

Section 7 Meteorology

7.1 General

The Taum Sauk area is located in Southeast Missouri near the geographical center of the United States. Its position in the middle latitudes allows it to be affected by warm, moist air masses from the Gulf of Mexico and cold, dry air masses that originate in Canada. The alternate invasion of these air masses produces a wide variety of weather conditions and allows for the region to enjoy a true four-season climate. The average annual temperature is 54 degrees. The average annual high temperature is 65 degrees, the average annual low temperature is 42 degrees.

By letter data January 19, 2006, AmerenUE provided weather information for most of 2005 as recorded at Farmington Regional Airport located about 1 mile south of Farmington, MO. The airport is at elevation 947 ft and at latitude 37.7610792 and longitude -90.4285972. The airport is about 27 miles northeast of the upper reservoir.

This section discusses the meteorology preceding and during three events:

1. September 25, 2005 - when overtopping occurred at the northwest corner of the reservoir.
2. September 27, 2005 - when a wet area was noted on the downstream side of parapet panel 72.
3. December 14, 2005 - when the upper reservoir breached.

Figure 7.1 contains a weather radar image of the United States at 10:00 a.m. on September 25. Appendix C shows thrice hourly weather data for the period September 24-27 and December 13-14, 2005.

7.2 September 25, 2005

The weather conditions in the Taum Sauk area (Farmington, MO Station), prior to and on September 25, 2005, as reported by the NWS, St. Charles, MO, were as follows:

“... Periods of rain and an occasional thunderstorm will continue over eastern Missouri and most of Illinois for the rest of this morning and into the afternoon hours. This precipitation is associated with the northern periphery of tropical depression Rita. Expect brief periods of heavy rain ... up to half an inch at times.

In the meantime... a cold front will move into northern Missouri and bring in additional showers and thunderstorms tonight...“

Approximate Time Overtopping was witnessed

According to the February 8, 2006 interview with Mr. Ronald Robbs, he witnessed the September 25 overtopping at the Northwest corner of the reservoir during a “mid-morning” visit to the upper reservoir. He said the water was coming over the reservoir in waves. After witnessing the overtopping, he went to the plant, phoned the Osage Operator and told the operator to start the generators to draw down the reservoir.

According to the February 8, 2006 interview with Richard Cooper, he was contacted by the Osage Operator for confirmation that he should put the generators on-line. Mr. Cooper agreed that they should generate. Mr. Cooper estimated the elapsed time could have been about 30 minutes between when the overtopping was witnessed and putting the generators on-line, but he did not know for certain. According to the generation logs for September 25 provided by AmerenUE, the first generator was put on-line at 11:03 a.m. This indicates the overtopping was witnessed around 10:00-10:30 am.

Maximum Wind Speeds As Recorded on September 25 at Farmington Airport

According to weather information in Appendix C, the largest windspeed recorded at three times an hour at Farmington Airport on the morning of September 25 was 17 knots and the largest recorded gust was 23 knots. The weather was rainy. The wind was blowing from between 80 and 100 degrees from North, almost perpendicular to the northwest corner of the reservoir (panels 90-96).

According to the February 8, 2006 interview with Mr. Ronald Robbs who witnessed the overtopping, he estimated the wind speed at “40-50 miles an hour” based on an Evening New report which said maximum wind speeds at Farmington Airport were 38 miles per hour. He believed the wind was coming out of the Southeast.

Difference in Wind Speed between Elevations

Commission staff interviewed representatives from the National Weather Service (NWS) in St. Charles, Mo. on January 12, 2006. NWS personnel stated that there can be large variances in wind speed between the elevations of Farmington Airport and the Upper Reservoir, but they expect this would occur on clear days. They said it is not likely there would be drastically different wind speeds between the elevation of Farmington Airport and the Upper Reservoir on a rainy, cloudy day

which was the case on September 25. They said one reason there could be a large difference in wind speeds between the two locations on September 25 is if there was an isolated thunderstorm on the mountain. According to the National Climatic Data Center website (www.ncdc.noaa.gov), there were no reported thunderstorms or high wind events from September 24 through October 1, 2005 in Reynolds County, MO. Mr. Robbs' interview also did not indicate a thunderstorm was occurring when he witnessed the overtopping.

