NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

October 23, 1995

WEATHER GROUP
CHAIRMAN'S FACTUAL REPORT

A. ACCIDENT

Location: Carrollton, Georgia

Date: August 21, 1995

Time: 1253 Eastern Daylight Time (1653 UTC)[1]

Aircraft: Atlantic Southeast (ASE) 529, Embraer EMB120, N256AS

NTSB No: DCA-95-MA-054

B. WEATHER GROUP

Chairman: James T. Skeen, Jr., NTSB
Washington, D.C.

Members: None

C. SUMMARY

On August 21, 1995, at about 1253 eastern daylight time, an Embraer EMB-120RT, N256AS, airplane, operated by Atlantic Southeast Airlines (ASA) crashed after departing the Atlanta Hartsfield International Airport (ATL), Atlanta, Georgia. The flight was a scheduled passenger flight carrying 26 passengers and a crew of three operating under the provisions of Title 14 Code of Federal Regulations (CFR) Part 135. The flight was operating in accordance with instrument flight rules (IFR). While climbing through 18,000 feet, the flightcrew declared an emergency and initially attempted to return to Atlanta. The pilots advised they were unable to maintain altitude and were vectored toward West Georgia Regional Airport, Carrollton, Georgia, for an emergency landing. The airplane continued descent until ground impact. The airplane was destroyed by impact forces and postcrash fire. The captain and seven passengers received fatal injuries.

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[1]All times used herein are eastern daylight time, unless otherwise specified, based on the 24-hour clock.

D. DETAILS OF THE INVESTIGATION

1. Surface Weather Observations[2]

Surface weather observations, in part, follow for the specified locations and times:

Atlanta Hartsfield International Airport (ATL), GA
located approximately 084 degrees at 40 nautical miles from the accident location; field elevation 1,026 feet; Automated Surface Observing System (ASOS)-augmented

Type--Record; time--1146; clouds--measured ceiling 400 feet variable broken 800 feet broken 1,700 feet overcast; visibility--2 miles; weather--light rain fog; temperature--73 degrees F; dew point--73 degrees F; wind--110 degrees at 3 knots; altimeter--30.08 inches hg; remarks--ceiling 100 feet variable 600 feet surface visibility 3 miles

Type--Record; time--1209; clouds--400 feet scattered measured ceiling 800 feet broken 2,900 feet overcast; visibility--2 miles; weather--light rain fog; temperature--73 degrees F; dew point--73 degrees F; wind--120 degrees at 4 knots; altimeter--30.08 inches hg; remarks--surface visibility 3 miles

Type--Record; time--1220; clouds--measured ceiling 400 feet broken 2,100 feet broken 3,100 feet overcast; visibility--2 miles; weather--moderate rain fog; temperature--73 degrees F; dew point--73 degrees F; wind--140 degrees at 5 knots; altimeter--30.08 inches hg; remarks--broken variable overcast

Type--Record special; time--1246; clouds--200 feet scattered measured ceiling 1,600 feet broken 3,400 feet overcast; visibility--2 miles; weather--light rain fog; temperature--73 degrees F; dew point--73 degrees F; wind--140 degrees at 3 knots; altimeter--30.08 inches hg; remarks--surface visibility 5 miles

Anniston Airport (ANB), AL
located approximately 271 degrees at 32 nautical miles from the accident location; field elevation 611 feet

Type--Record; time--1148; clouds--estimated ceiling 1,200

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[2]Heights in surface weather observations above ground level (AGL). All directions with reference to true north unless noted. All distances in statute miles unless noted.

feet broken; visibility--5 miles; weather--haze; temperature--83 degrees F; dew point--73 degrees F; wind--060 degrees at 6 knots; altimeter--30.04 inches hg

Type--Special; time--1220; clouds--estimated ceiling 1,500 feet broken; visibility--5 miles; weather--haze; wind--040 degrees at 6 knots; altimeter--30.04 inches hg

Type--Record; time--1252; clouds--estimated ceiling 1,500 feet broken; visibility--5 miles; weather--haze; temperature--87 degrees F; dew point--73 degrees F; wind--050 degrees at 5 knots; altimeter--30.02 inches hg

Fulton County Airport-Brown Field (FTY), GA
located approximately 071 degrees at 37 nautical miles from the accident location; field elevation 841 feet

