
 National Transportation Safety Board <b>FACTUAL REPORT</b> AVIATION		NTSB ID: ERA13FA059		Aircraft Registration Number: N6142F	
		Occurrence Date: 11/16/2012		Most Critical Injury: Fatal	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Owls Head	State ME	Zip Code 04841	Local Time 1645	Time Zone EST	
Airport Proximity: On Airport/Airstrip		Distance From Landing Facility: 0			
Aircraft Information Summary					
Aircraft Manufacturer CESSNA		Model/Series 172N		Type of Aircraft Airplane	
Revenue Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
<p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>*** Note: NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this aircraft accident report. ***</p> <p>HISTORY OF FLIGHT</p> <p>On November 16, 2012, about 1645 eastern standard time, a Cessna 172N, N6142F, was substantially damaged when it impacted a non-airport vehicle and then subsequently impacted terrain during takeoff from Knox County Airport (RKD), Owls Head, Maine. Night visual meteorological conditions prevailed and no flight plan was filed. The private pilot and two passengers were fatally injured and the occupant of the non-airport vehicle was not injured. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91 with the intended destination of Bangor International Airport (BGR), Bangor, Maine.</p> <p>According to an interview with the driver of the vehicle, he was driving his private vehicle on the taxiway and had followed another aircraft out to taxiway "alpha." The other airplane continued down taxiway "delta" and he proceeded with his vehicle to the hold short line of the runway. He announced his intentions on the common traffic advisory frequency (CTAF), utilizing a radio in his vehicle, heard no response nor saw anything on the runway, and he proceeded to cross runway 31. As his truck entered the runway a blur of an object went by in front of him striking the front of his truck. He continued to cross the runway and then got out to inspect what he saw at which time he observed an airplane attempting to climb. He continued watching the airplane drift to the left of runway 31 and then made a left turn as if attempting to return to the airport. Subsequently, the airplane was then observed in "slow flight" and then it began to spin. He observed the airplane on fire as he was driving to the accident scene. He also noticed while driving that his headlights were not working now.</p> <p>According to an eyewitness statement, the airplane was observed departing to the west and appeared to be doing a left climbing "chandelle" type maneuver. The airplane also had what appeared to be a high angle of attack. About 200 feet above ground level (agl) the navigation identification lights were observed rotating slowly counter clockwise. The airplane then appeared to pitch down and was observed descending behind trees.</p> <p>According to a representative from Lockheed-Martin Flight Service Station the accident pilot had called for a weather briefing at 1208 for the flight from BGR to RKD with a proposed departure time of 1500. No return weather briefing or flight plan was requested.</p> <p>PERSONNEL INFORMATION</p> <p>According to Federal Aviation Administration (FAA) records, the pilot held a private pilot certificate with a rating for airplane single-engine land. He held a third class medical certificate which was issued on June 30, 2011 and had a restriction "must wear corrective lenses."</p>					
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#### Narrative (Continued)

According to the pilots most recent Airman Certificate and/or Rating Application, dated June 15, 2012, he had 48.5 total flight hours, 17.4 of those hours were logged as solo flight, 3.8 flight hours of night instruction received, and 0.2 hours of night flight as pilot in command. However, an accurate amount of flight time at the time of the accident could not be achieved as no pilot logbook had been located at the time of this writing.

#### AIRCRAFT INFORMATION

According to FAA records, the airplane was issued an airworthiness certificate on August 23, 1979, and was registered to the flying club on April 18, 1991. It was equipped with a Lycoming O-320-H2AD, Serial number L1894-76T, 160-hp engine. It was also equipped with a McCauley propeller. The airplane's most recent annual inspection was recorded on December 4, 2011, and at that time a recorded hobbs time was 7601.9 hours. The engines most recent annual inspection was recorded on December 4, 2011, with a recorded tachometer time of 7601.9 hours and an engine total time in service of 1816.9 hours.

The last recorded fueling was accomplished on November 16, 2012 at BGR. The airplane had been fueled with 10.5 gallons of fuel. Fuel samples acquired from the fixed base operator appeared to be blue in color, similar to 100 LL aviation fuel, and free of debris or foreign matter.

#### METEOROLOGICAL INFORMATION

The 1655 recorded weather observation at RKD, included wind from 340 degrees at 3 knots, 10 miles visibility, clear skies, temperature 3 degrees C, dew point minus 3 degrees C; barometric altimeter 30.31 inches of mercury.

According to information obtained from the United States Naval Observatory official sunset was 1609 on the day of the accident and end of civil twilight was 1640.

