# National Transportation Safety Board

**Office of Aviation Safety**
**Washington, D.C. 20594-2000**
**September 16, 2002**

## METEOROLOGY FACTUAL REPORT

**DCA02MA054**

## A. ACCIDENT

Location: Tallahassee, Florida
Date: July 26, 2002
Time: 0540 Eastern Daylight Time (EDT) (0940 UTC[1])
Aircraft: FedEx Boeing 727-232, N497FE

## B. METEOROLOGICAL SPECIALISTS

Donald E. Eick
Senior Meteorologist
National Transportation Safety Board
Operational Factors Division, AS-30
Washington, D.C.

Kimberly A. Paradis
FedEx Express
ALPA Accident Investigator - Meteorology
Memphis, TN

Matt Duke
Air Operations Safety Specialist
FedEx Express
Memphis, TN

[1] UTC – Coordinated Universal Time

## C. SUMMARY

On July 26, 2002, at approximately 0537 eastern daylight time (EDT), a Boeing B-727-232, N497FE, operating as FedEx Express Flight 1478, crashed into trees on short final approach to runway 9 at the Tallahassee Regional Airport (KTLH), Tallahassee, Florida. The flight was operating under provisions of Title 14 Code of Federal Regulations Part 121, as a regularly scheduled cargo from Memphis, Tennessee (KMEM) to KTLH. Night visual meteorological conditions prevailed at the time of the crash. The three flight crewmembers were injured, two seriously, the aircraft was destroyed by impact forces and resulting fire.

## D. DETAILS OF INVESTIGATION

Accident location: The main wreckage is located at 30°23.399'N and 84°21.710'W, approximately 1,000 feet short of runway 9 at Tallahassee Regional Airport.

### Standard Nomenclature

All the weather data used in this report was obtained from official NWS sources. All times are Coordinated Universal Time (UTC) based upon the 24-hour clock. Local eastern daylight time (EDT) is UTC – 4 hours, and UTC is denoted as Z. Heights are above mean sea level (MSL) unless otherwise noted. Directions are referenced to true north and distances in nautical miles. Visibility is in statute miles and fractions of statute miles. All cloud heights are reported in feet above ground level (AGL).

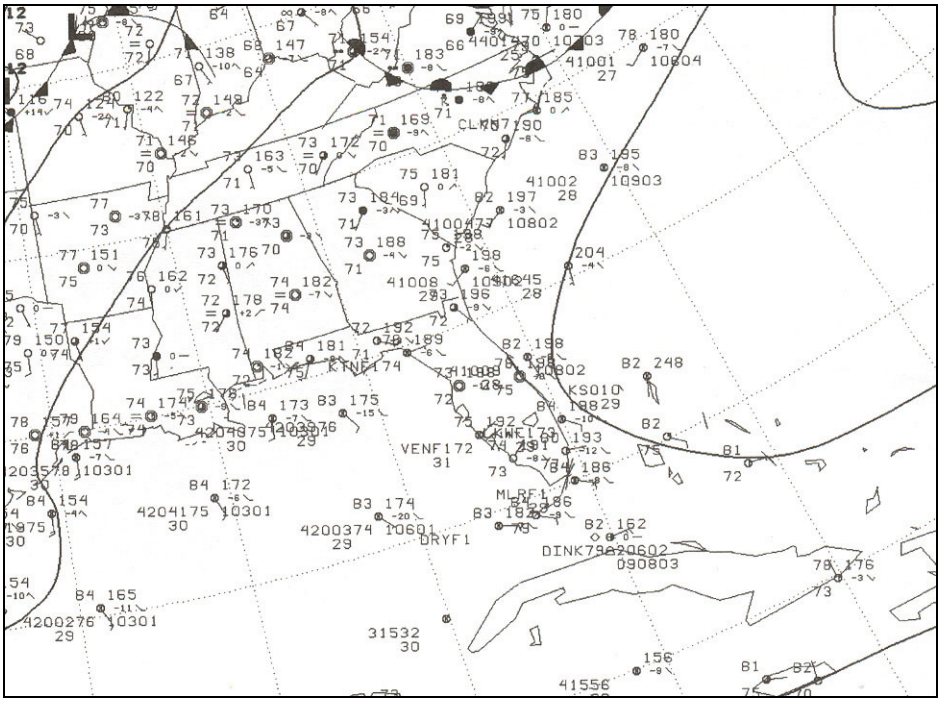
### 1.0 Synoptic Situation

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 Silver Springs, Maryland. These are the base products used in describing weather features and in the creation of forecasts and warnings. Reference to these charts can be found in the joint NWS and Federal Aviation Administration (FAA) Advisory Circular "Aviation Weather Services", AC 00-45.

#### 1.0.1 Surface Analysis Chart

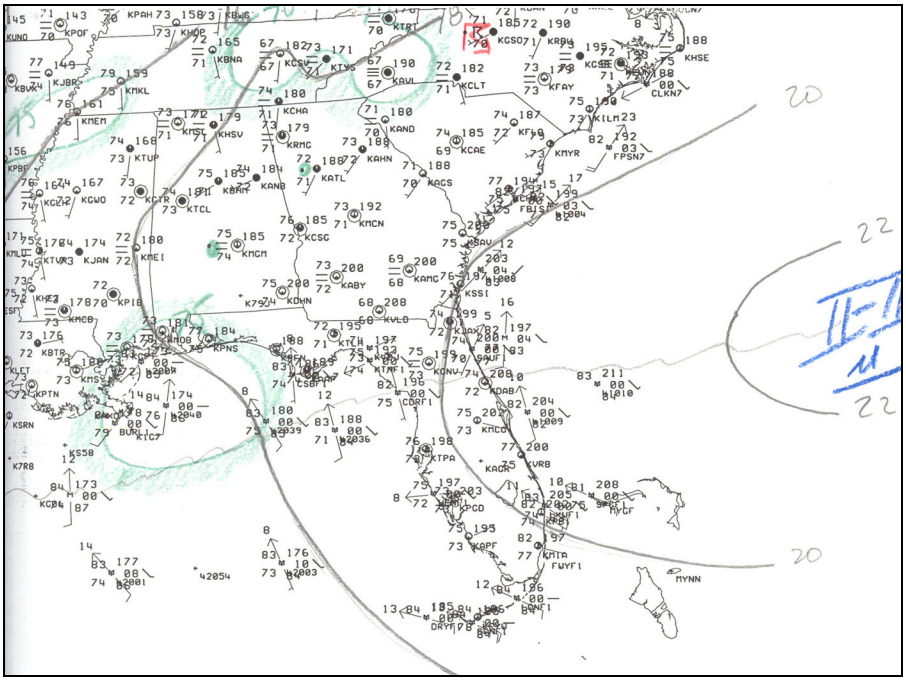
The NWS Surface Analysis Chart issued by NCEP for 0900Z on July 26, 2002, is included below. The chart depicted no frontal boundaries over the route of flight or in northern Florida. The isobars[2] indicated a high pressure ridge extended over central Florida, to the south of the Tallahassee area.

[2] Isobar – is a line of equal pressure, usually drawn at 4-millibar intervals on the surface analysis chart.



The station models on the Surface Analysis Chart indicated temperatures and dew points in the low to mid 70's (degrees Fahrenheit (F)) across the southeast and within a few degrees of each other. The station model for Tallahassee indicated a wind from the east-southeast at 5 knots, no present weather, a temperature of 72 degrees F and a dew point of 71 degrees F.

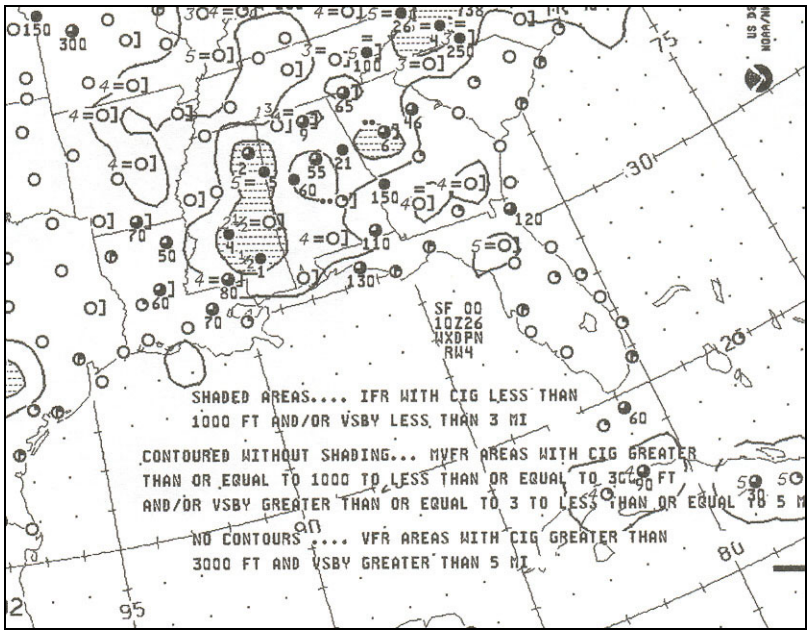
The NWS local forecast office at Tallahassee provided a hand-analyzed Surface Analysis chart for the Southeastern United States depicting surface conditions at 1000Z on 26 July 2002, which is included below. The chart has hand-drawn isobars at 2-millibar (mb) intervals and a dewpoint analysis at increments of 5 degree F.



