



Aviation Investigation Final Report

Location:	Lakeland, Florida	Accident Number:	MIA05FA050
Date & Time:	January 14, 2005, 15:37 Local	Registration:	N42WA
Aircraft:	Cessna T337G	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

According to a witness, the airplane was in a steep nose-up attitude after becoming airborne, then rolled left and impacted the ground while in a slight nose-up and left wing low attitude. An individual who owns a Cessna 337 heard both engines operating at what he thought was full power. The airplane impacted on the runway surface and was destroyed by impact and the postcrash fire. According to a witness, the pilot started the engines and taxied to utilize all available runway. The flight was cleared to takeoff, and according to a controller in the tower cab, he did not observe the point of rotation, but reported the airplane was in a normal climb attitude when the flight was airborne approximately 1,000 feet down the runway, when it was approximately 500 feet more down the length of the runway, he observed the airplane pitch up to between an estimated 30-45 degrees, then level off at an estimated altitude of between 150-200 feet above ground level. Approximately 5 seconds later, the wings were noted to rock up and down and the airplane drifted north of the runway. The airplane rolled nose and left wing low, then appeared to level off before impacting the ground while in a slight nose up and left wing low attitude. He did not hear any unusual engine sounds during the flight and could not determine if the engines were run-up before departure. Both engines' rpm sounded to be synchronized during the flight. There was no distress call made by the pilot. The owner recently purchased the airplane and had a pre-buy inspection of it; no discrepancies were noted related to the flight controls. The airplane was flown from the place where purchased (California), to Florida, and was delivered 2 days before the accident. The pilot who flew the airplane to Florida reported it was a "fairly flawless trip." He did report that the autopilot was inoperative, and the digital fuel flow meter was inoperative. No repairs were performed to correct the inoperative autopilot before the accident flight. The accident pilot flew the airplane on 3 separate flights earlier on the day of the accident, and during the takeoff of all 3 flights, a pilot rated passenger later reported that the airplane pitched up aggressively during rotation. The passenger looked at the elevator trim setting and noted it was in the correct range for takeoff. During the landing of the third leg, the accident pilot reportedly performed a full stall landing from a height of 10 feet. The airplane was then taxied to the ramp and both fuel tanks

were topped off for the accident flight. No maintenance was performed to the elevator primary or secondary flight control systems as a result of the reported excessive pitch-up events. Examination of the primary and secondary flight control system of the airplane revealed no evidence of preimpact failure or malfunction of the cables. The elevator trim was found set to 4 to 5 degrees aircraft nose-down. The flaps were extended 10 degrees, and the landing gear was extended at impact. Examination of the front and rear engines propeller and propeller governors revealed no evidence of preimpact failure or malfunction. Examination of the pilot's seat tracks revealed both exhibited evidence of lock pin engagement at the time of impact in the 9th hole from the front. The airplane was calculated to be within weight and balance limits at the time of the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's operation of the airplane with known deficiencies in equipment related to pitch, an abrupt pitch-up during the initial climb after takeoff for undetermined reasons and the failure of the pilot to maintain airspeed (Vs) resulting in inadvertent stall, uncontrolled descent, and in-flight collision with terrain.

Findings

Occurrence #1: ABRUPT MANEUVER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. ELEVATOR - EXCESSIVE
2. (C) OPERATION WITH KNOWN DEFICIENCIES IN EQUIPMENT - PILOT IN COMMAND
3. (C) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

4. (C) AIRSPEED(VS) - NOT MAINTAINED - PILOT IN COMMAND
5. STALL - INADVERTENT - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings

6. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On January 14, 2005, about 1537 eastern standard time, a Cessna T337G, N42WA, registered to Aerolease of America, Inc., and operated by a private individual, crashed shortly after takeoff at Lakeland Linder Regional Airport, Lakeland, Florida. Visual meteorological conditions prevailed at the time, and an instrument flight rules flight plan was filed for the 14 CFR Part 91 personal flight from Lakeland Linder Regional Airport (KLAL), Lakeland, Florida, to Tallahassee Regional Airport, Tallahassee, Florida. Impact forces and a postcrash fire destroyed the airplane, and the airline transport-rated pilot and one passenger were fatally injured. The flight was originating at the time of the accident.

