



NATIONAL TRANSPORTATION SAFETY BOARD

**Office of Aviation Safety
Washington, D.C. 20594**

April 14, 2016

Group Chairman's Factual Report

METEOROLOGY

ERA16FA100

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A. ACCIDENT

Location: Mobile, Alabama
Date: February 1, 2016
Time: about 1945 central standard time (0145 UTC¹ on February 2, 2016)
Airplane: Cessna 182T; registration N784CP

B. METEOROLOGY GROUP

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C. SUMMARY

On February 1, 2016, about 1945 central standard time, a Cessna 182T, N784CP, was destroyed by a collision with trees, terrain and a post-crash fire following a missed approach to the Mobile Regional Airport (MOB), Mobile, Alabama. The airline transport pilot and pilot-rated passenger were fatally injured. The airplane was registered to and operated by the Civil Air Patrol as a personal flight under the provisions of Title 14 Code of Federal Regulations Part 91. Instrument meteorological conditions existed at the airport at the time of the accident, and the flight was operated on an instrument flight rules flight plan. The flight originated from Louisiana Regional Airport (L38), Gonzales, Louisiana, about 1830.

D. DETAILS OF THE INVESTIGATION

The National Transportation Safety Board's (NTSB) Senior Meteorologist was not on scene for this investigation and conducted the meteorology phase of the investigation from the Washington D.C. office, collecting data from official National Weather Service (NWS) sources including the Weather Prediction Center (WPC) and the National Center for Environmental Information (NCEI). All times are central standard time (CST) based upon the 24 hour clock, local time is +6 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. NWS airport and station identifiers use standard International Civil Aviation Organization (ICAO) 4-letter station identifiers versus International Air Transport Association (IATA) 3-letter identifiers which deletes the initial country code designator "K" for U.S. airports. Both codes are both used intermittently in this report.

The accident site was located at latitude 30.6786° N and longitude 88.2636° W.

¹ UTC – is an abbreviation for Coordinated Universal Time.

E. FACTUAL INFORMATION

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. Reference to these charts can be found in the joint NWS and Federal Aviation Administration (FAA) Advisory Circular "Aviation Weather Services", AC 00-45G.

1.1 Surface Analysis Chart

The NWS Surface Analysis Chart for 1800 CST on February 1, 2016 is included as figure 1 with the approximate accident site within the red circle. The chart depicted a low pressure system at 996-hectopascals (hPa) over southeast Colorado associated with an occluded front, which stretched southward into the Oklahoma and Texas panhandles to the triple point where another low pressure system at 997-hPa was located and the front split into a cold front to the south and a stationary front extending eastward across northern Texas, southern Arkansas, into northern Alabama and Mississippi, and then becoming a cold front into northern Georgia, North Carolina. A high pressure ridge extended across Florida. The resultant pressure pattern resulted in a southerly wind component of warm moist air from the Gulf of Mexico streaming northward into the occluded frontal system.

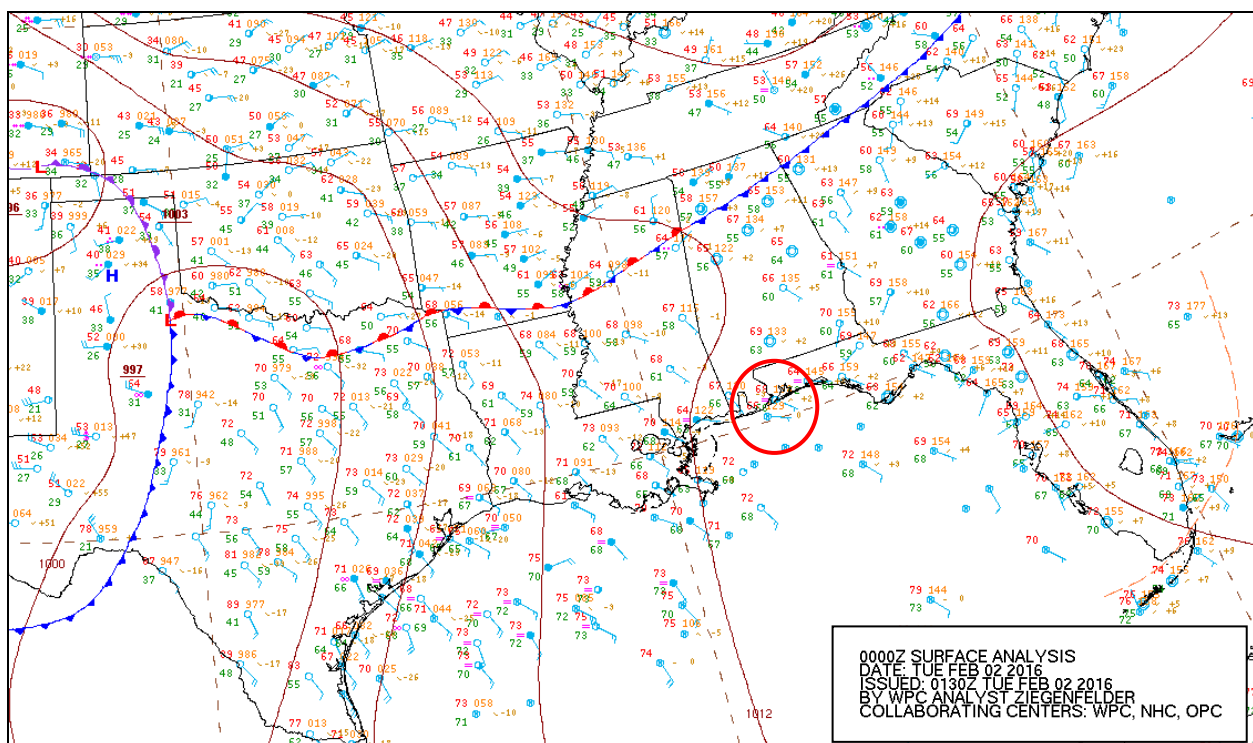


Figure 1 - NWS Surface Analysis Chart for 1800 CST

The station model for Mobile, Alabama indicated a wind from the south-southeast at approximately 5 knots, visibility unrestricted, scattered clouds, temperature of 67° Fahrenheit (F), dew point temperature of 66° F, and a sea level pressure of 1013.0-hPa. Multiple stations east and west of Mobile were indicating visibility restrictions in fog at the time.

1.2 Weather Radar Mosaic

The NWS regional radar mosaic for 1945 CST on February 1, 2016 is included as figure 2. No significant meteorological echoes associated with precipitation were identified in the vicinity of the accident site.

