National Transportation Safety Board
Aviation Accident Final Report

Location:	HYANNIS, MA	**Accident Number:**	NYC99LA052
Date & Time:	01/22/1999, 1719 EST	**Registration:**	N215CJ
Aircraft:	Beech 1900D	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	4 None
Flight Conducted Under:	Part 91: General Aviation - Positioning		

Analysis

At dusk, with a 100-foot ceiling in fog, the captain of the Beech 1900D had performed two missed approaches to the airport. On the third approach, both the captain and first officer visually acquired the runway. The first officer said the captain lined the airplane up with the runway centerline and requested landing flaps. The first officer further stated, '...the aircraft floated at appr. 20' [feet] over the runway at a normal transition when I heard the captain taking the power levers over the 'FI [flight idle] gate' by the sound of the engine/props.' This placed the propellers in the 'BETA' range. The airplane then started to sink, and the captain pulled back on the control yoke. The main landing gear struck the ground and were fractured during the +2.9G touchdown, which occurred about 2,500 feet beyond the approach end of the 5,252 foot long runway. The airplane departed the right side of the runway, about 4,700 feet beyond the approach end, and stopped. To place the throttles in BETA, it was necessary to lift the power levers over the flight idle stop. Examination of the flight manual revealed a warning: 'Do not lift power levers in flight.'

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The captain's improper placement of the power levers in the BETA position, while the airplane was inflight. Factors were the fog and dusk conditions.

Findings

Occurrence #1: HARD LANDING
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
1. (F) WEATHER CONDITION - FOG
2. (F) LIGHT CONDITION - DUSK
3. THROTTLE/POWER LEVER,BETA CONTROL - ENGAGED
4. (C) THROTTLE/POWER CONTROL - IMPROPER USE OF - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT

On January 22, 1999, at 1719 eastern standard time, a Beech 1900D, N215CJ, operated by Colgan Air Inc. as flight 1070, was substantially damaged while landing at the Barnstable Airport (HYA), Hyannis, Massachusetts. The certificated airline transport rated captain, first officer (FO), and two passengers were not injured. Night instrument meteorological conditions prevailed for the positioning flight which had departed Boston, Massachusetts, at 1600, and was conducted under 14 CFR Part 91.

According to Colgan Air records, and interviews, flight 1070 was scheduled as a positioning flight with two company employees onboard. The pilots started their taxi about 1600 and were airborne a few minutes later. The en route portion of the flight was reported as uneventful. The first two approaches at HYA resulted in missed approaches, after which, the captain elected to hold for a while to see if the weather would improve.

At 1706:24, the cockpit voice recorder (CVR) recorded a public address announcement by the captain, "Hey guys, we're gonna try it one more time. If we have to go missed we're gonna go back to Boston, OK?" The FO then contacted Cape Approach Control and requested radar vectors for another ILS approach to Runway 15. He further stated that if they missed on this approach, they would like to go back to Boston. At 1712:32, the captain advised Colgan Operations in Boston, that he intended to make one more approach into HYA.

At 1714:14, Cape Approach Control cleared the flight for the approach. The airplane was configured with the wing flaps at 17 degrees (approach). At 1714:52, the FO contacted the HYA air traffic control tower, and at 1714:55, the landing gear was extended. A few seconds later, flight 1070 was cleared to land by the control tower.

At 1715:14, the FO called, "landing un, gear's down, three green."

At 1715:54, the FO called, "OK, on the slope. On the localizer. Lookin' good and thousand feet till DH."

Prior to passing through 500 feet, the strobes were turned off, and just after passing 500 feet, the FO called, "OK, stay inside and I'll look outside for you." The altitudes from 500 feet to 100 feet above decision height (DH) were called out by the FO.

At 1717:32, the FO reported that he had the runway in sight. A few seconds later the captain queried the FO as whether he had the runway in sight. By 1717:37, both pilots had reported that they had visually acquired the runway, and at 1717:40, the captain called for the wing flaps to be set to the landing position.

At 1717:47, the cockpit area microphone (CAM) recorded a sound similar to decrease in engine RPM

At 1717:48, the captain called, "flaps landing? and uh....."