#### AIRPORT INFORMATION

The airport is a publically owned airport and at the time of the accident did not have an operating control tower. The airport was equipped with two runways designated as runway 13/31 and 03/21. The runways were reported as "in good condition" at the time of the accident. Runway 13/31 was a 5,007 - foot-long by 100-foot-wide runway and runway 03/21 was a 4,000 -foot-long by 100-foot-wide runway. The airport was 55.4 feet above mean sea level.

The airport lights were examined the following evening and operated as required. Photo documentation and video was produced about the time of the accident the following day in similar cloud conditions. From the threshold of runway 31 with the lights of an airport operations vehicle, parked on taxiway "A" could be detected with only the use of the vehicles headlights; however, when the airport runway and taxiway lights were illuminated to the full bright position the vehicle lights were unable to be differentiated from the surrounding lights.

#### WRECKAGE AND IMPACT INFORMATION

##### Ground Vehicle

The personal vehicle was a white pickup truck and owned by the driver. The vehicle exhibited damage along the front including the headlights and grill. The vehicle also had an impact mark along the left tire well located approximately 26 inches above the ground and the impact mark was similar in size as the right elevator. A light bulb from one headlamp was located and the filament was stretched similar to being utilized. A hand held two-way capable radio was located on the dash of the truck. The radio was in the "OFF" position, when found. The radio was turned to the "ON" position and the correct CTAF frequency was noted, transmissions and reception were confirmed on the radio over the CTAF frequency. According to the owner of the vehicle, it did not have nor has he ever used a yellow airport flashing light.

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**Narrative (Continued)****Airplane**

The airplane impacted the ground in a nose down, approximately 70 degrees, inverted attitude. The left wing came to rest inverted and the right wing and cockpit came to rest right side up. The wreckage was located approximately 2,100 feet from the initial impact with the vehicle.

**Nose Section**

The engine and cockpit exhibited thermal damage. The engine remained attached to the firewall. The nose wheel remained attached to the engine. The propeller remained attached to the propeller flange and the spinner remained attached; however, exhibited crush damage with deformation towards one direction. One propeller blade exhibited no chordwise or S-bending but was located in the ground about 1 inch. The other blade exhibited bending in the aft direction along the entire span of the blade which continued until the blade tip was perpendicular to the normal position. Engine rotation was unable to be confirmed due to thermal damage; however examination of the engine revealed no evidence of preimpact abnormalities or malfunctions that would have precluded normal operation. The taxi light and landing light were destroyed.

**Right Wing**


The right wing exhibited thermal damage; however, the leading edge exhibited crush damage along the entire leading edge and an impression was made in the surrounding terrain. The flap was in the up or retracted position and the cable continuity was confirmed from the flap actuator to the flap. The aileron remained attached and cable continuity was confirmed from the aileron to cuts in the cable produced by first responders, then from that cut to the yoke. The flap actuator was measured at the jack screw which indicated 0 inches, that correlates to a flap position of 0 degrees or fully retracted. The flap cable exhibited signs of tensile overload at the wing root. The right wingtip navigation light filament was stretched due to impact forces, which is similar in appearance of being in operation at the time of ground impact. No conclusive evidence could be obtained from the strobe lights as to their operation at ground impact. The autopilot servo cables remained intact and secured to the aileron cables; however, operation of the autopilot could not be determined.

**Empennage**

The empennage exhibited thermal damage up to the bulkhead forward of the vertical stabilizer. Examination of the right side of the rudder revealed and impact mark similar to a mark from the right elevator impacting it at about a 15 degree trailing edge up angle. The right elevator was separated and remained at the initial impact point on the runway. The right elevator exhibited paint transfer marks associated with the vehicle. The right elevator also exhibited a slight bend in the positive direction and then was also impact separated into two large pieces and several smaller pieces. The right side elevator counter weight remained with the elevator. The right horizontal stabilizer leading edge exhibited crush damage in the aft direction approximately 10 inches from the tip. The right horizontal stabilizer exhibited crush damage in the aft direction. The left elevator remained attached and continuity was confirmed from the elevator horn to the yoke. Rudder continuity was confirmed from the rudder horn to the rudder pedals. An elevator trim cable was separated at a turnbuckle; however, the separation exhibited signature of postimpact separation. The beacon and identification light filaments were unremarkable; however, no conclusive evidence could be obtained on their operation at ground impact. The elevator trim tab actuator was extended to 1.5 inches, the trim tab cable was cut; however, continuity was confirmed from the trim actuator chain to the cut and from the cut to the trim wheel chain in the cockpit.

**Left Wing**

The wing exhibited thermal damage and came to rest next to a tree, inverted. Impact damage was observed 17 inches in diameter beginning 43 inches from the wingtip. The outboard approximate 8 feet of the wing was separated and appeared to be similar as damage associated with the impact with the tree. The aileron remained attached and continuity was confirmed from the aileron to the cable cut at the door post, produced by first responders, then from that cut to the yoke. The aileron crossover cable exhibited tensile overload about the left wing root location. The flaps remained attached to the associated attach points; however, the flap cable exhibited tensile overload.