Type--Record; time--1151; clouds--800 feet scattered measured ceiling 1,400 feet broken 2,800 feet overcast; visibility--2 1/2 miles; weather--light rain fog; temperature--71 degrees F; dew point--70 degrees F; wind--estimated 180 degrees at 4 knots; altimeter--30.09 inches hg

Type--Special; time--1215; clouds--measured 900 feet broken 2,100 feet overcast; visibility--2 1/2 miles; weather--light rain fog; wind--estimated 180 degrees at 5 knots; altimeter--30.09 inches hg; remarks--surface visibility 3 miles

Type--Record; time--1248; clouds--measured 900 feet variable overcast; visibility--2 1/2 miles; weather--light rain fog; temperature--73 degrees F; dew point--71 degrees F; wind--estimated 200 degrees at 4 knots; altimeter--30.08 inches hg; remarks--ceiling 700 feet variable 1,100 feet

The West Georgia Regional Airport (CTJ) at Carrollton, Georgia, owned and operated an Automated Weather Observing System-3 (AWOS-3). The CTJ AWOS-3 observations were not transmitted long-line through the National Weather Service (NWS) and Federal Aviation Administration (FAA) weather communication networks. Following, in part, are the reported CTJ AWOS-3 observations around the accident time. These observations were supplied by the system's manufacturer (see attachment one):

West Georgia Regional Airport (CTJ), GA
located approximately 046 degrees at 4 nautical miles from the accident location; field elevation 1,160 feet; AWOS-3-unaugmented

Type--AWOS-3; time--1141; clouds--800 feet overcast; visibility--10 miles; temperature--76 degrees F; dew point--74 degrees F; wind--140 degrees at 2 knots; altimeter--30.08 inches hg; density altitude--2,300 feet

Type--AWOS-3; time--1201; clouds--800 feet overcast; visibility--10 miles; temperature--75 degrees F; dew point--74 degrees F; wind--150 degrees at 4 knots; altimeter--30.08 inches hg; density altitude--2,300 feet

Type--AWOS-3; time--1221; clouds--600 feet overcast; visibility--10 miles; temperature--76 degrees F; dew point--75 degrees F; wind--140 degrees at 4 knots; altimeter--30.09 inches hg; density altitude--2,300 feet

Type--AWOS-3; time--1241; clouds--600 feet overcast; visibility--10 miles; temperature--76 degrees F; dew point--75 degrees F; wind--130 degrees at 2 knots; altimeter--30.08 inches hg; density altitude--2,300 feet

Type--AWOS-3; time--1301; clouds--800 feet overcast; visibility--10 miles; temperature--76 degrees F; dew point--75 degrees F; wind--150 degrees at 6 knots; altimeter--30.08 inches hg; density altitude--2,400 feet

During the on-scene phase of the accident investigation, the Weather Group Chairman interviewed an employee at CTJ who was on duty at the time of the accident. The employee recalled that the prevailing visibility at the airport was 3-5 miles in haze around the accident time.

2. Radar Observations

A Weather Surveillance Radar-88 Doppler (WSR-88D) was located at the NWS Forecast Office (FFC) in Peachtree City, Georgia. FFC is approximately 112 degrees at 35 nautical miles from the accident site. Radar data described below cover the period from declaration of the in-flight emergency to just after the accident time.

Attachment two depicts base reflectivity from the FFC WSR-88D for 1241. The antenna elevation angle was 0.5 degree, and the center of the radar beam at the accident site was approximately 3,640 feet mean sea level (MSL). State and county boundaries and major population centers were placed on the image. In addition, a polar grid with 30 nautical mile by 30 degree increments was superimposed on the product. A color scale is found on the image depicting a range of reflectivity values from no data to 75 dBZ. The color white (no data) is shown over Carroll County. Shades of blue (corresponding to 5-15 dBZ) is depicted in Randolph County, Alabama, centered approximately 270 degrees at 40 nautical miles from the FFC

radar.

Attachment three depicts base reflectivity from the FFC WSR-88D for 1247. The antenna elevation angle was 0.5 degree, and the center of the radar beam at the accident site was approximately 3,640 MSL. State and county boundaries and major population centers were placed on the image. In addition, a polar grid with 30 nautical mile by 30 degree increments was superimposed on the product. A color scale is found on the image depicting a range of reflectivity values from no data to 75 dBZ. The color white (no data) is shown over Carroll County. Shades of blue (corresponding to 5-15 dBZ) is depicted in Randolph County, Alabama, centered approximately 270-275 degrees at 40 nautical miles from the FFC radar.

