National Transportation Safety Board

Office of Aviation Safety
Washington, D.C. 20594-2000
October 16, 2003

METEOROLOGY STUDY

NTSB CASE

A. ACCIDENT

Location: Staten Island
Date: October 15, 2003
Time: 1530 eastern daylight time (1830 UTC[1])
Ship: Andrew J. Barberi Ferry

B. METEOROLOGICAL SPECIALIST

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C. SUMMARY

D. DETAILS OF INVESTIGATION

All the weather data used in this report was obtained from official National Weather Service (NWS) sources including the National Climatic Data Center (NCDC). All times are Coordinated Universal Time (UTC) based upon the 24 hour clock. Local time of eastern daylight time (EDT) is +4 hours to UTC, and UTC=Z. Directions are referenced to true north and distances in nautical miles. Heights are above mean sea level (MSL) unless otherwise noted. Visibility is in statute miles and fractions of statute miles.

[1] UTC – is an abbreviation for Coordinated Universal Time.

1.0 Synoptic Situation

The synoptic or large scale migratory weather systems influencing the area were documented using standard NWS charts issued by the National Center for Environmental Prediction (NCEP) located in Camp Springs, Maryland. These are the base products used in describing weather features and in the creation of forecasts and warnings.

1.0.1 Surface Analysis Chart

The NWS regional surface analysis chart issued for 1800Z is included as Figure 1 and depicted the primary synoptic conditions across the area prior to the accident. The chart depicted a low pressure system with a central pressure of 976 hectopascals (hPa)[2] just north of New York state over Quebec, Canada. An occluded front extending from the low northeast and then east, and then southeastward across Maine to the triple point along the coast, where the front separated into a warm and cold fronts off the east coast. A trough of low pressure also extended from the low north-northwest across Canada. The isobars or lines of equal barometric pressure indicated a strong pressure gradient across the northeast with a 24-hPa change in pressure from the low to central New Jersey or approximately 400 miles.

The station models in the immediate vicinity of the accident site indicated winds from the west at 25 to 30 knots, with scattered to broken sky conditions, with a temperature 64 degrees Fahrenheit (F).

[2] Hectopascals (hPa) is the standard unit of pressure and is interchangeable with the term and units of millibars (mb).

