



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	ILIAMNA, AK	<b>Accident Number:</b>	ANC93FA161
<b>Date &amp; Time:</b>	08/31/1993, 1105 AKD	<b>Registration:</b>	N64273
<b>Aircraft:</b>	DE HAVILLAND DHC-2	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	3 Fatal, 3 Serious

**Flight Conducted Under:** Part 91: General Aviation -

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## Analysis

WHILE MANEUVERING AT LOW ALTITUDE TO OBSERVE MOOSE, THE AIRPLANE STALLED INTO THE GROUND. THE LODGE'S SENIOR PILOT STATED THAT THE LODGE HAD NO RECURRENT TRAINING PROGRAM.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE PILOT'S FAILURE TO MAINTAIN AIRSPEED RESULTING IN AN INADVERTENT STALL. A FACTOR IN THE ACCIDENT WAS THE INADEQUATE RECURRENT TRAINING OF THE PILOT BY THE OPERATOR/MANAGEMENT.

## Findings

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Occurrence #1: LOSS OF CONTROL - IN FLIGHT  
Phase of Operation: MANEUVERING

### Findings

1. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
  2. (F) INADEQUATE RECURRENT TRAINING - COMPANY/OPERATOR MANAGEMENT
  3. STALL - INADVERTENT - PILOT IN COMMAND
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Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER  
Phase of Operation: MANEUVERING

## Factual Information

### HISTORY OF FLIGHT

On August 31, 1993, at approximately 1105 Alaska daylight time, a wheel equipped de Havilland DHC2 MKE1 airplane, N64273, crashed while maneuvering approximately 6 miles west of Iliamna, Alaska. The airplane was being operated under 14 CFR Part 91 by Rainbow King Lodge of Iliamna, and had departed Iliamna on a company VFR flight plan, in visual meteorological conditions at approximately 1100. The commercial pilot and two passengers were seriously injured and three passengers were fatally injured. The airplane was destroyed.

After the accident, while awaiting medical evacuation at the Iliamna Airport, the pilot reportedly told witnesses that while he was maneuvering to look at a moose he lost control of the airplane and collided with the terrain. Investigators interviewed Mr. Harry Ricci, who identified himself as one of the managers of Rainbow King Lodge who had assisted in the medical evacuation of the pilot. Mr. Ricci told investigators that the accident pilot, Mr. Randy Toppen, had completed a preflight and taken off with a guide and four passengers for a landing strip west of Iliamna called Stuyhoke. He said that "Randy flew the same airplane yesterday." Ricci also told investigators that the accident pilot said, as he was carried on a stretcher, "I'm sorry, I'm sorry, I was going to look at a moose, I was in a turn, (the airplane) it got uncontrollable, I pushed the power up, that's it, I'm sorry."

NTSB and FAA Investigators interviewed Captain Michael W. McKendry, of Iliamna Air Taxi, a pilot who witnessed the accident airplane fly across the path of his airplane from right to left at a distance of approximately 1/4 to 1/3 mile. This witness said that he was "inbound" to Iliamna with fishing clients and was at an altitude of 700 feet above ground level (agl). He said that the Beaver was seen by him to be in a right wing down turn, near the ground at an altitude that he estimated to be 200 feet agl, and recalled seeing the "bottom of the Beaver's wing" as it turned. He estimated that the heading of the accident Beaver was 340 degrees in a right turn. That pilot also said that he last saw the accident airplane in a 30 degree right bank and nose low, 5 to 8 degrees. He said that he lost site of the Beaver behind a low rise but arriving over that spot moments later, spotted the crashed airplane nose down with a motionless passenger seen at the right side of the airplane. The witness pilot said that while he circled, that passenger showed some movement. The pilot circled over the accident site for about 50 minutes until fuel became a concern, during which time he radioed for and coordinated rescue activities.