According to the local controller of the Lakeland Linder Regional Airport Air Traffic Control Tower, the flight was cleared to takeoff from runway 27 and to climb on runway heading. He did not observe the point of rotation, but reported the airplane was in a normal climb attitude when the flight was airborne approximately 1,000 feet down the runway. The flight continued and when it was approximately 500 feet more down the length of the runway, he observed the airplane pitch up to between an estimated 30-45 degrees, then leveled off at an estimated altitude of between 150-200 feet above ground level. At that time the flight was abeam runway 27 and taxiway "B." Approximately 5 seconds later, the wings were noted to rock up and down and the airplane drifted north of the north edge of the runway. The airplane rolled nose and left wing low, then appeared to level off before impacting the ground while in a slight nose up and left wing low attitude; the airplane caught fire 20 seconds later. He did not hear any unusual engine sounds during the flight and could not determine if the engines were run-up before departure. Both engines' rpm sounded to be synchronized during the short duration flight. There was no distress call made by the pilot of the airplane.

Another witness reported seeing the airplane in a steep nose-up attitude after becoming airborne. The witness reported the airplane then rolled left and impacted the ground while in a slight nose-up and left wing low attitude. An individual who owns a Cessna 337 airplane and only heard the accident flight reported hearing both engines operating at what he thought was full power.

PERSONNEL INFORMATION

The pilot was the holder of an airline transport pilot certificate with ratings airplane single and multi-engine land. He also was the holder of a commercial pilot certificate with an airplane single engine sea rating, and was a certified flight instructor with airplane single and multi-engine, and instrument airplane ratings. He was issued a second-class medical certificate on November 16, 2004, with the restriction, "Must wear corrective lenses." He listed a total flight

time of 14,600 hours on the application for the last medical certificate.

In reference to the passenger, a search of FAA airmen records by name, date of birth, and social security number revealed no records.

AIRCRAFT INFORMATION

The airplane, model T337G, was manufactured by Cessna Aircraft Company and designated serial number P3370205. It was certificated in the normal category, and the type certificate data sheet indicates the front and rear engines are required to be Teledyne Continental Motors TSIO-360-C or -CB, rated at 225 horsepower when operated at 2,800 rpm. The front and rear engines installed at the time of the accident were Teledyne Continental Motors TSIO-360-CB5B and Rolls-Royce TSIO-360-DCC, respectively. The rear engine was originally manufactured by Rolls-Royce as a model TSIO-360-D engine, but on November 16, 1992, it was converted to a "C model Spec 5" engine. As a result of the conversion, the engine dataplate was reportedly remarked to read "TSIO-360-DCC." The front propeller rotates clockwise when viewed from behind the engine looking forward, while the rear propeller rotates counter-clockwise when viewed from behind the engine looking forward.

The airplane was reportedly purchased by the current owner in California in December 2004, and was flown to Florida by a pilot other than the accident pilot. The flight to Florida commenced on January 11th, and arrived in the afternoon of January 12th, in Lakeland, Florida. The individual who flew the airplane to Florida reported the flight was a "fairly flawless trip" which took approximately 16 to 17 flight hours and numerous fuel stops. He reported he did not have any noticeable problems with the engines or propellers, and that the autopilot and digital fuel flow meter were inoperative. He also reported that when flying the airplane at an altitude greater than 10,000 feet, the rear engine manifold pressure reading would decrease 4 inches then return to the normal setting. After landing in Lakeland, the pilot who flew the airplane from California offered the accident pilot a chance to fly together; he reportedly declined.

The current owner of the airplane provided to NTSB a list of discrepancies found during a pre-buy inspection of the airplane; none of the discrepancies relate to flight controls. Records provided by the facility that performed the pre-buy inspection revealed some, but not all of the discrepancies were repaired. The owner of the facility that performed the pre-buy inspection and some of the repairs reported they repaired only the items they were asked to repair. The owner also reported at the time of the repairs his company did not have access to the permanent maintenance records; therefore, the work performed was not entered in the maintenance records.

