ECQ	Ogle OEM WX9LOT Direct
Rockford (Winnebago)	147.255 MHz	114.8 PL	WX9MCS	N9MCS Repeater Group
Valpo (Indiana)	146.105 MHz	131.8 PL	KB9KRI	WX9LOT Direct
WCARES (Will)	444.550 MHz	114.8 PL	WX9LOT	NWS Romeoville
Wheaton (Du Page)	444.275 MHz	114.8 PL	KA9KDC	
Winnebago (Winnebago)	442.350 MHz	88.5 PL	W9TMW	
Illinois ARES (HF)	7.230 MHz (Summer)			
	3.905 MHz (Winter)			

#### 4. Skywarn/Emergency Net Activation

1. National Weather Service (NWS) declares a severe weather watch/warning for DuPage County
2. NWS has declared a Severe Weather Watch for DuPage County and/or collar counties
3. NWS declares a severe weather watch for one or more of Du Page County's "collar counties" (i.e., Cook, Kane, Will) and it is reasonably apparent that the weather event will impact Du Page County
4. NWS has activated it's amateur radio station (WX9LOT)
5. An declaration of emergency is declared by any of the following agency types: Federal, State, County, Town or Village

#### 5. Net Responsibilities

##### 5a. Net Control Station (NCS)

- Activates NET
- Announces NET activation
- Calls for reporting stations (Check-Ins)
- Moves traffic and functions as the Net "clearinghouse"
- Maintains the NET roster
- Assigns station to act as Net Administrator
- Supervises Net Administration (as necessary)
- Deactivates NET
- Returns repeater to normal use

##### 5b. Net Administrator (NA)

Responsibilities assigned by Net Control, to include (but not limited to):

- Act as standby NET Control
- Provide regular weather advisory updates
- Monitor both DARC VHF/UHF repeaters
- Respond to traffic on the UHF repeater should the NCS otherwise occupied
- Liaison with NWS Skywarn stations as directed by WX9LOT
- Tracking APRS mobiles (as necessary)
- Other (as necessary or directed by NCS)

The Net Administrator should be able to operate on both the primary DARC VHF (145.43 MHz, 107.2 PL) and “backup” (442.550 MHz, 114.8 PL) UHF repeater, and (tertiary backup) N9ATO UHF repeater (443.900, 114.8) as well as the WX9LOT-directed liaison repeater simultaneously and have access to:

NWS Enhanced Radar Image Webpage (See References)

NWS Watches, Warnings, Advisories Web Page (See References)

APRS Tracking: UIVIEW32 or Web pages (e.g., Find-U, qsl.net, Google Maps, Wulfdon, Phrozen-neon, etc.) (See References)

NWS – WX9LOT (Liaison Repeater as assigned)

WXSpots/WX Warnings (See References)

Illinois Repeater Association Frequency Matrix (See References)

CARMA - Public Service Frequencies (See References)

## 6. Net Control Scripts

### 6a. Severe Weather Net Activation Script

Attention all amateurs, this is the DuPage Amateur Radio Club Station, W9DUP, calling to order a “Severe Weather and Emergency Net”. Net Control today is (Your Call); my name is \_\_\_\_\_ and I am located in (Your Town).

This Net will be involved in passing information to and from the National Weather Service (NWS) Office in Romeoville.

Should this repeater fail and go off the air, all check-ins should tune to the DARC [442.550 MHz (+) PL 114.8] repeater. Should both the primary and the secondary repeaters fail, check-ins should then tune to the N9ATO [443.900 MHz (+) 114.8] repeater. In the event the Net Control Station goes down, the Net Administrator will pick-up and run the remainder of the net.

Severe Weather Reports are sightings of:

- Hail (report pea size only if you can confirm “substantial ground coverage”)
- Heavy damaging winds (damage: structures, trees, downed wires, streets blocked)
- Flooding (standing water traceable back to waterways out of their banks, flooded intersections due to inadequate drainage should be reported to local Public Works)
- Flash flooding (of any volume, provide speed, depth and direction estimates)
- Storm rotation (using mid-level storm clues if distance precludes observation)
- Wall Clouds (rotating or otherwise)
- Funnel Clouds (estimate distance to the ground, if possible)
- Tornadoes (tornadoes are by definition “on-the-ground”)

Reports not meeting any of these criteria should not be sent, unless specifically requested by Net Control. All legitimate severe weather reports should contain:

- Time of the event
- Location
- The actual event

This is a directed Net, all check-ins and communications need to go through the Net Control Station. All stations, with or without traffic are invited to check-in. Since this Net is related to public safety, we ask that you remain on frequency as long as you can. Notify Net Control when you are leaving the frequency or changing your location. There will be a check-out at the conclusion of the Net.