The Center Weather Service Unit (CWSU) located at the Federal Aviation Administration's (FAA) Atlanta Air Route Traffic Control Center (ARTCC) in Hampton, Georgia, monitors weather conditions over the ARTCC and provides consultation and advice to Center personnel. The CWSU utilizes, in part, a radar mosaic composed of near real-time weather radar data covering the southeastern United States.

Attachment four shows a radar mosaic depicting radar echoes affecting the Atlanta ARTCC for 1255. The resolution of the mosaic radar data was two kilometers. ARTCC boundaries, selected airports, and major airways were superimposed on the image. WSR-88D locations are delineated by crosses. A color scale is found on the image depicting a range of reflectivity from 5 dBZ to 75 dBZ. No radar reflectivity returns are shown in the accident area. Shades of blue and light green (corresponding to 5-20 dBZ) is depicted in the Randolph County area.

Attachment five depicts a Birmingham WSR-88D Echo Tops product obtained from the Atlanta ARTCC CWSU for 1253. The resolution of the product was 4 kilometers X 4 kilometers. ARTCC boundaries, selected airports, and major airways were superimposed on the image. A color scale is found on the image depicting a range of echo tops heights at 5,000 feet intervals from ND (no data) to 70,000 feet. No echo tops are shown in the accident area. Shades of blue (corresponding to 5,000-15,000 feet) are depicted in the Randolph County area.

Attachment six depicts a FFC Echo Tops product obtained from the Atlanta ARTCC CWSU for 1258. The resolution of the product was 4 kilometers X 4 kilometers. ARTCC boundaries, selected airports, and major airways were superimposed on the image. A color scale is found on the image depicting a range of echo tops heights at 5,000 feet intervals from ND (no data) to 70,000 feet. No echo tops are shown in the accident area.

Shades of blue (corresponding to 5,000-15,000 feet) are depicted in the Randolph County area.

3. Winds and Temperatures Aloft

The nearest rawinsonde site to the accident location was located at FFC. The following are portions of the interpolated Peachtree City rawinsonde soundings for 0800 and 2000 obtained through the Man computer Interactive Data System (McIDAS) at the University of Wisconsin, Madison, Wisconsin, using a Safety Board McIDAS work station:

0800 (1200 UTC)

Altitude (msl-ft)	Direction (true)	Speed (kts)	Temperature (°C)	Dew Point (°C)
1,000	160	7	22.1	21.6
2,000	205	14	20.6	19.9
3,000	200	14	19.1	18.3
4,000	205	14	17.8	16.9
5,000	215	10	16.4	15.4
6,000	230	8	15.0	14.0
7,000	255	8	13.6	12.5
8,000	245	6	12.2	11.1
9,000	225	4	10.8	9.6
10,000	218	4	9.3	8.2
11,000	217	4	7.9	6.7
12,000	225	2	6.5	5.3
13,000	288	0	5.1	3.9
14,000	325	2	3.7	2.5
15,000	325	2	2.3	1.1
16,000	325	2	0.9	-0.3
17,000	322	2	-0.7	-1.8
18,000	320	2	-2.3	-3.5

2000 (0000 UTC)

Altitude (msl-ft)	Direction (true)	Speed (kts)	Temperature (°C)	Dew Point (°C)
1,000	073	2	25.5	23.6
2,000	113	6	23.4	21.8
3,000	149	8	22.6	18.3
4,000	159	8	20.8	16.2
5,000	169	8	18.7	14.7
6,000	164	6	16.8	13.7
7,000	154	4	14.9	12.8
8,000	138	4	13.0	11.9
9,000	123	2	11.3	10.6
10,000	114	0	9.8	9.1

11,000	088	0	8.5	7.3
12,000	080	2	7.3	5.3
13,000	072	2	5.9	2.9
14,000	061	4	4.0	0.6
15,000	051	4	2.1	0.4
16,000	041	6	0.6	-2.9
17,000	030	6	-0.4	-12.5
18,000	020	6	-2.6	-7.3

4. Pilot Reports (PIREPs)

An Air Traffic Control (ATC) transcript revealed that the crew of N256AS reported that they were visual flight rules (VFR) at nineteen hundred feet[3] about two minutes before the accident.

