Aviation Investigation Final Report

Location:	Olympia, Washington	**Accident Number:**	SEA01TA050
Date & Time:	February 13, 2001, 10:20 Local	**Registration:**	N222KA
Aircraft:	Beech 200	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	12 None
Flight Conducted Under:	Public aircraft		

Analysis

The aircraft was on an instrument landing system (ILS) approach to runway 17. Reported visibility at the time was 1/4 mile in fog, below the published minimum approach visibility of 1/2 mile. The pilots reported that on the approach, the copilot called the approach lights in sight 100 feet above decision height (DH), and the runway in sight at decision height. The pilot visually acquired the runway a few seconds later and continued toward the runway for landing. Several passengers reported that the airplane subsequently floated or landed long, and the pilot reported that as the aircraft settled in for landing, he observed the touchdown zone markers at the departure end approaching rapidly. The airplane subsequently overran the runway, coming to a stop in the dirt 442 feet beyond the departure end. The aircraft's right main landing gear collapsed during the overrun.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to attain the proper touchdown point for landing. A factor was weather conditions below published approach minimums.

Findings

Occurrence #1: OVERRUN
Phase of Operation: LANDING - ROLL

Findings

1. (F) WEATHER CONDITION - BELOW APPROACH/LANDING MINIMUMS
2. (C) PROPER TOUCHDOWN POINT - NOT ATTAINED - PILOT IN COMMAND

Occurrence #2: MAIN GEAR COLLAPSED
Phase of Operation: LANDING - ROLL

Factual Information

On February 13, 2001, approximately 1020 Pacific standard time, a Beech 200, N222KA, registered to the State of Washington and operated by the Aviation Section of the Washington State Patrol on a public-use flight from Yakima, Washington, overran the end of runway 17 during landing following an instrument landing system (ILS) approach to runway 17 at Olympia, Washington. Following the runway overrun, the aircraft's right main landing gear collapsed, and the airplane was substantially damaged. There were no injuries to the airline transport pilot-in-command, commercial second pilot, or 10 passengers aboard the aircraft (all 12 persons aboard were Washington State Patrol employees.) Instrument meteorological conditions were reported at Olympia at 0956 and 1036, and the flight was on an instrument flight rules (IFR) flight plan.

The pilots reported that they received the Olympia weather from Seattle Approach Control upon being handed off to that facility. According to the pilots, the Seattle approach controller advised them that the ceiling was 100 feet variable, and that visibility was 1/4 mile in fog. The pilots reported that the Seattle approach controller then asked their intentions, and that they stated they wanted the ILS runway 17 approach into Olympia. The pilot stated he called for approach flaps approximately 5 miles from HABOR intersection. The pilots reported that the approach controller set them up for a left base intercept of the localizer approximately 3 miles north of HABOR. The pilot reported that the controller assigned him a heading of 200 degrees until localizer intercept, instructed him to descend and maintain 2,500 feet until established, and cleared him for the ILS runway 17 approach. The pilot reported that "It appeared he turned us too late", however, and that the aircraft flew through the localizer. The pilot stated the controller then turned him to a new heading of 140 degrees for localizer intercept, and asked if the pilot wanted to continue the approach. The pilot stated that he replied that he did. The pilot reported that after intercepting the localizer and stabilizing on the localizer and glide slope inside of HABOR, the approach was stable (on course and on glide slope) at approximately 120 knots.

The pilots reported that the second pilot called the approach lights in sight at 100 feet above decision height (DH), and that the second pilot called the runway in sight as the aircraft approached DH. The pilot stated that he looked out and initially did not see the runway, but that "within a matter of seconds" he looked out again and observed the runway numbers and touchdown zone markings. The pilot reported that he then began pulling the power levers to flight idle, and that full flaps were lowered at this time. The pilot stated that he last glanced at his airspeed as the second pilot called the runway and that his recollection was that he was at approximately 115 knots; he stated that this was the last time he recalled his airspeed. The pilot reported that the visibility on final was better than the 1/4 mile being reported (he reported it as about 1/2 mile), and that he did not lose sight of the runway at any time during this phase of the approach.

