Aviation Investigation Final Report

Location:	PETALUMA, California	**Accident Number:**	LAX00LA036
Date & Time:	November 18, 1999, 16:40 Local	**Registration:**	N550RT
Aircraft:	Beech 95-B55	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was attempting a short field landing and allowed the airspeed to dissipate too soon. The airplane entered a stall/mush condition and landed hard. The force of the landing bent the engine mounts and broke the wings. The pilot reported that he had not experienced any mechanical problems with the aircraft. The airplane was equipped with vortex generators on the wings and vertical stabilizer, which, according to the STC developer, reduces the stall, approach and Vmca airspeeds by at least 10 knots. The various reference speed reductions were never approved for inclusion as a supplement to the Pilot's Operating Handbook (POH). The STC developer said that pilots were supposed to use the original speeds and limitations in the POH. The pilot said he was using an approach speed derived from a sales brochure from the STC maker. The pilot stated that the accident could have been prevented by maintaining 'greater speed.'

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of the pilot to maintain adequate airspeed which resulted in a stall/mush condition and subsequent hard landing.

Findings

Occurrence #1: HARD LANDING
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
1. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
2. (C) STALL/MUSH - ENCOUNTERED - PILOT IN COMMAND

Factual Information

On November 18, 1999, at 1640 hours Pacific standard time, a Beech 95-B55, N550RT, landed hard and bounced several times before running off the end of the runway at the Petaluma Municipal Airport, Petaluma, California. The airplane, owned and operated by the pilot, sustained substantial damage. The commercial pilot and passenger were not injured. The local area personal flight, conducted under the provisions of 14 CFR Part 91, had originated at the Santa Rosa, California, airport, at 1615, and was en route to Petaluma. Visual meteorological conditions prevailed and no flight plan was filed.

The pilot reported that he was attempting to perform a short field landing to runway 11. He stated that he allowed the airspeed to dissipate too soon and the airplane dropped to the runway and bounced twice before he was able to recover. The stall-warning indicator had not enunciated. The propeller blades and engine mounts were bent and the wings had separated from the fuselage.

The pilot reported that he had not experienced any mechanical problems with the aircraft prior to the accident. He stated that the accident could have been prevented by maintaining "greater speed."

A Federal Aviation Administration (FAA) inspector from the Oakland Flight Standards District Office inspected the aircraft after the accident. He tested the stall indicator warning system and reported that it functioned normally.

The aircraft was equipped with vortex generators. The supplemental type certificate (STC) and the micro vortex generator kit installation manual were reviewed. The kit consisted of 106 vortex generators mounted on the wings, just aft of the boot line and on both sides of the rudder, plus two strakes on the outside of the engine nacelles. The manufacturer reported that the vortex generators had been shown "to substantially reduce stall speeds and Vmca, and to improve stall characteristics." However, they further stated that no flight manual supplement was developed for this specific STC (#SA5789NM), therefore, the original speeds, limitations, and performance data listed in the pilot's operating handbook (POH) were to be used in order to provide an increased margin of safety.

The pilot reported that he used the vortex generator manufacturer's (reduced) speeds he obtained from a sales brochure as his reference airspeeds during the approach, instead of the airspeeds indicated in the POH.

Pilot Information

Certificate:	Commercial	**Age:**	74,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	April 27, 1999
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	4150 hours (Total, all aircraft), 300 hours (Total, this make and model), 20 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N550RT
Model/Series:	95-B55 95-B55	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	TC-2101
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	September 1, 1999 Annual	**Certified Max Gross Wt.:**	5100 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-470-L
Registered Owner:	RICHARD KEITH	**Rated Power:**	260 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	SUU ,62 ft msl	**Distance from Accident Site:**	32 Nautical Miles
Observation Time:	00:55 Local	**Direction from Accident Site:**	40°
Lowest Cloud Condition:	Unknown	**Visibility**	20 miles
Lowest Ceiling:	Overcast / 20000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	50°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	14°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	SANTA ROSA , CA (STS)	**Type of Flight Plan Filed:**	None
Destination:	(O69)	**Type of Clearance:**	None
Departure Time:	16:15 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	PETALUMA MUNI O69	**Runway Surface Type:**	Asphalt
Airport Elevation:	87 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	11	**IFR Approach:**	None
Runway Length/Width:	3600 ft / 75 ft	**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	38.209823,-122.760253(est)

Administrative Information

Investigator In Charge (IIC):	Mars, Noelani
Additional Participating Persons:	MIKE BECKER; OAKLAND , CA
Original Publish Date:	May 8, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=47825