### PERSONNEL INFORMATION

Pilot Randy J. Toppen 18866 SW Arrowood (winter) Lake Oswego, OR 97035

P. O. Box 106 Iliamna, AK 99606 (summer)

History of licenses: Private pilot license, single engine land, 5/26/88 single engine sea, 5/9/89, instrument 4/5/91 Commercial pilot's certificate 501783120, 4/29/91 Commercial pilot, single engine sea 5/22/91 (DHC-2 Beaver)

The pilot, represented by counsel, consented to interview approximately 50 hours after the accident. NTSB and FAA investigators were advised by the attending physician (surgeon) that "there is no reason to delay an interview longer, he's in some pain, but thinking clearly." Investigators from the Safety Board and the FAA met with the accident pilot and his attorney in

an Anchorage hospital on September 2, 1993. In that interview, the pilot recalled specific details of the weight and balance, fuel load, heading and altitude of the VFR departure and cruise to the fishing drop-off location. The pilot said that he did not recall looking at a moose and neither could recall the details of the period of time in flight before the crash. A transcript of that recorded interview is attached to this report.

During the interview, the pilot said, "I remember making a turn. . . I remember trying to roll outta [sic] the turn and uh, [sic] both pitch and yaw weren't responding as I was rolling outta the turn. I remember pushing the nose down some, adding power, and still wouldn't respond in a nose up position." Investigators then asked if "pushing the nose down and adding power (was) the normal response for what type of problem?"

The pilot said, "for a stall. And that's . . . . I was -- I normally would recognize the buffeting associated with a stall. Uh, had that specifically registered in my mind, it just wasn't flying like uh, it felt mushy."

Investigators asked, "(the airplane) felt mushy?" The pilot answered "Yeah . . . wasn't responding . . . nose up and wings level."

Mr. Toppen told investigators that his experience was approximately 1100 hours total pilot time, 500 hours of that on floats and "five to six hundred (hours) on wheels." He said that most of his "time was in a Beaver, either on floats or on wheels."

Mr. Toppen recalled previous instances of circling animals with the Beaver airplane. He stated, in part, "If I'm making a slow, steep turn, after really looking at a bear, sometime or a moose, I'll put in climb flaps and, and uh, circle around these critters with, with climb flaps and, and un, additional prop RPM setting and. . ."

To the question, "So at some times you do make slow, steep turns to see animals close," Toppen replied, "Yeah. Or making like I make slow, relatively slow turns when I'm approaching to land, I'm going slower than. . . normal and I make sure that I don't have my flaps up when I'm coming . . . to land."

(Investigator's note: The aircraft's trailing edge wing flaps were found to be up in the wreckage, See impact and wreckage information.)

Mr. Toppen's log book indicated that he received 14.5 hours of training in a DHC2 Beaver (wheel equipped) between July 26, 1989 and August 28, 1989. Mr. Toppen had logged between approximately 96 hours and 119 hours, inclusively, of total flight time at this point.

He said that he began working as a lodge pilot for "Don Louche at Redoubt Mountain Lodge" in April 1991. He said that he started work at that time "with just basically a float ticket" and had "very few hours, couple hundred, two hundred fifty hours' total time and spent a month and half just flyin' with me daily, teachin' me how to fly the Beaver and spent another good two months flying just freight for him." Mr. Louche identified himself as the Rainbow King Lodge "senior pilot."

Mr. Toppen's log book indicated that he had 14.5 hours of flight time in a DHC2 Beaver (wheel equipped) and 294.1 total hours when he began work on May 11, 1991.

Entries in Mr. Toppen's log book were totalled to August 10, 1993, at which time his total flight time was entered as 905.8 total hours, 515.2 single engine land, and 390.6 single engine sea.

Investigators asked the accident pilot if he recalled doing stall training in the (Beaver) aircraft.

He said that he did recall that he did.

Mr. Toppen's pilot log book showed that he had nine flights in the DHC2 Beaver between May 11, 1991 and May 21, 1991. Six of the flight log entries have annotations indicating training was conducted. Two of the nine flights indicated that the purpose of the flight was maintenance related with "Don" and one flight was "with Don and Dee to look around Kenai." The nine flights totalled 18.3 flight hours during which Mr. Toppen logged the time as 18.3 "pilot in command ('incl. solo)."

The six flights which indicated training annotations totalled 13.9 hours flight time. No entries indicated that dual (instructional) flight time was given except the final flight of training on May 21, 1991. That entry indicated 1.6 hours of dual instruction was provided by a "George Chapman, 1257313 who stated, "I have personally instructed this person and consider him ready to take 'comm. sea plane test." The annotations written for this flight stated, "spot landings, emergency prod, step turns, short field, normal landings." Six landings were logged. No remarks were entered for stall training.