The pilot reported: "Once we were settling in for landing, I observed the aiming point marks for [runway] 35 approaching rapidly. Once landed I applied max [braking] and full reverse as [the second pilot] put the props full forward. It was apparent at this time that we had excessive speed and were going to run off the end of the runway." The aircraft ran off the end of the runway, collapsing its right main gear and coming to rest on its right wing. The Washington State Patrol operator's report to the NTSB indicated that no mechanical malfunction or failure of the aircraft was involved in the accident.

An FAA inspector from the Seattle, Washington, Flight Standards District Office (FSDO) interviewed the 10 passengers aboard the airplane, the tower controller, and the State Patrol aviation section secretary on duty at the airport at the time of the accident. Most passengers reported that on the accident approach, they first saw the ground at estimated altitudes ranging from 50 feet above ground level (AGL) to 300 feet AGL; one passenger reported not seeing the ground before touchdown. The State Patrol secretary (in the State Patrol hangar 500 feet from the runway) and the tower controller (1,230 feet from the runway) both reported that they did not see the airplane land; the State Patrol secretary reported she could just make out the runway from the hangar, whereas the tower controller reported he could not see the runway from the control tower. The passengers estimated visibility at the airport from "a couple of hundred feet" to less than 1/4 mile (of those who reported visibility estimates, the majority estimated it as 300 to 500 feet.) One passenger also reported that the visibility deteriorated as the airplane progressed down the runway. Three passengers reported that the aircraft floated or landed long, with one reporting that the airplane was just above the level of the VOR tower (located approximately midfield about 750 feet from the runway) as the airplane passed abeam the VOR. All 10 passengers reported that the touchdown was firm, hard, harder than normal, or solid, that the airplane "landed with a thunk", or that the touchdown was "not one of the best he had felt."

Investigators from the NTSB and FAA responded to the accident scene on the day of the accident and performed an on-scene examination of the aircraft and the accident area. The investigators found skid marks on the runway end, starting at a point 376 feet prior to the runway end and continuing in the dirt for 442 feet beyond the end of the runway before terminating at the aircraft. Both of the aircraft's navigation radios were tuned to 111.9 megahertz (MHz), the I-OLM (Olympia runway 17) localizer frequency, with both pilots' horizontal situation indicator (HSI) course deviation indicators (CDIs) set to the ILS final approach course of 172 degrees. Both altimeters were set to 30.20 inches Hg and indicated within 75 feet of the airport elevation of 206 feet. A Jeppesen approach chart dated May 5, 1995 (current at the time of the accident) for the ILS runway 17 approach to Olympia was clipped to the copilot's control wheel. The aircraft's radio altimeter decision height (DH) bug was set to 200 feet, 50 feet below the approach DH of 250 feet AGL. The aircraft's flaps were fully extended. No evidence of mechanical problems with the aircraft was noted.

The 0956 Olympia METAR observation reported weather conditions as: wind from 030 degrees true at 5 knots; visibility 1/4 statute mile in fog; sky obscured with vertical visibility

100 feet; temperature and dew point 0 degrees C; and altimeter setting 30.20 inches Hg. A special observation taken at 1036 reported the same conditions, except for winds from 360 degrees true at 3 knots.

DH on the straight-in ILS runway 17 approach at Olympia is 454 feet above sea level, 250 feet above the touchdown zone elevation of 204 feet. The published minimum visibility for the straight-in ILS approach is 1/2 mile. The State Patrol's operating procedures specify that weather minimums for IFR approaches are as specified by 14 CFR 91.175.

Olympia runway 17 is a 5,419-foot-long, asphalt-surface runway. The runway 17 threshold is displaced 427 feet, leaving a usable landing distance of 4,992 feet. Of this, 3,981 feet are available beyond the runway/glide slope intersection point. The State Patrol's operator's report to the NTSB reported that the runway was wet at the time of the landing. The runway is equipped with an ILS, medium intensity runway lights, and a medium intensity approach lighting system with runway alignment indicator lights (MALSR). The airport is also equipped with an Automated Surface Observing System (ASOS). The Olympia tower controller reported that there were no ILS facility alarms on the day of the accident.

