



National Transportation Safety Board Aviation Accident Factual Report

Location:	Nanwalek, AK	Accident Number:	ANC04LA050
Date & Time:	05/02/2004, 1340 AKD	Registration:	N35860
Aircraft:	Cessna U206F	Aircraft Damage:	Substantial
Defining Event:		Injuries:	5 None
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

History of the Flight

On May 2, 2004, about 1340 Alaska daylight time, a tundra tire-equipped Cessna U206F airplane, N35860, sustained substantial damage when it collided with rocky terrain during takeoff initial climb from the English Bay Airport, Nanwalek, Alaska. The airplane was being operated as a visual flight rules (VFR) on-demand passenger flight under Title 14, CFR Part 135, when the accident occurred. The airplane was operated by Smokey Bay Air Inc., Homer, Alaska. The commercial certificated pilot, and the four passengers, were not injured. Visual meteorological conditions prevailed, and VFR company flight following procedures were in effect for the flight to Homer.

During a telephone conversation with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC), on May 2, the director of operations for the operator reported that the airplane was departing runway 01 at Nanwalek. During the takeoff, the airplane collided with rocky terrain adjacent to the left side of the runway. The nose gear collapsed, and the airplane received damage to the wings, engine, and landing gear. Prior to the accident, the pilot had conducted two previous flights to Nanwalek.

On May 3, during a telephone conversation with the NTSB IIC, the pilot reported that the airplane was equipped with a Robertson Short Takeoff and Landing (STOL) modification. He said he lowered the airplane flaps to 20 degrees, and applied full power for a short field takeoff with the control yoke aft. As the airplane gained speed, the nose rotated to about 10 degrees above the horizon, and the main landing gear tires lifted off the runway surface. The pilot said about 3 feet above the runway, the airplane suddenly rolled to the left. He applied right aileron and right rudder to stop the roll, without affect. The left wingtip collided with small rocks and beach, about 800 feet from the beginning of the runway, and the airplane swerved about 30 degrees to the left. The nose gear then collided with a large boulder, separating the nose wheel. The airplane came to rest on a rocky beach, about 150 degrees to the left of the runway 01 centerline. The pilot said the engine was producing power throughout the event. He did not indicate any problem with the aileron controls.

Postaccident photographs of the accident scene and the airplane were taken by law enforcement personnel from the Alaska State Troopers about 1800. These photos were reviewed by the NTSB IIC. The photographs depicted the airplane on the beach area, adjacent to the runway, after the airplane was pulled upslope, out of the tidal waters of the bay by residents of Nanwalek. The photographs revealed that the left wing was bent upward at the tip. The right wing was bent upward about midspan. The right horizontal stabilizer and elevator was bent downward about midspan. The right main landing gear strut was bent downward, and the right main wheel assembly was bent outward about 45 degrees at the top of the wheel. A view of the aft side of the airplane revealed that the left wing flap was extended slightly. The right wing flap was extended about one-half of its range. A view of the instrument panel revealed the flap lever was up, and the flap position indicator was 10 degrees.

Weather Information

The pilot indicated that the weather conditions consisted of patchy low fog next to the mountains, a sky condition of 1,500 feet overcast, temperature 42 degrees F, and the wind was 270 degrees at 3 knots.

The closest official weather observation station is Seldovia, Alaska, which is located 8 nautical miles northeast of the accident site. At 1353, an Aviation Routine Weather Report (METAR) was reporting in part: Wind, variable at 4 knots; visibility, 10 statute miles; clouds and sky condition, 500 feet overcast; temperature, 45 degrees F; dew point, 43 degrees F; altimeter, 29.90 inHg.

Airplane information

The airplane is equipped for the installation of floats, and was equipped with a belly-mounted cargo pod. The flap actuator and flap position indicator have indices for flaps up, 10 degrees, 20 degrees, and full flaps. In addition, the airplane is required to have a placard that states, "Floatplane Max Flaps 30 degrees."

The airplane's flap mechanism consists of a flap motor that utilizes a jackscrew to extend the right flap. The left flap is connected to the right via cable to a bellcrank, then to a push-pull rod. As the right flap is extended or raised, the left flap extends or raises the same amount.