A traffic reporter and his helicopter pilot stated in NTSB interviews that they arrived at the accident site about 1400. They declared that the weather conditions in the Atlanta area were not very good, but were considerably better west of the city. The pilot estimated scattered clouds at about 1,500 feet and a broken ceiling at around 2,500 feet. Visibility was estimated at 3-5 miles in haze.

A pilot from the Georgia State Police stated in a NTSB interview that he arrived at the accident site about two hours after the accident. Cloud bases in vicinity of the accident location were 1,800-2,000 feet MSL. The visibility was 3-4 miles in haze. Winds were calm.

Archived PIREPs

Following are pertinent transmitted PIREPs obtained from the NWS archive:

Location--La Grange, time--0906, altitude--21,000 feet, type aircraft--Piper Seneca, sky condition--overcast tops 23,000 feet, temperature--minus 17 degrees Celsius, wind--210 degrees at 22 knots, icing--light to moderate clear.

Location--Rome, time--0944, altitude--5,500 feet, type aircraft--Cessna C182, sky condition--1,000 feet overcast tops 3,000 feet, turbulence--negative.

Location--Rome, time--1010, altitude--1,100 feet, type aircraft--unknown, remarks--during descent cloud base 1,100 feet above ground level.

[3]The altimeter of N256AS was set at 29.92 inches.

Location--Atlanta (Fulton County) to Gadsen, time--1036, altitude--8,000 feet, time aircraft--Beech BE55, sky condition--overcast tops 6,500 feet, weather--heavy rain showers until 6,000 feet.

Location--Anniston, time--1123, altitude--during descent, type aircraft--Beech BE99, sky condition--1,900 feet broken tops 3,500 feet.

5. Satellite Imagery

Visual and infrared GOES-8 (Geostationary Operational Environmental Satellite-8) imagery was obtained from McIDAS using a Safety Board McIDAS work station. Resolution of the visual data was 1 kilometer, and resolution of the infrared imagery was 4 kilometers.

Attachment seven shows a contrast-stretched visual image for the nominal time of 1245. State boundaries were overlaid on the image. The FAA NTAP (National Track Analysis Program) data during the period from 12:41:32 to 12:50:58 were plotted on the image. CTJ and the accident location were delineated by a circle and a star, respectively. In addition, the cursor indicated the approximate location where the propeller separated from the airplane.

Attachment eight portrays a 2X blow-up of attachment seven.

Infrared data for the nominal time of 1245 indicated that the minimum radiative temperatures in the area centered approximately 40-45 nautical miles west of FFC were around 6-7 degrees Celsius.

6. NWS Aviation Forecast and Advisories

Terminal Forecast (FT) - The FT for ATL is prepared by FFC. Following is the FT for ATL valid at the accident time:

ATL FT Amendment
Issued August 21, 1053
Valid August 21, 1100 to August 22, 0400
400 feet scattered ceiling 2,000 feet overcast, visibility 3 miles with light rain and fog, wind 150 degrees at 6 knots; occasional ceiling 400 feet overcast, visibility 1 mile with moderate rain showers and fog.
1200 800 feet scattered ceiling 2,000 feet broken, wind 140 degrees at 7 knots; occasional 2,000 feet scattered ceiling 3,500 broken, visibility 3 miles with light rain showers.
1400 Ceiling 4,000 feet broken, wind 100 degrees at 8 knots, thunderstorm moderate rain shower vicinity.

August 22, 0000 3,500 feet scattered 8,000 feet scattered ceiling 25,000 feet broken.

The scheduled FT for ATL valid beginning at 1300 follows:

ATL FT
Issued August 21, 1238
Valid August 21, 1300 to August 22, 1300
500 feet scattered ceiling 2,500 feet overcast, visibility 4 miles with light rain and fog, wind 120 degrees at 7 knots, thunderstorm vicinity; occasional ceiling 500 feet broken, visibility 2 miles with moderate rain showers and fog.
1500 Ceiling 3,500 feet broken, wind 120 degrees at 7 knots, thunderstorm vicinity; occasional ceiling 1,500 feet broken, visibility 3 miles with moderate rain showers.
1900 Ceiling 4,000 feet broken, wind 120 degrees at 7 knots; chance moderate rain showers/thunderstorm with moderate rain showers.
2300 3,000 feet scattered 8,000 feet scattered ceiling 25,000 feet broken, wind 100 degrees at 6 knots; occasional visibility 5 miles with fog.
August 22, 0500 1,500 feet scattered, visibility 5 miles with fog; occasional partial obscuration, ceiling 1,500 feet broken, visibility 2 miles with fog.

