



May 12, 2014

Matthew A. Barket, Esq.
Hamilton, Miller & Birthisel, LLP
150 Southeast Second Avenue
Suite 1200
Miami, FL 33131

RE: Case No. 13-35050 CA 21
Location of Interest: 3453 SW 25 Terrace, Miami, FL 33133
Time Period of Interest: July 25 – 27, 2013

To Whom It May Concern:

Included with this letter you will find information you requested from our office concerning weather observations for the area of Miami, Florida. Hourly observations provided were taken from the Automated Surface Observing System (ASOS) stations located at the Miami International Airport, the Opa Locka Airport and the Kendall-Tamiami Airport, which are approximately 5, 12 and 13 miles from the location of interest, respectively. Data provided for this report are from July 25 – 27, 2013, though the focus of the report will be on the date of loss, listed as July 26, 2013. Also attached is a list of conversions and meteorological identifiers that will help you decipher the information. A map of the area, courtesy of Google Maps, has also been included. Note the locations of the stations and area of interest, marked by either yellow push-pins or other identifiers.

The ASOS system serves as the nation's primary surface weather observing network and is designed to support weather forecast activities and aviation operations and, at the same time, support the needs of the meteorological, hydrological, and climatological research communities. ASOS detects significant changes, disseminating hourly and special observations. These observations are on archive and were provided by the National Climate Data Center (NCDC).

Observations from Miami International Airport during the time period of interest, in which either wind gusts or rain/thunderstorms were present, are summarized for the three dates of interest. These observations are listed below:

| Date | Time | Visibility | Temp | Dew Point | Relative Humidity | Wind | Wind Gust | Pressure | Present Weather | Report Type |
|------|------|------------|------|-----------|-------------------|------------------|-----------|----------|-----------------|-------------|
| 25 | 1353 | 10 miles | 92°F | 70°F | 49 % | East 9 mph | 16 mph | 29.98" | None | Auto |



| Date | Time | Visibility | Temp | Dew Point | Relative Humidity | Wind | Wind Gust | Pressure | Present Weather | Report Type |
|------|------|------------|------|-----------|-------------------|---------------|-----------|----------|-------------------|-------------|
| 26 | 1653 | 10 miles | 92°F | 74°F | 56% | WSW 17 mph | 24 mph | 29.96 | None | Auto |
| 26 | 1753 | 10 miles | 88°F | 74°F | 63% | WSW 13 mph | 20 mph | 29.98" | None | Auto |
| 26 | 1916 | 4 miles | 81°F | 72°F | 74% | VAR 6 mph | 24 mph | Missing | Thunder with Rain | Special |

| Date | Time | Visibility | Temp | Dew Point | Relative Humidity | Wind | Wind Gust | Pressure | Present Weather | Report Type |
|------|------|------------|------|-----------|-------------------|--------------|-----------|----------|-----------------|-------------|
| 27 | 0953 | 4 miles | 77°F | 73°F | 88% | NW 11 mph | | 30.00" | Heavy Rain/Mist | Auto |
| 27 | 1000 | 3 miles | 79°F | 73°F | 82% | NW 8 mph | 18 mph | 30.00" | Heavy Rain | Special |
| 27 | 1053 | 5 miles | 77°F | 74°F | 91% | E 8 mph | | 30.03" | Rain/Mist | Auto |
| 27 | 2158 | 10 miles | 81°F | 75°F | 82% | SW 5 mph | | Missing | Thunder | Special |
| 27 | 2153 | 10 miles | 79°F | 74°F | 85% | SE 8 mph | | 30.03" | Thunder | Auto |

