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Date: January 30, 2024
Subject: CEN24LA085 Weather Information
Contact: Don Eick, NTSB Meteorologist

The following information was collected in reference to CEN24LA085:

Observations

The accident occurred upon landing at San Marcos Regional Airport (KHYI), Austin, Texas, which has an elevation of 595 ft and has an Automated Weather Observation System (AWOS-3PT), which is augmented by tower personnel during normal operating hours under a Limited Aviation Weather Reporting System (LAWRS) agreement. Prior to the time of the accident the following conditions were being reported:

Weather observation for KHYI at 1656 CST, wind from 310° at 4 knots, visibility 9 miles in light rain, ceiling overcast at 1,100 ft agl, temperature 10°C, dew point 9°C, altimeter 30.05 inches of mercury (inHg). Remarks: automated weather observation system with a precipitation discriminator, lightning distant northwest through northeast, thunderstorm began at 1600 and ended at 1615 CST, pressure rising rapidly, sea-level pressure 1017.4-hPa, hourly precipitation 0.03 inches, temperature 10.0°C, dew point 9.4°C.

Special weather observation for KHYI at 1706 CST, wind from 310° at 12 knots gusting to 24 knots, visibility 9 miles, ceiling overcast at 900 ft agl, temperature 10° C, dew point 9°C, altimeter 30.09 inHg. Remarks: automated weather observation system with a precipitation discriminator, lightning distant north, rain ended at 1657 CST, ceiling 600 ft variable 1,100 ft.

Accident 1710 CST.

Special weather observation for KHYI at 1718 CST, wind from 300° at 13 knots, visibility 3 miles in moderate rain, ceiling overcast at 900 ft agl, temperature 10° C, dew point 9°C, altimeter 30.08 inHg. Remarks: automated weather observation system with a precipitation discriminator, wind shift at 1658 CST, lightning distant north and west, ceiling 600 ft variable 1,100 ft, hourly precipitation 0.07 inches (since 1656 CST).

Based on a review of the wind indicated that the wind went from a 4 knot tailwind component at 1656 to a 12 to 24 knot tailwind on the 1706 CST special report. Based on the previous hourly observation and a review of the conditions the runways were considered contaminated with water with 0.10 inches reported within the previous 3 hours. The Airport Facility Directory lists runway 13 as an asphalt runway, with no mention of being grooved. The general flight conditions and the observations disseminated surrounding the period were as follows:

MVFR METAR KHYI 021956Z 07007KT 10SM OVC019 11/08 A3009 RMK AO2 RAB22E55 SLP185 P0000 T01110083=

MVFR SPECI KHYI 022046Z 01004KT 10SM VCTS -RA OVC019 11/08 A3007 RMK AO2 TSB40RAB36 P0000=

IFR METAR KHYI 022056Z 04005KT 2 1/2SM +RA BR OVC019 11/09 A3005 RMK AO2 LTG DSNT SW TSB40E55RAB36 SLP174 P0004 60004 T01060089 56029=

IFR METAR KHYI 022156Z 07007KT 2 1/2SM -RA BR OVC015 10/09 A3004 RMK AO2 LTG DSNT N AND W SLP168 P0006 T01000089=

MVFR SPECI KHYI 022200Z 07008KT 10SM VCTS -RA OVC013 10/09 A3003 RMK AO2 LTG DSNT N AND W TSB00 P0000=

MVFR SPECI KHYI 022221Z 35005KT 10SM -RA OVC011 10/09 A3004 RMK AO2 LTG DSNT NE AND W TSB00E15 P0001=

MVFR METAR KHYI 022256Z 31004KT 9SM -RA OVC011 10/09 A3005 RMK AO2 LTG DSNT NW-NE TSB00E15 PRESRR SLP174 P0003 T01000094=