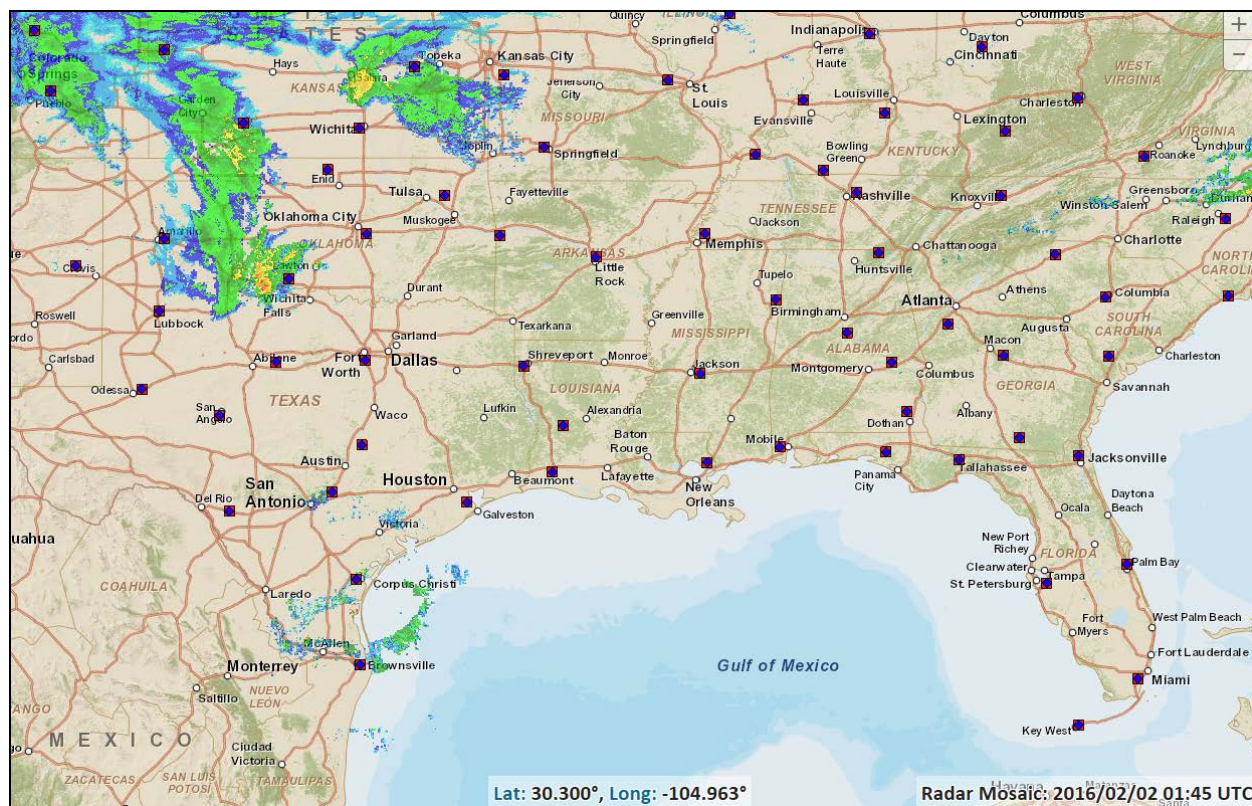


Figure 2 - National Radar Mosaic for 1945 CST

1.3 NWS Low-Level Significant Weather Prognostic Chart

The 12 and 24-hour Low-Level Significant Weather Prognostic Chart valid for the period is included as figure 3. The chart depicted the expected general flight categories of IFR/MVFR/VFR conditions, turbulence, and the freezing level for the period. The left side of the chart is the 12-hour forecast valid for 0000 CST on February 2, 2016 depicted an extensive area of instrument flight rule (IFR) conditions² over the Gulf Coast region that extended over

² IFR conditions – are defined as a ceiling or the lowest layer of clouds reported as broken or overcast of less than 1,000 feet above ground level (agl), and/or visibility less than 3 statute miles.

eastern Texas, Louisiana, most of Mississippi, Alabama, Florida panhandle and western Georgia. The 24-hour forecast on the right valid for 1200 CST on February 2, 2016 continued to depict an extensive area of IFR conditions over Louisiana, southern Mississippi, and Alabama. A larger area of marginal visual flight rule (MVFR) conditions³ surrounded the area.

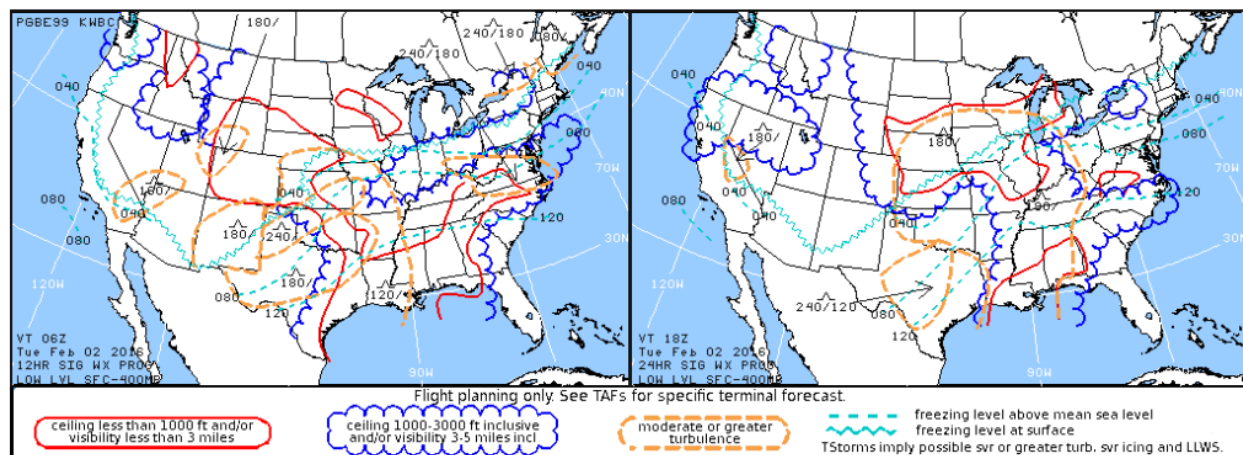


Figure 3 - 12 and 24 hour Low level Significant Weather prognostic Chart

2.0 Surface Observations

The official NWS Meteorological Aerodrome Reports (METARs) and special reports (SPECIs) surrounding the period were documented for Mobile Downtown Airport and Mobile Regional Airport surrounding the period. The cloud heights are reported above ground level (agl).

2.1 Mobile Regional Airport (KMOB), Mobile, Alabama

Mobile Regional Airport (KMOB) listed an elevation of 219 feet, and a magnetic variation of 1°W. The airport had a federally installed and maintained Automated Surface Observation System (ASOS) and was augmented by a certified observer. The following observations were reported surrounding the time of the accident:

Mobile Regional Airport weather observation at 1856 CST, wind from 130° at 6 knots, visibility 9 statute miles, a few clouds at 2,800 feet agl, ceiling broken at 6,000 feet, temperature and dew point 18° Celsius (C), altimeter 29.93 inches of mercury (Hg).

Mobile Regional Airport special weather observation at 1909 CST, wind from 130° at 7 knots, visibility 1/2 statute miles if fog, vertical visibility 200 feet agl, temperature and dew point 18° C, altimeter 29.93 inches of Hg.

³ MVFR conditions – are defined as a ceiling between 1,000 and 3,000 feet agl, and/or visibility between 3 and 5 miles.

Mobile Regional Airport weather observation at 1956 CST, wind from 140° at 7 knots, visibility 1/2 statute miles in fog, vertical visibility 200 feet agl, temperature and dew point 18° C, altimeter 29.93 inches of Hg.