Observations from Opa Locka Airport during the time period of interest, in which either gusty winds or rain/thunderstorms were present, are summarized for the three dates of interest. These observations are listed below:

| Date | Time | Visibility | Temp | Dew Point | Relative Humidity | Wind | Wind Gust | Pressure | Present Weather | Report Type |
|------|------|------------|------|-----------|-------------------|---------------|-----------|----------|-----------------|-------------|
| 26 | 1353 | 10 miles | 92°F | 74°F | 56% | WSW 9 mph | 18 mph | 30.00" | None | Auto |
| 26 | 1553 | 10 miles | 93°F | 74°F | 54% | W 13 mph | 21 mph | 29.97" | None | Auto |
| 26 | 1653 | 10 miles | 91°F | 73°F | 56% | WSW 16 mph | 23 mph | 29.96" | None | Auto |
| 26 | 1753 | 10 miles | 90°F | 72°F | 56% | W 16 mph | 21 mph | 29.99" | None | Auto |
| 26 | 1835 | 10 miles | 82°F | 72°F | 72% | NNW 13 mph | 23 mph | Missing | None | Special |
| 26 | 1853 | 10 miles | 81°F | 72°F | 74% | N 10 mph | | 30.02" | Light Rain | Auto |

| Date | Time | Visibility | Temp | Dew Point | Relative Humidity | Wind | Wind Gust | Pressure | Present Weather | Report Type |
|------|------|------------|------|-----------|-------------------|-----------|-----------|----------|------------------|-------------|
| 27 | 0910 | 1.75 miles | 81°F | 75°F | 82% | SW 13 mph | | Missing | Heavy Rain | Special |
| 27 | 0933 | 2 miles | 79°F | 73°F | 82% | W 5 mph | | Missing | Heavy Rain | Special |
| 27 | 0946 | 2 miles | 81°F | 75°F | 82% | Calm | | Missing | Light Rain | Special |
| 27 | 0953 | 10 miles | 80°F | 75°F | 85% | Calm | | 30.00" | Light Rain | Auto |
| 27 | 1019 | 10 miles | 79°F | 73°F | 82% | NW 15 mph | | Missing | Light Rain | Special |
| 27 | 1025 | 2 miles | 79°F | 73°F | 82% | W 13 mph | | Missing | Rain/Mist | Special |
| 27 | 1053 | 2 miles | 76°F | 74°F | 94% | NNE 6 mph | | 30.03" | Rain | Auto |
| 27 | 1106 | 3 miles | 77°F | 73°F | 88% | E 6 mph | | Missing | Light Rain/Mist | Special |
| 27 | 1153 | 6 miles | 77°F | 74°F | 91% | ESE 6 mph | | 30.01" | Mist | Auto |
| 27 | 2206 | 10 miles | 82°F | 75°F | 79% | Calm | | Missing | Vicinity Thunder | Special |
| 27 | 2253 | 10 miles | 82°F | 76°F | 82% | S 9 mph | | 30.02" | Vicinity Thunder | Auto |

Observations from Kendall-Tamiami Airport during the time period of interest, in which either gusty winds or rain/thunderstorms were present, are summarized for the three dates of interest. These observations are listed below:

| Date | Time | Visibility | Temp | Dew Point | Relative Humidity | Wind | Wind Gust | Pressure | Present Weather | Report Type |
|------|------|------------|------|-----------|-------------------|----------|-----------|----------|-----------------|-------------|
| 25 | 1253 | 10 miles | 91°F | 72°F | 54% | W 14 mph | 18 mph | 30.02 | None | Auto |

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| Date | Time | Visibility | Temp | Dew Point | Relative Humidity | Wind | Wind Gust | Pressure | Present Weather | Report Type |
|------|------|------------|------|-----------|-------------------|------------|-----------|----------|-----------------|-------------|
| 26 | 1153 | 10 miles | 89°F | 74°F | 61% | W 10 mph | 16 mph | 30.03" | None | Auto |
| 26 | 1253 | 10 miles | 92°F | 73°F | 54% | W 8 mph | 18 mph | 30.02" | None | Auto |
| 26 | 1353 | 10 miles | 92°F | 74°F | 56% | W 8 mph | 17 mph | 30.00" | None | Auto |
| 26 | 1653 | 10 miles | 90°F | 74°F | 59% | W 16 mph | 23 mph | 29.97" | None | Auto |
| 26 | 1753 | 10 miles | 88°F | 74°F | 63% | WSW 15 mph | 22 mph | 29.98" | None | Auto |