At 1717:51, the CAM recorded a sound similar to aircraft touching down on the runway.

At 1717:52, the CAM recorded a sound similar to landing gear warning horn.

At 1717:58, the captain said, "hang on."

The recording ended at 1718:04.

In a written statement the captain stated:

"...I could see the airport fully. I made a normal landing the airplane on the centerline. I started my flare at the normal altitude and started retarding the PWR Levers. The airplane soon started to settle as normally, then the sink rate increased making the landing firm. The landing was a firm touch down but there were no G.P.W.S or stall warning going off during my approach or landing. When I touched down I had a problem keeping the airplane rolling down the centerline...."

The first officer stated:

"... [the captain] lined the aircraft up with the centerline, commanded flaps landing, after which I felt the aircraft 'ballooned' a bit. It felt like the aircraft floated at appr. 20' over the runway at normal transition when I heard the captain taking the power levers over the 'FI [flight idle] gate' by the sound of the engine/props. The aircraft sank, sat on the ground instantaneous as if a firm landing had been made...."

One of the passengers stated:

"...As the aircraft continued closer to the runway in an apparent level attitude...I heard a propeller pitch change...The pitch change was heard at about ten feet...When this occurred the aircraft settled rapidly to the runway in a level flight attitude...."

The other passenger stated:

"...The landing was a bit hard, but didn't seem bad as I have felt much harder landings in a 1900 before. The plane then veered/tipped to the right and began to shake - very bumpy ride...."

In follow-up interviews with the Safety Board, both pilots reported that the approach was uneventful until after the approach lights were sighted. The FO remembered that the airplane floated down the runway, while the captain had no memory of the airplane floating. Both pilots described the landing as harder than normal, and then they lost directional control. The captain remembered his reference speed as 117 or 118 knots.

PERSONNEL INFORMATION

The captain held an airline transport pilot certificate with a rating for multi-engine airplanes, a commercial pilot certificate with a rating for single engine airplanes, and a flight instructor certificate. He was last issued a first class Federal Aviation Administration (FAA) airman medical certificate on January 7, 1999. He reported his total flight experience as 10,201 hours, with 6,333 hours in the Beech 1900, of which 3,101 were as pilot-in-command (PIC).

The FO held an airline transport pilot certificate with a rating for multi-engine airplanes, a commercial pilot certificate with a rating for single engine airplanes, and a flight instructor certificate. He was last issued a first class FAA airman medical certificate on March 2, 1998. He reported his total flight experience as 5,700 hours with 200 hours in the Beech 1900, none as PIC.

METEOROLOGICAL INFORMATION

The 1719 weather at Hyannis included variable winds at 3 knots, runway visual range 2,200 feet, prevailing visibility 1/4 mile, vertical visibility 100 feet, temperature and dewpoint 5 degrees Celsius, and altimeter 30.30 in/hg.

AIRDROME INFORMATION (Destination)

Runway 15 was 5,252 feet long, 150 feet wide, and had an asphalt surface. The runway was equipped with a medium intensity approach lighting system, and with runway alignment indicator lights.

FLIGHT RECORDERS

The digital flight data recorder (DFDR) and cockpit voice recorder (CVR) were forwarded to the Safety Board laboratories in Washington, DC, for readout.

According to the NTSB flight data recorder report, the wing flaps had been set to the landing configuration about 9 seconds prior to touchdown. Less than 1 second prior to touchdown, the airplane experienced a longitudinal acceleration of -0.28 Gs. There was an increase in engine torque, and a decrease in propeller rpm. At the same time, the elevator was changed to nose up pitch, and the nose of the airplane rotated to a nose up attitude. The airplane struck the ground with a +2.90 G load.

The airspeed was recorded as 125 knots when the wing flaps transitioned from approach to landing. When the airplane touched down 8 seconds later, the airspeed had decreased to 103.8 knots.

According to the CVR report, the recording consisted of four channels of fair quality audio information. A transcript was prepared of the final 11:40 of the 25:41 recording.