On May 13, 1991, the DHC2 entry in the pilot's log book indicated in the annotation on a 3.3 hour flight indicated, "step taxi, glassy water operations, P O stalls [power off stalls .ed], med turns, LORAN oper [Long Range Aids to Navigation equipment .ed]

Mr. Toppen's log book entry of May 22, 1991 indicates that "Edward D. Langdon AL-ANC-32" gave a satisfactory "ASES Comm check satisfactory. [Airplane Commercial check flight]. The FAA Flight Standards District Office, Anchorage confirmed that Mr. Langdon was, at that time, an FAA-Approved civilian pilot examiner.

During the September 2, 1993 hospital interview, investigators asked Mr. Toppen if he had ever, in stall training, performed "approach-turn stalls?" Toppen told investigators, in part, "Ya know, I did it -- this is funny that you asked this 'cause I did it after I took a -- I hadn't done it with Don to start with, stalls when turning and I -- when I went and did the commercial seaplane checkride with a fellow out of Eagle River, I forget his name, he actually asked me to do some and to be -- to do some stalls and turning. And I said I haven't done those before, I really don't wanna [sic] do them. And, uh, he didn't -- and after -- we didn't do any, he didn't force me to do any, then after we landed he said you probably should go up and do some work uh, practicing stalls with different flap settings and different banks 'o turn, he says you've got no problem doing that? And I said yea, that's neat. And so, after that date, there've been several times in both 67112, the airplane that I was flying at the time and in 64273, I had done numerous uh, stalls with flaps on."

Mr. Toppen told investigators that on occasions that he would later practice stalls, no one was present to observe this practice.

Investigators examined Mr. Toppen's pilot logs (2), with flight entries from December 12, 1987 to August 27, 1993. All log entries included locations, persons on board, maneuvers, purpose of the flight and other narrations. Other than the "P O Stalls" (power-off) entry on May 13, 1991, no entries could be found indicating stalls with power on, departure turn stalls, approach turn stalls, or other configurations of stalls, were practiced or instructed in a DHC2 Beaver airplane.

Investigators interviewed management and the lodge's senior pilot who stated that the lodge had no recurrent training program, other than stating, "the pilots can practice with the airplane on the way back from Anderson Lake, when we bring the airplane's back (at the beginning of

the season.)

An examination of the accident pilot's flight log showed that prior to ferrying N64273 from Anderson Lake (near Anchorage) to Iliamna on 5/15/93, remarks indicated "OP Check - T&G's", and four (4) landings were logged as water landings. The duration of that flight was shown to be 1.2 hours (1+12). On the following day, the log entry shows a flight from Anderson Lake to Iliamna conducted in 2.5 hours. One water landing was logged and remarks stated "w/Rusty-clear-LC Pass (Lake Clark) very nice". Further examination of log entries from the next flight (5/20/94) to the last flight log entry before the accident (8/27/94) did not reveal any recurrent training maneuvers conducted. All flights had log entries indicating revenue producing and logistics flights for lodge operation.

#### AIRCRAFT INFORMATION

The DeHavilland DHC-2 Beaver, serial number 897, entered commercial service on May 14, 1974, from the U.S. Army, its original owner. At the time of transfer from military service, it was shown to have 3262 hours of airframe usage.

In 1987, with 4,257 hours of flight on the airframe the records showed that the airplane underwent major overhaul and rework at Kenmore Air in Seattle, and a zero-timed major overhauled Pratt & Whitney engine, SN 42-122580, was installed. Records showed also that aircraft was stripped, painted, new glass, door modifications, seats and wheels were installed.

The airplane was maintained and inspected under annual inspection records as per requirements for aircraft not in commercial service. Annual inspection entries do not indicate damage in the past two years operational history, and other than replacement for wear, no major repair was noted. Inspections and adjustments in accordance with applicable Airworthiness Directives (AD's) were entered in logs through 7/17/93. An examination of FAA Forms 337 (Major Repair and Alteration Records) did not reveal damage history after August 1990. In 1991, that damage, to skin and bulkheads, were made in the fuselage. Left hand wing skin was repaired and skin repairs were made in the horizontal stabilizer and elevator. In the following 36 months of operation and inspections, no anomalies in these repairs were noted.