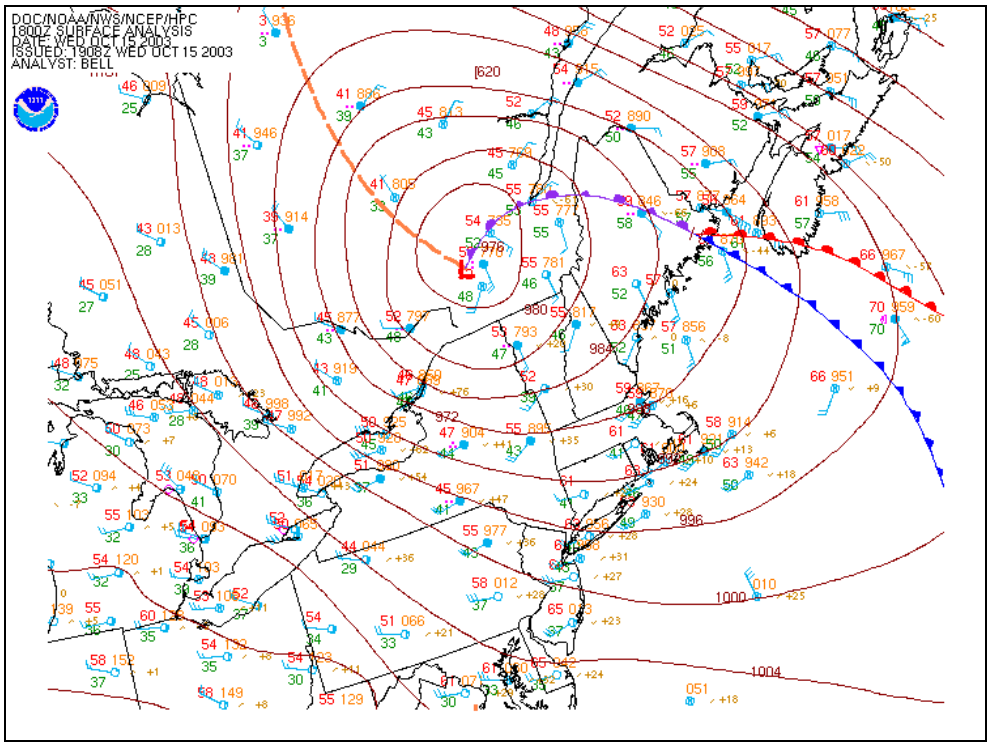

Figure 1 – NWS Surface Analysis for 1800Z.

2.0 Surface Observations

The closest official NWS observations were documented utilizing Meteorological Aerodrome Reports (METARs) from Newark Liberty International Airport (KEWR), New York Central Park (KNYC), and John F. Kennedy International Airport (KJFK).

2.0.1 Newark Liberty International Airport (KEWR), Newark, New Jersey

Newark Liberty International Airport was the closest official weather observation, located approximately 6 miles west-northwest of the accident location at an elevation of 18 feet msl. The airport is equipped with an Automated Surface Observation System (ASOS) and is augmented by NWS certified weather observers. The following conditions were reported surrounding the time of the accident:

KEWR weather observation at 1851Z, wind from 270 degrees at 24 knots gusting to 35 knots, visibility 10 statute miles, sky condition broken at 6,500 feet, temperature 18 degrees Celsius (C) (64.4 degrees F), dew point 4 degrees C (39 degrees F), altimeter 29.48 inches of Mercury (Hg). Remarks: automated observation system, peak wind from 270 degrees at 40 knots recorded at 1830Z, sea level pressure 998.4-hPa, temperature 17.8 degrees C, dew point 3.9 degrees C.

KEWR weather observation at 1951Z, wind from 270 degrees at 20 knots gusting to 35 knots, visibility 10 miles, sky overcast at 7,000 feet, temperature 17 degrees C, dew point 2 degrees C, altimeter 29.53 inches of Hg. Remarks: automated observation system, peak wind from 290 degrees at 37 knots recorded at 1857Z, sea level pressure 1000.0-hPa, temperature 17.2 degrees C, dew point 2.2 degrees C.

2.0.2 New York Central Park (KNYC), Manhattan, New York

A NWS observation location in Central Park located approximately 11 miles northeast of the accident site reported the following conditions:

KNYC weather observation at 1851Z, wind from 270 degrees at 16 knots gusting to 35 knots, winds variable from 240 to 330 degrees, visibility 10 miles, sky overcast at 6,500 feet, temperature 16 degrees C, dew point 5 degrees C, altimeter 29.48 inches of Hg. Remarks: automated observation system, peak wind from 270 degrees at 38 knots recorded at 1816Z, sea level pressure 997.5-hPa, temperature 16.1 degrees C, dew point 5.0 degrees C, thunderstorm sensor inoperative, not for aviation use.

KNYC weather observation at 1951Z, wind from 270 degrees at 16 knots gusting to 29 knots, winds variable from 240 to 320 degrees, visibility 10 miles, sky overcast at 7,500 feet, temperature 16 degrees C, dew point 4 degrees C, altimeter 29.52 inches of Hg. Remarks: automated observation system, peak wind from 280 degrees at 31 knots recorded at 1926Z, sea level pressure 998.7-hPa, temperature 15.6 degrees C, dew point 3.9 degrees C, thunderstorm sensor inoperative, not for aviation use.

2.0.3. John F. Kennedy International Airport (KJFK), Jamaica, New York

John F. Kennedy International Airport was located approximately 14 miles east of the accident site at an elevation of 13 feet msl. It also has an ASOS and is augmented by NWS observers. The following conditions were reported surrounding the time of the accident:

KJFK weather observation at 1851Z, wind from 260 degrees at 32 knots gusting to 41 knots, visibility 10 miles, scattered clouds at 6,500 feet, temperature 18 degrees C, dew point4 degrees C, altimeter 29.49 inches of Hg. Remarks: automated observation system, peak wind from 260 degrees at 47 knots at 1820Z, sea level pressure 998.3-hPa, temperature 17.8 degrees C, dew point 3.9 degrees C.

