



National Transportation Safety Board

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

December 10, 2012

WEATHER STUDY

DCA13RA025

A. ACCIDENT

Location: Monterrey, Mexico
Date: December 9, 2012
Time: 0333 central standard time (0933 UTC¹)
Aircraft: Learjet 25, registration N345MC

B. METEOROLOGICAL SPECIALIST

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C. SUMMARY

On December 9, 2012, at 0333 Central Standard Time, a Learjet 25, N345MC, crashed in mountainous terrain at an elevation of about 5,600 feet above mean sea level approximately 70 miles south of Monterrey, Mexico. The flight departed General Mariano Escobedo International Airport (MMMY), Monterrey, Nuevo Leon, Mexico at 0319 and was enroute to Lic. Adolfo Lopez Mateo International Airport (MMTO), Toluca, Estado de Mexico, Mexico. The two crew members and five passengers on board were fatally injured and the aircraft was destroyed.

D. DETAILS OF 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

¹ UTC – is an abbreviation for Coordinated Universal Time.

including the National Climatic Data Center (NCDC). 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.

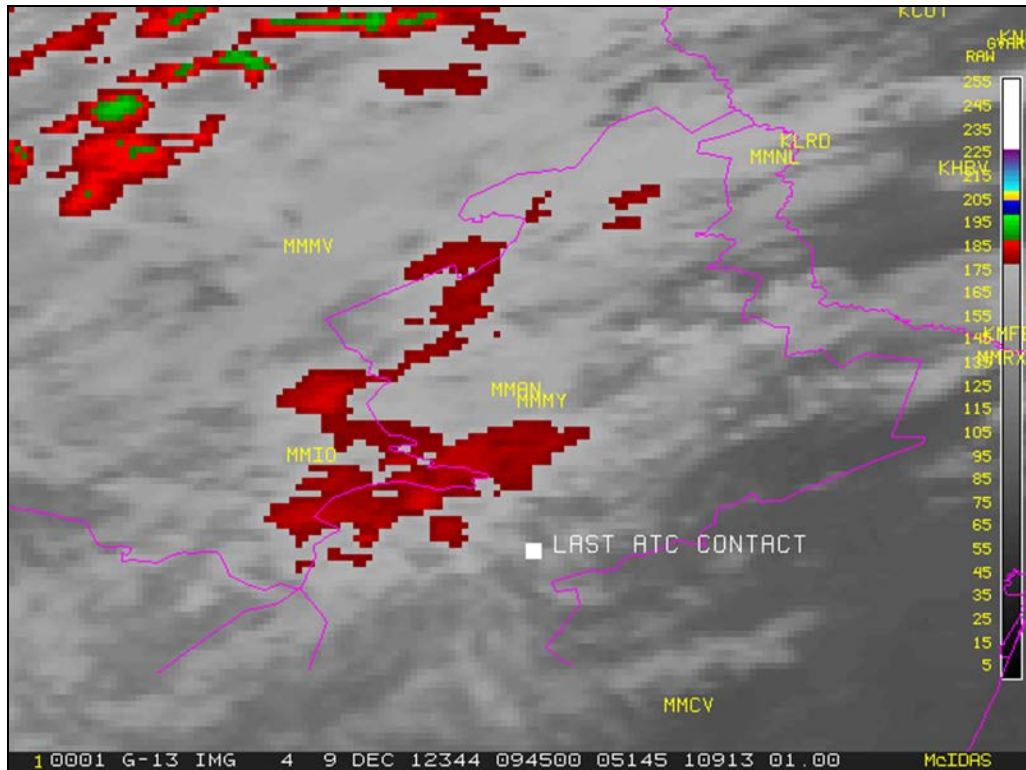
1.0 Observations

Monterrey Airport (MMAN) had limited weather reporting capability during the early morning period and did not have any reported observations between 0540Z and 1257Z. The observations surrounding the period indicate broken to overcast clouds with visibility restricted in mist and haze. The reports were as follows:

*METAR MMAN 090540Z 00000KT 7SM BKN040 19/15 A2989 RMK SLP096 52003 922 8/500 HZY=
Accident 0940Z
METAR MMAN 091257Z RTD 00000KT 3SM BR HZ SCT030 OVC070 16/15 A2989 RMK 8/57/ RTS=
METAR MMAN 091340Z 00000KT 3SM BR HZ SCT025 BKN070 OVC200 17/16/A2991 RMK 8/572
METAR MMAN 091440Z 27006KT 3SM BR HZ SCT025 OVC070 17/16 A2992 RMK SLP096 5//// 953 8/57/
BINOVC*

2.0 Satellite Imagery

The GOES-13 infrared image at 0945Z is attached with a standard MB temperature enhancement curve applied. The satellite image depicted an extensive area of broken to overcast clouds extending over northern Mexico into Texas, with an area of enhanced clouds along the route between the departure airport and the accident site. The radiative cloud top temperature over the accident site was 256° Kelvin or -17.16° Celsius (C), which corresponded to cloud tops near 23,000 feet.