When checking-in, please call W9DUP and wait for the reset tone. Then give only your call, slowly and phonetically. After the Net Control acknowledges you, please respond with the following information: your name, location, if you're a trained WX spotter, if you're Base (do you have emergency power?), if you're Mobile or Portable (are you APRS equipped?) and do you have traffic for the Net.

Anyone with severe WX or emergency traffic please call now.

Additional stations wishing to check in, please call now.

*Assign a Net Administrator from the combination of the trained NCS and current check-in lists*

\_\_\_\_\_, can you be our Net Administrator and liaison to WX9LOT?

Please check-in to (*Liaison Repeater*) and inform WX9LOT that we currently have a WX net up.

The current situation is:

*Read the National Weather Services' latest bulletin or state the current Watch/Warning condition (e.g., "a Severe Thunderstorm, Tornado Watch or Warning").*

Additional check-ins to the WX net, please call now.

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The **watch** or **warning** is over, so at this time the Net will now go to **stand by** or **shut down**. (*Do a roll call from the check-in list.*) Please respond by only giving your call after I give your call.

## 6b. Severe Weather Net Activation Script (Truncated)

Attention all amateurs, this is the DuPage Amateur Radio Club Station, W9DUP, calling to order a "Severe Weather and Emergency Net". Net Control today is (Your Call); my name is \_\_\_\_\_ and I am located in (Your Town).

This Net will be involved in passing information to and from the National Weather Service (NWS) Office in Romeoville.

Should this repeater fail and go off the air, all check-ins should tune to the DARC [442.550 MHz (+) PL 114.8] repeater. Should both the primary and the secondary repeaters fail, check-ins should then tune to the N9ATO [443.900 MHz (+) 114.8] repeater.

This is a directed Net, all check-ins and communications need to go through the Net Control Station. Since this Net is related to public safety, we ask that you remain on frequency as long as possible. Notify Net Control when you are leaving the frequency or changing your location.

When checking-in, please call W9DUP and wait for the reset tone. Then give only your call, slowly and phonetically. After the Net Control acknowledges you, please respond with the following information: your name, location, if you're a trained WX spotter, if you're Base (do you have emergency power?), if you're Mobile or Portable (are you APRS equipped?) and do you have traffic for the Net.

Anyone with severe WX or emergency traffic please call now.

Additional check-ins, please call now.

[Assign a Net Administrator from the combination of the trained NCS and current check-in lists](#)

\_\_\_\_\_, can you be our Net Administrator and liaison to WX9LOT?

Instruct the Net Admin to check-in to *(Liaison Repeater)* and inform WX9LOT that we currently have a WX net up.

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The **watch** or **warning** is over, so at this time the Net will now go to **stand by** or **shut down**. *(Do a roll call from the check-in list.)* Please respond by only giving your call after I give your call.

## 6c. DARC Weather Training Net Script

Attention all amateurs, this is the Du Page Amateur Radio Club Station, W9DUP, calling to order a "Severe Weather and Emergency Training Net". Net Control today is \_\_\_\_\_, my name is \_\_\_\_\_ and I am located in \_\_\_\_\_.

This Training Net meets in concert with the DuPage County EmComm Net on the 1<sup>st</sup> & 3<sup>rd</sup> Tuesday of the month, at 8 P.M. local time during the months of February through August and on the 1<sup>st</sup> Tuesday during the months of January, September, October, November and December.

This Net may be activated anytime there is an eminent threat of severe weather or any emergency in the Du Page County area. This Net will take precedence over any other Net. This Net will be involved in passing information to and from the National Weather Service Office in Romeoville.

THE CURRENT SITUATION IS:

*Read the National Weather Service latest Severe Weather Summary at:*  
[www.crh.noaa.gov/hazards/lot](http://www.crh.noaa.gov/hazards/lot)

This is a directed Net, all check-ins and communications need to go through the Net Control Station. All stations, with or without traffic are invited to check-in. Since this Net is related to public safety, we ask that you remain on frequency as long as possible. Notify Net Control when you're leaving (or returning to) the frequency or changing your location. Always contact the NC when you're leaving the net.