KJFK weather observation at 1951Z, wind from 270 degrees at 23 knots gusting to 34 knots, visibility 10 miles, scattered clouds at 7,000 feet, temperature 17 degrees C, dew point 2 degrees C, altimeter 29.53 inches. Remarks: automated observation system, peak wind from 260 degrees at 42 knots recorded at 1853Z, sea level pressure 999.8-hPa, temperature 17.2 degrees C, dew point 2.2 degrees C.

3.0 Marine Observations

The Ambrose Light marine buoy observation, site number ALSN6, located approximately 15 miles east-southeast at the entrance of the Hudson River reported the following conditions:

Ambrose Light weather at 1900Z, winds west at 39 knots gusting to 44 knots, pressure 29.47 inches of Hg, pressure tendency risen 0.09 inches, temperature 61.9 degrees F. No wave height was provided.

4.0 Marine Water Levels

Figures 2 and 3 are the New York and New Jersey harbor PORTS water level, winds, barometric pressure, air/water temperature time plots from Battery Park, New York and Sandy Hook, New Jersey. The time plots are provided in local time.

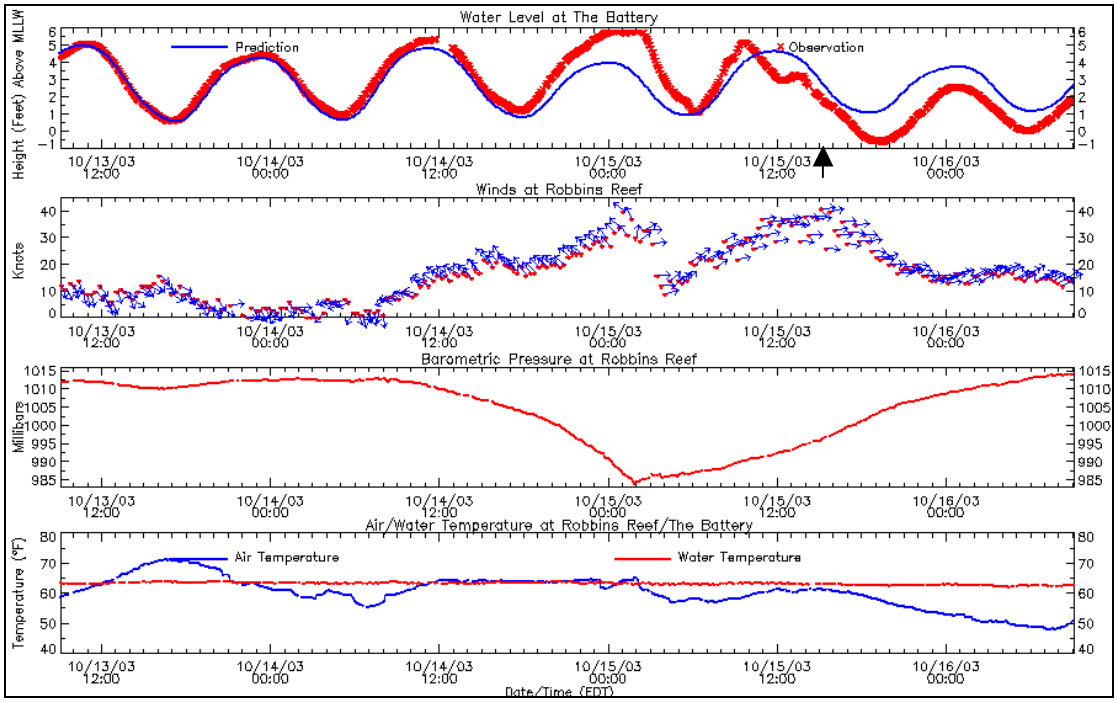

Figure 2 – Battery Park.