IFR SPECI KHYI 022306Z 31012G24KT 9SM OVC009 10/09 A3007 RMK AO2 LTG DSNT N RAE2257 CIG 006V011=

ACCIDENT 2310Z

IFR SPECI KHYI 022318Z 30013KT 3SM RA BR OVC009 10/09 A3008 RMK AO2
WSHFT 2258 LTG DSNT N AND W CIG 006V011 P0007=

MVFR SPECI KHYI 022338Z 35009KT 10SM -RA FEW008 OVC014 09/09 A3007 RMK
AO2 WSHFT 2258 LTG DSNT SW-N P0008=

MVFR METAR KHYI 022356Z 36011KT 10SM -RA OVC016 09/09 A3007 RMK AO2
WSHFT 2258 LTG DSNT SW-NW SLP180 P0008 60021 T00940089 10117 20089
53005=

MVFR SPECI KHYI 030003Z 02010KT 10SM VCTS -RA OVC016 09/08 A3006 RMK
AO2 LTG DSNT ALQDS TSB2357 P0000=

MVFR SPECI KHYI 030033Z 34011KT 4SM +TSRA BR FEW008 BKN018 OVC030
08/08 A3009 RMK AO2 LTG DSNT ALQDS TSB2357 P0026=

MVFR METAR KHYI 030056Z 34017KT 4SM +TSRA BR FEW009 BKN018 OVC043
08/08 A3010 RMK AO2 LTG DSNT ALQDS TSB2357 SLP189 P0067 T00830083=

MVFR SPECI KHYI 030152Z 02008KT 6SM +TSRA BR FEW007 BKN030 OVC050
08/08 A3012 RMK AO2 LTG DSNT NE AND E AND SW P0047=

MVFR METAR KHYI 030156Z 36011KT 3SM +TSRA BR FEW007 BKN030 OVC055
08/08 A3012 RMK AO2 LTG DSNT NE AND E AND SW SLP196 P0050 T00830083=

IFR SPECI KHYI 030200Z 35013KT 2 1/2SM -TSRA BR FEW007 BKN028 OVC045
08/08 A3012 RMK AO2 VIS 1 1/2V5 LTG DSNT NE AND E AND SW P0003=

MVFR SPECI KHYI 030207Z 01010KT 4SM TSRA BR SCT007 BKN031 OVC045 08/08
A3012 RMK AO2 LTG DSNT NE AND E AND SW P0005=

MVFR SPECI KHYI 030238Z 35012KT 7SM VCTS -RA BKN010 BKN028 OVC046 08/08
A3013 RMK AO2 LTG DSNT E↯SW P0014=

IFR SPECI KHYI 030245Z 36009KT 9SM -TSRA BKN008 BKN035 OVC046 08/08
A3013 RMK AO2 LTG DSNT ALQDS P0014=

IFR METAR KHYI 030256Z AUTO 34010KT 9SM -RA OVC008 08/08 A3014 RMK AO2
LTG DSNT NE-S TSE54 SLP204 P0014 60131 T00830078 51016=

IFR METAR KHYI 030356Z AUTO 36012KT 10SM VCTS -RA BKN008 OVC031 08/08
A3014 RMK AO2 LTG DSNT NE AND E TSB51 SLP203 P0002 T00830078=

A review of the observations indicated winds from the east at 10 knots or less prior to the accident, with winds backing to the northwest with gusts to 24 knots immediately prior to the accident., with rain showers and thunderstorms intermittent during the period.

A review of the NWS Regional Composite radar Mosaic for 1710 CST (figure 1) depicted a large area of echoes with over central Texas with echoes of 40 to 50 dBZ over the accident site. No cloud-to-ground lightning was detected within 15 miles of the accident site at the time of the image.