As well as the 2M primary repeater, all stations should simultaneously monitor the DARC [442.550 MHz (+) PL 114.8] repeater. Should the primary repeater go off the air, the Net Control will announce that the net will continue on the backup. Should both the primary and the secondary repeaters fail, check-ins should then tune to the N9ATO [443.900 MHz (+) PL 114.8] repeater. In the event the Net Control Station goes down, the Net Administrator will pick-up and run the remainder of the net.

When checking in, *call W9DUP*, wait for the reset tone and then give your call; slowly and phonetically. After the Net Control acknowledges you, please respond with the following information: your name, location, if you're a trained WX spotter, if you're Base, (do you have emergency power?), if you're Mobile or Portable (are you APRS equipped?) and do you have traffic for the NET.

At the conclusion of the Net there will be a check out roll call.

Stations with severe WX or emergency traffic, call W9DUP now.

Any station on short-time, call W9DUP now.

Any station wishing to check-in, call W9DUP now.

Are there any more check-ins to the Severe Weather and Emergency Training Net, call W9DUP now.

Severe Weather Reports are sightings of:

- Hail (report pea size only if you can confirm “substantial ground coverage”)
- Heavy damaging winds (damage: structures, trees, downed wires, streets blocked)
- Flooding (standing water traceable back to waterways out of their banks, flooded intersections due to inadequate drainage should be reported to local Public Works)
- Flash flooding (of any volume, provide speed, depth and direction estimates)
- Storm rotation (using mid-level storm clues if distance precludes observation)
- Wall Clouds (rotating or otherwise)
- Funnel Clouds (estimate distance to the ground, if possible)
- Tornadoes (tornadoes are by definition “on-the-ground”)

Reports not meeting any of these criteria should not be sent, unless specifically requested by Net Control.

All legitimate severe weather reports should contain:

- TIME OF EVENT
- LOCATION (
- THE ACTUAL EVENT

Time: is the time you observed the event. If you didn't see it, don't report it.

Location: is the exact location of the event. Use street names, cross-streets, highway numbers, mile-markers anything that can be pinpointed on a map. Also give the city or town and the county.

Event: is the severe weather situation that is taking place. It must fit one of the criteria mentioned.

Does any one have any traffic, questions or comments for the net?

With no additional traffic, questions or comments, I'll close the net.

I will now call for check-out to the net. Please respond by only giving your call after I give your call. [Call the log](#)

### **Read this March thru September:**

Thank you for participating in this Training Net. This net will meet again at 7:00 P.M. next Thursday. This is \_\_\_\_\_ now closing the Net at \_\_\_\_\_ hours and returning the frequency to regular amateur use. Please stand by while I deactivate Net mode.

### **All other months, read this:**

Thank you for participating in this Training Net. This net will meet again at 7:00 P.M. the first Thursday of "*next month.*" This is \_\_\_\_\_ now closing the Net at \_\_\_\_\_ hours and returning the frequency to regular amateur use. Please stand by while I deactivate Net mode.

## 6d. DARC Skywarn Net Standby Mode Script

This is "your call sign" for the DuPage Amateur Radio Club SKYWARN. The National Weather Service has issued (indicate type of Hazardous Weather Watch). At present, there is (*announce all watches and warnings affecting the repeater coverage area*).

The DARC SKYWARN Net is in the stand-by mode at this time and the repeater is open for normal amateur use. We ask that you keep your transmissions short and please wait for the reset tone to allow for breaking stations.

This Skywarn Net does not take routine check-ins in a standby-by status; however, any stations that have severe weather reports should call net control at this time or break in at any time. PAUSE

The National Weather Service is looking for reports of tornadoes, funnel clouds, wall clouds, hail, damaging winds, flooding (other than normal run-off problems) and any other storm damage. Any report not meeting these criteria, should not be passed unless specifically requested by Net Control.

This is "your call sign," SKYWARN Net Control, standing by.

Note:

*Please indicate that there is a standby weather net in progress every 10-15 minutes until the standby net is upgraded to a full net or the standby net is secured.*

## 8. Spotter Check-In Script

- Call Net Control as: "W9DUP, then un-key, "wait for reset tone" (coded as WX); then,
- W9DUP, this is (your call sign phonetically), (your call sign); then,
- Name
- Location (Base + Emergency Power Capable; Mobile + APRS capable)
- Trained Spotter?
- Traffic Status

## 9. Spotter Procedures

Notify net control of your location and the current weather conditions (or *No Traffic*). Report, again, whenever your weather conditions change.