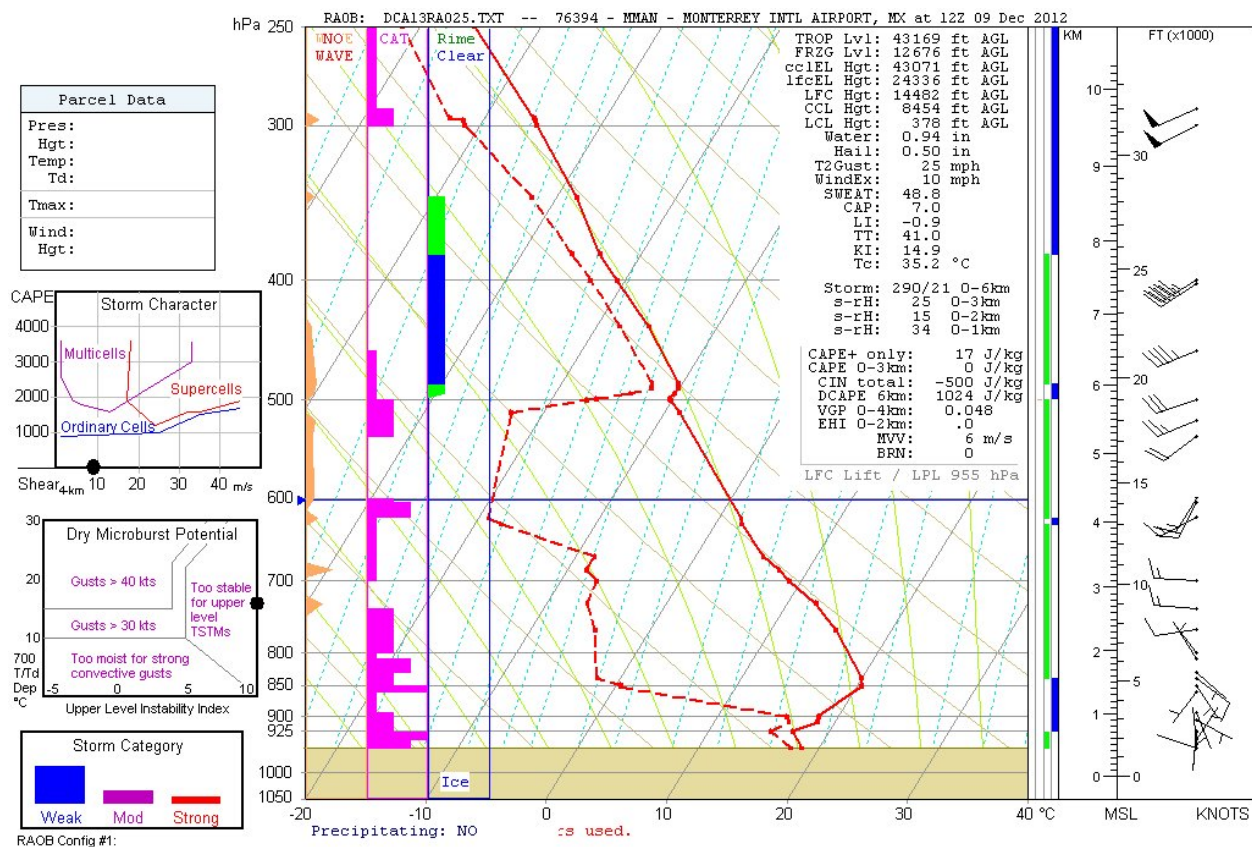


An animation of the satellite images surrounding the period depicted several bands forming normal to the wind which did not move downstream with time and were indicative of lenticular type clouds associated with mountain wave activity. One of the bands was identified in the immediate vicinity of the accident site. A review of the band 3 water vapor imagery did not depict any significant moisture channel darkening, which is often reported with significant turbulence events.

3.0 Sounding

The Monterrey sounding on December 9, 2012 at 1200Z is also attached. The sounding was conditionally unstable and supported low and middle layer altocumulus type clouds specifically between 20,000 and 29,000 feet. The freezing level was identified at 14,146 feet msl and is marked by a blue line on the sounding, the sounding supported icing in clouds through 29,000 feet. The sounding wind profile indicated light winds below 6,000 feet with west-southwesterly winds through the mean atmosphere. The tropopause was identified at 44,639 feet with the level of maximum winds in the stratosphere at 47,780 feet with a wind from 250° 72 knots.

The sounding wind profile supported the potential for mountain wave formation and the potential for light to moderate turbulence.



Best source is from Monterrey sounding from 1200Z. Sounding indicated the following winds:
Mean 0-6 km wind 245° 16kt, maximum wind 250/72KT at 47,778 feet.

Altitude (MSL)	Wind (true°/kts)	Temp (°C)	
2000	060/4KT	17.6	
3000	125/5KT	18.5	
4000	190/4KT	19.5	
5000	140/7KT	20.2	Top of inversion
6000		18.4	
7000	295/6KT	16.6	
8000	265/12KT	14.6	
9000	275/17KT	12.4	
10000	275/17KT	9.5	
11000	265/16KT	6.7	
12000	255/15KT	4.3	
13000	245/14KT	2.2	
14000	205/17KT	0.3	
15000	215/18KT	-1.8	
16000	220/20KT	-3.8	
17000	230/22KT	-5.9	

18000	245/24KT	-8.0
19000	250/32KT	-10.2
20000	250/37KT	-10.8
21000	245/43KT	-12.9
22000	245/45KT	-14.9
23000	240/46KT	-17.1
24000	240/47KT	-19.5
25000	235/47KT	-21.9
26000	235/48KT	-24.1
27000	240/48KT	-26.0
28000	240/49KT	-27.9
29000	240/50KT	-30.1
30000	240/50KT	-32.4

4.0 Forecasts

No TAF was issued for Monterrey (MMAN). The closest TAF was issued for Saltillo, Mexico (MMIO) located 71 miles northwest of the accident site and 48 miles southwest of Monterrey. The forecast expected broken conditions at 20,000 feet.

*TAF MMIO 090536Z 0906/1006 00000KT P6SM SCT200
 BECMG 0912/0913 17010KT
 FM091800 17015KT P6SM BKN200
 BECMG 1002/1003 20005KT SCT200.*

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