



Aviation Investigation Final Report

Location:	CHAMPAIGN, Illinois	Incident Number:	CHI00IA221
Date & Time:	July 23, 2000, 17:31 Local	Registration:	N421TE
Aircraft:	Aerospatiale ATR 42-300	Aircraft Damage:	None
Defining Event:		Injuries:	37 None
Flight Conducted Under:	Part 121: Air carrier - Scheduled		

Analysis

The airplane was undamaged during a precautionary landing following a flight control difficulty while in cruise flight. The flight crew was unable to trim the aircraft for level flight. The pilot reported initially that 80 to 100 pounds of control wheel force was required to maintain wings level. Subsequently, the pilot estimated the force required as 50 to 70 pounds. The trim switch was found to be intermittent and subsequent examination confirmed this. The switch was found to be contaminated with, "... salt, dust, hairs and other organic materials." Corrosion of the switch contacts was also found.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: The failure of the aileron trim switch due to foreign material contamination.

Findings

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

Phase of Operation: CRUISE

Findings

1. (C) FLT CONTROL SYST,AILERON TRIM/TAB CONTROL - CONTAMINATION
2. (C) FLT CONTROL SYST,AILERON TRIM/TAB CONTROL - FAILURE
3. PRECAUTIONARY LANDING - PERFORMED - PILOT IN COMMAND

Factual Information

On July 23, 2000, at 1731 central daylight time, an Aerospatiale ATR 42-300, N421TE, operated as Trans States Airlines Flight 7495, piloted by an airline transport pilot, experienced a flight control difficulty while in cruise flight near Champaign, Illinois. An uneventful landing was made and the airplane sustained no damage. The 14 CFR Part 121 passenger flight was operating on an instrument flight plan. Visual meteorological conditions prevailed at the time of the incident. No injuries were reported. The flight originated from the Michiana Regional airport, South Bend, Indiana, at 1640 eastern standard time, and was en route to the Lambert-St. Louis International Airport, Saint Louis, Missouri.

While in cruise flight at 14,000 feet msl, the flight crew was unable to trim the aircraft for level flight. According to the pilot's original report of the incident, approximately 80 to 100 pounds of aileron force was required to maintain level flight. The flight crew declared an emergency and diverted to the University of Illinois-Willard Airport, Champaign, Illinois, where an uneventful landing was made.

Following the incident, a mechanic for the airline determined that the, "...right section of [the] aileron control switch for trim to be very intermittent (mostly inoperative)." The mechanic also stated that the trim indicator showed 1/2 trim to the left. The mechanic stated that he was able to center the trim by using the intermittent switch. A ferry flight was performed so that the switch could be replaced.

According to a report filed by the airline, the switch had accumulated 26,747 hours time in service at the time of the incident.

The switch was examined by the manufacturer under the supervision of the Bureau Enquetes-Accidents. The malfunction of the switch was confirmed. The switch was found to have been contaminated with, "... salt, dust, hairs and other organic materials." Corrosion of the switch contacts was also found.

The pilot stated, in a written document dated after his original statement, that he may have overestimated the required force to hold wings level. He stated, "...it was probably 50 to 70 pounds of force to hold wings level.

Pilot Information

Certificate:	Airline transport; Commercial	Age:	31, 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:	March 20, 2000
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	5500 hours (Total, all aircraft), 100 hours (Total, this make and model), 100 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aerospatiale	Registration:	N421TE
Model/Series:	ATR 42-300 ATR 42-300	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Transport	Serial Number:	102
Landing Gear Type:	Retractable - Tricycle	Seats:	52
Date/Type of Last Inspection:	July 9, 2000 Continuous airworthiness	Certified Max Gross Wt.:	36825 lbs
Time Since Last Inspection:	122 Hrs	Engines:	2 Turbo prop
Airframe Total Time:	26773 Hrs	Engine Manufacturer:	P&W
ELT:	Installed	Engine Model/Series:	PW120
Registered Owner:	CHASE MANHATTAN BANK	Rated Power:	2000 Horsepower
Operator:	TRANS STATES AIRLINES	Operating Certificate(s) Held:	Commuter air carrier (135)
Operator Does Business As:	TWA EXPRESS	Operator Designator Code:	RAIA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	CMI ,754 ft msl	Distance from Accident Site:	
Observation Time:	16:53 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Scattered / 5000 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	9 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	30°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	75°C / 57°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	SOUTH BEND , IN (SBN)	Type of Flight Plan Filed:	IFR
Destination:	SAINT LOUIS , MO (STL)	Type of Clearance:	IFR
Departure Time:	16:40 Local	Type of Airspace:	Class E

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	
Runway Length/Width:		VFR Approach/Landing:	Precautionary landing

Wreckage and Impact Information

Crew Injuries:	3 None	Aircraft Damage:	None
Passenger Injuries:	34 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	37 None	Latitude, Longitude:	40.109088,-88.239616(est)

Administrative Information

Investigator In Charge (IIC):	Brannen, John
Additional Participating Persons:	KERRY J GAMBREL; SPRINGFIELD , IL
Original Publish Date:	January 2, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this incident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=49813

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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](#).