The raw observations in standard code and the general flight categories⁴ surrounding the period were as follows:

MVFR KMOB 012003Z COR 19008KT 7SM OVC010 21/19 A2994 RMK AO2 T02060194

IFR KMOB 012054Z 17006KT 7SM BKN009 OVC015 21/19 A2993 RMK AO2

IFR KMOB 012056Z 17005KT 7SM BKN009 OVC015 21/19 A2993 RMK AO2 SLP133 T02110194 56010

MVFR KMOB 012122Z 20007KT 7SM OVC010 21/19 A2993 RMK AO2 T02110194

MVFR KMOB 012256Z 18007KT 10SM BKN012 BKN018 OVC060 21/19 A2993 RMK AO2 SLP131 T02110194

VFR KMOB 012331Z 17006KT 7SM FEW017 SCT026 BKN038 20/19 A2992 RMK AO2 T02000189

*VFR KMOB 012356Z 16005KT 7SM FEW026 FEW039 19/19 A2992 RMK AO2 SLP130 T01940189 10217
20194 58003*

VFR KMOB 020056Z 13006KT 9SM FEW028 BKN060 18/18 A2993 RMK AO2 SLP132 T01830183

LIFR KMOB 020109Z 13007KT 1/2SM FG VV002 18/18 A2993 RMK AO2 T01830183

Accident 0145Z

LIFR KMOB 020156Z 14007KT 1/2SM FG VV002 18/18 A2993 RMK AO2 SLP132 T01830183

LIFR KMOB 020247Z 13008KT 1/4SM FG VV002 19/19 A2993 RMK AO2 T01890189

LIFR KMOB 020254Z 13008KT 1/2SM FG VV002 18/18 A2993 RMK AO2

LIFR KMOB 020256Z 14009KT 1/2SM FG VV002 18/18 A2993 RMK AO2 SLP133 T01830183 53001

LIFR KMOB 020356Z 14011KT 1 3/4SM BR OVC002 19/19 A2993 RMK AO2 SLP131 T01890189

⁴ As defined by the NWS and the FAA Aeronautical Information Manual (AIM) section 7-1-7 defines the following general flight categories:

- Low Instrument Flight Rules (LIFR*) – ceiling or lowest layer of clouds reported as broken, overcast or the vertical visibility into a surface based obscuration below 500 feet agl and/or visibility less than 1 statute mile.
- Instrument Flight Rules (IFR) – ceiling between 500 to below 1,000 feet agl and/or visibility 1 to less than 3 miles.
- Marginal Visual Flight Rules (MVFR**) – ceiling from 1,000 to 3,000 feet agl and/or visibility 3 to 5 miles.
- Visual Flight Rules (VFR) – ceiling greater 3,000 feet agl and visibility greater than 5 miles.

* By definition, IFR is a ceiling less than 1,000 feet agl and/or visibility less than 3 miles while LIFR is a sub-category of IFR.

**By definition, VFR is a ceiling greater than or equal to 3,000 feet agl and visibility greater than 5 miles while MVFR is a sub-category of VFR.

2.1.1 Mobile 5-Minute Observations

The Mobile Regional Airport 5-minute ASOS observations provided a further breakdown of the rapidly changing conditions over the area during the period. The observations indicated that between 1905 and 1910 CST visibility deteriorated to 1/2 mile in fog with a ceiling at 200 feet agl developing. The official observation reported at the time of the accident was as follows:

Mobile Regional Airport weather observation at 1945 CST wind from 140° at 8 knots, visibility 1/2 mile in fog, vertical visibility 200 feet agl, temperature and dew point 18° C, altimeter 29.92 inches of Hg. The supplementary information indicated a pressure altitude of 220 feet, 100% relative humidity, and a density altitude of 700 feet, and a magnetic wind the same the true direction reported.

The raw 5-minute observations for the hour were as follows:

19:00:31 5-MIN KMOB 020100Z 14006KT 8SM SCT028 BKN060 18/18 A2993 210 100 700 140/06 RMK AO2
T01830183

19:05:31 5-MIN KMOB 020105Z 13007KT 7SM FEW002 BKN028 BKN035 18/18 A2993 210 100 700 130/07
RMK AO2 T01830183

19:10:31 5-MIN KMOB 020110Z 13007KT 1/2SM FG VV002 18/18 A2992 220 100 700 130/07 RMK AO2
T01830183

19:15:31 5-MIN KMOB 020115Z 14006KT 1/2SM FG VV002 18/18 A2992 220 100 700 140/06 RMK AO2
T01830183

19:20:31 5-MIN KMOB 020120Z 14007KT 1/2SM FG VV002 18/18 A2992 220 100 700 140/07 RMK AO2
T01830183

19:25:31 5-MIN KMOB 020125Z 14007KT 1/2SM FG VV002 18/18 A2992 220 100 700 150/07 RMK AO2
T01830183

19:30:31 5-MIN KMOB 020130Z 14006KT 1/2SM FG VV002 18/18 A2992 220 100 700 140/06 RMK AO2
T01830183

19:35:31 5-MIN KMOB 020135Z 14006KT 1/2SM FG VV002 18/18 A2992 220 100 700 140/06 RMK AO2
T01830183

19:40:31 5-MIN KMOB 020140Z 13007KT 1/2SM FG VV002 18/18 A2992 220 100 700 130/07 RMK AO2
T01830183

Accident 1945Z (0145Z)

19:45:31 5-MIN KMOB 020145Z 14008KT 1/2SM FG VV002 18/18 A2992 220 100 700 140/08 RMK AO2
T01830183

19:50:31 5-MIN KMOB 020150Z 14009KT 1/2SM FG VV002 18/18 A2993 210 100 700 140/09 RMK AO2 SLP131
T01830183

19:55:31 5-MIN KMOB 020155Z 14007KT 1/2SM FG VV002 18/18 A2993 210 100 700 140/07 RMK AO2 SLP132
T01830183

20:00:31 5-MIN KMOB 020200Z 15008KT 1/2SM FG VV002 18/18 A2993 210 100 700 150/08 RMK AO2
T01830183

2.2 Mobile Downtown Airport (KBFM), Mobile, Alabama

The original destination and next closest weather reporting location to the accident site was from Mobile Downtown Airport (KBFM) located approximately 10 miles east of KMOB at an elevation of 26 feet. The airport also had a tower and an ASOS system and reported the following conditions at the time of the accident:

Mobile Downtown Airport special weather observation at 1900 CST, wind from 160° at 6 knots, visibility 1/2 statute miles in fog, vertical visibility 200 feet agl, temperature and dew point 18° C, altimeter 29.94 inches of Hg.

The raw observations and flight categories were as follows surrounding the period:

MVFR KBFM 012056Z 15005KT 10SM SCT011 BKN016 OVC022 20/18 A2994 RMK AO2 T02000183

IFR KBFM 012103Z 14005KT 10SM BKN009 OVC017 19/18 A2994 RMK AO2 T01940178

MVFR KBFM 012114Z 15004KT 10SM SCT010 BKN015 BKN035 19/18 A2994 RMK AO2 T01890178

MVFR KBFM 012153Z 12003KT 6SM BR SCT010 BKN015 BKN035 17/17 A2994 RMK AO2 SLP139

LIFR KBFM 012253Z 14003KT 1/4SM FG SCT005 BKN012 BKN055 16/16 A2994 RMK AO2 SLP138 VIS W-
NW 10 T01610161

LIFR KBFM 012347Z 17006KT 3/4SM BR VV002 18/18 A2994 RMK AO2

LIFR KBFM 012348Z 16005KT 1/2SM FG VV002 18/18 A2994 RMK AO2 SLP137 60000 T01830178 10211
20161 58002

LIFR KBFM 020053Z 16006KT 1/4SM FG VV002 18/18 A2994 RMK AO2 SLP138 T01830183

LIFR KBFM 020100Z 16006KT 1/2SM FG VV002 18/18 A2994 RMK AO2 T01830183

Accident 0145Z

LIFR KBFM 020153Z 15008KT 1SM BR VV003 18/18 A2994 RMK AO2 SLP138 T01780178

LIFR KBFM 020209Z 14006KT 3/4SM BR VV003 18/18 A2994 RMK AO2 T01780178

LIFR KBFM 020227Z 13006KT 1/4SM FG VV002 17/17 A2994 RMK AO2 T01720172

LIFR KBFM 020253Z 15004KT 1/4SM FG BKN002 BKN041 OVC085 17/17 A2995 RMK AO2 SLP140
T01720172 53003

LIFR KBFM 020300Z 13005KT 3/4SM BR SCT002 BKN041 OVC090 18/18 A2995 RMK AO2 T01780178

LIFR KBFM 020322Z 00000KT 1/4SM FG BKN002 OVC042 17/17 A2994 RMK AO2 T01670167

2.3 METAR Display

The display of the observations over the region from the NWS Aviation Weather Center (AWC) surrounding the period was also captured. The legion of the display is included as figure 4, with the station models color coded for the flight category for 1900 and 2000 CST are included as figures 5 and 6 respectively.