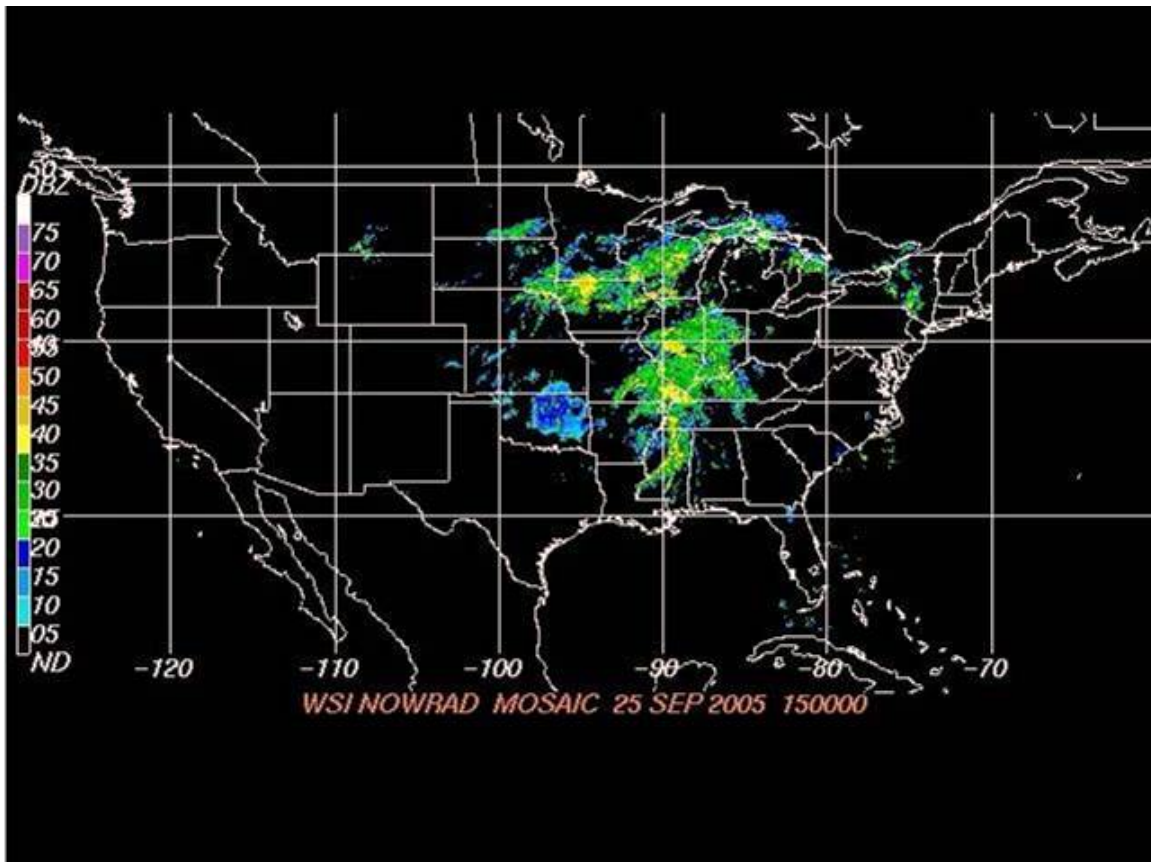


Figure 7.1 - Weather Radar Images September 25, 2005 – 10:00 a.m. CDT

7.3 September 27, 2005

According to the February 8, 2006 interview with Mr. Richard Cooper, he saw wet spots on the downstream side of the parapet wall, at the low point of the wall, during a morning visit to the upper reservoir. Panel 72 is the low point of the parapet wall. According to generation information the reservoir was filled to elevation 1596 this morning.

The weather information for the morning of September 27 indicated early morning fog leading to mostly to partly sunny conditions. During the morning there were steady winds of 3-5 knots at Farmington Airport. The wind direction changed during the morning. Winds came from 10-40 degrees from North at around 8:00-9:00 am then from 110-140 degrees from North after 10:00 am.

7.4 December 14, 2005

The Upper Reservoir breach started at around 5:15 a.m. The weather information for the early morning of December 14 indicated light snow, rain, and drizzle with temperatures in the mid-30s. At Farmington Regional Airport about 0.08 inches of precipitation occurred during the early morning. The recorded steady wind speeds ranged from 10-14 knots with gusts to 22 knots. Winds originated from 140-180 degrees from North.