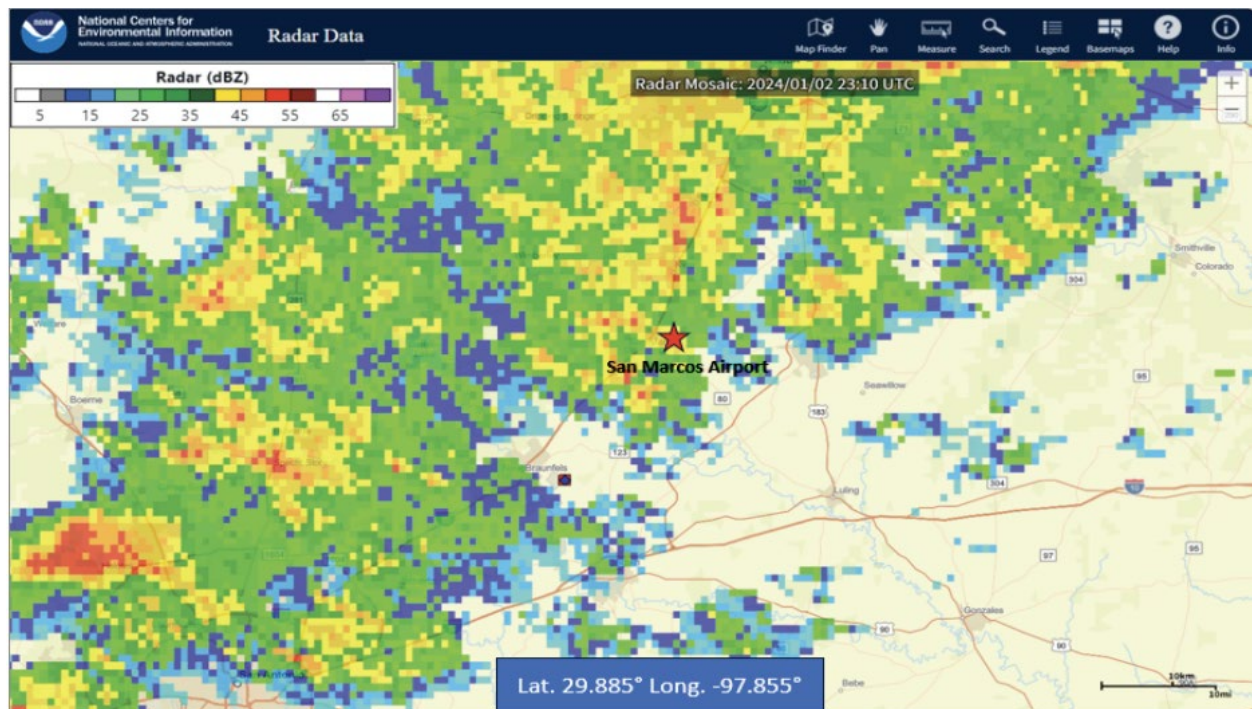


Figure 1. NWS Regional Composite Radar Mosaic

Sounding

A High Resolution Rapid Refresh (HRRR) numerical model data were obtained from the NOAA Air Resource Laboratory for the grid sight closest to the accident site for 1700 CST. The data was then plotted on a standard Skew T log P diagram using the RAOB Analysis software. Figure 2.