According to records supplied by the State Patrol, the pilot had successfully completed the Beech 200 Pilot Recurrent Course at the FlightSafety International Raytheon Learning Center, Wichita, Kansas, on October 28, 2000, and the copilot had successfully completed the same course at the same location on September 20, 2000. Both pilots' endorsements from this course indicated that they had undergone a flight review according to 14 CFR 61.56(c) and instrument experience according to 14 CFR 61.57(c) during their training. State Patrol records also indicated that at the time of the accident, the aircraft was current on all required inspections to include VOR receiver checks, pitot-static system, altimeter, and transponder system checks required for IFR flight.

The pilot reported the aircraft's gross weight at the time of landing as 11,009 pounds. The "Landing Distance with Propeller Reversing - Flaps 100%" performance chart in the Beech 200 Pilot's Operating Handbook gives the aircraft's approach speed as 99 knots indicated airspeed (KIAS) and its landing distance as approximately 1,100 feet under the following conditions: power retarded to maintain 1,000 feet per minute descent rate on final approach; paved, level, dry surface; approach speed as tabulated (99 KIAS at 11,000 pounds gross weight); maximum braking; condition levers at high idle; propeller controls full forward; power levers maximum reverse after touchdown until fully stopped; temperature 0 degrees C; pressure altitude 0 feet; gross weight 11,000 pounds; tailwind component 5 knots; and no obstacles.

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	44,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	March 22, 2000
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	October 28, 2000
Flight Time:	4603 hours (Total, all aircraft), 795 hours (Total, this make and model), 3936 hours (Pilot In Command, all aircraft), 51 hours (Last 90 days, all aircraft), 23 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Co-pilot Information

Certificate:	Commercial	**Age:**	37,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	October 20, 2000
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	September 20, 2000
Flight Time:	3039 hours (Total, all aircraft), 80 hours (Total, this make and model), 2912 hours (Pilot In Command, all aircraft), 72 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N222KA
Model/Series:	200	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	BB-49
Landing Gear Type:	Retractable - Tricycle	**Seats:**	12
Date/Type of Last Inspection:	December 22, 2000 100 hour	**Certified Max Gross Wt.:**	12500 lbs
Time Since Last Inspection:	24 Hrs	**Engines:**	2 Turbo prop
Airframe Total Time:	9200 Hrs	**Engine Manufacturer:**	P&W Canada
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	PT6A-41
Registered Owner:	State of Washington	**Rated Power:**	850 Horsepower
Operator:	Washington State Patrol Aviation Section	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	OLM,206 ft msl	**Distance from Accident Site:**	
Observation Time:	09:56 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	0.25 miles
Lowest Ceiling:	Indefinite (V V) / 100 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	10°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.2 inches Hg	**Temperature/Dew Point:**	0°C / 0°C
Precipitation and Obscuration:	N/A - None - Fog		
Departure Point:	Yakima, WA (YKM)	**Type of Flight Plan Filed:**	IFR
Destination:	Olympia, WA (OLM)	**Type of Clearance:**	IFR
Departure Time:	09:45 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	Olympia OLM	**Runway Surface Type:**	Asphalt
Airport Elevation:	206 ft msl	**Runway Surface Condition:**	Wet
Runway Used:	17	**IFR Approach:**	ILS
Runway Length/Width:	4992 ft / 150 ft	**VFR Approach/Landing:**	Unknown

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	10 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	12 None	**Latitude, Longitude:**	46.970573,-122.870727(est)

Administrative Information

Investigator In Charge (IIC):	Nesemeier, Gregg
Additional Participating Persons:	Chuck Cox; FAA - Seattle FSDO; Renton, WA
Original Publish Date:	September 19, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=51727