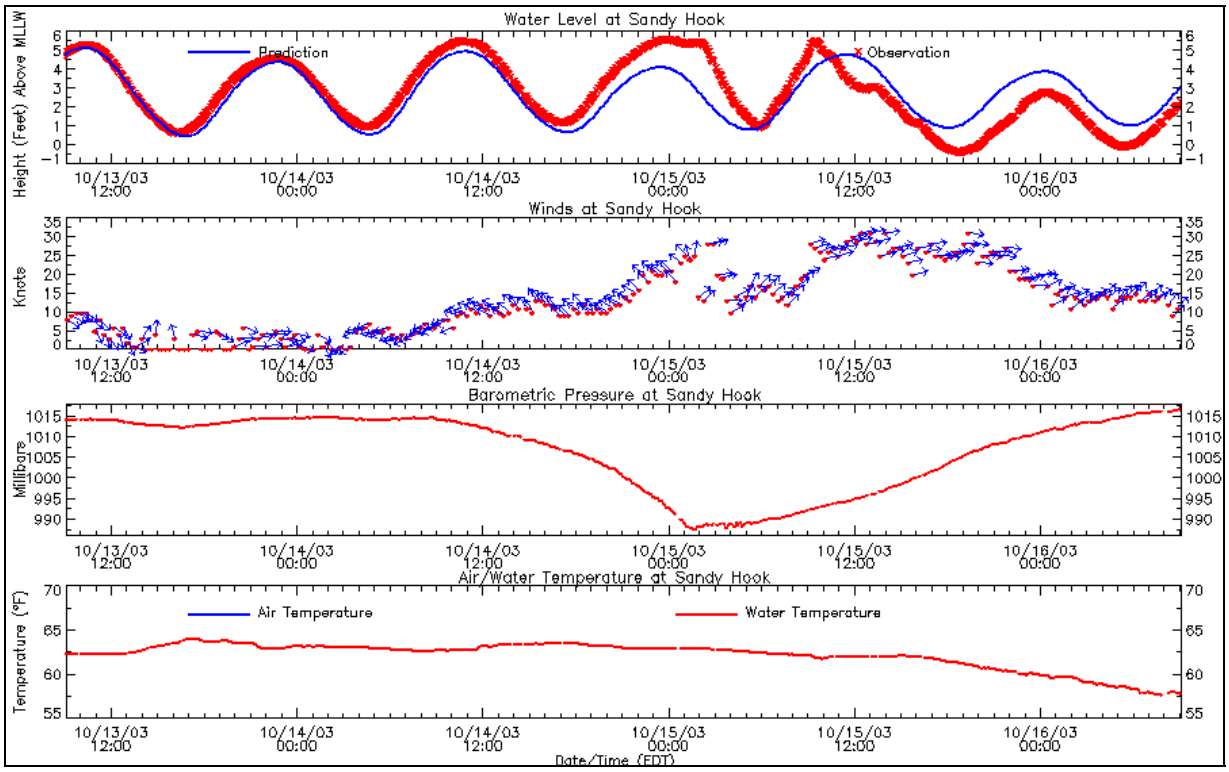

Figure 3 – Sandy Hook.

The water level charts indicate that at 1930Z or 1530 local, the water level was approximately 2 feet above the mean level water level with an outgoing tide, winds from the west at 35 to 40 knots, pressure at approximately 998-hPa, water temperature of 62 degrees and an air temperature of approximately 60 degrees.

5.0 Marine Forecast

The NWS Upton Regional Forecast Office (KOKX) issued a marine bulletin at 1404Z, which was valid from Montauk Point, Long Island, to Sandy Hook, New Jersey, out to 20 miles offshore, and included Long Island Sound and New York Harbor. The bulletin provided the synoptic conditions as low pressure system over the Great Lakes region will continue to intensify as it moves up the St. Lawrence River Valley this afternoon with it's associated cold front a head of it. High pressure was expected to build across the area on Thursday.

A gale advisory was in effect through early evening, with winds west at 35 to 40 knots, and with occasional gusts to 45 to 50 knots. Seas ranging from 10 to 13 feet, and expected to subside to 7 to 10 feet by evening. Tides 2 to 3 feet below normal, which may cause low water problems round the times of low tide in the afternoon.

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