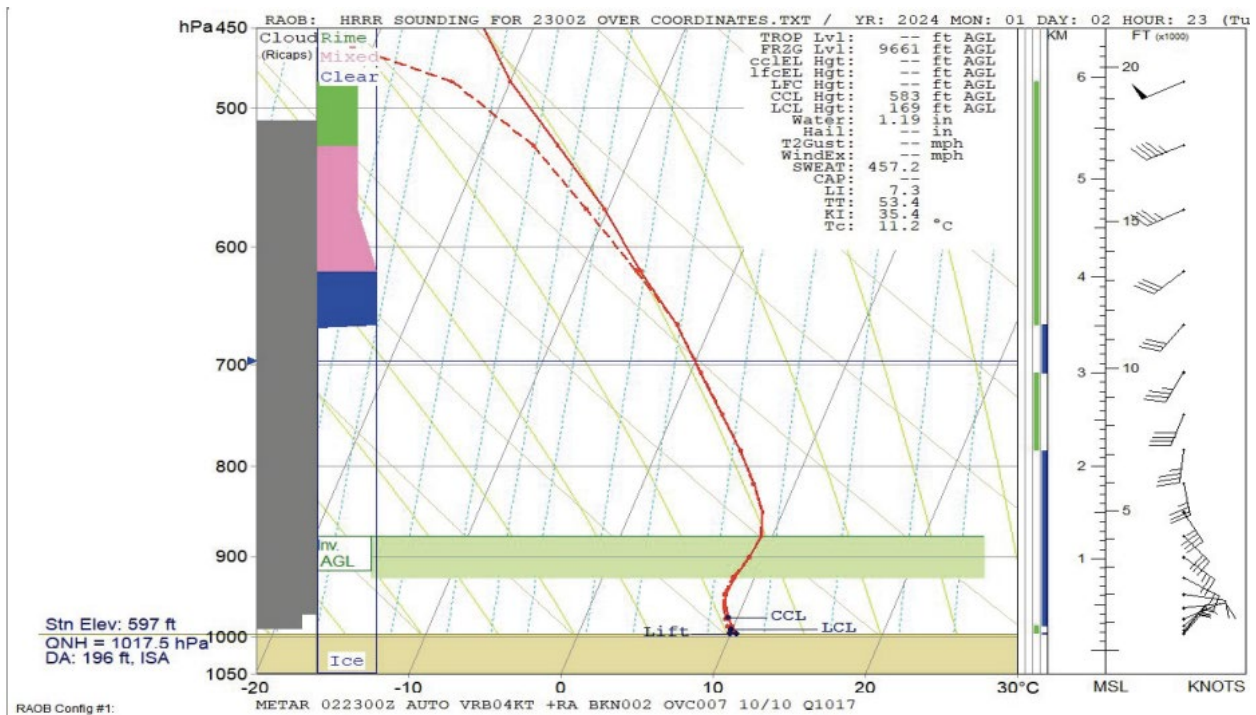


Figure 2. High Resolution Rapid Refresh

The sounding depicted an elevation of 597 ft over the grid point with a near surface temperature of 10.4°C (50.7°F), a dew point temperature of 10.0°C (50.0°F), with a relative humidity of 97%. The lifted condensation level (LCL) was identified at 168 ft agl, with the convective condensation level (CCL) at 583 ft agl. A temperature inversion was noted above the CCL through about 4,000 ft. The sounding was saturated from the LCL through 17,500 ft and with the Lifted Index of 7.3 and no significant Convective Available Potential Energy (CAPE), supported nimbostratus type clouds with heavy rain. The precipitable water content was 1.19 inches. The freezing level was identified at 10,258 ft and supported icing in clouds above that level. The HRRR sounding wind profile indicated a surface wind from the northeast or from 040° at 4 knots, with winds less than 10 knots below the inversion, and then veering rapidly to the south above the inversion and then to the west-southwest with increasing wind speeds with height. The mean 0 to 6 kilometer (or 18,000 ft steering wind was from 215° at 28 knots. A low level jet streak was identified near 5,000 ft or above the inversion with winds from 155° at 34 knots.

A table of the sounding parameters below 14,000 ft were as follows.

Height (ft msl)	Pres (hPa)	T (°C)	Td (°C)	RH (%)	Wind (dir/kts)	CAT (FAA)	LLWS (FAA)	ICING (USAF)
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597	996	10.4	10.0	97	033/4		Light	
624	995	10.4	9.9	97	030/3		Light	
707	992	10.2	9.9	98	034/4			
873	986	9.9	9.6	98	040/5			
1123	977	9.5	9.3	99	061/6	LGT		
1516	963	9.0	8.9	99	082/8	LGT		
2001	946	8.6	8.5	99	101/11	MDT		
2612	925	8.7	8.6	99	124/17	MDT		
3328	901	9.1	9.1	100	134/24	MDT		
4095	876	9.3	9.3	100	143/31	MDT		
4948	849	8.7	8.7	100	154/34	MDT		
5958	818	7.3	7.3	100	171/34	MDT		
7138	783	5.5	5.5	100	187/37	LGT		
8399	747	3.3	3.3	100	198/39	LGT		
9860	707	0.7	0.7	100	206/37	LGT		
11508	664	-2.2	-2.2	100	214/31	LGT		MDT Clear
13327	619	-6.1	-6.4	98	226/30	LGT		MDT Clear

Inflight Weather Advisories

At the time of the accident the NWS had a Convective SIGMET current over the area for embedded low-topped thunderstorms. The advisory was as follows.

WSUS32 KKCI 022255

SIGC

_MKCC WST 022255

CONVECTIVE SIGMET 5C

VALID UNTIL 0055Z

TX

FROM 40NE TTT-60E CWK-40SSE SAT-50SW SAT-50SSE SPS-40NE TTT AREA EMBD
TS MOV FROM 22025KT. TOPS TO FL320.

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