Robertson Aircraft STOL Information

The Robertson STOL modification to the airplane was installed on April 18, 1977. The modification consists of a leading edge cuff on each wing, and additional bellcranks and push-pull tubes that droop the ailerons as the wing flaps are extended. The following is the Robertson flap and aileron position data:

When the flaps are up, the normal aileron travel is 14 degrees down, and 20 degrees up (all values are plus or minus 2 degrees). When the flaps are extended to 25 degrees, the aileron

droops to 16 degrees, and the aileron travel is 28 degrees down, and 3 degrees up. When the flaps are extended to 30 degrees, the aileron droops to 15 degrees, and the aileron travel is 26 degrees down, and 4 degrees up. When the flaps are extended to 40 degrees, the aileron droops to 13 degrees, and the aileron travel is 25 degrees down, and 5 degrees up.

The Robertson owner's manual supplement contains information for "normal" operation, and "STOL" operation. The owner's manual describes "normal" operation as specifically tailored for the average pilot who desires increased safety margins, utility, and peace of mind. "STOL" operation is described for use by the experienced pilot when emergency conditions or operation into austere fields require the utmost from the aircraft, consistent with safety. The manual states, in part, that a "normal" takeoff consists of: "Flaps, 20 degrees; power, full throttle and 2,850 rpm; elevator control, lift nose wheel at 55 mph; accelerate to 70 mph over a 50 foot obstacle."

A "STOL" takeoff consists of, in part: "Flaps, 25 degrees (Note: to set flaps to 25 degrees, ignore detents on flap position indicator selector switch and observe aileron as flaps are being lowered. With control wheel centered, continue lowering flap until aileron has reached maximum droop and just started back up.) Brakes, set; power, full throttle and 2,850 rpm; Brakes, release; elevator control, lift nose at 50 mph; accelerate to 55 mph over a 50 foot obstacle."

According to the Robertson owner's manual supplement, at gross weight, the power off stall speed with flaps up is 67 mph; at 20 degrees of flaps, the stall speed is 58 mph; at 40 degrees of flaps, the stall speed is 55 mph.

Airplane Examination

The airplane was recovered by company and insurance company personnel and transported to Homer, Alaska. The wings were removed during the recovery process, which included disassembly of the aileron and flap control cables. During the recovery process, recovery personnel photographed the airplane before disassembly. Utilizing the photographs taken by recovery personnel before removal of the wings, and referencing the position of the flaps to the fuselage, the NTSB IIC estimated that when the photographs were taken by recovery personnel, the left flap was extended about 7 degrees, and the right flap was extended about 24 degrees.

On May 18, the wings and fuselage were examined in Homer by the NTSB IIC. Prior to the examination, all of the wing inspection panels and access plates were removed by company maintenance personnel. The examination revealed the right wing was bent upward about 80 degrees at the outboard end of the flap. The right aileron was wrinkled and bent upward at the outboard attach point. The outboard end of the right flap was bent downward about 45 degrees, and the outboard flap track assembly was fractured. Examination of the right flap actuator revealed that it was extended about 5 inches, or 32 threads. According to the manufacturer, extension of the flap actuator corresponds to about 26 degrees of flap extension. The director of maintenance for the operator reported that during recovery and removal of the wing for transport, he activated the flap motor in a downward direction for a few seconds to

facilitate the removal process. Examination of the internal flap and aileron control mechanism within the right wing revealed no observed mechanical malfunction.

The left wing was bent upward about 3 feet inboard from the wingtip, accompanied by diagonal scratches. The left aileron had upward curling about 12 inches inboard from the wingtip with diagonal scratches along the underside. The underside of the left aileron had midspan tearing of the skin surface adjacent to the aileron droop push-pull tube. This was accompanied by over-travel bending consistent with deflection of the aileron in a downward direction. The rod end bearing for the aileron droop mechanism, at the inboard extension bellcrank attach point, was broken consistent with overload signatures. Examination of the internal flap and aileron control mechanism within the left wing revealed no observed mechanical malfunction.