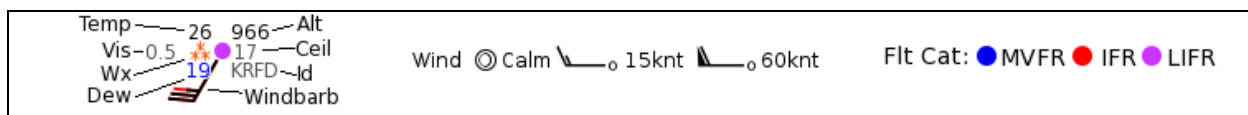


Figure 4 – Legion for METAR station model plot and flight categories

The METAR display for 1900 CST (0100Z) depicted most coast stations across Florida, Alabama, and Mississippi reporting LIFR to IFR conditions due to low ceilings between 200 to 400 feet agl, and visibility restrictions in fog. The station model for KMOB indicated VFR conditions with southeast wind at 5 knots, visibility 9 miles, ceiling broken at 6,000 feet, with temperature and dew point of 65° F.

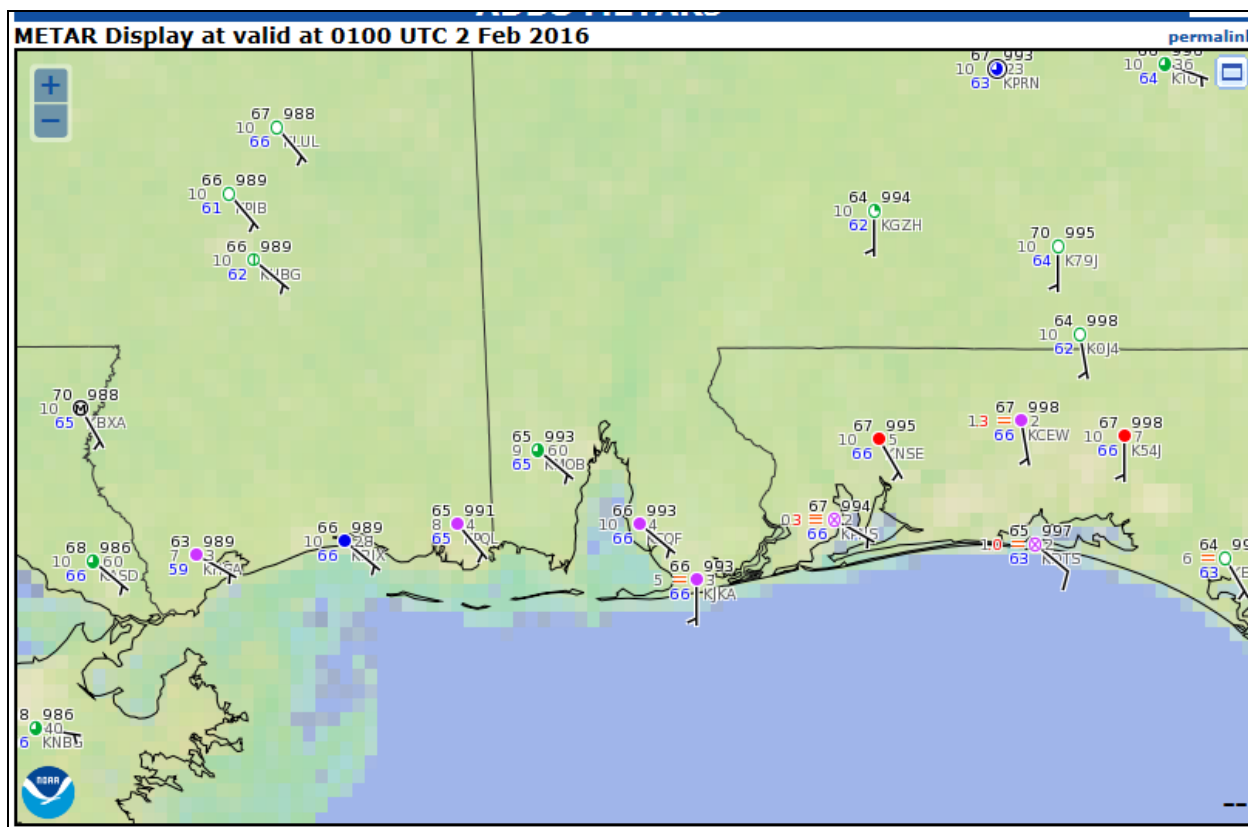


Figure 5 - METAR display for 1900 CST over the region

The METAR display at 2000 CST (0200Z) continued to depict an increasing coverage of LIFR to IFR conditions along the coast and moving inland. The station model for KMOB depicted southeast wind of 5 knots, visibility 1/2 mile in fog, vertical visibility 200 feet agl, temperature and dew point 65° F. MVFR to VFR conditions were being reported to the north.