Aviation Area Forecast (FA) - FAs are prepared by the National Aviation Weather Advisory Unit (NAWAU) at Kansas City, Missouri. Following are applicable portions of the valid FA in effect for Georgia:

Issued August 21, 0445
Synopsis and VFR Clouds/Weather
Synopsis valid until August 21, 2300
Clouds/Weather valid until August 21, 1700...Outlook valid August 21, 1700 2300
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Synopsis...Dissipating frontal system extends from Atlantic across coastal sections of South Carolina across western South Carolina and western North Carolina. At 0500 Tropical Storm Felix was over Atlantic about 520 miles southwest of Sable Island, Nova Scotia moving northeast at 13 knots. See latest advisory from National Hurricane Center.
.
North Carolina South Carolina Georgia
Northwest of Greensboro-Atlanta line...ceilings 1,500-2,500 feet broken-overcast layered to 20,000 feet...cirrus above. Visibilities 3-5 miles fog and haze. Widely scattered light rain showers/isolated

thunderstorms with moderate rain showers...cumulonimbus top to 35,000 feet...lowering ceilings/visibilities 1,000 feet overcast/3-5 miles. 1400-1700..becoming 3,000 feet broken. Widely scattered thunderstorms with moderate rain showers...cumulonimbus tops to 40,000 feet. Outlook...VFR.
Rest of North Carolina/South Carolina/Georgia...above ground level 2,000-3,000 feet scattered 10,000 feet scattered with scattered-broken cirrus above. Occasional visibilities 3-5 miles fog until 1000. 1000-1300...becoming 3,000-5,000 feet broken 10,000-12,000 feet broken tops 20,000...cirrus above. 1300-1700... becoming widely scattered thunderstorms with moderate rain showers...cumulonimbus tops to 40,000 feet. Outlook...VFR.
.

AIRMETs - AIRMETs are in-flight advisories prepared by the NAWAU.

No AIRMETs for turbulence or icing were valid for the Carrollton area at the accident time. Following is the text of the valid AIRMET SIERRA for IFR and mountain obscuration:

Issued: August 21, 1210
AIRMET SIERRA Update 4 for IFR and mountain obscuration valid until August 21, 1600
.
AIRMET IFR...North Carolina South Carolina Georgia...update
From Tri-Cities, Tennessee to 80 miles east Tri-Cities, Tennessee to Charlotte, North Carolina to 60 miles southwest Atlanta, Georgia to Chattanooga, Tennessee to Tri-Cities, Tennessee
Occasional ceilings/visibilities below 1,000 feet/3 miles in stratus/fog. Conditions ending North Carolina portions 11-12...ending South Carolina Georgia portions 1300-1600.
.
AIRMET Mountain Obscuration...North Carolina South Carolina Georgia...update
From Tri-Cities, Tennessee to 40 miles northwest Greensboro, North Carolina to Anderson, South Carolina to Atlanta, Georgia to Chattanooga, Tennessee to Tri-Cities, Tennessee
Mountains occasionally obscured in clouds fog precipitation. Conditions ending 2000-2300.
...

See attachment 9 for an areal depiction of the IFR conditions specified in AIRMET SIERRA Update 4. The AIRMET boundaries are plotted on a contrast-stretched visual image

for the nominal time of 1245. The cursor is located at the accident coordinates.

Non-Convective SIGMETs - None valid for accident area.

Convective SIGMETs - None valid for accident area.

Center Weather Advisories - None valid for accident area.

Meteorological Impact Statement (MIS) - The MIS is prepared by NWS CWSUs and designed for FAA planning and flow control purposes. The following MIS was prepared by the CWSU located in the Atlanta Air Route Traffic Control Center:

> Issued: August 21, 1151
> Atlanta ARTCC MIS 01 valid August 21, 1150-2345
> From 25 miles east Muscle Shoals, Alabama to Macon, Georgia to Alma, Georgia to 40 miles north Mobile, Alabama to 25 miles east Muscle Shoals, Alabama
> Scattered area level 3-5 thunderstorms with tops 35,000-45,000 feet developing by 1400. Thunderstorms moving from 010 degrees at 10 knots. Clusters/lines may form along trough axis from west central Georgia to south central Alabama.

James T. Skeen. Jr.
Weather Group Chairman

Attachments

AS-30
10-21-95