The hand-analyzed chart indicated a high pressure system at 1022 mb off the east coast of Florida with a high pressure ridge extending over northern Florida into the northern Gulf of Mexico. Most stations in the Florida Panhandle reported light southerly to calm winds. Near the time of the accident, the station model for Tallahassee reported calm wind, scattered clouds, temperature 72 degrees F, dew point 71 degrees F, and sea level pressure 1019.5 mb. Many inland stations throughout the Southeast Region reported visibility restrictions due to mist and fog, however the closest stations reporting visibility restrictions were Gainesville, FL (KGNV) and Albany, GA (KABY).

### 1.0.2 Weather Depiction Chart

The NWS Weather Depiction chart for 1000Z on July 26, 2002, is included below. The chart depicted a large area of Marginal Visual Flight Rules (MVFR) conditions[3] indicated by an unshaded contour extending over portions of Mississippi, Alabama, and Georgia, into the Carolina's. Enclosed within that area of MVFR conditions were several areas of Instrument Flight Rules (IFR) conditions[4] indicated by a shaded contour. Except for a small area of MVFR conditions in the north central Florida, Visual Flight Rules (VFR) conditions[5] were indicated over Florida, including the Tallahassee area.



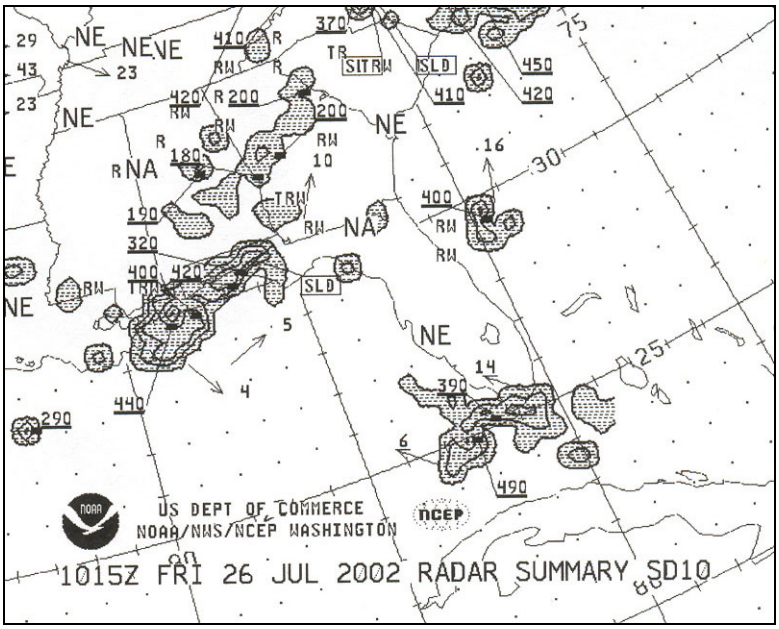

[3] MVFR Conditions – are defined as a ceiling between 1,000 feet and 3,000 feet inclusive, and/or visibility 3 to 5 statute miles.

[4] IFR Conditions – are defined as a ceiling less than 1,000 feet AGL and/or visibility less than 3 statute miles.

[5] VFR Conditions – are defined as no ceiling or ceiling greater than 3,000 feet and visibility greater than 5 statute miles.

### 1.0.2 Radar Summary Chart

The NWS Radar Summary Chart for 1015Z on July 26, 2002, is included below. The chart depicted several areas of echoes surrounding the Tallahassee area. A large area and embedded solid line of thunderstorms and rain showers extended over the Florida Panhandle into Alabama and Georgia, located to the southwest through north of Tallahassee. The area was identified moving northeastward at 5 to 10 knots with tops ranging from 32,000 to 42,000 feet. Another area of echoes was identified to the southeast of the Tallahassee area. To the northeast of Tallahassee, one radar site identified as Moody Air Force Base (KVAX), in Stockton, Georgia, reported that data was not available (NA).




The Individual radar site in Tallahassee was further documented in section 4.0 below to document any potential echoes in the immediate vicinity of the accident site.

## 2.0 Surface Observations

The Tallahassee Regional Airport, at an elevation of 81 feet has a NWS installed and maintained Automated Surface Observation System (ASOS), which is augmented under a Federal Aviation Administration (FAA) contract by certified NWS observers. The ASOS equipment is located approximately 1,000 feet from the approach end of runway 09 between taxiways sierra and papa, and directly south of taxiway juliet. The weather observer's office is located on the south ramp next to the Airport Rescue Fire Fighting (ARFF) building, which is directly north of the ASOS equipment. The office has an unobstructed view of the airport from the southeast through the west. The observer must walk to the northern side of the building to view the rest of the area. The ASOS equipment was noted as having no discrepancies. See Section 6.0 for pertinent ASOS data.

The observations issued for KTLH surrounding the time of the accident are as follows:

KTLH weather at 0853Z, wind 120 degrees true at 5 knots, visibility 9 statute miles, a few clouds at 100 feet, scattered 18,000 feet, scattered 25,000 feet, temperature and dew point 22 degrees Celsius (C), altimeter 30.10 inches of Mercury (Hg). Remarks: automated observation, sea level pressure 1019.2 mb, temperature 22.2 degrees C, dew point 21.7 degrees C, 3-hour pressure tendency decreasing 0.3 mb.

KTLH weather at 0953Z, wind calm, visibility 8 miles, a few clouds at 100 feet, scattered clouds at 15,000 feet, scattered clouds at 25,000 feet, temperature and dew point 22 degrees C, altimeter 30.11 inches Hg. Remarks: automated observation, sea level pressure 1019.2 mb, temperature 22.0 C, dew point 21.7 C.

KTLH weather at 1053Z, wind calm, visibility 9 miles, a few clouds at 100 feet, scattered clouds at 1,500 feet, scattered clouds at 15,000 feet, scattered clouds at 25,000 feet, temperature and dew point 22 degrees C, altimeter 30.13 inches Hg. Remarks: automated observation sea level pressure 1020.0 mb, sector visibility from the southwest through northwest quadrants 1/2 mile with cumulonimbus in the distance toward the southeast and southwest, smoke scattered at 1,500 feet, smoke plume over approach runway 9.

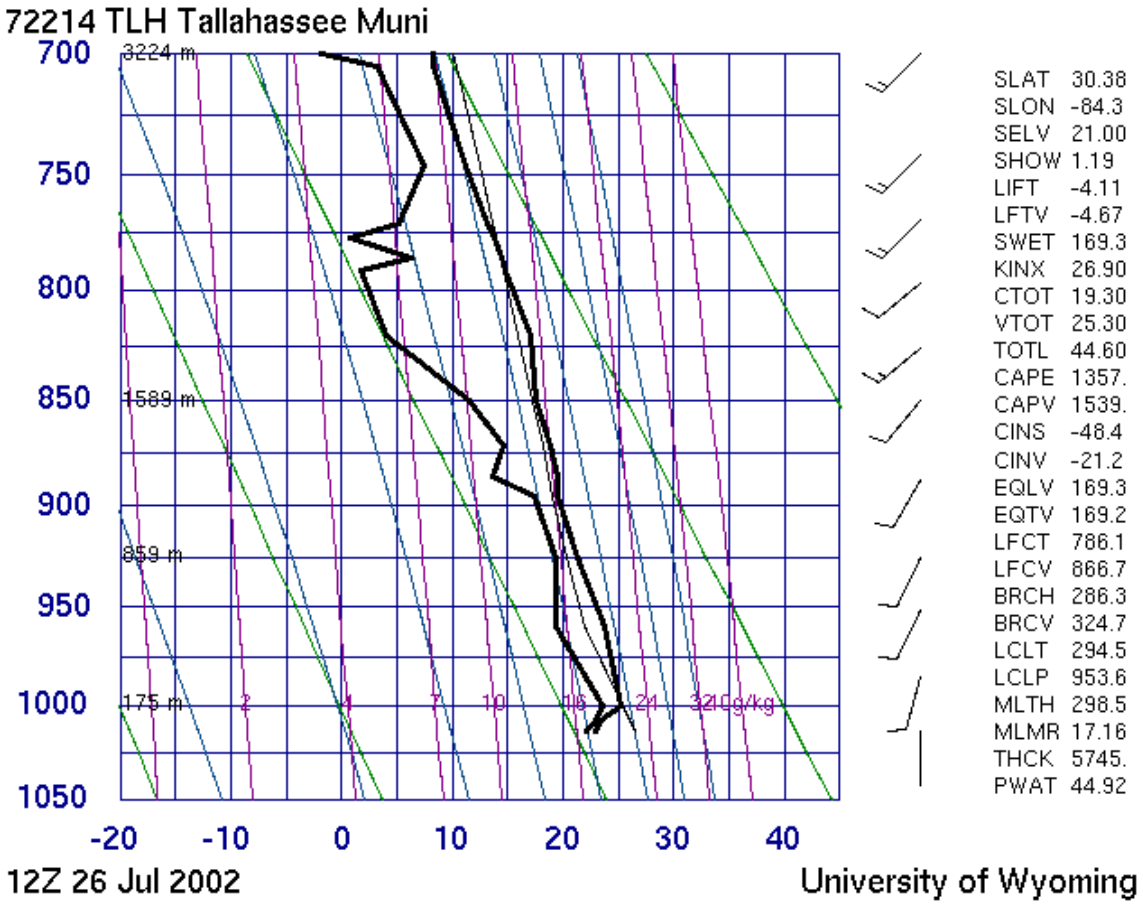
The 0853Z observation was obtained by the flight crew from the Gainesville Flight Service Station (FSS) while enroute. The 0953Z observation best reflects the conditions at the approximate time of the accident, and the 1053Z observation the conditions developing after Sunrise.