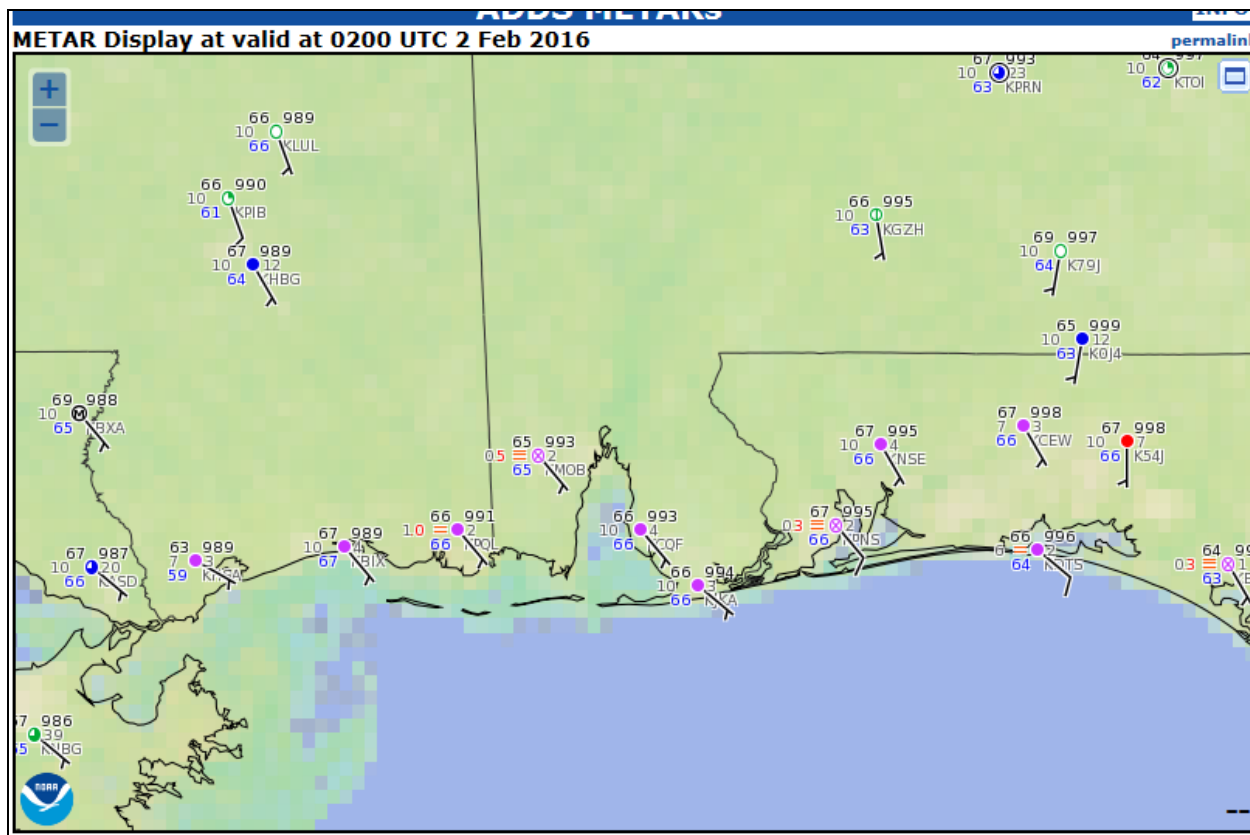


Figure 6 - METAR display for 2000 CST over the region

3.0 Upper Air Data

The closest upper air sounding or rawinsonde observation (RAOB) was from the NWS Slidell (KLIX), Louisiana, site number 72233, located approximately 85 miles west of the accident site at an elevation of 10 feet. The 1800 CST (0000Z on February 2, 2016) sounding was plotted on a standard Skew-T log P diagram⁵ from the surface to 500-hPa or 18,000 feet utilizing RAOB⁶ software is included as figure 7.

The Slidell sounding depicted warm moist low-level environment with a surface temperature of 21.8° C, a dew point of 20.6° C, with the relative humidity of 90% or greater from the surface through 6,000 feet, which was capped by a temperature inversion due to subsidence at 6,580 feet. The lifted condensation level (LCL)⁷ and level of free convection (LFC)⁸ were identified at

⁵ Skew T log P diagram – is a standard meteorological plot using temperature and the logarithmic of pressure as coordinates, used to display winds, temperature, dew point, and various indices used to define the vertical structure of the atmosphere.

⁶ RAOB – (The complete Rawinsonde Observation program) is an interactive sounding analysis program developed by Environmental Research Services, Matamoras, Pennsylvania.

⁷ Lifting Condensation Level (LCL) - The height at which a parcel of moist air becomes saturated when it is lifted dry adiabatically.

approximately 500 feet agl, with the convective condensation level (CCL)⁹ at 1,800 feet agl. The precipitable water value was 1.03 inches. The freezing level was identified at approximately 14,700 feet, with no icing threat at low levels except for a moderate to severe carburetor or induction system icing.

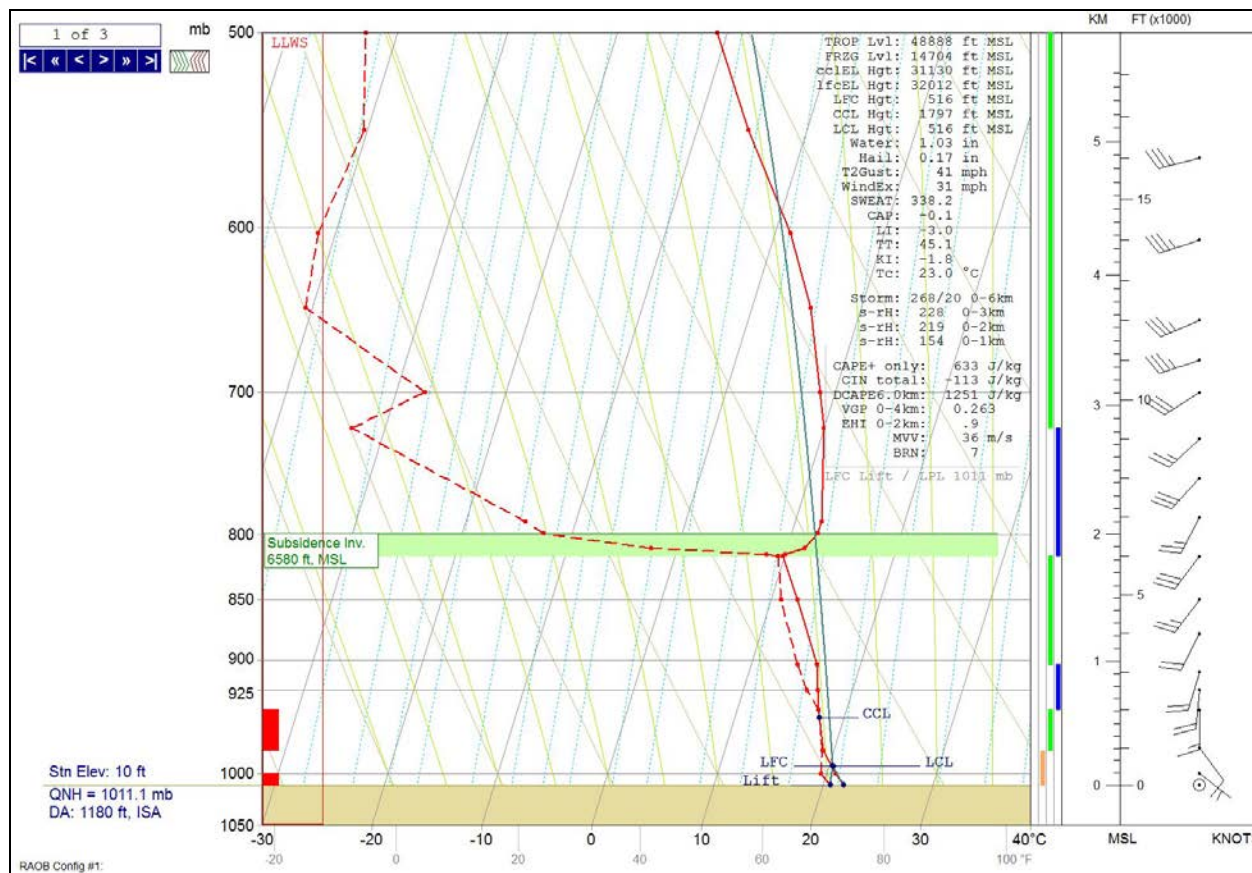


Figure 7 - NWS Slidell upper air sounding for 1800 CST

The Slidell wind profile indicated a calm surface wind with winds from the southeast veering to the southwest and west with height. The mean 0 to 6 kilometer or 18,000 feet wind was from 240° at 35 knots, with the maximum wind at 34,000 feet from 260° at 92 knots. The tropopause height was identified at 48,900 feet.

⁸ 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.

⁹ Convective Condensation Level (CCL) - The height to which a parcel of air, if heated sufficiently from below, will rise adiabatically until condensation starts. This is typically used to identify the base of cumuliiform clouds, which are normally produced from surface heating and thermal convection.

A screen capture of the sounding parameters of height, pressure (Pres), temperature (T), dew point temperature (Td), relative humidity (RH), wind direction and speed, clear air turbulence (CAT), low-level wind shear (LLWS), and structure icing potential from the surface through 18,000 feet is included as figure 8.