Initiate reports of severe weather conditions as follows:

- Report hail occurrences when the hailstones are Pea size (1/4") or larger (refer to Spotter Quick Reference Guide for details)
- Report wind gusts when their speed exceeds 50 miles per hour (see **Wind Specifics** below)
- Report tornadoes and funnel clouds. If a funnel cloud reaches more than half of the way to the ground, report it as a tornado
- Report pre-tornadic phenomena such as rotating wall clouds
- Report rainfall exceeding an inch per hour or resulting flash flooding
- Report any storm damage

When reporting, cover the following points:

**SOURCE:** Identify yourself

**TIME:** Is the time you observed the event. Use 12 hour format such as 8:07 AM, 6:36 PM. Report to the nearest minute

**LOCATION:** Is the exact location of the event. Use street names or highway numbers, which can be referenced on a map.  
Give the city or town and the county

**CONDITION:** Is the severe weather situation that is taking place

- 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, 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
- In the case of heavy rain, the amount of rain over what period and if it was measured or estimated
- In the case of flooding, the current extent of the flooding
- Any physical damage

Take the time to be sure of your observations

<u>SUMMER</u>	<u>WINTER</u>
<b>Tornadoes</b> – Speed and direction	Snowfall rates greater than 3" every 6 hours
<b>Funnel Clouds</b> - Be sure of your observations!	White Out or Fog Conditions
<b>Wall Clouds</b> -_Rotating? Be sure of your observations!	Poor Road Conditions
<b>Damage</b> - Large grove of trees downed, power lines, windows blown out, major roof/building, vehicles blown over, heavy damage	Wind Gusts greater than 50 MPH
<b>High Winds</b> _50 (40) MPH or greater. Report highest gust. Indicate estimate or actual measurement	Tree, Power Line, or Ice Damage
<b>Hail</b> 1/2 (1/4) Inch or larger. Report largest stones. Indicate estimate or actual measurement	Unexpected or Significant Events
<b>Flooding</b> -_Major Structural Damage/Evacuations, River Banks Broken, Water Out of Bank, Roads, Bridges or Railroads washed out.	
<b>Visibility</b> - When less than 1/2 mile from rain or blowing dirt	
<b>Rainfall</b> - 1/4 inch in 15 minutes, 1 inch per hour. Rain gage reports should include start time.	

## 10. Wind Specifics

One way to get an idea of wind speed is to estimate the average length of a downed branch or limb.

**Rule of Thumb Example:** You witness a 25 foot branch or limb down on your property, however, most of the other branches are just 10 to 12 feet. Chances are the 25-foot branch was weak and just fell in the wind. Take the 12 footers as your average. If you add the length to 40 and you have the estimated wind, **52-MPH.**

**Report 50 MPH**

**Rule of Thumb Example:** You have had strong thunderstorm winds and many branches and limbs are down. Several limbs of 30-foot length are observed along with an array of 20-foot sections. Since the 20 footers seem to dominate, take the 20 and add to 40 and you have estimated winds, **60 MPH. Report 60 MPH**

"This is (your call).**estimated wind speed of 60 MPH**" observed at Route 83 and 75<sup>th</sup> Street, in Willowbrook at 4:06 PM," or: "(your call)... **Measured wind gust of 72 MPH at.....**"

**Note:** All references to trees are for trees with foliage. Significantly higher winds may be required to cause similar damage to trees without foliage. Very wet soil conditions may allow weaker winds (30-57 Mph) to uproot trees. Storm spotters are not expected to be structural engineers and you can not judge wind speed strictly by damage alone. The quality of construction techniques and materials used greatly affect the end result.

All wind speed reports should be qualified, that is they are either an estimate of speed or an actual Measurement of speed. You never want to report something like: "winds are very strong, boy, its really getting bad."

If wind speed direction is requested, remember the direction is *from* the way winds are blowing. Don't judge surface wind direction, by cloud movement because upper level wind fields often move at different directions than do the surface (ground level) wind.

