



National Transportation Safety Board Aviation Accident Final Report

Location:	MANISTEE, MI	Accident Number:	CHI98LA100
Date & Time:	03/04/1998, 0907 EST	Registration:	N502T
Aircraft:	Cessna 650	Aircraft Damage:	Substantial
Defining Event:		Injuries:	9 None
Flight Conducted Under:	Part 91: General Aviation - Executive/Corporate		

Analysis

The airplane touched down approximately 3,100 to 3,200 feet down the 5,502-foot-long runway. It continued off the end of the runway where the nose gear collapsed puncturing the pressure bulkhead. The AWOS report received by the flightcrew during the approach reported the weather at the airport as partially obscured with a 200 foot broken ceiling. Minimum descent altitude for the approach was 441 feet with weather minimums of a 500 foot ceiling and 1 1/4 mile visibility. The flight data recorder shows the airplane touched down at an airspeed of 138 knots. The crew called out a Vref during the approach of 132 knots.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilots excessive airspeed during landing, exceeding the proper touchdown point, and failure to execute a missed approach.

Findings

Occurrence #1: OVERRUN

Phase of Operation: LANDING - ROLL

Findings

1. MINIMUM DESCENT ALTITUDE - EXCEEDED - PILOT IN COMMAND
2. (C) AIRSPEED - EXCESSIVE - PILOT IN COMMAND
3. (C) PROPER TOUCHDOWN POINT - EXCEEDED - PILOT IN COMMAND
4. (C) MISSED APPROACH - NOT PERFORMED - PILOT IN COMMAND

Occurrence #2: NOSE GEAR COLLAPSED

Phase of Operation: LANDING - ROLL

Findings

5. LANDING GEAR, NOSE GEAR ASSEMBLY - OVERLOAD

Factual Information

On March 4, 1998, at 0907 eastern standard time, a Cessna 650, N502T, operated by Tenneco Management Company, experienced a nose gear collapse during an overrun landing on runway 09 (5,502' x 100') at the Manistee County - Blacker Airport, Manistee, Michigan. The 14 CFR Part 91 corporate flight was operating in instrument meteorological conditions on an IFR flight plan. The captain, co-pilot, and seven passengers on board were not injured. The airplane was substantially damaged. The flight originated from Waukegan, Illinois, at 0737 central standard time.

The pilot-in-command (PIC), who was flying the airplane, reported they flew the VOR approach to runway 09. He reported that the lack of contrast due to the snow covered terrain distorted their "depth perception and other visual cues" when transitioning from instruments to visual for landing. The PIC reported that the airplane "floated" during the landing flare. He reported that the airplane traveled off the end of the runway even though they used the spoilers, speed brakes, maximum reverse, and maximum braking.

The co-pilot reported they received the Automated Weather Observing System (AWOS) report from Manistee approximately 10 minutes prior to arrival. He reported the "Weather was above required minimums on all reports obtained." He also reported that Manistee UNICOM informed them that there was approximately 1/2 inch of snow on the runway and braking action was fair to poor. He reported that they were cleared for the approach and the airplane was in VFR conditions with "clear ground (water over Lake Michigan) contact with a haze layer visible inland in the approximate location of the airport." He continued to report that the runway lights were visible at a point 2 miles from the airport. The co-pilot reported, as the pilot-in-command did, that the ground was snow covered which provided "no visual contrast to aid depth perception and the departure end of the runway was not discernible...." He reported the airplane floated during the landing which resulted in a touchdown point further down the runway than what they desired.

The Manistee County - Blacker Airport manager reported the runway lights were on high with the REILS and VASI on at the time of the accident. He reported "When aircraft came by office it was high (above normal touchdown) and was out of sight when it touched down." He estimated the visibility was about one mile at the time of the accident. He drove in his vehicle down the runway and from the tracks on the snow covered runway, he estimated that N502T touched down 3,100 to 3,200 feet down the runway. Photographs taken by the airport manager after the accident show the terrain was snow covered with grass visible through the snow adjacent to the runway.

The airplane came to rest approximately 120 feet off the departure end of runway 09. The nose gear collapsed and punctured the pressure bulkhead when the airplane contacted soft terrain off the end of the runway.