Height (ft-MSL)	Pres (mb)	T (C)	Td (C)	RH (%)	DD / FF (deg / kts)	CAT (AF)	LLWS	Icing - Type (S-F clouds)
10	1011	21.8	20.6	93	0 / 0		LIGHT	
322	1000	20.8	19.4	92	130 / 6			
925	979	19.0	18.9	99	145 / 11	L-M	LIGHT	
2013	942	17.4	17.4	100	180 / 17			
2525	925	16.8	15.8	94	185 / 19			
3000	909				195 / 19			
3200	903	16.0	14.2	89		LGT		
4000	877				205 / 21	LGT		
4881	850	12.4	10.9	91	215 / 25			
6002	816	9.8	9.4	97	215 / 28			
6036	815	10.0	8.3	89				
6205	810	11.6	-2.4	38				
6580	799	12.4	-12.6	16				
6891	790	12.4	-14.6	14		LGT		
7000	787				205 / 24	L-M		
8000	759				220 / 29	LGT		
9000	731				225 / 26			
9276	724	10.0	-33.0	3		LGT		
10191	700	8.6	-27.4	6	235 / 31	L-M		
11000	679				250 / 34	LGT		
12000	655				245 / 35			
12311	647	5.4	-40.6	2				
14000	607				250 / 37			
14183	603	1.4	-41.6	2				
16000	562				255 / 35			
16676	548	-5.3	-40.3	4		LGT		
19011	500	-10.9	-42.9	5	260 / 44			

Figure 8 - Slidell sounding parameters

4.0 Satellite Data

The Geostationary Operational Environmental Satellite number 13 (GOES-13) data was obtained from an archive at the Space Science Engineering Center (SSEC) at the University of Wisconsin-Madison (UW) in Madison, Wisconsin, and processed using the Safety Board's Man-computer Interactive Data Access System (McIDAS) software. The infrared long wave imagery (band 4) at a wavelength of 10.7 microns (μm) provided standard satellite image with radiative cloud top temperatures with a resolution of 4 km over the region during the period.

Figure 9 is the GOES-13 infrared image at 1945 CST at 2X magnification over the region, which depicted an extensive area of low stratiform clouds and/or fog over the gulf coast and extending northward over the Mobile Regional Airport. The radiative cloud top temperature over the accident site was 268° Kelvin or 12.86° C, which corresponded to cloud tops near 4,500 feet based on the Slidell sounding.

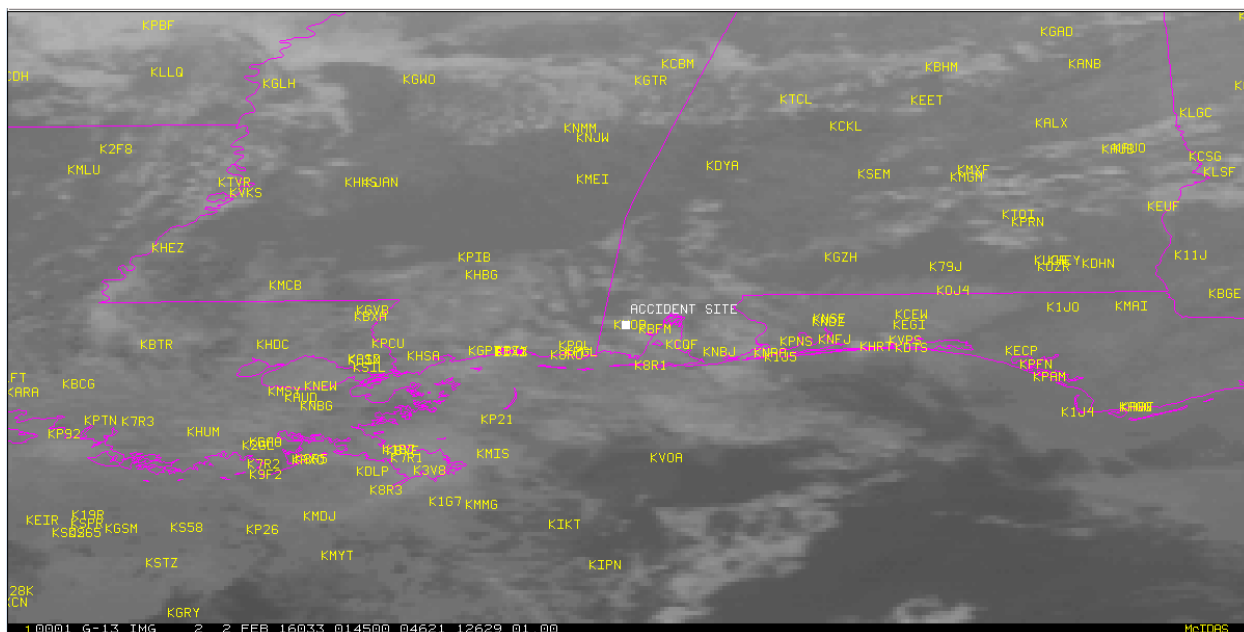


Figure 9 - GOES-13 infrared satellite image at 1945 CST

5.0 Pilot Reports

A search of pilot reports (PIREPs) over the area resulted in only one observation in the area during the period was as follows:

JKA UA /OV JKA/TM 2244/FL015/TP P68/WX FG/RM COASTAL FOG RIGHT ALONG THE BEACH

The report at 1644 CST over Jack Edward Airport (KJKA), Gulf Shores, Alabama, located approximately 40 miles southeast of the accident site reported coastal fog along the beach.

6.0 Terminal Aerodrome Forecast

The NWS Mobile/Pensacola Weather Forecast Office located at the airport was responsible for the issuance of the KMOB Terminal Aerodrome Forecasts (TAFs) during the period. The forecasts issued surrounding the period were as follows:

*TAF KMOB 011825Z 0118/0218 20007KT 5SM BR OVC005
 TEMPO 0118/0122 2SM -RA BR BKN004 OVC010
 FM020000 15007KT 2SM BR OVC004
 FM020600 15006KT 1/2SM FG OVC004
 FM021200 14009KT 1/4SM FG VCSH OVC004=*

*TAF KMOB 012328Z 0200/0224 18006KT P6SM SCT004 BKN017 OVC060
 TEMPO 0202/0206 1/2SM FG BKN004
 FM020600 15006KT 1/2SM FG OVC004
 FM021200 14009KT 1/4SM FG VCSH OVC004
 FM021800 16018G25KT 6SM BR OVC007=*

TAF AMD KMOB 020008Z 0200/0224 16005KT P6SM FEW004 SCT025
TEMPO 0202/0206 1/2SM FG BKN004
FM020600 15006KT 1/2SM FG OVC004
FM021200 14009KT 1/4SM FG VCSH OVC004

TAF AMD KMOB 020118Z 0201/0224 13007KT 1/2SM FG VV002
TEMPO 0201/0205 2SM BR BKN004
FM020500 15006KT 1/4SM FG OVC002
FM021200 14009KT 1/4SM FG VCSH OVC004
FM021800 16018G25KT 6SM BR OVC007=

The accident airplane departed from Louisiana Regional Airport (L38) at 1830 CST (0030Z) and may have used any of the earlier forecasts for preflight planning. Based on the latest forecast issued prior to the accident issued at 2318 CST (0118Z) the general forecast was for southeast winds at 7 knots, visibility 1/2 mile in fog, sky obscured with a vertical visibility or a ceiling at 200 feet agl, with temporary improvements to 2 miles in mist with a broken ceiling at 400 feet agl through 2300 CST.

