



NATIONAL TRANSPORTATION SAFETY BOARD

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

January 27, 2015

METEOROLOGY

DCA14MR004

A. ACCIDENT

Location: Casselton, North Dakota
Date: December 30, 2013
Time: About 1411 central standard time (2011 UTC¹)

B. METEOROLOGY GROUP

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C. 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 National Climatic Data Center (NCDC). All times are central standard standard time (CST) based upon the 24 hour clock, local time +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.

D. FACTUAL INFORMATION

1.0 Synoptic Situation

The NWS Surface Analysis Chart for 1500 CST on December 30, 2013 centered over the region is included as figure 1 with the approximate accident site by a red star, and depicted the primary weather features over the region immediately after the accident. The chart depicted a low pressure system at 1018-hectopascals (hPa) over the southeast corner of Nebraska associated with a frontal wave, with a cold front extending southward through Nebraska and a warm front extending southeastward from the low into Iowa and Missouri. A high pressure system was located over the northeast corner of North Dakota and Minnesota at 1029-hPa, with a high ridge extending over the Dakota's. The station models depicted general northerly winds of 5 to 10 miles per hour (mph), partly cloudy skies, and temperatures ranging from -1° to -8° Fahrenheit (F) across the region.

¹ UTC – is an abbreviation for Coordinated Universal Time.

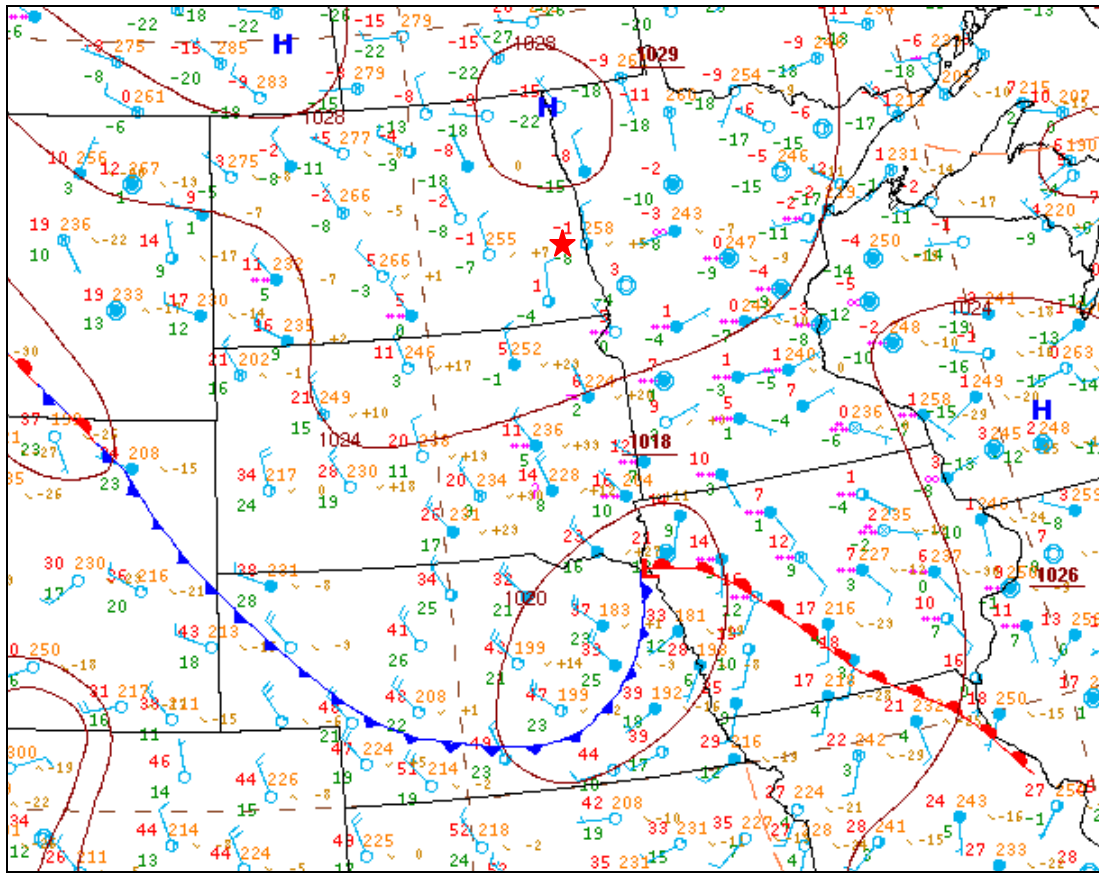


Figure 1 - NWS Surface Analysis Chart for 1500 CST

The NWS National radar mosaic for 1410 CST centered over the region is included as figure 2. The chart depicted a small band of very light radar reflectivities associated with light snow showers to the west-northwest of Casselton. No significant radar echoes were in the immediate vicinity of the accident site during the period.