## Wind Speed Estimates Based On Damage

WIND SPEED	OBSERVATIONS
30-44 MPH	Trees in motion. Light-weight loose objects (e.g., lawn furniture) tossed or toppled.
45-57 MPH	Large trees bend, twigs and small limbs break and a few larger dead or weak branches may break. Old/weak structures (e.g., sheds, barns) may sustain minor damage (roofs, doors). Buildings partially under construction maybe damaged. A few loose shingles removed from houses. Carports may be uplifted, minor cosmetic damage to mobile homes and pool lanai cages.
58-74 MPH	Large limbs break, shallow rooted trees broken/uprooted. 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.
75-89 MPH	Widespread damage to trees with trees broken/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 structures (e.g., farm buildings, airplane hangars) may be severely damaged.
90+ MPH	Many large trees broken or uprooted. Mobile homes severely damaged; moderate roof damage to homes. Roofs partially peeled off homes and buildings. Moving automobiles pushed off dry roads; barns, sheds demolished.

## 11. Hail Specifics

Thunderstorm hail is not normally a direct threat to life, but hail stones are one of the more costly severe weather elements in its damage to crops, roofs, livestock, automobiles and other outdoor objects. There are several requirements for a storm to be classified as severe. **The hail requirement is 1 inch stones or larger.**

Roughly 20% of all severe weather events involve hail. Serious hail storms (with hailstones 1.5 inches or larger in diameter) are not common in Illinois and rarely is a person injured or killed by large hail in any event. The peak hail season in this area is April through August, although hail has been reported with thunderstorms in every month of the year.

**Marble size hail?.....** Since marbles come in different sizes, this report would require a clarification. A better approach would be a hail conversion chart and ruler (or calipers) with the spotter and at the relaying station.

Serious spotters should obtain a ruler or calipers for measurement accuracy, making measurements only when it safe to do so. Typically the largest or most common sized hailstones are reported. For odd shaped stones measure along the stones longest axis. If a stone measures 2x3 inches, report it as 3 inches. 2x4 inches, report it as 4 inches. etc. If the hail covers the ground in sufficient quantities and depth, report that as well. If you observe real-time hail damage occurring, report it immediately, along with injuries or other significant damage.

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

Numerical hail reports (estimated or measured) assist radar operators to more precisely adjust the radar's hail detecting software programs for more accurate forecasts regarding hail producing storms.

***ALL reports should be qualified as either "measured" or "estimated" in inches.***

Hail Size and Common Comparisons	
Common Name	Diameter
BB size	0.10 inch
Pea	0.25 inch
Mothball, small marble, peanut M&M	0.50 inch
Penny or Dime, large marble, Milk Dud	0.75 inch
Nickel	0.88 inch
Quarter	1.00 inch
Kennedy Half-Dollar	1.25 inches
Ping Pong ball	1.50 inches
Golfball	1.75 inches

Hen Egg	2.00 inches
Tennis ball	2.50 inches
Baseball or Orange	2.75 inches
Hockey Puck	3.00 inches
Grapefruit	4.00 inches
Softball or larger	4.50 inches

## 12. Spotter Quick Reference Guides

[www.crh.noaa.gov/images/mkx/pdf/spotters/sptr-definitions.pdf](http://www.crh.noaa.gov/images/mkx/pdf/spotters/sptr-definitions.pdf)

Diagrams

[www.crh.noaa.gov/images/mkx/pdf/spotters/sptr-diagrams.pdf](http://www.crh.noaa.gov/images/mkx/pdf/spotters/sptr-diagrams.pdf)

## 13. Supplemental References

### 13a. Spotter Do's & Don'ts

**Do...**attend spotter classes as often as possible

**Do...**have a watch, pencil, note pad, cell phone, and the "color" Quick Spotter Reference Guide with you when spotting

**Do...**make an effort to provide an accurate report, including the time, location, condition (what you experienced/saw)

**Do...**reference your location to the nearest 1/10 mile and one of the 16 compass points...such as...*"1.5 miles NNE of Downers Grove"*

**Do...**provide the direction you are looking while viewing a rotating wall cloud, funnel cloud, or tornado

**Do...**place the safety of you and your family first, the report is second

**Do...**take a deep breath, try to remain calm, and get the job done

**Do...**utilize communication channels that have been set up for you or your group and follow proper protocols, procedures and formats

**Don't...**make it difficult for emergency response people (emergency management, law enforcement, fire fighters, Red Cross, etc.) to do their job

**Don't...**assume that you have a tornado just because you see something that looks like a funnel cloud - you must see some indication of ground-based, rotational effects (rotating debris/dirt) underneath or very close to the funnel cloud in order to classify it as a tornado and there may be very little of any funnel cloud

**Don't...**get caught up in the game of trying to be the first person to call-in a tornado report - spotting is a game of being 100% correct...it's not a game of being the first.