The NWS form 500-10 "Station Description and Instrumentation" is included as Appendix 1 and identifies the visibility reference points used by the weather observers at Tallahassee. The chart identifies limited reference points from the southwest through northwest of the airport.

## 3.0 Upper Air Data

The closest upper air sounding station is located at the NWS Regional Forecast Office in Tallahassee, station number 72214, located on the Florida State University Campus approximately 4 miles northeast of the airport. The 1200Z sounding on July 26, 2002 is included below plotted on a Stűve diagram[6] from the surface to 700-mb with the applicable wind, stability and lifted indices plotted to the right of the chart:

[6] Stűve diagram – also called a pseudo-adiabatic chart is a thermodynamic diagram named after its designer, G. Stűve, with temperature as abscissa and pressure to the power of 0.286 as ordinate, increasing downward. The adiabats are thus straight lines.




This sounding indicates a surface-based temperature inversion[7] to the 1,000 mb level or 175 meters (575 feet MSL), with temperatures decreasing above to 700 mb (approximately 10,000 feet). The temperature-dewpoint spread was within 2 degrees from the surface to 175 meters, which resulted in relative humidity greater than 90%. The temperature-dewpoint spread increases from 1.6 degrees at 1,000 mb (175 meters) to 3.8 degrees at 951.7 mb (610 meters or 2,000 feet). The temperature-dewpoint spread decreases to 2.1 degrees at 925 mb (859 meters or 2,800 feet).

The wind profile indicated wind from the south at 2 knots at the surface and veering to the southwest, increasing to 14 knots at 700 mb. The change in wind direction was less than 5 degrees at the height of the temperature inversion and the change in velocity was 3 knots.

Sounding variables and indices:

| | |
|---|---|
| Lifted Condensation Level (LCL)[8]: | 953.6 mb ~ 2,000 feet |
| Level of Free Convection (LFC)[9]: | 866.7 mb ~ 4,600 feet |
| Equilibrium Level (EL)[10]: | 169.3 mb ~ 45,000 feet |

[7] Inversion – an increase in temperature with increasing altitude.

[8] Lifted Condensation Level (LCL) - The height at which a parcel of moist air becomes saturated when it is lifted dry adiabatically.

[9] Level of Free Convection (LFC) - The level at which a parcel of saturated air becomes warmer than the surrounding air and begins to rise freely. This occurs most readily in a conditionally unstable atmosphere.

| | |
|---|---|
| Lifted Index (LI)[11]: | -4.11 |
| K-Index (KI): | 26.90 |
| Precipitable Water (PW): | 44.92 mm = 1.76 inches |
| Mean winds (0-6 km): | 221 degrees at 10 knots |

## 4.0 Weather Radar Information

The closest Weather Surveillance Radar-1988, Doppler (WSR-88D) is located at Tallahassee Regional Airport. It is approximately 2 miles east-northeast of the accident site. The WSR-88D is an S-band 10-centimeter wavelength radar with a 0.95-degree beam width, and a power output of 750,000 watts. The radar produces three basic type of products: reflectivity, radial velocity, and spectral width. Specifically, the base reflectivity and Vertical Azimuth Display (VAD) wind profile images were documented with discussions below. During the period surrounding the accident, the KTLH WSR-88D was operating with no performance degradations in the precipitation mode (Mode B).

### 4.0.1 Reflectivity

Reflectivity is the measure of the efficiency of a target in intercepting and returning radio energy. With hydrometeors[12], it is a function of the drop size distribution, number of particles per unit volume, physical state (ice or water), shape, and aspect ratio. Reflectivity is normally displayed in decibels (dBZ[13]), and is a general measure of echo intensity. The chart below relates the NWS Video Integrator and Processor (VIP) intensity levels versus the WSR-88D's display levels, precipitation mode reflectivity in decibels, and rainfall rates.

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[10] Equilibrium Level (EL) - On a sounding, the level above the level of free convection (LFC) at which the temperature of a rising air parcel again equals the temperature of the environment. The height of the EL is the height at which thunderstorm updrafts no longer accelerate upward. Thus, to a close approximation, it represents the height of expected (or ongoing) thunderstorm tops. However, strong updrafts will continue to rise past the EL before stopping, resulting in storm tops that are higher than the EL. This process sometimes can be seen visually as an overshooting tops or anvil dome. The EL typically is higher than the tropopause, and is a more accurate reference for storm tops.

[11] Lifted Index (LI) - A common measure of atmospheric instability. Its value is obtained by computing the temperature that air parcel near the ground would have if it were lifted to some higher level (around 18,000 feet, usually) and comparing that temperature to the actual temperature at that level. Negative values indicate instability - the more negative, the more unstable the air is, and the stronger the updrafts are likely to be with any developing thunderstorms. However, there are no "magic numbers" or threshold lifted indices values below which severe weather becomes imminent.

[12] Hydrometeors are any product of condensation or sublimation of atmospheric water vapor, whether formed in the free atmosphere or at the earth's surface; also, any water particles blown by the wind from the earth's surface. Hydrometers are classified as; (a) Liquid or solid water particles suspended in the air: cloud, water droplets, mist or fog. (b) Liquid precipitation: drizzle and rain. (c) Freezing precipitation: freezing drizzle and freezing rain. (d) Solid (frozen) precipitation: ice pellets, hail, snow, snow pellets, and ice crystals. (e) Falling particles that evaporate before reaching the ground: virga. (f) Liquid or solid water particles lifted by the wind from the earth's surface: drifting snow, blowing snow, blowing spray. (g) Liquid or solid deposits on exposed objects: dew, frost, rime, and glaze ice.

