



National Transportation Safety Board Aviation Accident Final Report

Location:	SOUTH BEND, IN	Accident Number:	CHI95LA341
Date & Time:	09/16/1995, 2020 CDT	Registration:	N169GA
Aircraft:	Swearingen SA-226TC	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None

Flight Conducted Under: Part 91: General Aviation - Positioning

Analysis

DURING A REPOSITIONING FLIGHT, THE PILOT-IN-COMMAND (PIC) WAS CONDUCTING ENGINE OUT TRAINING WITH THE COPILOT. THE PIC SIMULATED A RIGHT ENGINE FAILURE DURING INITIAL CLIMBOUT AFTER TAKEOFF APPROXIMATELY 300 FEET ABOVE GROUND LEVEL. THE AIRSPEED AND ALTITUDE STARTED TO DECAY. THE PIC SAID HE FIXATED ON AIRSPEED AND TERMINATED TRAINING AS AIRSPEED NEARED SINGLE ENGINE BEST ANGLE OF CLIMB AIRSPEED (VXSE). THE AIRPLANE STRUCK TREES NEAR THE DEPARTURE END OF THE RUNWAY AS POWER WAS APPLIED ON BOTH ENGINES, BUT THE AIRPLANE CONTINUED TO FLY AND WAS LANDED BACK AT THE AIRPORT. THE PILOT OPERATING HANDBOOK STATED UNDER A CAUTION THAT MINIMUM ALTITUDE FOR OBSTACLE CLEARANCE SHOULD BE MAINTAINED UNTIL SINGLE ENGINE BEST RATE OF CLIMB AIRSPEED (VYSE) IS ATTAINED. AT 11,500 POUNDS GROSS WEIGHT, THE SINGLE ENGINE CLIMB RATE SHOULD BEEN A POSITIVE 700 FEET PER MINUTE.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the Pilot-in-Command's inadequate supervision of the flight and failure to assure that proper airspeed, rate of climb, and clearance from trees were obtained/maintained.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: TAKEOFF

Findings

1. EMERGENCY PROCEDURE - SIMULATED - PILOT IN COMMAND
2. (C) SUPERVISION - INADEQUATE - PILOT IN COMMAND
3. (C) AIRSPEED - NOT OBTAINED/MAINTAINED - PILOT IN COMMAND
4. (C) PROPER CLIMB RATE - NOT OBTAINED/MAINTAINED - PILOT IN COMMAND
5. OBJECT - TREE(S)
6. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND

Factual Information

On September 16, 1995, at 2020 central daylight time (cdt), a Swearingen SA-226TC, N169GA, operated by Grand Aire Express, Inc., of Monroe, Michigan, received substantial damage after takeoff when it struck trees off the departure end of runway 27L at Michiana Regional Airport, South Bend, Indiana. The pilot-in-command (PIC) and Copilot reported no injuries. The positioning 14 CFR Part 91 flight was operating in visual meteorological conditions. An IFR flight plan was filed. The flight originated from South Bend, Indiana, at 2020 cdt.

During the repositioning flight, the PIC briefed they would be conducting training with the newly designated captain (co-pilot) on departure. At approximately 300 feet above ground level, the PIC retarded the right engine power lever to simulate an engine failure. The co-pilot commenced the emergency procedures as prescribed in the aircraft flight manual. The airplane began losing altitude and airspeed near single engine best angle of climb airspeed (V_{xse}). The PIC said that he became fixated on airspeed and did not notice anything else. The PIC terminated the training at the same time the airplane struck the trees near the departure end of the runway. The airplane landed back at South Bend Airport without any handling problems.

Post flight inspection revealed extensive damage to both wing leading edges, wing ribs, engine inlets, engines, and to both propellers. Tree pieces were found in the oil cooler, and the compressor inlet.

The Pilot's Operating Handbook (POH) states a caution under the emergency procedures for a engine failure during takeoff-takeoff continued at or above takeoff decision speed (V₁), which states "...Minimum altitude for obstacle clearance should be maintained until single engine best rate of climb speed is attained...." A note also followed the caution statement which stated, "...Failure of either engine at or shortly above V₁ will cause a marked decrease in performance and will require careful control of the airplane...When operating in high density altitude conditions with loss of an engine, precise control of pitch attitude and altitude become dominant. The pilot must use care to ensure positive clearance above the runway before retracting the landing gear and while accelerating to takeoff speed at 50 foot height (V₅₀) or single engine best rate of climb (V_{yse})...". At 11,500 pounds gross weight, the single engine climb rate should have been a positive 700 feet per minute.

Pilot Information

Certificate:	Airline Transport	Age:	28, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	07/17/1995
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	6000 hours (Total, all aircraft), 400 hours (Total, this make and model), 5700 hours (Pilot In Command, all aircraft), 75 hours (Last 90 days, all aircraft), 35 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Swearingen	Registration:	N169GA
Model/Series:	SA-226TC SA-226TC	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	TC-376
Landing Gear Type:	Retractable - Tricycle	Seats:	3
Date/Type of Last Inspection:	09/01/1995, AAIP	Certified Max Gross Wt.:	12500 lbs
Time Since Last Inspection:	18 Hours	Engines:	2 Turbo Prop
Airframe Total Time:	23275 Hours	Engine Manufacturer:	Garrett
ELT:	Installed, not activated	Engine Model/Series:	TPE-331-10-UA
Registered Owner:	CZAR, INC.	Rated Power:	840 hp
Operator:	GRAND AIRE EXPRESS	Operating Certificate(s) Held:	Air Cargo
Operator Does Business As:	GRAND AIRE EXPRESS	Operator Designator Code:	GXPA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Dusk
Observation Facility, Elevation:	SBN, 799 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1950 CST	Direction from Accident Site:	0°
Lowest Cloud Condition:	Scattered / 11000 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	210°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	23° C / 14° C
Precipitation and Obscuration:			
Departure Point:	(SBN)	Type of Flight Plan Filed:	IFR
Destination:	PANAMA CITY, FL (5FP)	Type of Clearance:	IFR
Departure Time:	2010 CST	Type of Airspace:	Class C

Airport Information

Airport:	SOUTH BEND REGIONAL (SBN)	Runway Surface Type:	Concrete
Airport Elevation:	799 ft	Runway Surface Condition:	Dry
Runway Used:	27L	IFR Approach:	None
Runway Length/Width:	7099 ft / 150 ft	VFR Approach/Landing:	Precautionary Landing; Traffic Pattern

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	TODD J CARLSON	Report Date:	04/18/1996
Additional Participating Persons:	BOB F HELBING; SOUTH BEND, IN		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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