**Don't...**call-in or relay a report if you're not sure what you're looking at - you must be 100% sure; after your safety, accuracy is the highest priority, – better no report rather than a erroneous one.

## 13b. Spotter Safety Procedures

*Volunteer spotters carry out spotting activity at their own risk. Remember that you never need Net Control's approval to take self-protective steps. Take care of your safety first. Inform Net Control of the situation when you can do so safely.*

If a tornado approaches your location:

- Drive away from the tornado.
- 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.
- Avoid being near overhead lines that could attract lightning or fall on your vehicle.
- Be sure you have multiple exit routes from your spotter location. Avoid cul-de-sacs and dead-end streets.
- Be aware of sites affording protection from hail, such as covered parking or drive-through teller lanes.
- Be observant of the local environment always.
- When near a thunderstorm, keep a three to four mile "buffer zone" between you and the 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.

Lightning is the most common weather hazard facing the spotter. The spotter can have a lightning strike exposure due to his 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 miles from a thunderstorm cloud.

### 13c. Night Spotting

(Courtesy of Skip Voros-WD9HAS and the Milwaukee Skywarn Association)

Night time spotting of severe weather and tornadic storms is extremely difficult, and for the mobile spotter much more dangerous. These problems arise because there is no continuous source of light.

For effective night time operations, spotters must significantly increase their situational awareness since only background lightning and power-line flashes will reveal the storms most active regions. Arcing and flashing powers lines (called **Power flashes**) are often seen as flashes of white or blue-to-green colored light originating at ground level or low angles to the horizon. These power flashes result from: (1) lightning and electrical surges hitting power lines or transformers, (2) wires that are being blown around and touching because of high winds, (3) damage debris and tornadoes intersecting power lines, (3) heavy rains and wet snows soaking wooden electric poles creating electrical fires.

In wide spread situations with extreme downbursts, straight-line winds or outflow gust fronts, often whole quadrants of the horizon, near ground level, and almost simultaneously, may show power flashes as a dangerous system approaches. These same strong winds can also create a roaring sound or rushing noise that is similar to an approaching tornado; and severe storms with large hail can also create a similar roar or even a deep rumble.

Since there are documented cases of tornado producing storms with little or no lightning it is very important for the night spotter to have a good understanding of storm structure and wind fields. This is why it's essential to attend storm spotter training programs. When severe winds are forecasted, night time spotters should pay attention to how rain drops bead-up and trail on windows and windshields, the movement of flags on flag poles, and if winds are blowing into or out of a storm. Any sudden or dramatic shift in direction or increase in hail size should heighten your awareness level. Keep in mind that you will only have a few brief instants (over several lightning flashes) to correctly identify suspicious cloud features.

Infrequent or occasional lightning is generally useless, moderate lightning amounts are hard on the eyes, and continuous lightning may create a strobe affect to further distort your depth perception. However, it can sometime provide a spectacular three dimensional view of cloud structures. As with daytime spotting you must be within a few miles of the active areas to accurate identify suspicious features.

If you observe a suspicious cloud feature, watch it for several minutes. Cloud features can change almost instantly depending on your point of view and the light source angle, whereas wall clouds, funnels, or tornadoes will be more constant.

Low to the ground wind blown cloud fragments, called **Scud Clouds**, when illuminated by lightning may be mistaken for a funnel or tornado. Also, a **Shelf Cloud** from a side view can be mistaken for a **Wall cloud**. Sometimes scud can be seen rotating around a wall cloud. Observed for several minutes, the scud will appear to be in different locations with succeeding flashes and can reveal cloud rotation. The spotter must be stationary to observe this effect.

Under darkness or poor light conditions; distant telephone poles, smoke stacks, smoke plumes, rain shafts, rain curtains or hail shafts silhouetted by certain light source or sun angles can also create a funnel or tornado look-alike. When in doubt watch the event for awhile.

Finally, most people tend to over estimate hailstone sizes, and this condition is worse when spotting at night. When making estimates keep in mind as the distance between you and the stone increases your accuracy decreases!

### **Take time to be sure of your observations**

## 14. Myths

***Myth: Trees lying in different directions must mean tornado damage.***

The direction trees are laying can be influenced by things like tree type, tree bark, size of tree, amount of foliage, wind load, root structure, and soil conditions. Local terrain can influence the wind direction and change the way trees are blown down. Branches or trunks can lie in different directions if there is tree rot causing weak or failure points

***Myth: "Projectiles" automatically suggest a tornado.***

While projectiles are common from a tornado, straight line wind (especially a downburst) can throw debris down wind and produce projectiles.

