Aviation Investigation Final Report

Location:	Hollister, California	**Accident Number:**	LAX04LA227
Date & Time:	May 29, 2004, 18:49 Local	**Registration:**	N6797Y
Aircraft:	Beech A36	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	5 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane impacted a taxiway sign, a bale of hay, and a ditch during an aborted takeoff. The private pilot reported that she conducted the preflight inspection and conducted the pre-takeoff and systems and settings checks. During the takeoff roll about halfway down the runway, the control yoke pushed back against the pilot's hand and the nose wheel came up off the runway. The pilot then applied forward pressure on the control yoke while checking the airspeed indicator. The pilot noticed that the airspeed was in the "green range," and released some of the forward pressure that she had applied to the yoke. When she released the forward pressure, the airplane's nose pitched up abruptly, and the stall warning horn sounded. The airplane was approximately 35 feet above the ground when this occurred. The pilot lowered the nose to gain airspeed, but the airplane banked to the left approximately 30 degrees. The pilot reduced the power to abort the takeoff, and the wings leveled. The airplane was to the left of the departure runway and 50 feet above the ground, so the pilot elected to reapply full power. The airplane banked left again so the pilot pulled the power to idle to abort the takeoff. During the aborted takeoff, the airplane impacted the taxiway sign, bale of hay, and ditch before coming to rest. A post accident examination of the trim system revealed that the trim tab was approximately 5.5 degrees off from the cockpit's trim indicator in the nose up direction. No mechanical reason could be found for what the pilot described as the airplane's left banking tendency. Review of the maintenance records revealed that the airplane underwent its last annual inspection 80 hours prior to the accident. During the annual inspection the mechanic "checked lights, cables, pulleys, controls, and attach points." Approximately 150 hours prior to the accident, a mechanic "installed bushings and jack screws, and hardware as necessary to remove excessive free play from elevator trim tab system." The pilot did not notice the trim setting anomaly during the preflight inspection.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's inadequate preflight inspection which failed to detect the mis-rigged elevator trim system, and the pilot's delay in aborting the takeoff.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: TAKEOFF - ROLL/RUN

Findings
1. FLT CONTROL SYST,ELEVATOR TRIM INDICATOR - FALSE INDICATION
2. (C) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
3. OBJECT - AIRPORT SIGN/MARKER
4. OBJECT - OTHER
5. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
6. (C) ABORTED TAKEOFF - DELAYED - PILOT IN COMMAND

Factual Information

On May 29, 2004, at 1849 Pacific daylight time, a Beech A36, N6797Y, impacted terrain and a taxiway sign during an aborted takeoff from runway 24 at the Hollister Municipal Airport, Hollister, California. The airplane was registered to, and operated by, the pilot under the provisions of 14 CFR Part 91 as a personal flight. The private pilot and four passengers were not injured. The airplane was substantially damaged. The flight was originating at the time of the accident, and was destined for a private airstrip near Copperopolis, California. Visual meteorological conditions prevailed, and a flight plan had not been filed for the cross-country flight.

According to the pilot's written statement, she arrived at the airport at 1730 to prepare the airplane for the flight and conduct the preflight inspection. She provided a safety briefing to the passengers and started the engine. The pilot taxied to the run up area for runway 24 and completed "all pre-takeoff systems and settings" checks.

The pilot applied full throttle and "hard right rudder" for takeoff. Before the airplane reached the intersection of runway 24 and 31 (approximately halfway down the 3,150-foot runway), the control yoke "suddenly pushed back" on the pilot's left hand. The pilot's right hand was on the throttle control. The nose wheel lifted up off the ground and the pilot applied forward pressure on the control yoke while checking the airspeed indicator. The airspeed was in the "green" range. The pilot released "some of the pressure" on the yoke, the nose "pitched up abruptly, and the stall warning alarm went off." The pilot estimated that the airplane was 30-40 feet above the ground when this occurred.

The pilot pushed the nose down in "an attempt to gain airspeed," and the airplane banked to the left approximately 30 degrees. The pilot pulled the power back and aborted the takeoff, which resulted in a wings level attitude. The airplane was 50 feet above the ground at this point and to the left of runway 24. With the wings level, the pilot added full power again, which resulted in a left bank.

The pilot believed that "there was no chance for recovery" and elected to pull the power to idle. She instructed her passengers to brace themselves for the landing. The landing gear were still extended, and the pilot attempted to land on runway 13. The airplane impacted a taxiway sign with left aft end of the empennage. The pilot attempted to keep the airplane's nose up as long as possible as the airplane impacted the ground between runway 13 and the taxiway, a bale of hay, and a ditch. The propeller blades impacted the ground, and the airplane spun around 150 degrees before coming to rest upright. The pilot evacuated the passengers once the airplane came to a stop, and she shut down the electric and ignition systems.