A review of the permanent maintenance records confirmed there were no entries in either the airframe or either engine logbooks indicating maintenance was performed related to the pre-buy discrepancies. The maintenance records further indicate the airplane was last inspected in accordance with an annual inspection on April 24, 2004. The airplane total time at that time

was 6,091.8 hours. The front engine was last rebuilt/zero timed by the engine manufacturer on September 10, 1993, and was installed in the airplane on June 20, 1999. The front engine had accumulated approximately 1,043 hours since overhaul at the time of the last annual inspection. The rear engine was last overhauled on August 25, 1992, and was installed in the airplane on October 1, 1992. The rear engine had accumulated approximately 1,386 hours since overhaul at the time of the last annual inspection. No determination was made as to the elapsed time since the last annual inspection.

METEOROLOGICAL INFORMATION

A surface observation weather report taken at the accident airport on the day of the accident at 1541, or approximately 4 minutes after the accident indicates the wind was from 330 degrees at 5 knots, the visibility was 10 statute miles, scattered clouds existed at 700 feet, and 8,000 feet, overcast clouds existed at 12,000 feet, the temperature and dewpoint were 18 and 16 degrees Celsius, respectively, and the altimeter setting was 30.10 inHg.

COMMUNICATIONS

The pilot was last in contact with the Lakeland Linder Regional Airport Air Traffic Control Tower at the time of the accident. There were no reported communication difficulties.

WRECKAGE AND IMPACT INFORMATION

The airplane crashed on airport property and came to rest upright located at 27 degrees 59.324 North latitude and 082 degrees, 01.087 minutes West longitude, or approximately .56 nautical mile and 271 degrees magnetic from the approach end of runway 27.

Examination of the accident site revealed the airplane first impacted on runway 9/27 approximately 3,000 feet from the approach end of runway 27 (the departure runway), and 44 feet south of the runway centerline. The energy path was oriented on a magnetic heading of 220 degrees. Numerous ground scars on the runway surface were noted, while two separate ground scar locations consistent with propeller to runway contact were also noted. The first ground scars on the runway associated with propeller contact consisted of three marks with a deeper gouge on the left side of each scar when viewed looking towards the main wreckage, or consistent with a counter-clockwise rotation. The distance from the center of the first to the center of the second scar measured 16 inches. The second ground scars on the runway associated with propeller contact occurred down the energy path and consisted of two marks with a deeper gouge on the right side of each scar when viewed looking towards the main wreckage, or consistent with a clockwise rotation. The distance from the center of the first to the center of the second scar measured 19 inches. A faint outline of the full span of the left wing was noted on the runway surface near the initial contact location. Additionally, a mark on the runway associated with the right wingtip was noted. A combination flexible and aluminum line measuring approximately 3 feet in length later associated with the left brake line was noted near the initial runway contact location.

Further examination of the accident site revealed the ground scar on the runway continued off the south edge of the runway onto grass where the ground scar continues to the point where the airplane came to rest, which was approximately 146 feet from the south edge of runway 9/27. The airplane came to rest upright on a magnetic heading of 260 degrees. The energy path in the grass was oriented on a magnetic heading of 215 degrees. Debris consisting of the left and right main landing gear struts, a cell phone clip, pieces of the nose landing gear fork, a piece from an engine crankcase, and a fuel sump drain tube were located in the grass along the energy path. Fire damage to the grass was noted south of the main wreckage. The majority of the burn area was located forward of the left wing and south of the left wingtip, with some burning aft of the left wing.

Examination of the wreckage revealed all components necessary to sustain flight were attached to the airplane or were in close proximity to the main wreckage. The postcrash fire consumed the cockpit, cabin, and left wing. Compression wrinkles were noted on the upper skin of the right wing, which remained secured only by the aileron flight control cables. The elevator was noted in the full trailing edge up position; binding prevented movement of the elevator from neutral to the trailing edge down position. Both vertical stabilizers were displaced from their normal positions; the upper portion of both were displaced away from each other. Flight control continuity was confirmed for roll, yaw, and pitch trim. Both main landing gear wheels were separated from each strut; each rim exhibited a flat spot on the outer diameter. The flap actuator measured 3.6 inches extended which equates to approximately 10 degrees extended. The right flap cable was connected at the actuator but was fractured near the right wing root area. The left flap cable was also connected at the flap actuator but was fractured in 2 locations. The first fracture point was located approximately 19.5 inches from the actuator attach point and the second fracture was located near the actuator. The aft propeller was separated from the engine but found in close proximity to the main wreckage. The forward fuel selector valve was found positioned near the "off" detent, and the aft fuel selector valve was found positioned between the "off" and "right" tank detents. Segments of each fractured flap cable, the pitch trim sensor, pitch actuator, and pitch trim actuator were retained for further examination.