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**Narrative** (Continued)

The left navigation light filaments were stretched due to impact forces, which is similar in appearance of being in operation at the time of ground impact. No conclusive evidence could be obtained from the strobe lights as to their operation at ground impact.

**Cockpit**

The cockpit was consumed by post-impact fire; the directional gyro was the only instrument that was recognizable; however, due to the thermal damage no notable information was obtained. The yokes were consumed by post-impact; however, the yoke chain assembly remained intact and on the sprocket; however, exhibited thermal damage. The rudder pedals remained attached to the rudder bar; however, exhibited thermal damage. Three seatbelt latches were located and buckled; however, due to the thermal damage no seatbelt webbing was located. No shoulder harness were located and no should harness straps were buckled to the lap belt buckle.

**MEDICAL AND PATHOLOGICAL INFORMATION**

An autopsy was performed on the pilot on November 18, 2012, by the Office of Chief Medical Examiner, Augusta, Maine. The autopsy listed the cause of death as "multiple blunt injuries" and the report listed the specific injuries. The FAA's Civil Aerospace Medical Institute performed forensic toxicology on specimens from the pilot. The report stated no carbon monoxide, no cyanide or ethanol was detected in the blood.

**ADDITIONAL INFORMATION**

Cessna Model 172N "Information Manual"

According to Section 4 "Normal Procedures" for a normal takeoff states

1. Wing Flaps - UP
2. Carburetor Heat - Cold
3. Throttle - FULL OPEN
4. Elevator Control - LIFT NOSE WHEEL (at 55 KIAS)
5. Climb Speed - 70-80 KIAS

According to Section 5 "Performance", the ground roll required should have been 737 feet with a takeoff speed of 52 knots indicated airspeed at 2300 pounds. The manual further shows the distance needed for landing at the maximum weight over a 50 foot obstacle would have been about 1210 feet.

FAA's Airplane Flying Handbook (FAA-H-8083-3A),

According to Chapter 5 "Takeoffs and Departure Climbs" states in part "Rejected Takeoff/Engine Failure. Emergency or abnormal situations can occur during a takeoff that will require a pilot to reject the takeoff while still on the runway. Circumstances such as a malfunctioning powerplant, inadequate acceleration, runway incursion, or air traffic conflict may be reasons for a rejected takeoff. Prior to takeoff, the pilot should have in mind a point along the runway at which the airplane should be airborne. If that point is reached and the airplane is not airborne, immediate action should be taken to discontinue the takeoff. Properly planned and executed, chances are excellent the airplane can be stopped on the remaining runway without using extraordinary measures..."

According to Chapter 10 "Night Operation" states in part "Takeoff and Climb. Night flying is very different from day flying and demands more attention of the pilot. The most noticeable difference is the limited availability of outside visual references. Therefore, flight instruments should be used to a greater degree in controlling the airplane. This is particularly true on night takeoffs and climbs. The cockpit lights should be adjusted to a minimum brightness that will allow the pilot to read the instruments and switches and yet not hinder the pilot's outside vision. This will also eliminate light reflections on the windshield and windows.

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**Narrative** (Continued)

After ensuring that the final approach and runway are clear of other air traffic, or when cleared for takeoff by the tower, the landing lights and taxi lights should be turned ON and the airplane lined up with the centerline of the runway. If the runway does not have centerline lighting, use the painted centerline and the runway edge lights..."

Knox County Regional Airport Flightline Driving Manual


According to the manual under the section titled "Movement Areas" which states in part "The movement area consists of taxiways and runways. You are required to must [sic] have a need to access the movement area, prior authorization from airport management and you must have (and monitor) an operating two-way radio (set to Unicom Frequency 123.05) at all times before entering/driving on any movement area..."



The section titled "Driving on the Movement Areas" goes on to state:


- Do not enter a movement area unless you have a legitimate need, authorization from airport management and two-way aviation radio communications.
- Monitor your aviation two-way radio at all times, RDK Unicom frequency is 123.05
- After announcing your location and intentions on the radio, proceed only after you have looked in all direction, including up
- Never drive your vehicle on or across runways unless absolutely necessary and limit your time within the runway safety area by driving at an expedited but safe speed.

The manual goes on to state in part "...When driving on an AOA [airport operations area] make sure your vehicle is properly equipped for the area where you operated, i.e. radio, beacon, markings...use extreme caution at night and/or in poor weather conditions...aircraft always have the right of way..."