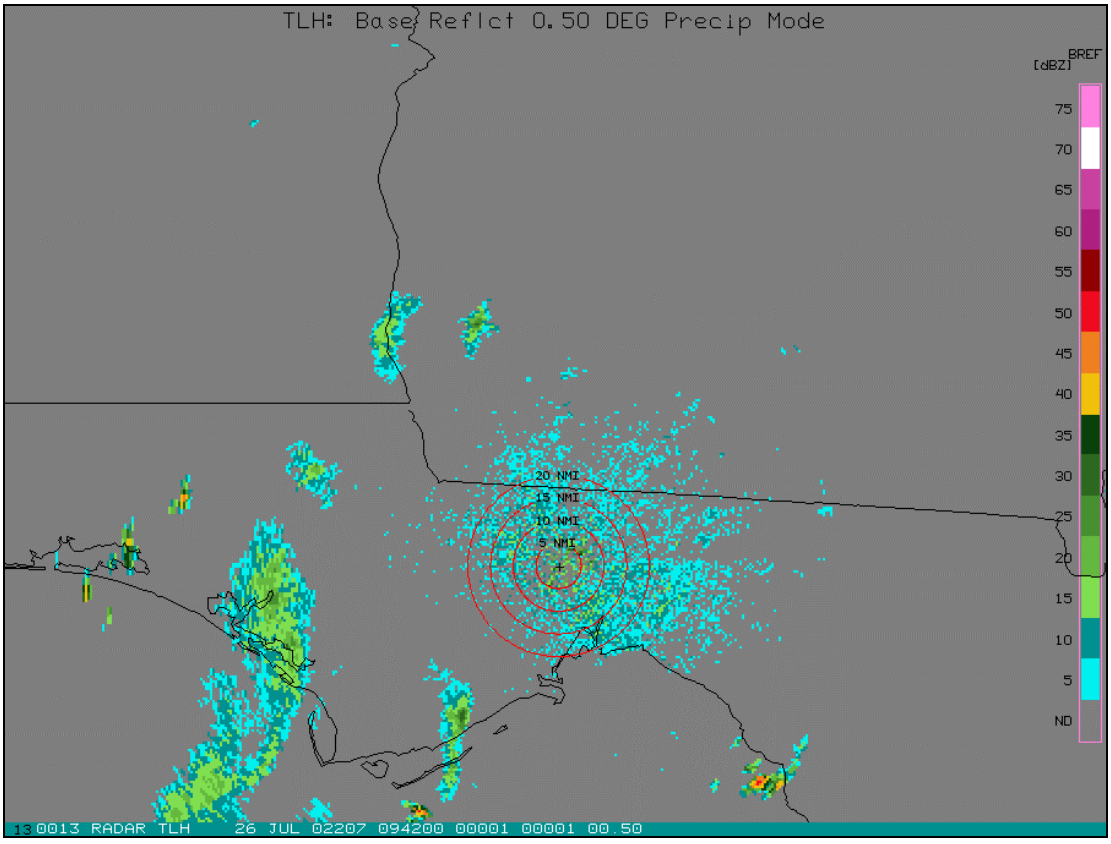
[13] dBZ = 10 log Ze

**NWS VIP/dBZ CONVERSION TABLE**

| NWS VIP LEVEL | WSR-88D LEVEL | PREC MODE (dBZ) | RAINFALL (in/hr) |
|---|---|---|---|
| 0 | 0 | < 5 | |
| | 1 | 5 to 9 | |
| | 2 | 10 to 14 | |
| 1 | 3 | 15 to 19 | .01 |
| Very Light | 4 | 20 to 24 | .02 |
| | 5 | 25 to 29 | .04 |
| 2 | 6 | 30 to 34 | .09 |
| Light to Moderate | 7 | 35 to 39 | .21 |
| 3 | 8 | 40 to 44 | .48 |
| Strong | | | |
| 4 | 9 | 45 to 49 | 1.10 |
| Very Strong | | | |
| 5 | 10 | 50 to 54 | 2.49 |
| Intense | | | |
| 6 | 11 | 55 to 59 | >5.67 |
| Extreme | 12 | 60 to 64 | |
| | 13 | 65 to 69 | |
| | 14 | 70 to 74 | |
| | 15 | > 75 | |

The base reflectivity image at 0942Z from the KTLH WSR-88D, is included below as a Plan Position Indicator (PPI) display of the individual radar scans at various angles, with reflectivities in decibels. The resolution is provided at 1° X 1 kilometer. A color scale is found at the right side of the image depicting the reflectivities from ND (no data) to 75 dBZ. The only echoes within 20 miles of Tallahassee were identified with ground clutter[14] or non-meteorological echoes. Of the meteorological echoes identified beyond 20 miles, one was an area of echoes with reflectivities to 50 dBZ located off shore approximately 60 miles to the southeast. Another area with reflectivities to 30 dBZ was located along the coastline approximately 35 miles to the southwest. Other scattered echoes of 30 dBZ or less were in a line from near Panama City, Florida, to near Dothan, Alabama.

[14] Ground clutter - A pattern of radar echoes reflecting off fixed ground targets such as buildings or hills near the radar. This may hide or confuse the proper return echo signifying actual precipitation.

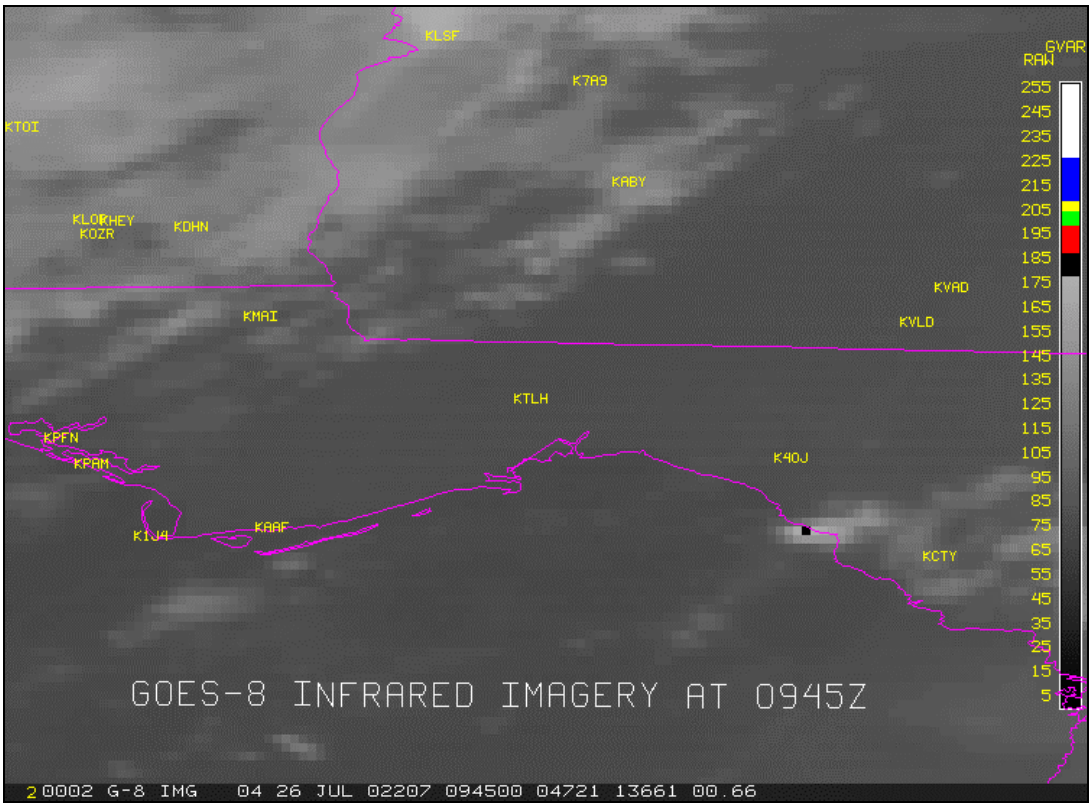



KTLH WSR-88D Vertical Azimuth Display (VAD) wind profile at 0953Z determined the low-level wind conditions as follows:

| | |
|---|---|
| 1,000 feet | 180 degrees at 5 knots |
| 2,000 feet | 230 degrees at 10 knots |
| 3,000 feet | 220 degrees at 15 knots |

## 5.0 Satellite Imagery

The Geostationary Operations Environmental Satellite number 8 (GOES-8) data was obtained from NCDC and displayed on the National Transportation Safety Board's Man-computer Interactive Data Access System (McIDAS) workstation. The infrared imagery at a wavelength of 10.7 microns (μm) (band 4) and at 3.9 μm (band 2) provided a 4-kilometer (km) resolution with radiative cloud top temperatures. The visible imagery (band 1) with a 1-km resolution was not available due to the low Sun angle. The infrared satellite imagery on July 26, 2002, from 0930Z to 1000Z at 15-minute intervals were analyzed with the applicable images documented below.




The GOES-8 infrared band 4 image at 0945Z on July 26, 2002, at 6X magnification is included above with a standard MB temperature enhancement curve applied. The image depicted no cloud layers of significant depth over the Tallahassee area to reflect any energy. The radiative temperature over KTLH was measured at 291.69 degrees Kelvin or 18.44 degrees C, which corresponded to near surface temperatures. The area of convective clouds located approximately 60 miles southeast of KTLH and west-northwest of Cross City, Florida (KCTY), indicated a radiative temperature of 242.60 degrees K or –30.56 degrees C, which corresponded to cloud heights in the range of 30,000 feet.

The GOES-8 band 2 infrared imagery depicted similar conditions and did not depict any significant low cloud cover or fog over the area, and as a result was not reproduced.

## 6.0 Five-minute Automated Surface Observation System (ASOS) Observations

The ASOS reported the following conditions surrounding the time of the accident:

| Time (Z) | Wind ($^{o}$/KT) | Vis. (SM) | Sky Condition | T/Td (C) | Altimeter (in. Hg) |
|---|---|---|---|---|---|
| 0920 | 120/03 | 8 | CLR | 22/22 | 30.11 |
| 0925 | Calm | 8 | FEW001 SCT150 SCT250 | 22/22 | 30.11 |
| 0930 | 120/03 | 8 | FEW001 SCT150 SCT250 | 22/22 | 30.11 |
| 0935 | Calm | 8 | FEW001 SCT150 SCT250 | 22/22 | 30.10 |
| 0940 | Calm | 8 | FEW001 SCT150 SCT250 | 22/22 | 30.11 |
| 0945 | Calm | 7 | FEW001 SCT150 SCT250 | 22/22 | 30.11 |
| 0950 | Calm | 8 | FEW001 SCT150 SCT250 | 22/22 | 30.11 |
| 0955 | Calm | 8 | CLR | 22/22 | 30.11 |
| 1000 | Calm | 9 | FEW001 SCT150 SCT250 | 22/22 | 30.11 |
| 1005 | Calm | 9 | FEW001 SCT150 SCT250 | 22/22 | 30.11 |

Key: CLR – sky clear below 12,000 feet
FEW – a few clouds (1/8 to 2/8's sky coverage)
SCT – scattered clouds (3/8 to 4/8's sky coverage)

## 7.0 Preflight Weather Documents

The "Weather by Route" document issued to the accident airplane at 0713Z on July 26, 2002, is included as Appendix 2. It lists relevant observations, forecasts, and Notices to Airmen (NOTAMs) for the departure, destination, alternates, and selected en-route stations. This document also incorporates a section for in-flight advisories for the route of flight.

## 8.0 In-Flight Weather Advisories

There were no Significant Meteorological Advisories (SIGMETs), Convective SIGMETs, Airman Meteorological Advisories (AIRMETs), Severe Weather Forecast Alerts, or Center Weather Advisories current at the time of the accident. In addition, there were no Pilot Reports (PIREPs) received near the time of the accident.