Examination of flight control system for pitch revealed flight control cable continuity was confirmed for pitch from the bellcrank near the control surface to the cockpit, except where cut to facilitate recovery of the airplane. The elevator cables were noted to be properly routed over all pulleys. The elevator rod assembly (P/N 1560136-1), which connects to the bellcrank near the control surface and the control surface, was bent and fractured at the threaded portion near the bellcrank. No evidence of preexisting cracks was noted on the fracture surface. The elevator flight control surface remained connected to the horizontal stabilizer at the four hinges, and the elevator trim tab remained secured to the elevator. The elevator trim tab actuator measured 1.375 inches extended, which equates to approximately 4-5 degrees trailing edge tab up, or aircraft nose down trim. Several rivets that secure the right elevator counterweight attach arm to the elevator were fractured. The leading edge of the elevator at the right side was displaced aft, and the inboard lower edge of the skin of the right side of the

elevator was pushed up in the area of the counterweight attach point. The outboard section of the right side of the elevator, and the right elevator counterweight were retained for further examination.

Examination of the interior of the right vertical stabilizer which houses the right elevator counterweight revealed arc shaped scraping/score marks on the interior surface of the inboard skin, and also on a section of the forward spar of the vertical stabilizer. The total length of the arc measured approximately 12.125 inches. A dent measuring approximately 2 inches wide is located along the arc; the counterweight measured approximately 5 inches wide. The tail end of three consecutive rivets were noted to have paint/material transfer on a side of the rivet, and the inboard top side of the right elevator counterweight was gouged. The tail end of the rivets with material adhering to one side measured .16 inch in diameter, while the gouge in the counterweight measured .12 inch in diameter. The location of the paint/material on one side of the three rivets was consistent with the elevator counterweight moving in the down, or elevator up direction. A sharp edge impact mark was noted on the bottom side of the counterweight. The counterweight stop bolt and bracket did not appear to be deformed. Three distinct indentations were noted on the aft spar lighting hole in the area where the counterweight beam goes through. The damage is consistent with the shape of the counterweight beam.

Examination of the interior of the left vertical stabilizer which houses the left elevator counterweight revealed a mark on the interior surface of the inboard skin, and several dents measuring approximately 4.25 inches in length. The dents are located at the juncture of the forward spar and skin line. The counterweight was gouged on the top, forward, and inboard edges. Light scuffing in the primer aft and above the dented area was noted. The dented area was noted to start at the top of the lighting hole and extended to the top of the adjacent lighting hole. No abnormalities were noted to the counterweight stop.

Examination of the cockpit revealed heat damage precluded reading of flight and engine instruments. The throttle quadrant was displaced from its normal position; therefore, throttle, propeller, and mixture control positions could not be accurately determined. Examination of the pilot's seat tracks revealed the inboard seat track rail was displaced down 17 inches aft of the forward end; a gouge in the inboard edge and top side of the rail was noted in that area. The inboard seat track rail also exhibited a gouge in the aft and outboard directions on the top of the seat track rail at about the 8 o'clock position of the 9th hole from the front. The outboard seat track also exhibited hole elongation of the seat track rail in the aft and outboard directions of the 9th hole from the front. Both seat tracks were bent up beginning approximately 6.5 inches aft of the forward end. Examination of the outboard seat track revealed the forward foot was off the track. Heat damage to the outboard seat track was noted in the first forward 7 inches of the track. A stop made of steel was noted in the aft portion of the outboard seat track. Examination of the pilot's seat revealed one of the two seat pins was fractured approximately 1.375 inch up from the bottom of the pin.

Examination of the co-pilot's seat tracks revealed a roller was located on the inboard seat track

approximately 11 inches aft of the forward end of the track. Marks/gouges were noted on the inboard and outboard seat track rails approximately 21.0 inches aft of the forward end. The inboard seat track was bent up beginning approximately 10.5 inches aft of the forward end of the seat track. One of the seat pins exhibited a slight bend.

