



# Aviation Investigation Factual Report

<b>Location:</b>	Watford City, North Dakota	<b>Accident Number:</b>	CHI07LA162
<b>Date &amp; Time:</b>	June 5, 2007, 10:52 Local	<b>Registration:</b>	N8835Q
<b>Aircraft:</b>	Aero Commander S2R	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 137: Agricultural		

## Factual Information

### HISTORY OF FLIGHT

On June 5, 2007, at 1052 central daylight time, an Aero Commander S2R, N8835Q, piloted by a commercial pilot, was destroyed during an in-flight collision with terrain and subsequent ground fire near Watford City, North Dakota. Visual meteorological conditions prevailed at the time of the accident. The aerial-application flight was operating under the provisions of 14 Code of Federal Regulations (CFR) Part 137 without a flight plan. The pilot was fatally injured. The local area flight departed Watford City Municipal Airport (S25), Watford City, North Dakota, at an unconfirmed time.

The operator reported that the airplane was loaded with approximately 300 gallons of liquid insecticide and estimated the takeoff weight of the airplane was between 7,200 and 7,300 lbs. Approximately 1045, the pilot radioed that he was going to divert to another field because there were individuals near the field he was about to spray. No additional radio transmissions were received from the accident pilot.

A witness, who was working an oil field west of the accident site, stated that the airplane appeared to be making normal spray runs before he lost sight of the airplane behind a hill. He noticed smoke about four to five minutes later and contacted local law enforcement to report the accident.

### PERSONNEL INFORMATION

According to Federal Aviation Administration (FAA) records, the pilot, age 47, held a commercial certificate with an airplane single-engine land rating. The pilot's commercial certificate was issued with the limitation "Carrying passengers in airplanes for hire is prohibited at night and on cross-country flights of more than 50 nautical miles." The pilot's last aviation medical examination was completed on January 9, 2007, when he was issued a second-class medical certificate with the restriction "Must wear corrective lenses."

The pilot's logbook indicated that he had 744.1 total hours of flight experience, 31.2 hours during the previous 6 months, and 17.1 hours during the previous 30 days. The pilot had 17.1 hours in the same make and model as the accident airplane, all in the previous 30 days. The pilot's last biennial flight review was completed on March 6, 2006.

### AIRCRAFT INFORMATION

The accident airplane was a 1970 Aero Commander S2R, serial number 1535R. The Aero Commander S2R was a single-engine, low-wing, all-metal airplane with a fixed tail-wheel

landing gear system, and was used for aerial application. The airplane was configured to seat a single occupant. The aircraft's type-certificate data sheet listed the maximum gross weight as being 6,000 lbs. FAA documentation revealed that the maximum gross weight had been increased to 7,200 lbs after a wingtip modification.

The accident airplane was issued a restricted airworthiness certificate on August 4, 1970, for the purpose of "Agricultural & Pest Control." The airplane was owned and operated by Taylor Ag Services, Inc., Watford City, North Dakota. The FAA issued the current aircraft registration certificate on January 21, 2004. The last annual inspection was completed on May 1, 2007, at a total service time of 6,598.4 hours. A review of the airframe maintenance records found no history of unresolved operational issues.

The airplane was equipped with a 600-horsepower Pratt & Whitney R-1340-S3H1-G engine, serial number P-326971. The R-1340-S3H1-G is a reciprocating, carbureted, nine-cylinder, air-cooled, radial engine with a 1,344 cubic inch displacement. At the last annual inspection, the engine had a total service time of 1,638.4 hours and had accumulated 657.3 hours since the last major overhaul (SMOH). A review of the engine maintenance records found no history of unresolved operational issues.

The propeller was a three-bladed Hamilton Standard 23D40-311 constant speed propeller, design number 7035A9. The propeller had a total service time of 3,068.5 hours and had accumulated 968.4 hours SMOH at the time of the last annual inspection.

## METEOROLOGICAL INFORMATION

The closest weather reporting facility to the accident site was at the Sloulin Field International Airport (ISN), Williston, North Dakota, located about 14 nautical miles northwest of the accident site. The airport was equipped with an automated surface observing system (ASOS). At 1052, the ISN ASOS reported: Wind 180 degrees true at 4 knots; visibility 10 statute miles; sky clear; temperature 21 degrees Celsius; dew point 12 degrees Celsius; altimeter setting 29.76 inches of mercury.

## FLIGHT RECORDERS

The accident airplane was not equipped, nor was it required to be equipped, with a cockpit voice recorder or flight data recorder.