## 9.0 Terminal Forecasts

FedEx Express issues its own forecasts, which are controlling. The forecast issued for KTLH is as follows:

0300Z-0859Z: Cloud ceilings greater than 2,000 feet and visibility greater than 3 statute miles. There was no wind forecast included (assumed to be less than 10 knots).

0900Z-1259Z: Sky partially obscured, 3 statute miles visibility in mist, with occasional scattered clouds at 500 feet, visibility 1 statute mile in mist.

## 10.0 NWS Public Weather Advisories

There were no weather advisories issued by the NWS on July 26, 2002 for any significant restricted visibility over the region or other severe weather.

## 11.0 Weather Observer Interview

On 29 July 2002 from 0715 to 0915 EDT, the Meteorology Group interviewed Observer Francisco Vargas, who was on duty at the time of the accident and his supervisor James Gurlen who relieved him.

NWS Weather Observer Francisco Vargas, certificate #126826, holds a Bachelor of Science degree in Meteorology from Florida State University (FSU). He has been a weather observer at Tallahassee Regional Airport since October 2001 and was certificated on November 9, 2001. His only experience observing has been at the Tallahassee Regional Airport and he acquired his skills through studies at FSU and self-study of the NWS weather observation manuals and handbook of codes. He is not a pilot and has no flight experience, but is very interested in aviation and plans to become an aeronautical engineer. Mr. Vargas routinely works the midnight shift Monday through Friday, arriving between 2315 and 2330 local time. Prior to his arrival at work, he reviews the synoptic situation via the Internet, then upon arrival debriefs with the departing observer. Mr. Vargas indicated he was well rested at the beginning of the shift and that he had no problems remaining alert through his duty period on the night of the accident. He typically goes out to make his observation at 40 minutes past the hour and normally goes out every five to ten minutes to monitor weather conditions, especially prior to known air carrier arrivals. He uses the visibility reference map designated for the KTLH area for estimating prevailing visibility. Many of the visibility markers are difficult to see at night, but bright moonlight and the runway lights enhance his observations.

Conditions through the night of the accident were generally clear with calm winds. No discrepancies were noted with ASOS or any other equipment. Although his office does not have a monitor of the weather radar, they do have access to the Weather Channel to confirm activity across the region. Further, they do not have access to runway visual range (RVR) information aside from what is heard on the tower frequency scanner.

In the opinion of Messrs. Vargas and Gurlen, KTLH ASOS data is reliable for all but sky cover and is a little slow reporting visibility reductions.

Mr. Vargas stated that historically he observes Delta, Northwest and AirTran Airlines land after the control tower is closed. Most air carriers land on runway 27, although he has seen Delta and Northwest land on runway 9 infrequently. A Delta jet landed on runway 27 about 0100 EDT well after the tower had closed. He had never seen FedEx Express land on runway 9.

Mr. Vargas was outside preparing for the hourly observation prior to the time of the accident. He provided the following eyewitness description of the conditions and events leading up to the accident:

- As he was standing to the north of the weather observer's building, Mr. Vargas saw the accident aircraft approaching the airport from the northwest. He could clearly see the lights of the aircraft, but could not judge its distance from the field. He noted nothing unusual about the aircraft or its approach at that time. Assuming the aircraft would either turn left to acquire the runway 27 ILS or fly over the field for a visual downwind pattern to runway 27, he proceeded to the southern side of the building to observe conditions to the west and south of the field. He had completed his observation and had entered the building when he heard a "boom", then a "boom, boom". He noted the time as 0540 EDT and ran out of the building to investigate. He immediately saw fire from the aircraft and from the area near the trees just short of the approach end of runway 9.

- Weather conditions at the time were calm winds, with only some very thin, light stratus from about 25 feet above the ground to below the tree top levels from the area around the control tower to the forested area west of the field midway along runway 18-36. This stratus was observed to be only in amongst the trees and was reported as a few clouds at 100 feet (FEW001)[15]. He dismisses the possibility of windshear, turbulence, fog or other visibility obscurations seriously impacting the flight path into the airport. He observed no visibility obscuration near the accident site, aside from the smoke emanating from the accident. He does not recall the status of the moon, but noted it had been full two nights prior. He does not recall whether the runway lights were illuminated at the time. He observed occasional lightning within cumulonimbus clouds to the distant southeast and southwest, which correlates with the radar summary. There were altocumulus clouds at 15,000 feet and thin, wispy cirrus type clouds at 25,000 feet.

- Immediately after the accident, Mr. Vargas observed black smoke rising vertically from the accident aircraft back into the trees to about 1,500 feet AGL, then spreading towards the north. This smoke was distinctly not clouds.

- After the accident, Mr. Vargas immediately called 911 and simultaneously picked up the direct phone line to the control tower. There was no answer from the control tower. He relayed to the 911 operator that a Federal Express Boeing 727 missed the runway. Before he hung up, he heard the Fire Department alarms. He then called his supervisor Mr. Gurlen, who told him to notify the NWS ASOS Monitoring Operations Center (AMOC) and NWS Regional Forecast Office, per FAA/DOT 7900.5b *Surface Weather Observing*. After calling AMOC to request they start archiving ASOS data, he then contacted the duty forecaster at the Tallahassee NWS office to relay the crash information. He then remained outside to note any weather changes. There were none, aside from the accident smoke, until sunrise.

In the opinion of Mr. Vargas, weather was not a factor in this accident. The fog began to form near sunrise, but it stayed in the trees and may have been a result of the smoke. He reported sector visibility of 1/4 mile from the southwest through northwest at 1030Z when he could only faintly see the accident.

[15] According to NWS ASOS Program Manager the present software does not allow the augmenter to enter the cloud field with a height of 000 such as FEW000 or a few clouds less than 100 feet.

## 12.0 Astronomical Data

The following astronomical data were obtained from U.S. Naval Observatory located in Washington, D.C., for the Tallahassee, Florida area.

| | |
|---|---|
| Beginning of Civil Twilight: | 1026Z (0626 EDT) |
| Sunrise: | 1052Z (0652 EDT) |
| Altitude of the Sun: | over $10^{o}$ below the horizon |
| Moonrise: | 0155Z (2155 EDT) on preceding day |
| Moon Transit: | 0720Z (0320 EDT) |
| Moonset: | 1249Z (0849 EDT) |
| Altitude of the Moon: | approximately $31^{o}$ above the horizon |
| Azimuth of Moon: | $219^{o}$ |
| Percent illumination: | 95% |
| Phase of the Moon: | Waning gibbous (full moon on 24 July at 0507 EDT) |

The height and azimuth of the moon placed it behind to the right and above relative to the accident aircraft.

Donald E. Eick
NTSB Senior Meteorologist

Appendix 1 -Visibility reference points

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
WEATHER BUREAU

STATION DESCRIPTION AND INSTRUMENTATION

REGIONAL HDQS. APPROVAL TMV 5-10-02

Station: KTLH- Tallahassee Regional Airport

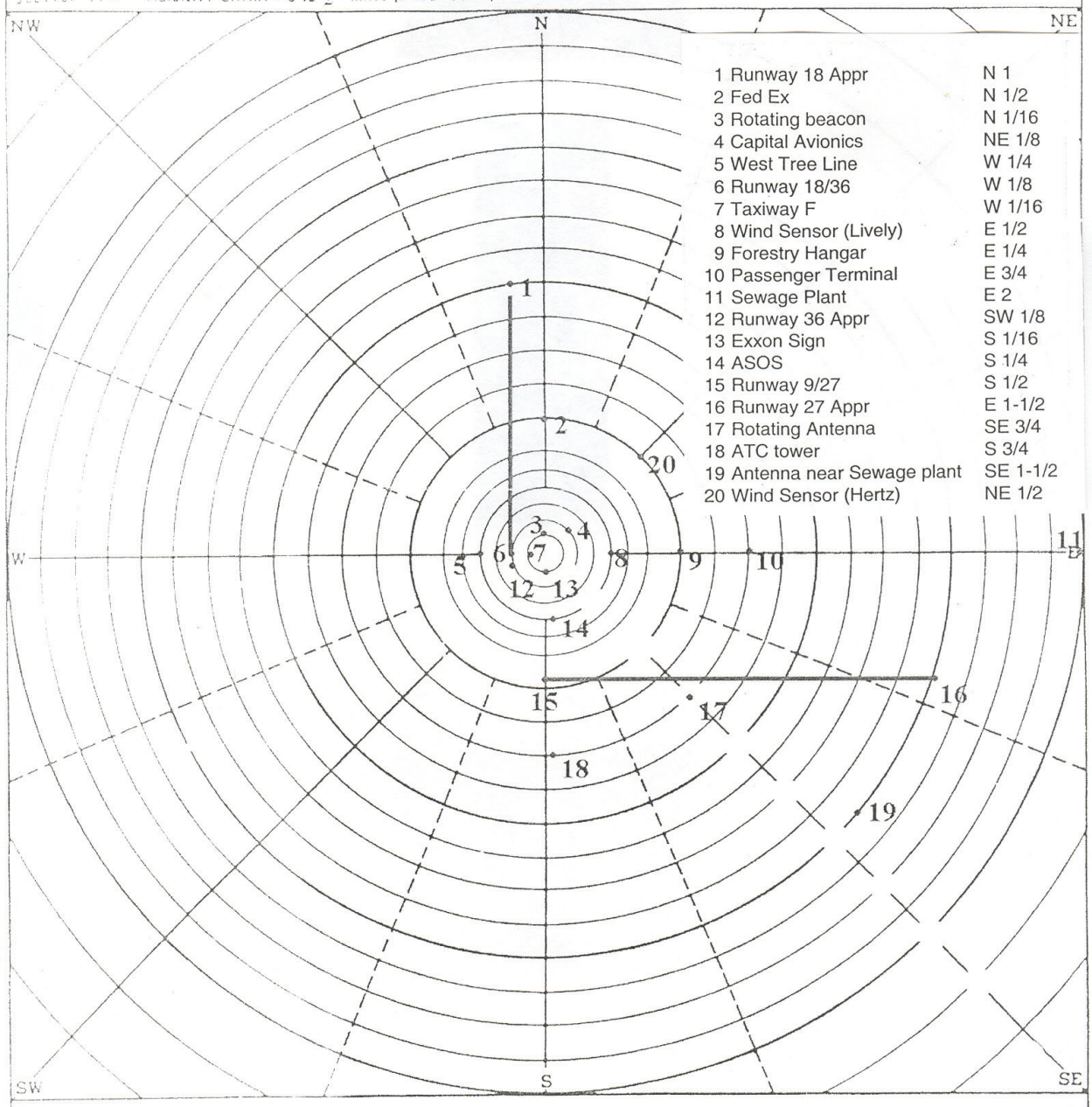
Prepared by (Name, title, station and date): Francisco Vargas- Weather Observer