Examination of the front engine with NTSB oversight revealed crankshaft, camshaft, and valve train continuity. Rotation of the engine using the starter revealed suction and compression at all cylinders, and spark at all towers of both magnetos. Testing of the spark plugs at 80 psi revealed all tested good with the exception of the No. 2 bottom plug that was bent. The oil filter was cut open and the filter element was clean. The fuel metering unit, and engine driven fuel pump were connected via a flexible hose and the fuel pump drive coupling was rotated using a pneumatic tool. With rotation of the fuel pump, fuel flow was noted at the outlet of the fuel metering unit. With rotation of the fuel pump and a reduction of throttle and/or mixture control settings, a reduction in fuel flow was noted.

Examination of the rear engine with NTSB oversight revealed no data plate was affixed to the engine. The crankshaft was fractured at the nose case; no evidence of preimpact failure or malfunction was noted. Rotation of the engine using an exemplar starter revealed suction and compression at all cylinders. Both magnetos and the ignition harness was heat damaged which precluded testing. Testing of the spark plugs at 80 psi revealed all tested good, with several exhibiting moderate wear of the electrode and ground electrode. A piece of aluminum was found in the turbocharger scavenge pump gear area. The scavenge pump gears were not failed and there was no evidence of hard particle passage inside the scavenge pump housing. The oil filter was cut open and the filter element was clean. The engine driven fuel pump aneroid housing was cracked but the fuel pump could be rotated by hand. The fuel metering unit, and engine driven fuel pump were connected via a flexible hose and the fuel pump drive coupling was rotated using a pneumatic tool. With rotation of the fuel pump, fuel flow was noted at the outlet of the fuel metering unit. With rotation of the fuel pump and a reduction of throttle and/or mixture control settings, a reduction in fuel flow was noted.

Examination of the front propeller with NTSB oversight revealed the spinner exhibited a flattened area, and the pitch change knob was bent. Both propeller blades remained installed in the propeller hub. The No.1 propeller blade was at a low blade angle, and the leading edge was twisted approximately 180 degrees towards low pitch beginning approximately at blade station 12. Several nicks were located on the leading edge of the blade. Chordwise scratches from blade station 12 to the end of the blade were noted, and the blade was curled 180 degrees beginning at blade station 36. A witness mark on the propeller hub associated from the counterweight of the No. 1 blade was made with the blade 180 degrees from the normal operating range. Numerous witness marks were noted on the butt end of the blade. The No. 2 propeller blade was near the feather position, was not aligned inside the hub. Chordwise scratches were noted on the cambered side of the blade from the blade tip to 6 inches inboard of that location. The blade exhibited a forward bent beginning near the propeller hub. The blade was bent aft at blade station 14, and bent forward at blade station 35. A 2-inch length of the trailing edge of the blade was missing at the blade tip, and the trailing edge of the blade

was damaged in several sections along the span of the blade. Damage to the leading edge of the blade was noted from blade station 21 to the blade tip. Disassembly of the propeller revealed the No. 1 blade pitch change pin was bent, and the No. 2 blade pitch change pin was bent and fractured. Both link arms were detached from the pitch pins of both blades, and both start lock latches were fractured; no evidence of preexisting cracks were noted on the fracture surfaces. Evidence of contact was noted with both start lock pins and both flyweights.

Bench testing of the front propeller governor with NTSB oversight revealed the high rpm setting was 2,900 rpm (specification is 2,800 + or - 10 rpm), the relief valve pressure was 280 psi (specification is 270 + or - 10 psi), the unit flowed 6 quarts per minute, and the feather dump occurred at 2,055 rpm (specification is 2,100 + or - 25 rpm).

Examination of the rear propeller with NTSB oversight revealed the crankshaft flange remained secured to the propeller flange; the crankshaft was fractured just aft of the propeller flange. Examination of the fracture surfaces revealed no evidence of preexisting cracks. Both propeller blades remained installed in the propeller hub, and based on witness marks, were at between 15 and 20 degrees at the time of impact. The No. 1 propeller blade was bent approximately 90 degrees towards the cambered side of the blade, and the leading edge was twisted towards low pitch. Several gouges were noted on the trailing edge of the blade, and chordwise scratches were noted on the cambered side of the blade at the blade tip. The No. 2 propeller blade was missing approximately 4.5-inches of length, and was bent towards the non cambered side of the blade at the fracture surface location. Spanwise scratches were noted on the non cambered side of the blade from the fracture surface inboard approximately 11 inches. Disassembly of the propeller revealed the No. 2 blade pitch pin was sheared. The start lock pins were not fractured, and witness marks were noted on top of the counterweight latch assembly.