7.0 NWS Area Forecast Discussion

The NWS public Area Forecast Discussion issued at 1610 CST describing the conditions over the area was as follows, an aviation section discusses the forecaster's consideration regarding the TAFs. The discussion was as follows:

FXUS64 KMOB 012210
AFDMOB

.
AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE MOBILE AL
410 PM CST MON FEB 1 2016

.NEAR TERM /NOW THROUGH TUESDAY/...FOR TONIGHT MAIN CONCERN LOOKS TO BE THE ONSET OF DENSE FOG ALONG THE IMMEDIATE COAST SPREADING INLAND EARLY THIS EVENING AND OVERNIGHT. DENSE FOG CONTINUES OVER THE NEAR SHORE WATERS OF ALABAMA AND WILL BEGIN TO FORM OVER THE NEAR SHORE WATERS OF NORTHWEST FLORIDA THEN SPREAD INLAND THROUGH THE EVENING AND THE OVERNIGHT HOURS. A DENSE FOG ADVISORY IS NOW IN EFFECT FOR THE IMMEDIATE COASTAL AREAS OF NW FL AND THE COASTAL AND CENTRAL LOCATIONS OF MOBILE AND BALDWIN CO'S IN AL. FOR REMAINING AREAS EXPECT MOSTLY CLOUDY SKIES WITH PATCHY FOG FORMING LATE POSSIBLY BECOMING LOCALLY DENSE AT TIMES NEAR SUNRISE. WILL CONTINUE TO MONITOR THE FOG CLOSELY AND EXTEND THE ADVISORY FURTHER INLAND IF NECESSARY. FOR TUE MAIN UPPER TROF TO THE WEST SHIFTS EASTWARD TO THE CENTRAL PLAINS AND WEST TEXAS WITH A STRONG IMPULSE IN THE MID LEVELS MOVING NE TO THE CENTRAL AND UPPER PLAINS JUST EAST OF THE TROF AXIS.

AT THE SURFACE A BROAD AREA OF LOW PRESSURE MOVES NE JUST EAST OF THE MID LEVEL IMPULSE WITH A STRONG SURFACE COLD FRONT STRETCHING WELL SOUTH MOVING TO THE TX GULF COAST BY MIDDAY TUE THEN MOVING EASTWARD ACROSS NORTH CENTRAL GULF STATES THROUGH TUE NIGHT. AHEAD OF THE FRONT A WELL DEFINED 45 TO 55 H8 JET IS NOTED MOVING INTO PARTS SE MS AND EXTREME WESTERN SW AL BY MID TO LATE AFTERNOON THEN SHIFTING

FURTHER EASTWARD INTO THE EVENING AND OVERNIGHT HOURS, AS A RESULT STILL EXPECTING SCATTERED TO NUMEROUS SHOWERS WITH ISOLATED THUNDERSTORMS MOVING INTO WESTERN PARTS OF THE FORECAST AREA BY TUE AFTERNOON WITH THE THREAT OF FEW STRONG TO SEVERE THUNDERSTORMS POSSIBLE WELL AHEAD OF THE MAIN SQUALL LINE MOVING ACROSS INTO WESTERN PARTS OR GENERALLY WEST OF A LINE FROM WIGGINS MS TO CAMDEN AL. DAMAGING STRAIGHT LINE WINDS AND ISOLATED TORNADOES WILL BE THE MAIN THREAT. MODEL CAPES IN THE THESE AREAS INCREASE TO ABOUT 800 J/KG WITH 0-3KM HELICITY VALUES RANGING FROM 200 TO 300 M2/S2.

.AVIATION...

18Z ISSUANCE...MOSTLY IFR TO LIFR CIGS AND VISIBILITIES THROUGH 02/18Z. LOW CEILINGS AND FOG MOSTLY FROM WARM AIR ADVECTING NORTH OVER THE COOLER NEAR SHORE WATERS RESULTING IN WIDESPREAD LOW STATUS AND FOG THROUGH TUESDAY AHEAD OF A SURFACE COLD FRONT APPROACHING FROM THE WEST. SHOWERS AND THUNDERSTORMS ARE EXPECTED AHEAD OF THE FRONT BY TUE AFTERNOON CONTINUING THROUGH TUE NIGHT...SOME POSSIBLY STRONG TO SEVERE. WINDS WILL CONTINUE FROM THE SOUTH AT 6 TO 12 KNOTS THROUGH 02.18Z WITH HIGHER GUSTS TUE AFTERNOON AND TUE NIGHT. 32/EE.

.MOB WATCHES/WARNINGS/ADVISORIES...

AL...DENSE FOG ADVISORY UNTIL 8 AM CST TUESDAY FOR ALZ263>266.

FL...DENSE FOG ADVISORY UNTIL 8 AM CST TUESDAY FOR FLZ202-204-206.

MS...NONE.

GM...DENSE FOG ADVISORY UNTIL 8 AM CST TUESDAY FOR GMZ633>635-655.

FXUS64 KMOB 020040

AFDMOB

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE MOBILE AL

640 PM CST MON FEB 1 2016

.DISCUSSION...UPDATED FOR LATEST AVIATION DISCUSSION BELOW.

.AVIATION...

00Z ISSUANCE...CEILINGS AND VISIBILITIES EXPECTED TO AGAIN DROP INTO THE LIFR CATEGORY TONIGHT. EXPECT SOME IMPROVEMENT BY MID MORNING BUT DON'T EXPECT TO SEE MUCH IN THE WAY OF VFR...MORE LIKE IFR AND MVFR CEILINGS SHOULD BE THE RULE TOMORROW WITH GUSTY SOUTH TO SOUTHEASTERLY SURFACE WINDS. SHOWERS AND TSTMS WILL BEGIN MOVING INTO SOUTHEAST MISSISSIPPI BY LATE AFTERNOON TOMORROW. /08

8.0 Area Forecast

The Area Forecast (FA) is a forecast of visual Flight Rules (VFR) clouds and weather conditions over an area as large as the size of several states. It must be used in conjunction with the AIRMET Sierra (IFR) bulletin for the same area in order to get a complete picture of the weather. The area forecast together with the AIRMET Sierra bulletin are used to determine forecast enroute weather and to interpolate conditions at airports which do not have a terminal forecast (TAF) issued. The NWS Aviation Weather Center (AWC) located in Kansas City, Missouri, issues the FA at regular intervals and issues specials reports as necessary usually in the form of an AIRMET. The Dallas-Fort Worth (KDFW) regional forecast that was current at the

time of the accident was issued at 1345 CST and valid through 0200 CST on February 2, 2016. The forecast was as follows:

*FAUS44 KPCI 011945
FA4W
DFWC FA 011945
SYNOPSIS AND VFR CLDS/WX
SYNOPSIS VALID UNTIL 021400
CLDS/WX VALID UNTIL 020800...OTLK VALID 020800-021400
OK TX AR TN LA MS AL*

*.
SEE AIRMET SIERRA FOR IFR CONDS AND MTN OBSCN.
TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS.
NON MSL HGTS DENOTED BY AGL OR CIG.*

*.
SYNOPSIS...20Z OCFNT SE CO-TX PNHDL. CDFNT TX PNHDL-SE NM-FAR W TX.
WRMFNT TX PNHDL-NERN TX-SE AR-NW GA-E TN. 14Z WRMFNT CNTRL MO-E TN.
CDFNT CNTRL MO-SW LA. STNR FNT CNTRL LH-E LS-CNTRL MN-E CNTRL MT.*

*.
LA
N-CNTRL-SW...BKN030 TOP 080. 03Z VIS 3-5SM BR. OTLK...IFR CIG SHRA BR.
SE...BKN020 TOP 140. ISOL -SHRA. BECMG 0003 BKN010. VIS 3-5SM BR. OTLK...IFR CIG FG.*

*.
MS
N HLF...BKN030 TOP 100. ISOL -SHRA. OTLK...IFR CIG BR.
S HLF...BKN020 TOP 080. 03Z BKN015. VIS 3SM BR. OTLK...IFR CIG BR FG.*

*.
AL
N HLF...BKN030 LYRD FL250. ISOL -SHRA. 03Z VIS 3-5SM BR. OTLK...IFR CIG BR.
S HLF...BKN030 TOP 100. 03Z VIS 3-5SM BR. OTLK...IFR CIG BR.*

....