## WRECKAGE AND IMPACT INFORMATION

The FAA performed an on-scene examination on June 5, 2007.

A global positioning system (GPS) receiver was used to identify the position of the main wreckage as 47 degrees 53.947 minutes north latitude, 103 degrees 30.799 minutes west longitude. The main wreckage was located about 14 nautical miles northwest of Watford City,

North Dakota, alongside an unimproved access road that ran between two agricultural fields.

The main wreckage, consisting of the cockpit, fuselage, left and right wing, and empennage, was found immediately adjacent to the east-west access road. Power lines were located about 50 feet south of the main wreckage that ran parallel to the access road. A ground scar began approximately 21 feet north of the power lines and led up to the main wreckage. Portions of the left wingtip's navigational lens were found at the initial point of impact. The main wreckage remained upright and was facing south. A fan-shaped debris field, about 80 feet long, continued away from the main wreckage on a northwest heading.

A majority of the aircraft was destroyed by the post-impact ground fire. The left wing was consumed by fire. The right wing remained intact with only minor fire damage to the inboard section. The right aileron remained attached to the wing. The post-impact fire consumed the entire fuselage. Flight control continuity was confirmed for the rudder system. Control continuity could not be established for the elevator and aileron systems due to melted or broken control rods.

The engine, which had separated from the airplane, was located just south of the access road. The engine was resting in a vertical position with the spinner and two of its three propeller blades embedded in the terrain. The engine did not exhibit fire damage. Compression and suction were noted in conjunction with crankshaft rotation. The propeller blades exhibited a combination of chordwise scratching, blade twist, and leading edge damage.

The on-scene investigation did not reveal any pre-impact anomalies that would have prevented the normal operation of the airframe, engine, or its associated systems.

#### MEDICAL AND PATHOLOGICAL INFORMATION

On June 6, 2007, the North Dakota State Medical Examiner performed an autopsy on the pilot at its state morgue in Bismarck, North Dakota.

Toxicology samples for the pilot were submitted to the FAA Civil Aeromedical Institute, Oklahoma City, Oklahoma. The toxicology results indicated that ibuprofen was detected in urine samples. No additional substances were detected.

#### ADDITIONAL INFORMATION

The FAA was a party to the investigation.

## Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	47,Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Single
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	January 1, 2007
<b>Occupational Pilot:</b>	UNK	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	744 hours (Total, all aircraft), 17 hours (Total, this make and model), 681 hours (Pilot In Command, all aircraft), 21 hours (Last 90 days, all aircraft), 17 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Aero Commander	<b>Registration:</b>	N8835Q
<b>Model/Series:</b>	S2R	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Restricted (Special)	<b>Serial Number:</b>	1535R
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	1
<b>Date/Type of Last Inspection:</b>	May 1, 2007 Annual	<b>Certified Max Gross Wt.:</b>	2900 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	6598.4 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Pratt & Whitney
<b>ELT:</b>		<b>Engine Model/Series:</b>	R-1340-S3H1-G
<b>Registered Owner:</b>	Taylor Ag Services Inc	<b>Rated Power:</b>	600 Horsepower
<b>Operator:</b>	Taylor Ag Services, Inc.	<b>Operating Certificate(s) Held:</b>	
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	ZGKG

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KISN, 1982 ft msl	<b>Distance from Accident Site:</b>	14 Nautical Miles
<b>Observation Time:</b>	10:52 Local	<b>Direction from Accident Site:</b>	315°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	4 knots / None	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	180°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.76 inches Hg	<b>Temperature/Dew Point:</b>	21°C / 12°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Watford City, ND (S25 )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>		<b>Type of Clearance:</b>	None
<b>Departure Time:</b>		<b>Type of Airspace:</b>	

## Airport Information

<b>Airport:</b>	WATFORD CITY MUNI S25	<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>	2109 ft msl	<b>Runway Surface Condition:</b>	
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	On-ground
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Fatal	<b>Latitude, Longitude:</b>	

## Administrative Information

Investigator In Charge (IIC):	Fox, Andrew
Additional Participating Persons:	Vance Q Emerson; Federal Aviation Administration - Fargo FSDO; Fargo, ND
Report Date:	February 22, 2008
Last Revision Date:	
Investigation Class:	<a href="#">Class</a>
Note:	
Investigation Docket:	<a href="https://data.nts.gov/Docket?ProjectID=65967">https://data.nts.gov/Docket?ProjectID=65967</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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