Bench testing of the rear propeller governor with NTSB oversight revealed the high rpm setting was 2,900 rpm (specification is 2,800 + or - 10 rpm), the relief valve pressure was 280 psi (specification is 270 + or - 10 psi), the unit flowed 5 quarts per minute, and the feather dump occurred at 2,050 rpm (specification is 2,100 + or - 25 rpm).

MEDICAL AND PATHOLOGICAL INFORMATION

Postmortem examinations of the pilot and passenger were performed by the District Ten Medical Examiner's Office. The cause of death for both was listed as blunt impact.

Toxicological analysis of specimens of the pilot and passenger were performed by the FAA Toxicology and Accident Research Laboratory (CAMI), located in Oklahoma City, Oklahoma, and MedTox Laboratories, Inc. (MEDTOX), located in St. Paul, Minnesota.

The result of analysis by CAMI for specimens of the pilot was negative for carbon monoxide, cyanide, volatiles, and tested drugs. The result of analysis by MEDTOX for specimens of the pilot was negative for volatiles. Less than 2 percent carboxyhemoglobin saturation was

detected, and creatinine (171 mg/dl) was detected in the submitted blood specimen. The urine drug screen result was negative.

The result of analysis by CAMI for specimens of the passenger was negative for carbon monoxide, cyanide, and volatiles. Sildenafil, and desmethylsildenafil were each detected in the blood and liver specimen. The result of analysis by MEDTOX for specimens of the passenger was negative in urine for tested drugs, and also for volatiles. Less than 2 percent carboxyhemoglobin saturation was detected, and creatinine (86 mg/dl) was detected in the submitted blood specimen.

TESTS AND RESEARCH

Autopilot components consisting of a pitch trim sensor, pitch actuator, and pitch trim actuator were examined at the manufacturer's facility with FAA oversight. The pitch trim sensor was bench tested which revealed the unit was "...slightly sticky in movement of the leaf switch." By design, the time delay is 1.5 seconds, but the tested time delay was approximately 2.5 seconds. The up and down time delays for the leaf switch were found to be 3.5 seconds, and .5 seconds, respectively. Examination of the pitch actuator revealed impact damage to the motor case, and the chain drive was driven to one end of travel. The shear pin rated at 30 inch pounds which holds the sprocket to the capstain was sheared. A new shear pin was installed and the slip torque was 12 inch pounds (specification is 12 plus or minus 1 inch pound). Internal electrical damage precluded bench testing of the assembly, but electrical power was applied directly to the motor and clutch. The internal clutch engaged at 13.0 volts DC; no discrepancies were noted to the motor and clutch. Examination of the trim actuator revealed electrical component damage that precluded bench testing of the assembly; however, electrical power was applied directly to the motor and it was found to operate in the autopilot and manual mode tests. The clutch torque measured 22 inch pounds (specification is 22 to 28 inch pounds). The gear motor housing was cracked circumferentially.

Examination of the fractured flap cable segments and the outboard section of the right side of the elevator was performed by the NTSB Materials Laboratory located in Washington, D.C. The results of the examination of two flap cable segments revealed both exhibited local bending of the segment near the fracture. Examination of the rivets that secure the right elevator counterweight to the outboard right side of the elevator revealed all the fracture surfaces exhibited evidence of shear overstress. The examination of the right elevator counterweight revealed some of the markings had obvious directionality but the direction was not identified, while directionality of other marks was not clear.

Weight and Balance calculations were performed using the latest empty weight and empty weight moment, 3,233.2 and 457,756.45, the weight of the pilot (162 pounds) and passenger (204 pounds) per the autopsy reports, and the weight of usable fuel in both fuel tanks which were topped off before the flight departed (888 pounds). The aircraft weight at the time the engines were started was estimated to be 4,487.2 pounds and the center of gravity (CG) was calculated to be 139.691 inches aft of datum. The airplane type certificate data sheet

indicates the gross weight is 4,700 pounds for takeoff and flight, and the CG range at that weight is 138.6 to 142.0.