Continued examination of the left wing revealed a metal rivet bucking bar within a space formed by the leading edge skin and the forward spar, between wing station 118.0 and 136.0. The spanwise space for the location of the slightly rusted bar was formed by chordwise nose ribs that each have lightening holes in the vertical web of the each rib. Just inboard from the nose rib at wing station 118.0 is a pulley for the left aileron. Visual examination of the internal space containing the bucking bar was conducted by using a flashlight and mirror. The examination revealed scuffing of the primer paint. No denting, bending, or signs of impingement were observed along the edges of the lightening hole, nor were there any signs of damage to the aileron roller.

Since the wings were removed for recovery, rigging of the aileron and flap cables could not be verified, other than to note that they were not separated or broken.

An examination of the instrument panel revealed that the flap handle was in the down position. The flap indicator was in the up position. A placard was affixed to the instrument panel adjacent to the flap indicator which stated: "Floatplane Max Flaps 30 degrees."

Video Information

The right front seat passenger was recording the flight on a hand-held video recorder. The video tape, which included the accident event, was provided to the NTSB IIC, and was submitted the NTSB Recorder Laboratory. The Recorder Laboratory copied the video and returned it to the NTSB IIC. Review of a copy of the video tape revealed that the passenger predominately captured views toward the right front portion of the airplane. The video revealed that prior to takeoff, the airplane was taxied at a fast pace toward the departure end of the runway. The airplane made a rolling "U" turn, did not slow or stop, and the pilot applied full power. A view of the right aileron during the takeoff roll does not reveal any obvious droop to the aileron. The right flap position is not captured on the video. As the airplane lifted off the ground, it almost immediately rolled to the left with subsequent collision with the ground. The video does not record any sound of a stall warning horn, or a view of the flap handle position. The elapsed time from application of full power for takeoff, until the left wing collided with the ground, was about 17 seconds.

Following the accident, additional video from the passenger's camera recorded the position of the airplane at the point of rest. The video showed that the left flap appeared to be slightly extended. The right flap appeared extended about one-half of its normal travel.

The original video and a copy provided to the NTSB IIC, was returned to the owner.

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	43, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane Single-engine	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	08/11/2003
Occupational Pilot:		Last Flight Review or Equivalent:	04/19/2004
Flight Time:	1310 hours (Total, all aircraft), 990 hours (Total, this make and model), 1109 hours (Pilot In Command, all aircraft), 119 hours (Last 90 days, all aircraft), 49 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N35860
Model/Series:	U206F	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	U20602764
Landing Gear Type:	Tricycle	Seats:	6
Date/Type of Last Inspection:	03/28/2004, 100 Hour	Certified Max Gross Wt.:	3600 lbs
Time Since Last Inspection:	98 Hours	Engines:	1 Reciprocating
Airframe Total Time:	7650 Hours at time of accident	Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	IO-520-DCF
Registered Owner:	Smokey Bay Air Inc.	Rated Power:	300 hp
Operator:	Smokey Bay Air Inc.	Operating Certificate(s) Held:	On-demand Air Taxi (135)
Operator Does Business As:		Operator Designator Code:	X53A

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:		Visibility	10 Miles
Lowest Ceiling:	Overcast / 1500 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	3 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	270°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	7° C
Precipitation and Obscuration:			
Departure Point:	Nanwalek, AK (KEB)	Type of Flight Plan Filed:	Company VFR
Destination:	Homer, AK (PAHO)	Type of Clearance:	None
Departure Time:	1340 ADT	Type of Airspace:	Class G

Airport Information

Airport:	English Bay (KEB)	Runway Surface Type:	Gravel
Airport Elevation:	27 ft	Runway Surface Condition:	Rough; Soft; Wet
Runway Used:	01	IFR Approach:	None
Runway Length/Width:	1850 ft / 50 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	4 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	5 None	Latitude, Longitude:	59.352222, -151.925278

Administrative Information

Investigator In Charge (IIC):	Scott Erickson
Additional Participating Persons:	Ruben Saldana; FAA-AL-ANC FSDO 03; Anchorage, AK
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/ .