



## National Transportation Safety Board Aviation Accident Factual Report

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<b>Location:</b>	Wasilla, AK	<b>Accident Number:</b>	ANC16LA068
<b>Date &amp; Time:</b>	09/16/2016, 1104 AKD	<b>Registration:</b>	N8008Z
<b>Aircraft:</b>	JEFFERY D TUTTLE BDK Carbon Concepts	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Sys/Comp malf/fail (non-power)	<b>Injuries:</b>	1 Serious
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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On September 16, 2016, about 1104 Alaska daylight time, a tailwheel-equipped, experimental amateur-built, Tuttle BDK Carbon Concepts airplane, N8008Z, sustained substantial damage following an inflight structural failure of the leading-edge wing slats, followed by a loss of control, and subsequent impact with terrain. The accident occurred as the pilot was attempting to return for an emergency landing near Wasilla, Alaska. The airplane was registered to and operated by the pilot, as a visual flight rules (VFR) flight under the provisions of 14 Code of Federal Regulations (CFR) Part 91 when the accident occurred. The certificated commercial pilot, the sole occupant of the airplane sustained serious injuries. Visual meteorological conditions prevailed, and no flight plan had been filed. The local area flight departed Anderson Lake Airport, Wasilla, Alaska at about 1100 with a planned stop at Palmer Airport, Palmer, Alaska for touch-and-go landings prior to returning to Anderson Lake Airport.

During a telephone conversation with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on September 21, the pilot reported, from his hospital room, that the accident flight was the first flight after he completed building the experimental, amateur-built airplane. He added that the airplane was equipped with carbon fiber, leading-edge wing slats, manufactured by Carbon Concepts LLC, Wasilla.

The pilot said that after departure from Anderson Lake Airport, he flew the airplane westbound while climbing to an altitude of about 1,000 feet, followed by a turn to the east. After completing the turn to the east, the pilot heard a loud "pop" and he immediately saw that the airplane's left wing leading-edge wing slat had buckled and distorted making the airplane difficult to control about the longitudinal and vertical axis. He stated that while struggling to maintain control of the airplane he realized that he was too high to make an emergency, straight in approach to the Anderson Lake Airport, so he chose to overfly the airport while descending. He added that during the emergency descent to the airport, he was forced to make significant engine power adjustments in an effort to maintain control of the airplane. After overflying the airport, he made a right turn to begin the approach to the Anderson Lake Airport when the right wing leading-edge wing slat failed, resulting in almost a complete loss of control. He guided the airplane using the rudder and varying the engine power settings to an

open road, with his main concern being not to cause undue harm to people or property on the ground. During the emergency descent the airplane struck the top of a tree before impacting the road in a nose low attitude, sustaining substantial damage to wings and fuselage.

On September 29, 2016, the NTSB IIC, along with the rest of the investigative team examined the airframe and engine at a private residence in Wasilla. All the primary flight control surfaces remained connected to their respective attach points, and flight control continuity was verified from all of the primary flight control surfaces to the cockpit.

Each wing was equipped with three carbon fiber leading-edge slats located center, inboard and outboard. The right wing's leading-edge slats revealed features consistent with a compression failure of the leading edge, trailing edge bond failure, lack of adhesive in the joints, and ply bridging. In addition, the inboard slat attachment bracket exhibited deformation patterns consistent with an overload failure.

The left wing leading-edge slats had no apparent leading edge damage but revealed signatures consistent with resin starvation. In addition, the attach bracket between the inboard and center slat exhibited features consistent with an adhesive failure in the joint and a disbond at the attachment. Microscopic inspection of the attachment bracket revealed a lack of adhesion, improper surface preparation, and improper adhesive thickness.

The propeller remained attached to the engine crankshaft and one of the propeller blades exhibited chordwise scratching. Examination of the Lycoming O-320-A2B engine revealed no anomalies, contamination, or evidence of malfunction in any of the engine accessories. The cylinders, pistons, valve train, crankshaft, and other internal components were all without evidence of anomaly or malfunction.

The closest weather reporting facility is Wasilla Airport, Wasilla, Alaska about 8 miles southwest of the accident site. At 1056, an aviation routine weather report (METAR) at Wasilla, reported: wind from 070° at 5 knots; visibility, 10 statute miles; sky condition, scattered clouds 7,000 feet, scattered clouds 8,000 feet; temperature, 54° F; dew point 41° F; altimeter, 29.38 inHG.

After repeated attempts, the pilot did not submit an NTSB Pilot/Operator Accident Report form (NTSB Form 6120.1) as required.

## Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	34, Male
<b>Airplane Rating(s):</b>	Single-engine Land; Single-engine Sea	<b>Seat Occupied:</b>	Front
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Unknown
<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>	Unknown	<b>Last FAA Medical Exam:</b>	
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	700 hours (Total, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	JEFFERY D TUTTLE	<b>Registration:</b>	N8008Z
<b>Model/Series:</b>	BDK Carbon Concepts	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	Yes
<b>Airworthiness Certificate:</b>	Experimental	<b>Serial Number:</b>	BDK-001
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	Unknown	<b>Certified Max Gross Wt.:</b>	
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>		<b>Engine Model/Series:</b>	O-320-A2B
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	150 hp
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PAWS	Distance from Accident Site:	
Observation Time:	1856 UTC	Direction from Accident Site:	
Lowest Cloud Condition:	Scattered / 7000 ft agl	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	70°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.38 inches Hg	Temperature/Dew Point:	12° C / 5° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Wasilla, AK	Type of Flight Plan Filed:	None
Destination:	Wasilla, AK	Type of Clearance:	None
Departure Time:	AKD	Type of Airspace:	Class G

## Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious	Latitude, Longitude:	61.613889, -149.327778

## Administrative Information

Investigator In Charge (IIC):	David B Banning
Additional Participating Persons:	Curtis Martin; Federal Aviation Administration; Wasilla, AK
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	<a href="http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=94051">http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=94051</a>