***Myth: A "roaring" sound suggests a tornado.***

Witnesses often describe a "roaring" or freight train sound with a tornado but that sound can also occur from straight line winds as they pass through trees, forests, or terrain. Those who have been struck by a tornado also describe a high-pitch whine or squeal sound as it hits.

***Myth: Damage = Tornado!***

As this document suggests, not all damage is tornado related. More times than not it is simply straight line wind. The severe thunderstorm that produces a tornado (usually a Supercell) often produces straight line wind damage as well. It is very common to have both types of damage related to the same parent thunderstorm in different areas.

***Myth: Uprooted trees are only caused by Severe Thunderstorms (gusts of 58 mph or higher).***

Root structure can make a big difference. Shallow roots may allow the tree to topple much easier. Soil type and moisture content can also allow a tree to uproot with winds well below 58 mph. Tree rot can cause branches or entire trees to be toppled with relatively weak wind speeds.

***Myth: Structures explode in a tornado due to lower pressure.***

Structures are torn apart in a tornado from the wind or from the impact of debris.

***Myth: Twisting automatically means a tornado hit.***

Not true. Houses, for example, are usually impacted by wind in one primary direction due to the size of the tornado. You need to examine the entire area impacted.

***Myth: Tornadoes often skip.***

Actually skipping tornadoes are rare. Usually one tornado will form and dissipate, and a different tornado will form at a later stage.

***Myth: Drive at right angles to the storm***

The best thing to do is to seek shelter. Many people are injured or killed when remaining in their vehicles

***Myth: People caught in the open should seek shelter under highway overpasses***

Overpasses, ditches and culverts may provide limited protection from a tornado, but your risk will be greatly reduced by moving inside a strong building

## 15. References

Spotter Quick Reference Guides

Definitions

[www.crh.noaa.gov/images/mkx/pdf/spotters/sptr-definitions.pdf](http://www.crh.noaa.gov/images/mkx/pdf/spotters/sptr-definitions.pdf)

Diagrams

[www.crh.noaa.gov/images/mkx/pdf/spotters/sptr-diagrams.pdf](http://www.crh.noaa.gov/images/mkx/pdf/spotters/sptr-diagrams.pdf)

Basic Spotters Guide

[www.nws.noaa.gov/om/brochures/basicspot.pdf](http://www.nws.noaa.gov/om/brochures/basicspot.pdf)

Advanced Spotters Guide

[www.nws.noaa.gov/om/brochures/adv\\_spotters.pdf](http://www.nws.noaa.gov/om/brochures/adv_spotters.pdf)

Storm Spotters Glossary

[www.srh.noaa.gov/oun/severewx/glossary.php](http://www.srh.noaa.gov/oun/severewx/glossary.php)

Radar Images – Chicago

<http://radar.weather.gov/ridge/radar.php?rid=lot&product=NOR&overlay=11101111&loop=no>

Watches, Warnings, Advisories

[www.crh.noaa.gov/hazards/?wfo=lot](http://www.crh.noaa.gov/hazards/?wfo=lot)

Hydrology – Illinois River Water Levels

[www.crh.noaa.gov/ahps2/index.php?wfo=lot](http://www.crh.noaa.gov/ahps2/index.php?wfo=lot)

APRS Tracking

[www.findu.com](http://www.findu.com)

[www.gsl.net/n9wtm](http://www.gsl.net/n9wtm)

<http://gaprs.net>

[www.aprsworld.net](http://www.aprsworld.net)

Illinois Repeater Association Frequency Matrix (By Frequency, by City)

[www.ilra.net](http://www.ilra.net)

Northeastern Illinois and Southern Wisconsin Severe Weather Spotter (SKYWARN) Nets

<http://pages.ripco.net/~ormos/ares-skywarn-freqs.html>

NWS -- WX9LOT

[www.crh.noaa.gov/lot/?n=am\\_radio](http://www.crh.noaa.gov/lot/?n=am_radio)

CARMA (Public Service Frequencies)

[www.carmachicago.com](http://www.carmachicago.com)

WXSpots

[www.wxspots.com](http://www.wxspots.com)

WX Warnings

[www.wxspots.com](http://www.wxspots.com)