| Date | Time | Visibility | Temp | Dew Point | Relative Humidity | Wind | Wind Gust | Pressure | Present Weather | Report Type |
|------|------|------------|------|-----------|-------------------|---------|-----------|----------|------------------|-------------|
| 27 | 2151 | 10 miles | 81°F | 77°F | 88% | S 5 mph | | Missing | Vicinity Thunder | Special |
| 27 | 2153 | 10 miles | 80°F | 77°F | 91% | S 6 mph | | 30.02" | Vicinity Thunder | Auto |
| 27 | 2251 | 10 miles | 79°F | 73°F | 82% | S 6 mph | | Missing | Vicinity Thunder | Special |
| 27 | 2253 | 10 miles | 79°F | 73°F | 82% | S 6 mph | | 30.02" | Vicinity Thunder | Auto |

Hourly observations from both airports indicate that light rain fell in the area on the 4th. Daily values of temperatures and precipitation from each station are included with this report. Any variable listed as -999 represents a missing value for the day.

| Station | NWS COOP ID | Time of Observation | Rainfall Total 07/25/2013 | Rainfall Total 07/26/2013 | Rainfall Total 07/27/2013 | Rainfall Total 07/28/2013 |
|------------------------|-------------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Miami International AP | 085663 | 2400 | 0.00" | 0.01" | 0.44" | 0.05" |
| Opa Locka Airport | KOPF | 2400 | 0.00" | 0.00" | 1.07" | 0.07" |
| Kendall-Miami Airport | KTMB | 2400 | 0.00" | 0.00" | 0.00" | 0.46" |

Also included with this letter are official paper copies of requested radar images, provided by NCD, for certain times during the event. The images provided are known as Base Reflectivity Images, which display echo intensity measured in dBZ (decibels of Z, where Z represents the energy reflected back to the radar). The scale of dBZ values is also related to the intensity of rainfall. Dates and times are located on the right hand side of each image (year/month/date/time are given in GMT). Since time is given in GMT, the date on the first image reflects being taken at 23:07 GMT on the 26th, which corresponds to 7:03PM EDT on the 26th.

The provided images were taken from the radar site located in Miami/Dade County, located near the Kendall-Tamiami airport and the approximate location of interested is noted on each image. You will notice an abundance of DBZ values between 5 and 15 dBZs, due to ground clutter and backscatter from clouds, smoke, fog, and temperature inversions; even buildings and antenna towers can reflect small amounts of radar energy during a radar sweep. Typically, light rain is occurring when the dBZ value reaches 20. Depending on the type of weather occurring and the area of the U.S., forecasters use a set of rain-rates, which correspond to the dBZ values.

On the 26th, the radar indicated a line of moderate to strong storms to the north of the location of interest, however, an outflow boundary (a surface boundary formed by the horizontal spreading of thunderstorm-cooled air) is shown on the radar image and, over the course of the next 50 minutes, moves south of the main line of storm activity. At 00:00 GMT on the 27th (8:00PM EDT on the 26th), the outflow boundary interacted with some warmer air and formed another line of storms just to the northwest of the location. From 00:04 GMT on the 27th until 01:07 GMT (or 8:04 PM EDT to 9:07 PM EDT on the 26th), radar images indicate dBZ values between 45 and 50 passed over the area of interest. Values of 45-50 dBZ usually indicate moderate to heavy rainfall.

Based on the data provided to us, stations surrounding the area of interest reported rainfall and radar images indicate that moderate to heavy rain fell briefly over the location of interest.

I hereby certify that the data provided are true copies of the specified records and/or publications for the times and places indicated thereon on file at the National Climatic Data Center in Asheville, NC, and the Southeast Regional Climate Center in Chapel Hill, NC.

Sincerely,

Melissa L. Griffin
Climate Services Assistant
Florida Climate Center
The Florida State University
(850) 644-0719