



## Shade Tree Meteorology, LLC

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June 26, 2009

**Reference:** Case Caption: XXXXXXXXXXXX, et al. v. YYYYYYYYYYYYYY, et al.  
Date of Incident: May 1, 2007 in Wintersville, Jefferson County, Ohio

### Scope of work:

On June 17, 2009 Shade Tree Meteorology, LLC was retained by Mr. Frank J. Bruzzese, Esq. to perform a meteorological review of conditions on Tuesday, May 1, 2007, using data normally relied upon by meteorologists in the course of doing business. I was informed that the request was in relation to an electrocution accident which had taken place in the rear of the residence at 99 XYZ Drive, Wintersville, Jefferson County, Ohio between 8:55 p.m. and 9:10 p.m. on that date. I was specifically asked to determine the likelihood of a lightning strike in the vicinity of the accident location during that time period, as well as describe the general weather conditions.

### List of meteorological documents reviewed for this investigation:

- Watches, Warnings, Statements, and Forecast Discussions issued by the National Weather Service (NWS) Forecast Office in Pittsburgh, Pennsylvania and the National Storm Prediction Center in Norman, Oklahoma for Jefferson County, Ohio for May 1 and May 2, 2007
- National Weather Service Doppler Weather Radar image loops of precipitation, wind velocity and echo tops from the Pittsburgh, Pennsylvania radar transmitter, zoomed in over Jefferson County, Ohio for the evening of May 1, 2007
- National Weather Maps archived by the National Oceanic and Atmospheric Administration showing weather patterns across the United States at 8 a.m. EDT on both May 1 and May 2, 2007
- April and May 2007 Quality Controlled Local Climatological Data Reports detailing weather information gathered at Ohio County Airport, Wheeling, West Virginia, approximately 14 miles south southeast of the accident location, as archived by the National Climatic Data Center
- Vaisala StrikeNet report from the National Lightning Detection Network of lightning strikes within 5 miles of the accident from 8:45 p.m. to 9:30 p.m. EDT on May 1, 2007

### List of other documents reviewed for this investigation:

- Amended Complaint as filed with the Common Pleas Court of Jefferson County, Ohio
- Google Earth maps and aerial views of the vicinity of the accident

### **Meteorological chronology reconstructed from public weather records:**

A nearly stationary frontal system, the boundary region between warmer air to the south and cooler air to the north, stretched from the Great Plains to the Atlantic coastal region on May first and second, 2007. A low pressure wave moved east along the front from Illinois to off the Rhode Island coast from the morning of May 1 through the morning of May 2. As it moved along the front, it first pushed warm air ahead of it northward across eastern Ohio, then pushed cooler air behind it southward across the area. The boundary moved southeast across eastern Ohio as a cool front behind the wave on the evening of May 1, 2007. The National Weather Service forecasts for Jefferson County issued by the Pittsburgh forecast office called for showers and thunderstorms in the area more than 24 hours in advance. The National Weather Service Storm Prediction Center in Norman, Oklahoma issued convective outlooks throughout the day which mentioned thunderstorm potential for eastern Ohio that evening. At 4:20 p.m. EDT the Storm Prediction Center issued Severe Thunderstorm Watch number 206, valid until 11:00 p.m., including Jefferson County Ohio. The National Weather Service Forecast office in Pittsburgh issued a series of Severe Thunderstorm Warnings for counties adjacent to Jefferson County through the course of the evening, with damaging wind as the major threat and hail as a secondary threat.

According to the Doppler Weather Radar imagery from the Pittsburgh radar, the leading edge of the heavier rain and thunderstorms moved across the accident site between 8:15 p.m. and 8:20 p.m. EDT on May 1, 2007. By 8:57 p.m., radar showed the storm activity in the Wintersville area to be spotty, with one storm a couple of miles northwest of the accident site being the nearest one possibly capable of producing lightning. A thunderstorm which peaked in height and intensity about 5 miles to the northwest of the accident site at about 8:07 p.m. collapsed between 8:07 and 8:53 p.m., generating a wind gust front with wind speeds in excess of 40 mph in the vicinity of the accident site around 8:45 p.m. EDT. Radar shows that gust front, having diminished with time, passing the Wheeling Airport around 9:00 p.m. EDT. Surface observations show a peak wind gust of 45 miles per hour at the Wheeling Airport around that time.

According to the StrikeNet report from the National Lightning Detection Network, the nearest lightning strikes to the accident location during the 8:45 p.m. to 9:30 p.m. EDT span of the report were 2.4 miles away. One of them, at 09:03:54 p.m., northwest of the accident site and the other, at 9:23:57 p.m., north northwest of the accident site. Those strikes are consistent with the radar data and unlikely to have affected the accident site.

**Conclusions:**

Based on my review of the relevant meteorological and other documentation listed above, it is my opinion to a reasonable degree of meteorological certainty that the weather near 99 XYZ Drive, Wintersville, Jefferson County, Ohio between 8:55 p.m. and 9:10 p.m. on Tuesday, May 1, 2007 was as follows:

- Cloudy with rain showers in the area and occasional distant thunder likely audible
- temperature had fallen from the mid 80s prior to the onset of showers to the upper 70s at the time
- wind was from the northwest at 15 to 25 mph
- intense thunderstorms had passed, but periods of showers continued well past the accident time

It is my expert opinion based on the StrikeNet report, combined with radar and surface observations, that there were no lightning strikes within two miles of the accident location between 8:45 p.m. and 9:30 p.m. EDT on Tuesday, May 1, 2007.

It is further my opinion that the most likely cause of tree damage leading to a power outage at the time of the accident was strong winds during the gust front which affected the accident location around 8:45 p.m. and was created by outflow from a collapsing thunderstorm about 5 miles northwest of the accident site.

Sincerely,

Richard J. Westergard  
Certified Consulting Meteorologist