Updated on May 8 2014 10:42AM

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<b>Landing Facility/Approach Information</b>						
Airport Name Knox County Regional Airport		Airport ID: RKD	Airport Elevation 55 Ft. MSL	Runway Used 31	Runway Length 5007	Runway Width 100
Runway Surface Type: Asphalt						
Runway Surface Condition: Dry						
Approach/Arrival Flown: NONE						
VFR Approach/Landing: Forced Landing						
<b>Aircraft Information</b>						
Aircraft Manufacturer CESSNA		Model/Series 172N		Serial Number 17273155		
Airworthiness Certificate(s): Normal; Utility						
Landing Gear Type: Tricycle						
Amateur Built Acft? No		Number of Seats: 4		Certified Max Gross Wt. 2550 LBS	Number of Engines: 1	
Engine Type: Reciprocating		Engine Manufacturer: LYCOMING		Model/Series: O-320-H2AD	Rated Power: 180 HP	
- Aircraft Inspection Information						
Type of Last Inspection Annual		Date of Last Inspection 12/2011	Time Since Last Inspection Hours		Airframe Total Time 7602 Hours	
- Emergency Locator Transmitter (ELT) Information						
ELT Installed?/Type		ELT Operated?		ELT Aided in Locating Accident Site?		
<b>Owner/Operator Information</b>						
Registered Aircraft Owner  ANG AERO CLUB INC		Street Address				
		City BANGOR		State ME	Zip Code 04402-8212	
Operator of Aircraft  ANG AERO CLUB INC		Street Address				
		City BANGOR		State ME	Zip Code 04402-8212	
Operator Does Business As:				Operator Designator Code:		
- Type of U.S. Certificate(s) Held: None						
Air Carrier Operating Certificate(s):						
Operating Certificate:			Operator Certificate:			
Regulation Flight Conducted Under: Part 91: General Aviation						
Type of Flight Operation Conducted: Personal						
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Sex:	Seat Occupied: Left	Occupational Pilot? No			Certificate Number:																																																																																										
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Airplane Rating(s): Single-engine Land																																																																																															
Rotorcraft/Glider/LTA: None																																																																																															
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Instructor Rating(s): None																																																																																															
Current Biennial Flight Review?																																																																																															
Medical Cert.: Class 3		Medical Cert. Status: With Waivers/Limitations			Date of Last Medical Exam: 06/2011																																																																																										
<table border="1"> <tr> <th rowspan="2">- Flight Time Matrix</th> <th rowspan="2">All A/C</th> <th rowspan="2">This Make and Model</th> <th rowspan="2">Airplane Single Engine</th> <th rowspan="2">Airplane Multi-Engine</th> <th rowspan="2">Night</th> <th colspan="2">Instrument</th> <th rowspan="2">Rotorcraft</th> <th rowspan="2">Glider</th> <th rowspan="2">Lighter Than Air</th> </tr> <tr> <th>Actual</th> <th>Simulated</th> </tr> <tr> <td>Total Time</td> <td>49</td> <td>49</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pilot In Command(PIC)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Instructor</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Instruction Received</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 90 Days</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 30 Days</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 24 Hours</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air	Actual	Simulated	Total Time	49	49									Pilot In Command(PIC)											Instructor											Instruction Received											Last 90 Days											Last 30 Days											Last 24 Hours										
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<b>Flight Plan/Itinerary</b>																																																																																															
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<b>Weather Information</b>					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
RKD	1655	EST	55 Ft. MSL	0 NM	64 Deg. Mag.
Sky/Lowest Cloud Condition: Clear				Ft. AGL	Condition of Light: Night/Dark
Lowest Ceiling: None			Ft. AGL	Visibility: 10 SM	Altimeter: 30.31 "Hg
Temperature: 3 °C	Dew Point: -3 °C	Weather Conditions at Accident Site: Visual Conditions			
Wind Direction: 340	Wind Speed: 3	Wind Gusts:			
Visibility (RVR): Ft.	Visibility (RVV) SM				
Precip and/or Obscuration: No Obscuration; No Precipitation					


  

<b>Accident Information</b>					
Aircraft Damage: Substantial		Aircraft Fire: Ground		Aircraft Explosion: Ground	

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot	1				1
Second Pilot					
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants					
Other Crew					
Passengers	2				2
- TOTAL ABOARD -	3				3
Other Ground					
- GRAND TOTAL -	3				3



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<b>Administrative Information</b>		
<p>Investigator-In-Charge (IIC)</p> <p>Shawn Etcher</p>		
<p>Additional Persons Participating in This Accident/Incident Investigation:</p> <p>Maurice F King, Jr FAA/FSDO South Portland, ME</p> <p>Steven M Miller Cessna Aircraft Company Wichita, KS</p>		
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