A cassette copy of the cockpit voice recorder tape was provided to the National Transportation Safety Board by the Tenneco Management Company. According to Tenneco procedures, the non-flying pilot, in this case the co-pilot, would be calling out checklist items on the Landing Preliminary checklist.

The co-pilot received the AWOS weather just prior to being cleared to 3,000 feet by air traffic control. He briefed the PIC that the winds were being reported as "350 at 8." He then stated

"now instead of two scattered it's partially obscured and two broken." Several comments followed regarding the decreased visibility just past the shoreline. The co-pilot commented "maybe we can see better than we think when we get in there." He then remarked, "well I'll tell you what she's gonna be tight...." This remark was followed by the 500 foot altitude call-out from the Ground Proximity Warning System (GPWS). Approximately twenty-one seconds later the co-pilot stated "I got the runway lights." This is followed by the GPWS call-out "minimum, minimum." He then stated "still have runway lights, approach lights." The GPWS call-out "sink rate, two hundred" was heard followed by the PIC calling for "final flaps" and the co-pilot saying "ok there's the runway." This was followed by two more "sink rate" call-outs then the sound of the airplane touching down. One of the pilots returned to the cockpit approximately five minutes after the accident to call for a vehicle and to cancel their flight plan. As he was switching radio frequencies the Manistee AWOS can be heard over the radio. The AWOS at that time was reporting "partially obscured ceiling 100 broken."

The VOR/GPS RWY 9 approach minimum descent altitude for a Category C airplane with DME is 441 feet. Weather minimums for the approach are 500 foot ceiling and 1 1/4 mile visibility.

A review of the flight data recorder printout provided by Tenneco Management Company shows the airplane touched down at an indicated airspeed of about 138 knots. The cockpit voice recorder revealed the co-pilot called out a Vref during the "Landing Preliminary" checklist of "32."

Pilot Information

Certificate:	Airline Transport; Flight Instructor	Age:	50, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim.	Last Medical Exam:	11/10/1997
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	11955 hours (Total, all aircraft), 758 hours (Total, this make and model), 8835 hours (Pilot In Command, all aircraft), 111 hours (Last 90 days, all aircraft), 24 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Cessna	Registration:	N502T
Model/Series:	650 650	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	7067
Landing Gear Type:	Retractable - Tricycle	Seats:	9
Date/Type of Last Inspection:	11/20/1997, Continuous Airworthiness	Certified Max Gross Wt.:	22450 lbs
Time Since Last Inspection:	189 Hours	Engines:	2 Turbo Fan
Airframe Total Time:	1166 Hours	Engine Manufacturer:	Garrett
ELT:	Installed, not activated	Engine Model/Series:	TFE-731
Registered Owner:	TENNECO MANAGEMENT CO.	Rated Power:	4080 lbs
Operator:	TENNECO MANAGEMENT CO.	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	MBL, 620 ft msl	Observation Time:	0857 EST
Distance from Accident Site:	0 Nautical Miles	Direction from Accident Site:	0°
Lowest Cloud Condition:	Scattered / 200 ft agl	Temperature/Dew Point:	-1° C / -4° C
Lowest Ceiling:	Broken / 1100 ft agl	Visibility	4 Miles
Wind Speed/Gusts, Direction:	8 knots, 350°	Visibility (RVR):	0 ft
Altimeter Setting:	29 inches Hg	Visibility (RVV):	0 Miles
Precipitation and Obscuration:			
Departure Point:	WAUKEGAN, IL (UGN)	Type of Flight Plan Filed:	IFR
Destination:	(MBL)	Type of Clearance:	IFR
Departure Time:	0737 CST	Type of Airspace:	Class E

Airport Information

Airport:	MANISTEE COUNTY-BLACKER (MBL)	Runway Surface Type:	Asphalt
Airport Elevation:	620 ft	Runway Surface Condition:	Snow--dry
Runway Used:	9	IFR Approach:	VOR
Runway Length/Width:	5502 ft / 100 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	7 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	9 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC): PAMELA S SULLIVAN **Adopted Date:** 12/08/1998

Additional Participating Persons: WILL ELLIOT; GRAND RAPIDS, MI
ANDREW HALL; WICHITA, KS

Publish Date:

Investigation Docket: NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at <http://dms.nts.gov/pubdms/>.

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