Effective date: May 10, 2002

Reason for rendition: Observer's office relocation (West of old site)

Location of observing point: Raingauge near building

Section IV B VISIBILITY CHART - 0 to 2 miles (Linear Scale)




| | |
|---|---|
| 1 Runway 18 Appr | N 1 |
| 2 Fed Ex | N 1/2 |
| 3 Rotating beacon | N 1/16 |
| 4 Capital Avionics | NE 1/8 |
| 5 West Tree Line | W 1/4 |
| 6 Runway 18/36 | W 1/8 |
| 7 Taxiway F | W 1/16 |
| 8 Wind Sensor (Lively) | E 1/2 |
| 9 Forestry Hangar | E 1/4 |
| 10 Passenger Terminal | E 3/4 |
| 11 Sewage Plant | E 2 |
| 12 Runway 36 Appr | SW 1/8 |
| 13 Exxon Sign | S 1/16 |
| 14 ASOS | S 1/4 |
| 15 Runway 9/27 | S 1/2 |
| 16 Runway 27 Appr | E 1-1/2 |
| 17 Rotating Antenna | SE 3/4 |
| 18 ATC tower | S 3/4 |
| 19 Antenna near Sewage plant | SE 1-1/2 |
| 20 Wind Sensor (Hertz) | NE 1/2 |

REMARKS: ALL USBY MARKERS ARE VISABLE NIGHT AND DAY

Appendix 2 – Enroute weather document

# Aurora Weather Report

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WBR MEM TLH / B727
FLIGHT INFORMATION FOR:
ROUTE REQUESTED: MEM TLH
AIRCRAFT REQUESTED: B727
Date: 26Jul02 07:13Z
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DEPARTURE WEATHER/FORECAST/NOTAMS
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KMEM 260650Z AUTO 18003KT 10 SKC 26/25 A3002 RMK SLP161
KMEM 260556Z 17006KT 10SM FEW030 27/24 A3003 RMK ASLP164 T02680244
     10306 2 0268 403220239 51010
KMEM 260452Z 18004KT 10SM CLR 27/24 A3003 RMK SLP164 T02680243
MEM FT FEDEX 2603Z-2623Z ABV 2000/3
    10Z ABV 2000/3 VCBR
    14Z ABV 2000/3 =
MEM 01/037 MEM 18R ALS OTS WEF 0202011100
MEM 01/038 MEM 36L ALS OTS WEF 0202011100
MEM 01/039 MEM 36L ILS OTS WEF 0202011100
MEM 01/040 MEM 18R ILS OTS WEF 0202011100
MEM 02/011 MEM 17 ILS LLZ 110.95 VICE 111.3
MEM 03/037 MEM 27 ILS LLZ UNUSBL BYD 20 DEGS L CRS
MEM 07/079 MEM 17/35 CLSD EXC ACFT LESS THAN 111 WINGSPAN
1100-0300 DLY
MEM 07/089 MEM 27 ILS LLZ UNMNT
MEM 07/090 MEM 9 ILS LLZ UNMNT
MEM 07/094 MEM TOWER 638 (258 AGL) 6.5 SSE LGTS OTS TIL 0208042157
MEM 07/111 MEM 35 CLSD LDG WEF 0207261100-0207262359
KMEM J20020446882 2/3621      30APR20021922/UFN
  MEMPHIS INTL, MEMPHIS, TN.
   RADAR-1, AMDT 39A ...
   PROC NA.
KMEM J20020732098 2/7215      19JUL20021622/PERM
  MEMPHIS INTL, MEMPHIS, TN.
   ILS RWY 27, AMDT 2C...
   S-LOC 27 MDA 720/HAT 428 ALL CATS, VIS CAT D RVR 50.
   THIS IS ILS RWY 27, AMDT 2D.
KMEM J20001120306 A0129/00    28SEP20001935/UFN
  TWY T CLOSED BETWEEN THE WEST EDGE OF TWY N AND RUNWAY 18R-36L
  EFFECTIVE 09/28/00 FROM 1935L-UFN.
KMEM J20010336732 A1041/01    WIE/UFN
  TWY P CLSD WEST OF TWY N.
  FDXL/EN
KMEM J20010707089 A1183/01    05JUL20011130/UFN
  TWY M3 CLSD.
  FDXL/EN
KMEM J20020223550 A0013/02    WIE/UFN
  FLYSAFE NOTAM JG02001.  GATES 600, 601, 630, 631, 632
  AND 633 HOLD ENGINE START DURING PUSHBACK WHEN NECESSARY
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TO ENSURE AREA BEHIND AIRCRAFT IS CLEAR OF JET BLAST. DO NOT BLAST FIRE HOUSE OR TRUCK TERMINAL.

KMEM J20020436565 A1426/02 WIE/UFN
18R/36L GLIDEPATH OBST LGTS OTS.
FDXL/EN/L0801

KMEM J20020640460 A1425/02 WIE/UFN
A/FD APT RMKS (EFF 020613):
A030 RWY 18R/36L RWY 18R/36L EFFECTIVE ON OR ABOUT 1 FEB 2002, CLSD FOR RECONSTRUCTION.
A049 RWY 36R RWY 36R ALSF2 UNMONITORED.
A110-02 N-S TWY 1 MILE NORTH & 400 FT RIGHT OF RY 18C HAS FALSE APPEARANCE EAST OF RY WHEN LNDG SOUTH.
A110-06 LARGE FLOCKS OF BIRDS INVOF ARPT.
A110-10 TWY V BTN TWY S & TWY V2 RSTRD TO ACFT WITH TAIL HEIGHTS LESS THAN 65 FT 10 INCHES. TWY V BTN TWY V2 & AER 27 RSTRD TO ACFT WITH WINGSPANS OF 171 FT 6 INCHES OR LESS.
A110-13 PORTIONS OF TWY A EAST OF TWY A1 NOT VISIBLE FM ATCT
A110-15 BOEING 727 MODEL ACFT PROHIBITED FM TAXIING SOUTHBOUND ON TWY B BTN TWY V & RY 27 WHEN RY 27 IS ACTV.
A110-21 TWY N NORTH OF TWY Z, TWY C NORTH OF TWY Z AND TWY S NORTH OF TWY Z DESIGNATED AS NON-MOVEMENT AREAS.
A110-22 LARGE & HEAVY EASTBOUND ACFT ON TWY V FOR RY 27 HOLD SHORT AT MINIMUM THRUST AREA SIGN.
A110-23 EXTENSIVE CONSTRUCTION ON ARPT. PAEW ON & ADJ TO TWYS 0600-2000 INDEFLY.
A110-26 IF POSSIBLE ALL ACFT CONDUCT GROUND OPNS WITH TRANSPONDERS ON.
A110-27 PAEW 190 FT WEST OF RY 17/35 CNTRLN.
A110-28 RY 17/35 RSTRD TO ACFT WITH WINGSPAN 111 FT OR LESS.
A110-29 TWY 'N' BETWEEN TWY 'M9' AND TWY 'T' RSTRD TO ACFT WITH WINGSPAN OF 117 FT OR LESS.
A110-30 TWY 'M1' CLSD.
A110-31 TWY 'M2' WEST OF RY 17/35 CLSD.
A110-32 TWY 'M3' WEST OF RY 17/35 CLSD.
A110-33 TWY 'M4' WEST OF RY 17/35 CLSD.
A110-34 TWY 'M6' WEST OF RY 17/35 CLSD.
A110-35 TWY 'M7' WEST OF RWY 17/35 CLSD.
A110-36 TWY 'M9' WEST OF RY 17/35 CLSD.