Interviews with the accident pilot as well as other pilots who flew the accident airplane did not reveal a history of malfunctions, handling difficulties or anomalies with the operation.

Investigators calculated the aircraft to have weighed approximately 4712 pounds based on 70 gallons of fuel, six passengers weights totalling 1100 pounds and 40 pounds of equipment, tackle, boots, food and personal belongings found on board. This information was based on the recall of the pilot in his hospital bed.

Investigators were provided with aircraft, engine and propeller log books, weight and balance, Supplemental Type Certificates (STC) and FAA Forms 337. No Pilot's Operating Handbook (POH) were found in the aircraft or could be produced by the company/management. Airplane operating material found in the airplane consisted of a fuel consumption and cruise power chart and a list of coordinates for locations in the lodge's operating area. No aircraft checklists or operating instructions were found in the aircraft or provided by the lodge to investigators.

In a DHC-2 Beaver Flight Manual (dated 31 March 1956) provided by Bombardier/De Havilland Aircraft, as parties to the NTSB investigation, a statement appears at section 4.6.1, which addresses load factors and stalling speeds. This entry states: "In tight turns, flight load

factors may reach the limit loads, and may also increase the danger of unintentional stall."

#### WRECKAGE AND IMPACT INFORMATION

Tree scars and ground scar alignment indicate the heading of the aircraft to be 350 degrees magnetic turning to 360 degrees magnetic as the collision with the ground occurred. Small tree top branches were missing from 60 foot trees, beginning approximately 210 feet from the scar matching the nose impact. At 170 feet from the nose scar, a tree 14 inches diameter at the trunk at ground level was broken off at approximately 35 feet above ground. The diameter of the trunk at that point was eight inches.

The airplane rested nose down, at approximately a 40 degree angle on a magnetic heading of 040 degrees. The cockpit/cabin was detached from the top engine mounts and the engine was nearly vertically pushed into soft ground. Two blade of the three bladed propeller could be seen with bending and twisting on the outboard 12 inches and misaligned approximately 8 inches from the rotational plane.

The right wing was detached from the fuselage and rested on its top surface on the ground on the right side of the fuselage. The right wing lift strut remained attached to the fuselage and wing.

That wing had a 30 inch semi-circular tear on the leading edge into the spar section located approximately one-half semispan. Debris of bark, cambium and wood were found in the tear. Similar wood, bark and cambium were found on a trunk section of a deciduous tree that had been broken off approximately 35 feet above ground level, 235 feet from the wreckage. Trailing edge wing flaps were up, or in the cruise configuration.

The right landing gear rested at the airplanes left side, 10 feet aft of amidships, at a distance of 25 feet. The left wing and left landing gear remained attached to the fuselage.

A scar, three feet deep, 10 feet long, aligned north and south, was evidenced 65 feet south of the wreckage. Evidence indicated that the divot had contained a cluster of eight inch red birch trees, as that root-ball and tree cluster had now meshed itself with the aircraft engine and accessory section.

Investigators found the left elevator control surface 35 feet east of the ground scar and the right elevator surface 28 feet aft of the tail of the wreckage. Separation failure modes as could be seen by the naked eye and a hand-held magnifying glass on scene were consistent with a combination of instantaneous failures.

All aircraft seats indicated frame failure, forward along the longitudinal axis of the airplane. Seatbacks of all seats were broken forward.

Investigators examined control cables for continuity and established all connections to the rudder and the elevator to be normally attached and in good condition. All cables in the fuselage were found to be safety-wired and clean, and routed through grommets and guides. Control cable continuity could not be established at the bell cranks below the pilot station due to fuselage crushing in that area. Continuity could neither be established to the wings due to tearing and separation, however cable routing and condition looked to be ordinary and in good condition.

The general condition of the fuselage tail section, pulleys, attachment points, movable hinge points and bulkheads were examined by investigators and were found to be clean and without

corrosion to the naked eye and supplemental artificial light.

