



Aviation Investigation Final Report

Location:	SAINT GEORGE, Utah	Accident Number:	DEN89FA076
Date & Time:	February 10, 1989, 17:25 Local	Registration:	N1010Z
Aircraft:	SWEARINGEN SA226TC	Aircraft Damage:	Substantial
Defining Event:		Injuries:	6 None
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

DRG THE TAKEOFF ROLL WITH THE COPLT AT THE CTLS, THE ACFT BEGAN TURNING TO THE LEFT. THE COPLT CORRECTED WITH RGT RUDDER, BUT AS THE TAKEOFF CONTD, THE ACFT VEERED UNCONTROLLABLY TO THE LEFT. THE TAKEOFF WAS ABORTED, BUT BEFORE STOPPING, THE ACFT TURNED FURTHER LEFT & HIT A CESSNA 172 & A UPS VEHICLE, BOTH OF WHICH WERE UNOCCUPIED. THIS WAS THE 1ST FLT AFTER MAINT ON THE NOSEWHEEL STEERING SYS. A SYS CHECK REVEALED THAT WHEN HYDRAULIC & ELECTRICAL PWR WERE APPLIED, THE NOSEWHEEL STEERING SYS WOULD DEFLECT TO THE LEFT AT A RATE OF ABOUT ONE DEGREE PER SECOND. INVESTIGATION REVEALED THAT WHEN MAINT WAS PERFORMED, A ONE-PIECE ARMING/POPPET VLV WAS USED TO REPLACE A TWO-PIECE VLV, WHICH WAS PREVIOUSLY INSTALLED. DRG THE INSTLN, THE SMALL PART OF THE TWO-PIECE VLV (ABT THE SIZE OF A WASHER) WAS NOT REMOVED. WHEN THE ONE-PIECE VLV WAS INSTLD PROPERLY, THE SYS OPERD NORMALLY. MAINT INSTRNS & DRAWINGS DID NOT ADDRESS THE TWO-PIECE VLV & NO INSTRNS WERE FND TO INDC THE TWO PIECES OF THE OLD VLV SHOULD BE CHGD AS A PACKAGE.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: MALFUNCTION OF THE NOSEWHEEL STEERING SYSTEM DUE TO IMPROPER INSTALLATION OF THE NOSEWHEEL STEERING POPPET VALVE & INADEQUATE MAINTENANCE INSTRUCTIONS.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION

Phase of Operation: TAKEOFF

Findings

1. (C) LANDING GEAR,STEERING SYSTEM - INCORRECT
 2. (C) MAINTENANCE,REPLACEMENT - IMPROPER - COMPANY MAINTENANCE PERSONNEL
 3. (C) PROCEDURE INADEQUATE - MANUFACTURER
 4. CONDITION(S)/STEP(S) INSUFFICIENTLY DEFINED
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Occurrence #2: LOSS OF CONTROL - ON GROUND/WATER

Phase of Operation: TAKEOFF - ROLL/RUN

Findings

5. DIRECTIONAL CONTROL - NOT MAINTAINED
 6. GROUND LOOP/SWERVE - UNCONTROLLED
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Occurrence #3: ON GROUND/WATER COLLISION WITH OBJECT

Phase of Operation: TAKEOFF - ABORTED

Findings

7. OBJECT - AIRCRAFT PARKED/STANDING
8. OBJECT - VEHICLE

Factual Information

Pilot Information

Certificate:	Airline transport	Age:	40,Female
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):	Airplane multi-engine; Airplane single-engine	Toxicology Performed:	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	November 17, 1988
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	7282 hours (Total, all aircraft), 1825 hours (Total, this make and model), 4736 hours (Pilot In Command, all aircraft), 148 hours (Last 90 days, all aircraft), 55 hours (Last 30 days, all aircraft), 9 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	SWEARINGEN	Registration:	N1010Z
Model/Series:	SA226TC SA226TC	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	TC-373
Landing Gear Type:	Retractable - Tricycle	Seats:	19
Date/Type of Last Inspection:	February 7, 1989 Continuous airworthiness	Certified Max Gross Wt.:	12500 lbs
Time Since Last Inspection:	2 Hrs	Engines:	2 Turbo prop
Airframe Total Time:	16361 Hrs	Engine Manufacturer:	AIRESEARCH
ELT:	Installed, not activated	Engine Model/Series:	TPE-331
Registered Owner:	SKYWEST AIRLINES, INC.	Rated Power:	940 Horsepower
Operator:		Operating Certificate(s) Held:	Commuter air carrier (135)
Operator Does Business As:		Operator Designator Code:	SWIA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	SGU ,2939 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	17:40 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Scattered / 6000 ft AGL	Visibility	20 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/ None	Turbulence Type Forecast/Actual:	/
Wind Direction:	0°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(SGU)	Type of Flight Plan Filed:	IFR
Destination:	PALM SPRINGS (PSP)	Type of Clearance:	IFR
Departure Time:	17:25 Local	Type of Airspace:	Class D

Airport Information

Airport:	SAINT GEORGE SGU	Runway Surface Type:	Asphalt
Airport Elevation:	2939 ft msl	Runway Surface Condition:	Dry
Runway Used:	16	IFR Approach:	None
Runway Length/Width:	6100 ft / 100 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	4 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	6 None	Latitude, Longitude:	37.1804,-113.600028(est)

Administrative Information

Investigator In Charge (IIC): Wiemeyer, Norman

Additional Participating Persons: JAMES R BANNISTER; FORT WORTH , TX
FRANK CHRIST; SAN ANTONIO , TX
SAM SHAN; SALT LAKE CITY , UT

Original Publish Date: April 24, 1990

Last Revision Date:

Investigation Class: [Class](#)

Note:

Investigation Docket: <https://data.nts.gov/Docket?ProjectID=17580>

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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](#).