



National Transportation Safety Board Aviation Accident Final Report

Location:	MISSOULA, MT	Accident Number:	SEA99LA003
Date & Time:	10/17/1998, 0230 MDT	Registration:	N299GL
Aircraft:	Beech 99	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Minor, 1 None
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

While flying a night visual approach, the co-pilot flared too high above the runway. As the aircraft floated down the runway, the speed decreased, and the pilot-in-command took control. Because he felt the aircraft was approaching a stall, he initiated a go-around. During the attempted go-around, the pilot-in-command found it necessary to keep both hands on the control wheel due to the fact that the aircraft had been trimmed to the full nose-up position during the landing flare. Even with both hands on the control wheel, the aircraft became very difficult to control. Although the co-pilot moved the throttles to maximum power and began retraction of the flaps, the pilot-in-command's remedial action had occurred too late to successfully execute the go-around. It was later discovered that during the operator's initial training, both crew members had been taught to apply full nose-up trim after crossing the runway threshold and reducing the power to idle. This action, which the operator eliminated from the landing sequence procedure after this accident, was inconsistent with the instructions in the Beech 99 Pilots Operating Manual.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot-in-command's delayed remedial action in response to the co-pilot's improper landing flare, and the co-pilot's application of excessive (full nose-up) trim during the landing flare as taught in the operator's initial aircrew training program. Factors include the co-pilot's improper flare and his lack of total experience in this type of aircraft.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: GO-AROUND (VFR)

Findings

1. (F) FLARE - IMPROPER - COPILOT/SECOND PILOT
2. (F) LACK OF TOTAL EXPERIENCE IN TYPE OF AIRCRAFT - COPILOT/SECOND PILOT
3. (C) TRIM SETTING - EXCESSIVE - COPILOT/SECOND PILOT
4. (C) CONDITION(S)/STEP(S) IN ERROR - COMPANY/OPERATOR MANAGEMENT
5. (C) REMEDIAL ACTION - DELAYED - PILOT IN COMMAND

Factual Information

On October 17, 1998, approximately 0230 mountain daylight time, a Beech 99, N299GL, impacted the terrain during an attempted go-around from a night visual approach at Missoula International Airport, Missoula, Montana. The aircraft, which was registered to CLB Corporation of Provo, Utah, and operated as Alpine Air 5010, sustained substantial damage. The captain, who held an airline transport pilot certificate, received minor injuries, and the copilot, who held a commercial certificate, was uninjured. The 14 CFR Part 135 cargo flight, which departed Billings, Montana approximately 90 minutes prior to the accident, had been IFR en route.

According to the crew, the co-pilot was executing a visual approach to runway 29, with the intention of completing a full-stop landing. He initiated the flare too high above the runway surface, and as the aircraft floated toward the departure end of the runway, the airspeed began to decrease. As the airspeed decreased and the aircraft began to sink, the pilot-in-command called for the co-pilot to add power, which he did. Immediately thereafter, the pilot-in-command determined that the airspeed was "very low," and the aircraft was "... about to stall." He therefore took control and initiated a go-around. As he started the go-around, the pilot discovered that because the aircraft was trimmed to a full nose-up position, it was very difficult to control. He therefore found it necessary to keep both hands on the control wheel, while at the same time trying to re-trim. During the attempted go-around, the pilot-in-command called for the flaps to be raised, but the co-pilot first pushed the throttles forward to maximum power as called for in the B-99 Pilots Operating Manual rejected landing checklist. After pushing the power levers forward, the co-pilot initiated flap retraction, but according to the pilot-in-command, "...it was too late, the airplane was going to hit the ground." Soon thereafter, the aircraft descended into the dirt surface adjacent to the runway.

A review of company records and statements from the flight crew revealed that the co-pilot began his training with the operator about three weeks prior to the accident. At that time, he had accumulated approximately 215 hours of flying time, none of which was in the Beech 99 or other turbo-prop powered aircraft. During his training program, he accumulated 10.6 additional hours, none of which was at night. As part of his training, the co-pilot flew three missed approaches from instrument approaches, and two go-arounds from visual approaches, all as sole manipulator of the controls. He did not fly any missed approaches or go-arounds during which he acted solely as co-pilot or second-in-command. Nor did he fly any visual or instrument approaches during which he transferred control of the aircraft to the other pilot for the purpose of initiating a go-around or missed approach. As of the date of the accident, the co-pilot had accomplished 10 night landings in the Beech 99, but had experienced no go-arounds during Part 135 operations.

During the investigation, both flightcrew members stated that as part of their initial training with the operator, they had been taught to move the elevator trim to the full-up position after crossing the runway threshold and reducing power to idle. This procedure is not called for in the Pilots Operating Manual, and according to representatives of the manufacturer, such a technique would create excessive "stick forces" and an unsafe condition during a go-around procedure. After the accident, when the operator's Director of Operations became aware that the flightcrews had been taught this full nose-up trim procedure, he issued a directive calling for all pilots to discontinue the practice and to follow trim procedures as outlined in the Pilots Operating Manual.

Pilot Information

Certificate:	Airline Transport; Flight Instructor	Age:	30, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	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--no waivers/lim.	Last FAA Medical Exam:	12/09/1997
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	4567 hours (Total, all aircraft), 667 hours (Total, this make and model), 4187 hours (Pilot In Command, all aircraft), 221 hours (Last 90 days, all aircraft), 66 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N299GL
Model/Series:	99 99	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	U-102
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	10/15/1998, AAIP	Certified Max Gross Wt.:	11900 lbs
Time Since Last Inspection:	10 Hours	Engines:	2 Turbo Prop
Airframe Total Time:	39685 Hours	Engine Manufacturer:	P&W
ELT:	Installed, not activated	Engine Model/Series:	PT6A-28
Registered Owner:	CLB CORPORATION	Rated Power:	680 hp
Operator:	CLB CORPORATION	Operating Certificate(s) Held:	On-demand Air Taxi (135)
Operator Does Business As:	ALPINE AVIATION	Operator Designator Code:	TIMA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	MSO, 3200 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	0256 MDT	Direction from Accident Site:	0°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	Light and Variable /	Turbulence Type Forecast/Actual:	/
Wind Direction:	Variable	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	4° C / 6° C
Precipitation and Obscuration:			
Departure Point:	BILLINGS, MT (BIL)	Type of Flight Plan Filed:	IFR
Destination:	(MSO)	Type of Clearance:	IFR
Departure Time:	0108 MDT	Type of Airspace:	Class G

Airport Information

Airport:	MISSOULA INTERNATIONAL (MSO)	Runway Surface Type:	Asphalt
Airport Elevation:	3201 ft	Runway Surface Condition:	Dry
Runway Used:	29	IFR Approach:	Visual
Runway Length/Width:	9501 ft / 100 ft	VFR Approach/Landing:	Full Stop

Wreckage and Impact Information

Crew Injuries:	1 Minor, 1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor, 1 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	ORRIN K ANDERSON	Report Date:	09/28/2000
Additional Participating Persons:	DAVE SNIDER; HELENA, MT		
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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