Aviation Investigation Final Report

Location:	FRESNO, California	**Accident Number:**	LAX97LA125
Date & Time:	March 17, 1997, 15:30 Local	**Registration:**	N425TV
Aircraft:	Cessna 425	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	3 None
Flight Conducted Under:	Part 91: General aviation		

Analysis

Two pilots and a mechanic were going on a postmaintenance test flight to check the ailerons following control system work. The aircraft maintenance records disclosed that the right brake master cylinder was replaced prior to this flight. In addition, the original PT6-112 engines had been replaced by new PT6-135's with new 4-bladed propellers. The company which installed the engines and props said that the engines and props had not been rigged following installation due to the aircraft's scheduled arrival at the paint shop. The rigging was an open item yet to be accomplished at the time of the accident. The pilot said that prior to engine start, he tested and held brakes. Following engine start, the right brake pedal slowly went to the floor, and the aircraft began moving forward and turning left. He attempted to pump the right pedal to restore brake pressure, but without success. A loaded Cessna Citation was directly ahead of the aircraft, and the pilot intentionally kept the aircraft turning left to avoid the jet as he moved the throttle levers into reverse to stop. When the aircraft failed to stop, he pulled the propeller levers into feather and the condition levers to stop. The aircraft continued to move during this process, and the left wing collided with the parked Cessna 425. Examination of the aircraft by FAA airworthiness inspectors revealed that the engine and prop rigging was out of spec to the point that the propeller blades would not move beyond a zero blade angle. Taxi tests disclosed no anomaly with the brakes, and the engines and propellers as rigged would not provide any braking or reverse thrust. Detailed examination of the aircraft revealed no evidence of brake fluid leakage. The right brake master cylinder was removed from the airplane and tested to factory specifications for a new cylinder.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: failure of the right brake to function, due to the installation mechanic's failure to completely

bleed all air from the lines. A factor in the accident was the pilot's decision to fly the unairworthy aircraft before the engine/propeller installation had been fully rigged and tested to specification.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: STANDING - ENGINE(S) OPERATING

Findings
1. (C) LANDING GEAR,NORMAL BRAKE SYSTEM - FAILURE,PARTIAL
2. (C) MAINTENANCE,INSTALLATION - INADEQUATE - OTHER MAINTENANCE PERSONNEL

Occurrence #2: COLLISION BETWEEN AIRCRAFT (OTHER THAN MIDAIR)
Phase of Operation: OTHER

Findings
3. AIRPORT FACILITIES,TAXIWAY CONDITION - CONGESTED/CONFINED AREA
4. REMEDIAL ACTION - ATTEMPTED - PILOT IN COMMAND
5. (F) PROPELLER SYSTEM/ACCESSORIES,REVERSING SYSTEM - INOPERATIVE
6. (F) OPERATION WITH KNOWN DEFICIENCIES IN EQUIPMENT - ATTEMPTED - PILOT IN COMMAND
7. OBJECT - AIRCRAFT PARKED/STANDING

Factual Information

On March 17, 1997, at 1530 hours Pacific standard time, a Cessna 425, N425TV, collided with a parked and unoccupied Cessna 425 (N707NY) following an engine start at the Fresno, California, airport. The aircraft was owned and operated by Intersection, Inc., of Dover, Delaware, and was beginning a local area maintenance test flight when the accident occurred. Both aircraft sustained substantial damage. The certificated commercial pilot, an airline transport pilot rated second pilot, and a mechanic onboard the aircraft were not injured. Visual meteorological conditions prevailed and no flight plan was filed.

FAA airworthiness and operations inspectors responded to the accident scene, interviewed the occupants and witnesses, and reviewed the maintenance records and current work orders.

Review of the aircraft maintenance records disclosed that the right brake master cylinder was replaced prior to this flight. In addition, the original Pratt & Whitney PT6-112 engines had been replaced by new PT6-135 turbo prop engines. In addition to the new engines, 4-bladed propellers were also installed in accordance with a Supplemental Type Certificate. Other work involving many other systems was performed as well.

A representative of the company which installed the engines and propellers on the aircraft was interviewed. The representative stated that the engines and propellers had not been rigged following installation due to the aircraft's scheduled arrival at the paint shop. The rigging was an open item yet to be accomplished at the time of the accident.

In a telephone interview conducted on March 24, 1997, the pilot stated that the purpose of the test flight was to check the aileron trim following work on the control system. Prior to engine start the pilot tested and held brakes. Following engine start and while waiting for a taxi clearance, the right brake pedal slowly went to the floor and the aircraft began moving forward and turning left. The pilot reported that he attempted to pump the right pedal to restore brake pressure, but without success. A loaded Cessna Citation was directly ahead of the aircraft and the pilot intentionally kept the aircraft turning left to avoid the jet as he moved the throttle levers into reverse to stop. When the aircraft failed to stop he pulled the propeller levers into feather and the condition levers to stop. The aircraft continued to move during this process and the left wing collided with the parked Cessna 425.

Both the second pilot and the mechanic onboard the aircraft at the time of the accident provided written statements which corroborated the pilot's statement.

Examination of the aircraft by an airworthiness inspector from the Fresno, California, Flight Standards District office revealed that the engine and propeller rigging was out of specification. When the cockpit controls were moved into reverse, the propeller blades would

not move beyond a zero blade angle. Taxi tests disclosed no anomaly with the brakes, and the engines and propellers as rigged would not provide any braking or reverse thrust. Detailed examination of the aircraft revealed no evidence of brake fluid leakage.

The right brake master cylinder was removed from the airplane and shipped to the FAA Aircraft Certification Office in Wichita, Kansas, for examination. A certification engineer took the parts to the Cessna factory where it was examined and tested. The tests and disassembly revealed no discrepancies and the cylinder functioned within serviceable limits.

Pilot Information

Certificate:	Commercial; Foreign	**Age:**	37,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:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	January 5, 1996
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	2725 hours (Total, all aircraft), 130 hours (Total, this make and model), 2680 hours (Pilot In Command, all aircraft), 25 hours (Last 90 days, all aircraft), 12 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N425TV
Model/Series:	425 425	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	425-0176
Landing Gear Type:	Retractable - Tricycle	**Seats:**	8
Date/Type of Last Inspection:	March 11, 1997 Continuous airworthiness	**Certified Max Gross Wt.:**	8200 lbs
Time Since Last Inspection:	7 Hrs	**Engines:**	2 Turbo prop
Airframe Total Time:	3724 Hrs	**Engine Manufacturer:**	P&W
ELT:	Installed, not activated	**Engine Model/Series:**	PT6-135A
Registered Owner:	INTERSECTION, INC., TRUSTEE	**Rated Power:**	750 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:	FAT ,333 ft msl	**Distance from Accident Site:**	
Observation Time:	14:56 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	23°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(FAT)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	00:00 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	FRESNO AIR TERMINAL FAT	**Runway Surface Type:**	
Airport Elevation:	333 ft msl	**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 None	**Latitude, Longitude:**	36.749691,-119.669761(est)

Administrative Information

Investigator In Charge (IIC):	Rich, Jeff
Additional Participating Persons:	DAVE LEHMAN; FRESNO , CA
Original Publish Date:	May 21, 1998
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=29744