According to Cessna Aircraft Company personnel, based on an aircraft weight of 4,400 pounds, flaps extended approximately 10 degrees, 0 degree bank angle, and a CG of 137.7 inches aft of datum, the stall speed is 65.59 miles-per-hour, or 57 knots.

A pilot-rated individual who was a passenger on 3 flights in the accident airplane with the accident pilot on the day of the accident reported that during takeoff of the first flight from KLAL to Tampa International Airport, the aircraft took an "agressive" leap off the runway which required the pilot to put forward pressure on the yoke to correct the nose-up tendency. The individual believed the "over nose-up trim" was due to a miss-set elevator trim but he checked the indicator and it was okay. The individual further reported that he equated the nose-up trim to be excessive based on his experience flying single engine airplanes. The airplane did not have pitch oscillation problem, but it did have a tendency to over-rotate. He did not notice any binding of the primary elevator flight control system. The flight landed uneventfully during the first flight leg, then during takeoff of the second flight leg to return to KLAL, the pilot-rated passenger noted a "favorable pitch up" on rotation. The flight continued towards the destination airport (KLAL), but had to divert to a nearby airport due to weather at the destination airport. The airplane landed uneventfully and was fueled at a self service pump; both fuel tanks were filled. While on the ground, the pilot checked the engine oil and performed a 10-minute walk-around of the airplane. The flight departed to return to KLAL, and on takeoff, the airplane had an "agressive pitch up." The flight continued to the destination airport where during landing, the pilot performed a full stall landing from a height of approximately 10 feet. The airplane bounced at least 1 time. The individual also reported that in his opinion they hit hard enough for him to expect a propeller strike or gear collapse. The pilot advised him that more power was needed during the approach and landing. While taxiing after landing, both portions of the main cabin were opened without difficulty. The airplane was then fueled.

No maintenance was performed to the primary or secondary pitch flight control system due to the reported excessive pitch up during the previous 3 takeoffs earlier that day with the accident pilot as the pilot-in-command.

On the day of the accident at approximately 1515, or approximately 22 minutes before the accident, both fuel tanks were topped off. A total of 16.2 gallons of fuel were added. There were no reports of fuel contamination of other airplanes fueled by the same source.

ADDITIONAL INFORMATION

The wreckage minus the retained components was released to Alan Stone, insurance adjuster for International Loss Management (ILM), on August 15, 2005. All NTSB retained components were also released to Alan Stone, of ILM, on January 11, 2006.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	Age:	56, Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	Yes
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	November 1, 2004
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	14600 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N42WA
Model/Series:	T337G	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	P3370205
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	April 1, 2004 Annual	Certified Max Gross Wt.:	4700 lbs
Time Since Last Inspection:		Engines:	2 Reciprocating
Airframe Total Time:	6091.8 Hrs as of last inspection	Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	TSIO-360-CB5B
Registered Owner:	Aerolease of America, Inc.	Rated Power:	225 Horsepower
Operator:	Danny Ferrer	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KLAL,142 ft msl	Distance from Accident Site:	
Observation Time:	15:41 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Scattered / 700 ft AGL	Visibility	10 miles
Lowest Ceiling:	Overcast / 12000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	5 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	330°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.1 inches Hg	Temperature/Dew Point:	18°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Lakeland, FL (KLAL)	Type of Flight Plan Filed:	IFR
Destination:	Tallahassee, FL (KTLH)	Type of Clearance:	IFR
Departure Time:	15:37 Local	Type of Airspace:	

Airport Information

Airport:	Lakeland Linder Regional KLAL	Runway Surface Type:	Asphalt
Airport Elevation:	142 ft msl	Runway Surface Condition:	Dry
Runway Used:	27	IFR Approach:	Unknown
Runway Length/Width:	8500 ft / 150 ft	VFR Approach/Landing:	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	
Total Injuries:	2 Fatal	Latitude, Longitude:	27.988611,-82.018058

Administrative Information

Investigator In Charge (IIC):	Monville, Timothy
Additional Participating Persons:	Stan Okon; FAA Flight Standards District Office; Orlando, FL Todd Sigler; Cessna Aircraft Company; Wichita, KS Jason D Lukasik; Teledyne Continental Motors; Mobile, AL Brian Murphy; NTSB; Washington, DC
Original Publish Date:	August 29, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=60879

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).