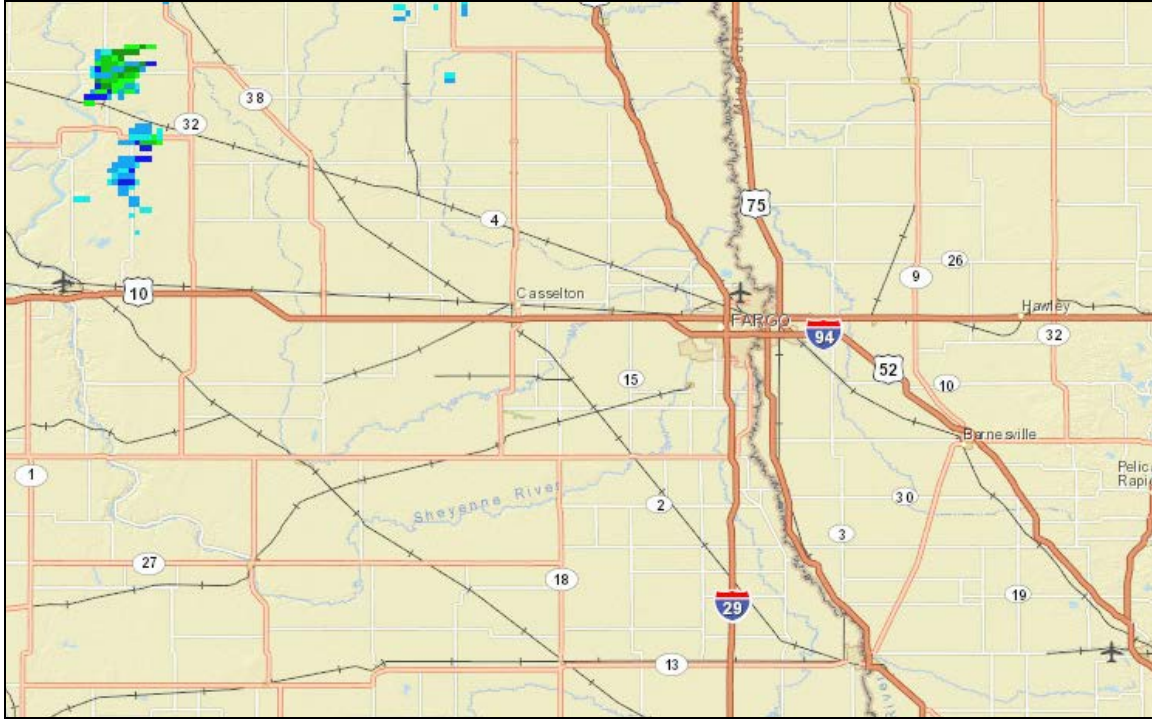


Figure 2 - NWS radar mosaic chart for 1410 CST

2.0 Surface Observations

The closest official NWS weather reporting facility to the accident site was from Hector International Airport (KFAR), Fargo, North Dakota, located approximately 17 miles east of Casselton, at an elevation of 901 feet. The airport had an Automated Surface Observation System (ASOS) and was augmented by NWS certified weather observers. At the approximate time of the accident Fargo reported the following conditions:

Fargo weather (KFAR) at 1408 CST (2008Z) wind from 360° at 16 miles per hour (mph), visibility 2 1/2 statute miles in haze, sky overcast at 3,000 feet agl, temperature 0° F (-18° Celsius (C)), dew point temperature -8° F (-22° C), altimeter 30.20 inches. Remarks: automated observation system, light snow shower ended at 1406, hourly precipitation less than 0.01 inches. The wind chill was calculated at -20° F.

3.0 Weather During Investigation

The following table is the NWS data for Fargo, ND, for the period from December 30, 2013 through January 5, 2014.

Date	MAX T (°F)	MIN T (°F)	AVG T (°F)	Departure from norm (°F)	Weather	Snow on ground	Precip (inches)	MAX Wind	AVG WINDCHILL (°F)
DEC30	2	-19	-8	-16	SN	8"	0.6"	360° 18	-31
DEC31	-14	-18	-16*	-24	HZ	8"		360° 14	-38
JAN1	-5	-20	-12	-19	SN	8"	T	040° 9	-30
JAN2	-5	-25*	-15	-22	FZRA	8"		160° 22	-43
JAN3	29*	-5	12*	5	SN	8"	T	340° 40	-12
JAN4	11	-15	-2	-9	UP	8"	0.3"	340° 39	-31
JAN5	-13	-20	-16	-23		8"	T	320° 23	-54

Notes: 1. * extreme for the month

2. Precipitation amount in inches, with "T" trace or less than 0.01 inches.

2. Wind chill temperature calculated based on average temperature and maximum wind

Submitted by:

Donald Eick
NTSB Senior Meteorologist