Numerous small parts, actuators, springs, bell cranks, and aircraft skin and fairings littered the wreckage path, consistent with impact breakup of the aircraft.

#### ADDITIONAL INFORMATION

Mr. Charles Williams, who identified himself as the Rainbow King Lodge Director of Maintenance, said that the pilot Toppen was a second year employee. He said that earlier that day, around 7AM, Toppen had flown the accident airplane to Nagashik and returned around 9AM. He said the airplane had no maintenance problems and that the airplane was operating "fine." He said that problems with N64273 have been "very few, and since changing from wheels to floats on July 17 (1993), we've only had a tail (wheel) hydraulic strut go flat, and I fixed a bleed system problem in the flaps, that's all." Williams said that Toppen flew it on floats and wheels for two years since major repair in 1991.

Williams recalled that the airplane had major repairs including a new motor mount. He said that all repair was done at Matenuska Air , by Mr. George Chapman, and that facility had completed an annual inspection on the airplane approximately 175 hours prior to the accident.

Mr. Williams gave his address as 1316 Hayden Drive, McHenry, IL, 60050 and showed investigators an Airline Transport License, an A&P license and IA license (mechanic and inspector).

Mr. Tom Robinson was identified as the lodge's owner and Harry Ricci and Don Losche identified themselves as the lodge's chief pilot and flight instructor, respectively.

Statements are attached by Tom Rigden, registered guide, along with Larry Bryant, pilot for Iliamna Air Taxi, both of whom were eyewitnesses and assisted the Alaska State Troopers with rescue efforts.

Investigators also interviewed two surgeons who were vacationing as sport fishermen and were brought into the crash site by pilots McKendry and Larry Bryant, approximately 25 minutes after the crash. Those surgeons described efforts to stabilize the injured, prior to the arrival of the Alaska Air National Guard/USAF Pararescue team, approximately 3 hours after the accident. Attempts were unsuccessful to resuscitate the three deceased.

The factual report was revised on June 30, 2003, to correct factual inaccuracies (see Michael McKenry letter dated June 21, 2003.)

## Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 2 Valid Medical--no waivers/lim.	<b>Last FAA Medical Exam:</b>	04/19/1993
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	1100 hours (Total, all aircraft), 900 hours (Total, this make and model), 1000 hours (Pilot In Command, all aircraft), 200 hours (Last 90 days, all aircraft), 70 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	DE HAVILLAND	<b>Registration:</b>	N64273
<b>Model/Series:</b>	DHC-2 DHC-2	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal; Utility	<b>Serial Number:</b>	897
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	7
<b>Date/Type of Last Inspection:</b>	05/11/1993, Annual	<b>Certified Max Gross Wt.:</b>	5100 lbs
<b>Time Since Last Inspection:</b>	190 Hours	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	5518 Hours	<b>Engine Manufacturer:</b>	P&W
<b>ELT:</b>	Installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	R-985-AN14B
<b>Registered Owner:</b>	RAINBOW KING LODGE, INC	<b>Rated Power:</b>	450 hp
<b>Operator:</b>	RAINBOW KING, INC	<b>Operating Certificate(s) Held:</b>	None
<b>Operator Does Business As:</b>	RAINBOW KING LODGE	<b>Operator Designator Code:</b>	



## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	, 0 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1100	Direction from Accident Site:	0°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	7 Miles
Lowest Ceiling:	Broken / 1500 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	12 knots / 15 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	45°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	16° C / -18° C
Precipitation and Obscuration:			
Departure Point:		Type of Flight Plan Filed:	Company VFR
Destination:	STAYHOK RIVER, AK	Type of Clearance:	None
Departure Time:	1055 ADT	Type of Airspace:	Class G

## Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Destroyed
Passenger Injuries:	3 Fatal, 2 Serious	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 Fatal, 3 Serious	Latitude, Longitude:	

## Administrative Information

Investigator In Charge (IIC):	DOUGLAS R HERLIHY	Report Date:	12/02/1994
Additional Participating Persons:	MICHAEL W HINDS; ANCHORAGE, AK JULIA GRIMES; KING SALMON, AK		
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 <a href="mailto:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).