



National Transportation Safety Board Aviation Accident Final Report

Location:	Nome, AK	Accident Number:	ANC11LA041
Date & Time:	06/01/2011, 2140 AKD	Registration:	N168TT
Aircraft:	ECLIPSE AVIATION CORP EA500	Aircraft Damage:	Substantial
Defining Event:	Landing gear not configured	Injuries:	2 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot indicated that, prior to the accident flight, the wing flaps had failed, but he decided to proceed with the flight contrary to the Airplane Flight Manual guidance. While conducting a no-flap approach to the airport, he decided that his airspeed was too fast to land, and he initiated a go-around. During the go-around, the airplane continued to descend, and the fuselage struck the runway. The pilot was able to complete the go-around, and realized that he had not extended the landing gear. He lowered the landing gear, and landed the airplane uneventfully. He elected to remain overnight at the airport due to fatigue. The next day, he decided to test fly the airplane. During the takeoff roll, the airplane had a severe vibration, and he aborted the takeoff. During a subsequent inspection, an aviation mechanic discovered that the center wing carry-through cracked when the belly skid pad deflected up into a stringer during the gear-up landing.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot landed without lowering the landing gear. Contributing to the accident was the pilot's decision to fly the airplane with an inoperative wing flap system.

Findings

Aircraft	Landing gear system - Not used/operated (Cause) TE flap actuator - Malfunction (Factor)
Personnel issues	Decision making/judgment - Pilot (Cause) Forgotten action/omission - Pilot (Cause) Alertness/Fatigue - Pilot

Factual Information

On June 1, 2011, about 2140 Alaska daylight time, an Eclipse EA-500 Airplane, N168TT, sustained substantial damage during a go-around at the Nome Airport, Nome, Alaska. The commercial pilot and the sole passenger were not injured. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was in effect. The flight originated from the Ugolny Airport (UHMA), Anadyr, Russia.

In a written statement to the NTSB investigator-in-charge (IIC), the pilot said that he was flying a visual approach to runway 10. He noticed that his airspeed was exceptionally high, but he elected to continue the approach. On short final to the runway, he realized that he was not going to be able to land, and decided to go-around. During the go-around procedure, the airplane's fuselage contacted the runway. The pilot was able to continue flying the airplane, and realized that he had not extended the landing gear during the approach. He then lowered the landing gear, and landed the airplane uneventfully. He said that the only damage to the airplane he noticed was a broken antenna and some missing paint on the belly skid pad.

The pilot was told that there were no U.S. Customs officers in Nome at the time, and that he would need to fly to Anchorage to clear customs. He said that he was very fatigued, and decided that he would fly to Anchorage the next morning.

On June 2, the pilot decided to make a test flight before proceeding to Anchorage. During the takeoff roll, the airplane encountered a vibration that the pilot said felt "like a violent nose wheel shimmy." He aborted the takeoff and elected to have the airplane inspected by a mechanic. Upon inspection, a mechanic discovered that the center wing carry-through structure was cracked when the belly skid pad deflected upward into a stringer that the structure was attached to.

The pilot initially reported no mechanical anomalies with the airplane prior to the accident, but later stated that the airplane flaps were inoperative during the accident flight. The pilot stated in an email that there was an indication of a flap failure, and that he had landed in Japan and Korea without the flaps. The IIC verified that the inboard flap actuator had over-traveled during retraction, and the flaps were stuck in the retracted position. According to the Eclipse Airplane Flight Manual (AFM), Section 3: "Emergency Procedures - Flaps"; a "FLAPS FAIL" caution message displayed by the Crew Alert System on the ground requires an action of "DO NOT FLY."

The airplane is equipped with a Diagnostic Storage Unit (DSU), which is capable of recording select airplane and flight parameters. Data from the DSU was downloaded after the accident flight and sent to the NTSB Vehicle Recorders Division for examination. The downloaded DSU data for the accident flight contained parameters regarding the airplane's airspeed, altitude, pitch, heading, flap handle position, landing gear handle position, landing gear position, and engine thrust lever angle. The data retrieved from the DSU showed that, during the accident approach, the airplane's flap handle was in the up position, the airspeed during the approach never dropped below 140 knots, and the landing gear and landing gear handle remained in the up position. This data corroborates the pilot's account of the events.

According to the Eclipse AFM, Section 7: "Landing Gear Warning," a visual "CONFIG GEAR" warning, and aural "Landing Gear" warning sounds if any of the gear is not down and locked

under three conditions:

1. Flaps extended to LDG setting and altitude below 12,500 feet Mean Sea Level (MSL).
2. Airspeed less than 120 knots, both throttles less than 30 percent, and altitude less than 12,500 feet MSL.
3. Airspeed between 120 and 140 knots, either throttle less than 30 percent, and altitude below 12,500 feet MSL.

The airplane was also equipped with a Honeywell KGP-560 Enhanced Ground Proximity Warning System (EGPWS). However, this model EGPWS does not provide aural warnings for flap or landing gear configuration.

Under the conditions reported by the pilot, and supported by the DSU data, the airplane would not have generated a landing gear warning during the accident approach and landing.

History of Flight

Prior to flight	Flight control sys malf/fail
Landing-flare/touchdown	Landing gear not configured (Defining event)
Approach-VFR go-around	Abnormal runway contact

Pilot Information

Certificate:	Commercial; Foreign; Private	Age:	63
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:	
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 2 With Waivers/Limitations	Last Medical Exam:	09/28/2009
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	2370 hours (Total, all aircraft), 205 hours (Total, this make and model), 2370 hours (Pilot In Command, all aircraft), 29 hours (Last 90 days, all aircraft), 22 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	ECLIPSE AVIATION CORP	Registration:	N168TT
Model/Series:	EA500	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	000042
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	10/18/2010, Continuous Airworthiness	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	2 Turbo Fan
Airframe Total Time:	343 Hours	Engine Manufacturer:	P&W CANADA
ELT:	Installed, not activated	Engine Model/Series:	PW610F-A
Registered Owner:	On file	Rated Power:	950 lbs
Operator:	On file	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	POAM	Observation Time:	2153 ADT
Distance from Accident Site:		Condition of Light:	Day
Direction from Accident Site:		Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Few / 1700 ft agl	Temperature/Dew Point:	6°C / 4°C
Lowest Ceiling:	Overcast / 8000 ft agl	Visibility	10 Miles
Wind Speed/Gusts, Direction:	3 knots, 120°	Visibility (RVR):	
Altimeter Setting:	29.78 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Precipitation		
Departure Point:	Anadyr (UHMA)	Type of Flight Plan Filed:	IFR
Destination:	Nome, AK (PAOM)	Type of Clearance:	IFR
Departure Time:	0300 UTC	Type of Airspace:	

Airport Information

Airport:	Nome (PAOM)	Runway Surface Type:	Asphalt
Airport Elevation:		Runway Surface Condition:	Dry
Runway Used:	10	IFR Approach:	Visual
Runway Length/Width:	6001 ft / 150 ft	VFR Approach/Landing:	Go Around; Straight-in; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	
Total Injuries:	2 None		

Administrative Information

Investigator In Charge (IIC):	Christopher R Shaver	Adopted Date:	03/08/2012
Additional Participating Persons:	Dave Cox; FAA, Fairbanks FSDO; Fairbanks, AK Jack Harrington; Eclipse Aerospace; Albuquerque, NM		
Publish Date:	03/08/2012		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=80720		

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