The airplane sustained structural damage to the wings, landing gear, flaps, horizontal

stabilizer, and elevator.

According to the pilot, she set the elevator trim to the setting recommended in the pilot's operating handbook (POH) prior to takeoff, which was 3 degrees nose up.

On June 3, 2004, a Federal Aviation Administration inspector examined the airplane and interviewed the pilot. The inspector stated that he looked the airplane over and found nothing wrong with it.

On July 6, 2004, an aircraft mechanic examined the airplane at the accident airport. According to the mechanic's written statement, he inspected the elevator trim rigging utilizing the Raytheon Aircraft Beech Bonanza maintenance manual (part number 36-590001-9A25). According to the mechanic's statement, "due to the extensive damage to the left elevator and trim tab, these control surfaces were disconnected and only the right side could be checked with accuracy." With the cockpit elevator trim tab control set on zero, the right elevator trim tab rigging should be tab up 1 +/- 0.5 degrees. However, the mechanic found the tab at 4.5 degrees tab down (nose up), which equated to the trim tab being 5.5 degrees different from what the cockpit indication depicted. The mechanic also found the trim tab stops to be out of tolerance. He determined that when the cockpit trim indicator was set in the green band, which is 3 to 6 degrees for normal takeoff, the trim tab would actually be set to about 8 to 11 degrees in the nose up direction.

At the time of the accident, the airplane accumulated 1,735 hours of operation. Review of the aircraft maintenance records revealed that the airplane underwent its last annual inspection on August 20, 2003, at an airplane total time of 1,654.7 hours. According to the annual inspection endorsement, a mechanic "checked lights, cables, pulleys, controls, and attach points." A maintenance entry dated January 15, 2003, indicated a mechanic "installed bushings and jack screws, and hardware as necessary to remove excessive free play from elevator trim tab system." There was no airplane total time associated with this entry; however, an endorsement made a month prior indicated that the airplane total time during a pre-buy inspection was 1,576.4 hours. On May 12, 2003, the airplane was primed and painted, and its current registration number was painted on the airplane. During the painting process, the flight controls were "removed and checked for proper balance in accordance with the aircraft's maintenance manual." No airplane time was associated with this endorsement; however, an endorsement made 7 days later indicated that the airplane had a total time of 1,628.3 hours.

Review of the airplane's POH revealed that the preflight inspection called for the pilot to "check" the control surfaces on the empennage; however, it does not elaborate on what is to be checked. The before takeoff checklist indicates that the pilot is to set the elevator trim tab to 3 degrees nose up (or 6 degrees nose up if only the front seats are occupied).

The Student Pilot's Flight Manual by William K. Kershner recommends that a pilot check the elevator trim tab during the preflight inspection to see what position it is set for (nose up vs. nose down). The manual also recommends that a pilot move the control wheel through its full

range and to "look back at the elevators and check the elevator trim tab to see that it is neutral. Check the trim tab control setting in the cockpit to see that it coincides with the actual setting of the tab."

According to the pilot, she accumulated at total of 202.7 hours of flight time, of which 146.9 hours were accumulated in the A36.

Pilot Information

Certificate:	Private	**Age:**	43,Female
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	October 21, 2002
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	April 10, 2003
Flight Time:	203 hours (Total, all aircraft), 147 hours (Total, this make and model), 113 hours (Pilot In Command, all aircraft), 32 hours (Last 90 days, all aircraft), 13 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N6797Y
Model/Series:	A36	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	E2974
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	August 23, 2003 Annual	**Certified Max Gross Wt.:**	3650 lbs
Time Since Last Inspection:	81 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1735 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-550-B36B
Registered Owner:	Ours Together Inc.	**Rated Power:**	300 Horsepower
Operator:	Bernadette Abramson	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	270°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.02 inches Hg	**Temperature/Dew Point:**	17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Hollister, CA (307)	**Type of Flight Plan Filed:**	None
Destination:	Copperopolis, CA (NONE)	**Type of Clearance:**	None
Departure Time:	18:49 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Hollister Municipal 3O7	**Runway Surface Type:**	Asphalt
Airport Elevation:	230 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	24	**IFR Approach:**	None
Runway Length/Width:	3150 ft / 100 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:**	36.893333,-121.410278

Administrative Information

Investigator In Charge (IIC):	Charnon, Nicole
Additional Participating Persons:	Steve Smith; Federal Aviation Administration; San Jose, CA
Original Publish Date:	June 8, 2005
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=59341