The forecast for the route of flight expected ceilings broken at 2,000 to 3,000 feet with tops to 10,000 to 14,000 feet, with ceilings lowering and visibility dropping after 1800 to 0100 CST to broken at 1,000 feet and visibility 3 to 5 miles in mist. The forecast was amended by AIRMET Sierra series for IFR conditions.

9.0 In-Flight Weather Advisories

The NWS issues in-flight weather advisories designated as Severe Weather Forecast Alerts (AWW's), Convective SIGMET's (WST's), SIGMET's (WS's), Center Weather Advisories (CWA's), and AIRMET's (WA's). In-flight advisories serve to notify en route pilots of the possibility of encountering hazardous flying conditions, which may not have been forecast at the time of the preflight briefing. Whether or not the condition described is potentially hazardous to a particular flight is for the pilot to evaluate on the basis of experience and the operational limits of the aircraft.

During the period the only operational advisory issued was AIRMET Sierra series for IFR conditions over the region. The advisories current at the time are as follows with figure 10 the graphic advisory:

WAUS44 KKKI 012045

2016032 2042

WA4S

DFWS WA 012045

AIRMET SIERRA UPDT 6 FOR IFR AND MTN OBSCN VALID UNTIL 020300

AIRMET IFR...TX AR LA MS AL AND CSTL WTRS

FROM 50ENE TTT TO 20NE EIC TO 40SE MLU TO 20ESE LGC TO 50SW PZD TO 40W CEW
TO 90SSE SJI TO 50SE LEV TO 70SE LCH TO 70ESE PSX TO 50S CRP TO 20N SAT TO CWK
TO 30WSW TTT TO 50ENE TTT

CIG BLW 010/VIS BLW 3SM BR. CONDS CONTG BYD 03Z THRU 09Z.

AIRMET IFR...TN MS AL

FROM 40SE BWG TO HNV TO GQO TO 30NE MSL TO 40S MSL TO 40N IGB TO 40S DYR
TO 40WNW BNA TO 40SE BWG

CIG BLW 010/VIS BLW 3SM PCPN/BR. CONDS CONTG BYD 03Z THRU 09Z.

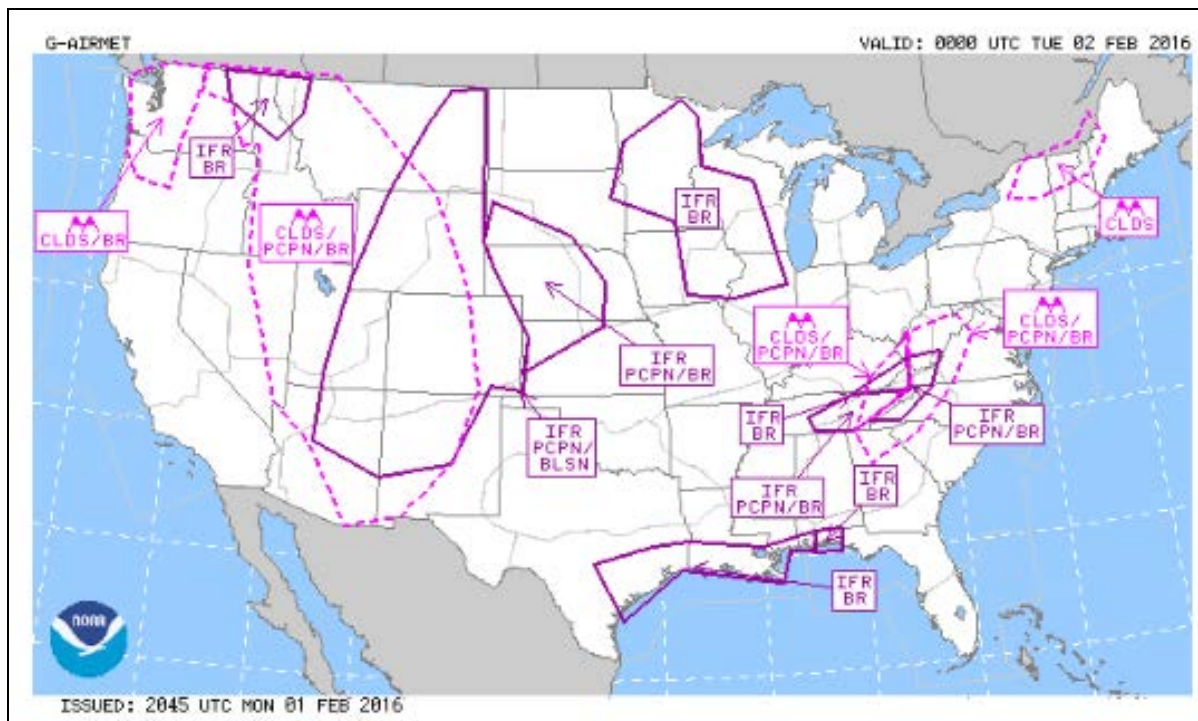


Figure 10 - G-AIRMET Sierra for IFR conditions current at 1800 CST

10.0 Winds and Temperature Aloft Forecast (FD)

The NWS Winds and Temperature Aloft Forecast current for the route of flight were as follows:

WINDS ALOFT FORECASTS

DATA BASED ON 011800Z

VALID 020000Z FOR USE 2000-0300Z. TEMPS NEG ABV 24000

FT	3000	6000	9000	12000	18000	24000	30000	34000	39000
MOB	2010	2015+11	2425+09	2433+05	2742-12	2652-23	277837	268441	267747

11.0 Preflight Weather Briefing

A search of the Lockheed Automated Flight Service Station (AFSS) and Direct Users Access Terminal Service (DUATS) indicated no record of any briefing through their services. Lockheed AFSS was able to determine that the pilot received their weather information through an online service “Seattleavionics.com”, which provided them weather in the cockpit capability. The pilot also had a ForeFlight account and a weather briefing was noted at 0945 CST. No other briefings were noted after that period. It is likely therefore unknown, what updated information the pilot may have obtained for the return flight back to the Mobile area.

12.0 Astronomical Data

The United States Naval Observatory website provided the following astronomical data for Mobile, Mobile County, Alabama on February 1, 2016:

Beginning of civil twilight	0619 CST
Sunrise	0644 CST
Moonset	1145 CST
Sunset	1728 CST
End of civil twilight	1753 CST
Accident	1945 CST
Moonrise	0119 CST

At the time of the accident both the Sun and Moon were more than 15° below the horizon and dark nighttime conditions existed.

Submitted by:

Donald Eick
NTSB Senior Meteorologist