KMEM J20020706185 A1839/02 WIE/UFN
RWY27 PAPI OTS.
FDXL/EN/0617

KMEM J20020713464 A0049/02 WIE/UFN
FLYSAFE NOTAM JG02004. SPOT 5 CLOSED UFN. CAUTION MEN AND EQUIPMENT WORKING AT SPOT 5 REPAIRING PAVEMENT. ENTER AND EXIT RAMP ON EAST SIDE OF MEM RAMP VIA SPOT 4 ONLY. GATE 130 ALSO CLOSED DUE TO TAXILANE VICTOR WEST DEVIATION TO VICTOR EAST AND SPOT 4. PLEASE EXERCISE CAUTION.

KMEM J20020642106 06/047 WIE/UFN
MEM GILMORE THREE ARRIVAL...

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  TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION HAS CHANGED:
  LANDING NORTH-EXPECT CLEARANCE TO CROSS AT 10000 FT.
KMEM J20020728348 07/022      17JUL20021622/UFN
  MEM HOLLY ONE ARRIVAL...
   TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION HAS CHANGED:
   LANDING SOUTH - EXPECT CLEARANCE TO CROSS AT 10000 FT.
KMEM J20020728361 07/023      17JUL20021627/UFN
  MEM MARVELL THREE ARRIVAL...
   TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION HAS CHANGED:
   LANDING SOUTH - EXPECT CLEARANCE TO CROSS AT 10000 FT.
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ENROUTE WEATHER/FORECAST
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KBHM 260653Z 19006KT 10SM SCT200 24/22 A3010 RMK AO2 SLP183
     T02390222 $
KBHM 260553Z 19007KT 10SM FEW055 24/22 A3011 RMK AO2 SLP186
     T02440222 10278 20244 403060222 50006 $
KBHM 260520Z 20008KT 10SM SCT015 BKN031 24/22 A3011 RMK AO2 $
KBHM 260453Z 18003KT 10SM SCT018 BKN027 25/22 A3011 RMK AO2

    SLP187 T02500217 $
KBHM 260453Z 18003KT 10SM SCT018 BKN027 25/22 A3011 RMK AO2 SLP187
BHM FT FEDEX 2602Z-2619Z ABV 2000/3
    10Z 10 SCT 3SM HZ OCNL 10 BKN 2SM BR
    14Z -X 3SM HZ
    15Z ABV 2000/3
    18Z ABV 2000/3 2110 =
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DESTINATION TLH WEATHER/FORECAST/NOTAMS
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KTLH 260653Z 11003KT 10SM FEW180 SCT250 23/23 A3010 RMK AO2 SLP192
KTLH 260553Z 00000KT 10SM SCT180 SCT250 24/23 A3011 RMK AO2 SLP195
     T02440233 10289 20244 58006
KTLH 260453Z 24003KT 10SM SCT180 BKN250 24/23 A3013 RMK AO2 SLP201
     T02440233 403110217
TLH FT FEDEX 2603Z-2619Z ABV 2000/3
    09Z -X 3SM BR OCNL 5 SCT 1SM BR
    13Z ABV 2000/3
    15Z ABV 2000/3 VCSH
    18Z ABV 2000/3 OCNL 20 BKN 2SM TSRA G25 =
!TLH 01/011 TLH 36 ILS GP OTS WEF 0201171300
!TLH 03/001 TLH 36 THR DSPLCD 600
!TLH 07/017 TLH TOWER 418 (372 AGL) 10.3 ESE LGTS OTS TIL 0207311150
!TLH 07/019 TLH 18/36 CLSD WEF 0207221100
!TLH 07/021 TLH TOWER 273 (254 AGL) 17.6 SE LGTS OTS TIL 0208051310
!TLH 07/022 TLH TOWER 541 (330 AGL) 32.7 E LGTS OTS TIL 0208062042
!TLH 07/023 TLH 36 ILS LLZ OTS
KTLH J20011113762 1/2267      WIE/UFN
  TALLAHASSEE REGIONAL, TALLAHASSEE, FL.
    VOR OR GPS RWY 18, AMDT 9A.
      S-18: MDA 760/HAA 678 ALL CATS, VISIBILITY CAT C 2, CAT
      D 2 1/4.
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      CIRCLING: MDA 760/HAA 678 ALL CATS, VISIBILITY CAT C 2,
      CAT D 2 1/4.
      MINIMUM ALTITUDE SZW 5 DME/RADAR FIX 760.
      ALTERNATE MINIMUMS: CAT D 800-2 1/4.
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TLH ALTERNATES: KJAX KTPA KATL
WEATHER/FORECAST/NOTAMS
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KJAX 260656Z 00000KT 10SM FEW035 BKN120 23/22 A3011 RMK AO2 SLP198
     T02280217
KJAX 260556Z 00000KT 10SM SCT040 BKN100 23/22 A3014 RMK AO2 SLP205
     60003 T02280217 10244 20228 58005
KJAX 260456Z 00000KT 10SM SCT035 BKN100 23/22 A3015 RMK AO2