WRECKAGE AND IMPACT INFORMATION

On-site examination of the airplane by an inspector from the FAA and Colgan Air personnel revealed that the rear spar of the right wing was cracked, and the forward spar of the right wing was bent. The main landing gear wheel units had been fractured and separated from the main landing gear struts. Examination of the runway revealed the following marks:

Distance from Approach	Marks on Runway End of Runway 15
2,500 feet	Tire marks
2,800 feet	Right main landing gear strut contacted runway
2,900 feet	Right propeller contacted runway
3,500 feet	Left main landing gear strut contacted runway
4,700 feet	Airplane departed runway on right side and stopped

MEDICAL AND PATHOLOGICAL INFORMATION

Toxicological testing was conducted in accordance with the operator's manual, and both pilots were negative for drugs and alcohol.

ADDITIONAL INFORMATION

On the day of the accident, the captain had reported for duty at 0535, with his first departure from Hyannis at 0620. He returned to Hyannis at 0920, having accumulated 2 hours 31 minutes of flight time, with three flights. The FO for those flights went off duty.

The captain, with a different FO, departed Hyannis for Boston, Massachusetts, at 1100. They flew five more flights and accumulated an additional 3 hours 53 minutes before returning to Boston, at 1540.

The investigation revealed that movement of the power levers aft of the flight idle position required them to be lifted. Once the power levers were lifted, they cleared a gate, and

could be moved further aft. In this region, movement of the power lever had direct control over the pitch of the propellers and it is referred to as "BETA." Aft movement of the power levers in this region initially flattens the propeller pitch, and further movement places them in the reverse pitch area. Reverse pitch can be used on the ground to slow the airplane.

Examination of the FAA approved checklist for the airplane revealed the following:

"WARNING"

"Do not lift power levers in flight"

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Commercial	**Age:**	36, 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:**	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last Medical Exam:**	12/21/1998
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	10202 hours (Total, all aircraft), 6333 hours (Total, this make and model), 6900 hours (Pilot In Command, all aircraft), 169 hours (Last 90 days, all aircraft), 58 hours (Last 30 days, all aircraft), 12 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Beech	**Registration:**	N215CJ
Model/Series:	1900D 1900D	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	UE-215
Landing Gear Type:	Retractable - Tricycle	**Seats:**	21
Date/Type of Last Inspection:	12/28/1998, Continuous Airworthiness	**Certified Max Gross Wt.:**	16950 lbs
Time Since Last Inspection:	129 Hours	**Engines:**	2 Turbo Prop
Airframe Total Time:	5501 Hours	**Engine Manufacturer:**	P&W
ELT:	Installed, not activated	**Engine Model/Series:**	PT61-67D
Registered Owner:	COLGAN AIR INC.	**Rated Power:**	1279 hp
Operator:	COLGAN AIR INC.	**Air Carrier Operating Certificate:**	Flag carrier (121)
Operator Does Business As:		**Operator Designator Code:**	NSVA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	**Condition of Light:**	Dusk
Observation Facility, Elevation:	HYA, 55 ft msl	**Observation Time:**	1719 EST
Distance from Accident Site:	0 Nautical Miles	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Unknown / 0 ft agl	**Temperature/Dew Point:**	5°C / 5°C
Lowest Ceiling:	Overcast / 100 ft agl	**Visibility**	0.25 Miles
Wind Speed/Gusts, Direction:	3 knots	**Visibility (RVR):**	0 ft
Altimeter Setting:	30 inches Hg	**Visibility (RVV):**	0 Miles
Precipitation and Obscuration:			
Departure Point:	BOSTON, MA (BOS)	**Type of Flight Plan Filed:**	IFR
Destination:	(HYA)	**Type of Clearance:**	IFR
Departure Time:	1600 EST	**Type of Airspace:**	Class D

Airport Information

Airport:	BARNSTABLE MUNI (HYA)	**Runway Surface Type:**	Asphalt
Airport Elevation:	55 ft	**Runway Surface Condition:**	Dry
Runway Used:	15	**IFR Approach:**	ILS
Runway Length/Width:	5252 ft / 150 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 None	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	ROBERT L HANCOCK	**Adopted Date:**	06/22/2000
Additional Participating Persons:	BILL STEVENS; BEDFORD, MA ANDREW CLAY; MANASSAS, VA		
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.ntsb.gov/pubdms/.		