     SLP210 T02330222 403280211
KJAX 260456Z 00000KT 10SM SCT035 BKN100 23/22 A3015 RMK AO2 SLP210
JAX FT FEDEX 2603Z-2619Z ABV 2000/3 VCSH
    04Z ABV 2000/3
    09Z 5 SCT OCNL 5 BKN 3SM BR
    10Z 5 OVC 1SM BR
    13Z 5 SCT 3SM HZ
    14Z ABV 2000/3
    18Z ABV 2000/3 2210 OCNL 20 BKN 2SM TSRA G30 =
   NO NOTAM (D)'S
KJAX J20000621278 0/6526      16JUN20001246/UFN
  JACKSONVILLE INTL  JACKSONVILLE FL.
   HI-ILS RWY 7 ...
   HI-ILS RWY 13 ...
   HI-ILS RWY 25 ...
   CIRCLING: MDA 540/HAA 510 CAT C.
   TEMPORARY CRANE ON AIRPORT 227 MSL.
KJAX J20011101159 1/1957      WIE/UFN
  JACKSONVILLE INTL  JACKSONVILLE, FL.
       ILS RWY 7 AMDT 12C ...
       ILS RWY 13 AMDT 6 ...
       ILS RWY 25 AMDT 1 ...
       VOR OR GPS RWY 31 ORIG-C ...
       NDB RWY 7 AMDT 9C ...
       NDB RWY 31 ORIG-C ...
       RNAV (GPS) RWY 7 ORIG ...
       RNAV (GPS) RWY 13 ORIG ...
       RADAR-1 AMDT 6C ...
           CIRCLING: MDA 540/HAA 510 CAT A/B/C.
       TEMPORARY CRANE ON AIRPORT 227 MSL.
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KTPA 260653Z 00000KT 10SM FEW018 SCT140 BKN250 24/23 A3013 RMK AO2
     SLP201 T02440228 $
KTPA 260553Z 08003KT 10SM FEW018 SCT140 BKN250 24/23 A3015 RMK AO2
     SLP207 60001 T02440228 10250 20239 58004 $
KTPA 260453Z 00000KT 10SM FEW025 SCT130 BKN250 24/23 A3015 RMK AO2
     SLP209 T02440228 403440211 $
TPA FT FEDEX 2603Z-2619Z ABV 2000/3 OCNL -SHRA, VCTS
    06Z ABV 2000/3
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     16Z ABV 2000/3 VCSH
     18Z ABV 2000/3 2710 OCNL 15 BKN 11/2SM TSRA G30 =
   NO NOTAM (D)'S
KTPA J20020622803 2/5574       14JUN20021619/PERM
  TAMPA INTL, TAMPA, FL.
   RNAV (GPS) RWY 9 ORIG.
   LNAV MDA 480/HAT 460 ALL CATS.
   CHART VDP AT 1.30 NM TO RWY09.
  THIS IS RNAV (GPS) RWY 9, ORIG-A.
KTPA J20011229959 A1584/01     WIE/UFN
  TWY'S A4 AND A5 - CLSD.
  FDXL/EN/01-194
KTPA J20011230001 A1587/01     WIE/UFN
  EDGE MARKINGS AT INT OF TAXILANE A AND A3 ARE
  NON-STANDARD.
  FDXL/EN/01-190
KTPA J20011230014 A1590/01     WIE/UFN
  TWY F CLSD.
  FDXL/EN/01-163
KTPA J20011236002 A1602/01     WIE/UFN
  EXCAVATION IN PROGRESS IN SAFETY AREA OF TAXILANE A
  (BTWN A4 AND A5). AREA IS MARKED, LIT, AND BARRICADED.
  FDXL/EN/01-197
KTPA J20020106939 A1002/02     04JAN20021530/UFN
  TAXILANE A CLSD BTWN A-3 AND 500 FT SOUTH OF A-5.
  FDXL/EN/02-002
KTPA J20020243112 A1182/02     WIE/UFN
  TWY A4 CLSD.
  FDXL/EN/02029
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KATL 260700Z 22004KT 10SM SCT006 BKN019 BKN080 BKN250 23/22 A3011
     RMK AO2
KATL 260700Z 22004KT 10SM SCT006 BKN019 BKN080 BKN250 23/22
    A3011 RMK AO2
KATL 260653Z VRB04KT 10SM FEW025 SCT080 BKN090 23/22 A3011 RMK AO2
     SLP187 T02280222
KATL 260553Z 21004KT 10SM SCT025 BKN080 BKN090 BKN250 23/22 A3011
     RMK AO2 RAB07E23 SLP187 P0000 60000 T02330217 10278 20233
     50004
KATL 260453Z 20007KT 10SM SCT024 SCT080 BKN250 24/22 A3012 RMK AO2
     SLP190 T02390217 402940211
ATL FT FEDEX 2603Z-2619Z ABV 2000/3 OCNL -SHRA, VCTS
    06Z 5 SCT 10 SCT OCNL 10 BKN 3SM BR
    08Z 4 SCT 8 OVC 2SM BR OCNL 4 BKN 1SM BR
    12Z 8 SCT 12 BKN 3SM BR OCNL 8 BKN
    15Z ABV 2000/3
    17Z ABV 2000/3 2410 VCTS =
!ATL 07/031 ATL TOWER 2049 (1080 AGL)7 NNE LGTS OTS TIL 0208020900
!ATL 07/038 ATL 8L/26R CLSD 0330-1030 DLY WEF 0207230330-0207261030
!ATL 07/045 ATL TOWER 1263 (315 AGL) 6.8SSW LGTS OTS TIL 0208072154
!ATL 07/050 ATL 8L/26R CLSD WEF 0207261030-0207261130
!ATL 07/051 ATL 9L/27R CLSD WEF 0207260430-0207261030
!ATL 07/053 ATL 9L/27R CLSD WEF 0207260430-0207261030
KATL J20010917070 1/9794       12SEP20011653/UFN
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  THE WILLIAM B. HARTSFIELD ATLANTA INTL
   ATLANTA, GA.
   EFFECTIVE EXCEPT WHEN ATC ADVISES CRANE IS DOWN.
   IFR TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES...
   RWY 26L: 300-1 OR STANDARD WITH MINIMUM CLIMB OF 330 FT
   PER NM TO 1300.
   RWY 26R: 300-1 OR STANDARD WITH MINIMUM CLIMB OF 350 FT
   PER NM TO 1300.
   TEMPORARY CRANE 1209 FT MSL 5831 FT WEST OF RWY 8R THLD AND
   481 FT SOUTH OF CENTERLINE.
KATL J20011235893 1/3405      21DEC20012125/UFN
  THE WILLIAM B. HARTSFIELD ATLANTA INTL,
  ATLANTA, GA.
   EFFECTIVE EXCEPT WHEN ATC ADVISES CRANE IS DOWN.
   ILS RWY 8L AMDT 2.
   SIDESTEP RWY 8R: MDA 1520/HAT 496 ALL CATS.
   ILS RWY 8R  AMDT 58B.
   S-ILS 8R: DH 1507/HAT 483, VIS RVR 6000 ALL CATS.
   S-LOC 8R: MDA 1520/HAT 496 ALL CATS. VIS CATS A/B
   RVR 4000, CAT D RVR 5000, CAT E RVR 6000.
   SIDESTEP RWY 8L: MDA 1520/HAT 505 ALL CATS.
   FOR INOPERATIVE ALSF-2, INCREASE S-ILS 8R CAT E VIS
   1/2 MILE.
   ILS RWY 8R (CAT II), AMDT 58B.
   PROC NA.
  TEMPORARY CRANE 1209 FT MSL 5831 FT WEST OF RWY 8R THLD AND
  481 FT SOUTH OF CENTERLINE.
KATL J20020333576 2/2314      19MAR20022148/UFN
  THE WILLIAM B. HARTSFIELD ATLANTA INTL,
  ATLANTA, GA.
  EFFECTIVE EXCEPT WHEN ATC ADVISES CRANE IS DOWN.
  RNAV (GPS) RWY 8L, ORIG.
  LNAV/VNAV: DA 1520/HAT 505 ALL CATS. VIS 1 1/4 ALL CATS.
  LNAV: MDA 1520/HAT 505 ALL CATS. VIS CAT A/B 4000 RVR, CAT
  C 5000 RVR. VDP NA.
  RNAV (GPS) RWY 8R, ORIG.
  LNAV/VNAV: DA 1520/HAT 496 ALL CATS. VIS 1 1/4 ALL CATS.
  LNAV: MDA 1520/HAT 496 ALL CATS. VIS CAT A/B 4000 RVR.
  VDP NA.
  TEMPORARY CRANE 1209 FT MSL 5831 FT WEST OF RWY 8R THLD AND
  481 FT SOUTH OF CENTERLINE.
KATL J20020630346 06/038      19JUN20021420/UFN
  ATL LA GRANE NINE ARRIVAL...
  GREEN COUNTY (GCV) TRANSITION: LA GRANGE 9 STAR UNUSABLE UNTIL
  FURTHER ADVISED WEF 0206191420.
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WINDS ALOFT
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DATA BASED ON 260000Z
VALID 261200Z   FOR USE 0900-1800Z. TEMPS NEG ABV 24000
FT  3000 6000    9000    12000   18000   24000   30000  34000  39000
      45000  53000
MEM 2708 9900+17 0711+12 0317+08 0212-05 0312-16 031533 361343 331252
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  THE WILLIAM B. HARTSFIELD ATLANTA INTL
   ATLANTA, GA.
   EFFECTIVE EXCEPT WHEN ATC ADVISES CRANE IS DOWN.
   IFR TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES...
   RWY 26L: 300-1 OR STANDARD WITH MINIMUM CLIMB OF 330 FT
   PER NM TO 1300.
   RWY 26R: 300-1 OR STANDARD WITH MINIMUM CLIMB OF 350 FT
   PER NM TO 1300.
   TEMPORARY CRANE 1209 FT MSL 5831 FT WEST OF RWY 8R THLD AND
   481 FT SOUTH OF CENTERLINE.
KATL J20011235893 1/3405      21DEC20012125/UFN
  THE WILLIAM B. HARTSFIELD ATLANTA INTL,
  ATLANTA, GA.
   EFFECTIVE EXCEPT WHEN ATC ADVISES CRANE IS DOWN.
   ILS RWY 8L AMDT 2.
   SIDESTEP RWY 8R: MDA 1520/HAT 496 ALL CATS.
   ILS RWY 8R  AMDT 58B.
   S-ILS 8R: DH 1507/HAT 483, VIS RVR 6000 ALL CATS.
   S-LOC 8R: MDA 1520/HAT 496 ALL CATS. VIS CATS A/B
   RVR 4000, CAT D RVR 5000, CAT E RVR 6000.
   SIDESTEP RWY 8L: MDA 1520/HAT 505 ALL CATS.
   FOR INOPERATIVE ALSF-2, INCREASE S-ILS 8R CAT E VIS
   1/2 MILE.
   ILS RWY 8R (CAT II), AMDT 58B.
   PROC NA.
  TEMPORARY CRANE 1209 FT MSL 5831 FT WEST OF RWY 8R THLD AND
  481 FT SOUTH OF CENTERLINE.
KATL J20020333576 2/2314      19MAR20022148/UFN
  THE WILLIAM B. HARTSFIELD ATLANTA INTL,
  ATLANTA, GA.
  EFFECTIVE EXCEPT WHEN ATC ADVISES CRANE IS DOWN.
  RNAV (GPS) RWY 8L, ORIG.
  LNAV/VNAV: DA 1520/HAT 505 ALL CATS. VIS 1 1/4 ALL CATS.
  LNAV: MDA 1520/HAT 505 ALL CATS. VIS CAT A/B 4000 RVR, CAT
  C 5000 RVR. VDP NA.
  RNAV (GPS) RWY 8R, ORIG.
  LNAV/VNAV: DA 1520/HAT 496 ALL CATS. VIS 1 1/4 ALL CATS.
  LNAV: MDA 1520/HAT 496 ALL CATS. VIS CAT A/B 4000 RVR.
  VDP NA.
  TEMPORARY CRANE 1209 FT MSL 5831 FT WEST OF RWY 8R THLD AND
  481 FT SOUTH OF CENTERLINE.
KATL J20020630346 06/038      19JUN20021420/UFN
  ATL LA GRANE NINE ARRIVAL...
  GREEN COUNTY (GCV) TRANSITION: LA GRANGE 9 STAR UNUSABLE UNTIL
  FURTHER ADVISED WEF 0206191420.
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WINDS ALOFT
----------------------------------------
DATA BASED ON 260000Z
VALID 261200Z   FOR USE 0900-1800Z. TEMPS NEG ABV 24000
FT  3000 6000    9000    12000   18000   24000   30000  34000  39000
      45000  53000
MEM 2708 9900+17 0711+12 0317+08 0212-05 0312-16 031533 361343 331252
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