



National Transportation Safety Board Aviation Accident Final Report

Location:	OPA LOCKA, FL	Accident Number:	MIA00LA004
Date & Time:	10/11/1999, 2024 EDT	Registration:	N438MA
Aircraft:	Fairchild SA227-AC	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None

Flight Conducted Under: Part 91: General Aviation - Positioning

Analysis

It was the first officer's leg and after bringing both power levers to flight idle while on final approach at 30-50 feet, the captain later reported hearing, 'both engines go into a ground idle.' She verified that both power levers were forward of the gate, then noted the sink rate increased. The airplane bounced then after touchdown, the captain brought both power levers to ground idle; the airplane veered to the right. She attempted to maintain runway centerline with asymmetric reverse but the airplane veered off the right side of the runway. The airplane touched down 484 feet from the approach end of the runway; distance between the first and second gouge in the runway from the right propeller indicates the ground speed was 92 knots. Examination of the airplane revealed compression wrinkles on the lower wing skin at the wing splice location. Rigging check of both engine controls revealed no evidence of improper rigging at the flight idle position; improper rigging was noted at the low and high reverse positions for the right engine. Previous discrepancies were written up pertaining to asymmetric reverse. No previous reports of high rates of descent when power levers brought to flight idle position.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The improper flare by the co-pilot, and the failure of the captain to take remedial action by applying power to arrest the observed high rate of descent resulting in a hard landing. A finding in the accident was the inadequate maintenance adjustment of the right engine controls which diminished directional control capability while on the runway following the hard landing.

Findings

Occurrence #1: HARD LANDING

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

1. PROPER DESCENT RATE - NOT ATTAINED - COPILOT/SECOND PILOT
2. (C) FLARE - IMPROPER - COPILOT/SECOND PILOT
3. (C) REMEDIAL ACTION - NOT PERFORMED - PILOT IN COMMAND

Occurrence #2: LOSS OF CONTROL - ON GROUND/WATER

Phase of Operation: LANDING - ROLL

Findings

4. MAINTENANCE,ADJUSTMENT - IMPROPER - COMPANY MAINTENANCE PERSONNEL
5. DIRECTIONAL CONTROL - DIMINISHED

Factual Information

On October 11, 1999, about 2024 eastern daylight time, a Fairchild SA227-AC, N438MA, registered to Textron Financial Corporation, operated by Merlin Express, Inc., as Avalon flight 5001, landed hard at the Opa Locka Airport, Opa Locka, Florida. Visual meteorological conditions prevailed at the time and no flight plan was filed for the 14 CFR Part 91 positioning flight. The airplane was substantially damaged and the commercial-rated captain and airline transport-rated first officer were not injured. The flight originated about 4 minutes earlier from the Miami International Airport, Miami, Florida.

The captain reported that the first officer was flying the airplane and the airplane was on a normal approach to runway 30. She reported that the first officer pulled the power levers to flight idle to transition for landing and heard "...both engines go into a ground idle. I checked that the power levers were forward of the gate, and they were. The aircraft sink rate increased. We bounced on the first landing then landed a second time", at "that point Beverly told me to take the aircraft. I brought both power levers over the gate, and the aircraft immediately pulled hard to the right. I pulled the left power lever to full reverse & kept the right power lever in ground idle to try to keep the aircraft straight & get it slowed down." The airplane veered to the right off the right side of the runway collapsing the nose landing gear. Both occupants evacuated the airplane. There was no mention by the captain in her written statement that she observed any beta lights illuminated during the final approach. Also, there were no similar discrepancies reported by the flightcrew on any of the previous five flights that day.

The first officer stated that on several of the previous landings, the airplane had a tendency while on the ground to veer to the right. The accident flight departed with her flying the airplane and after takeoff, air traffic control communications were transferred to Opa Locka Air Traffic Control Tower. While in contact with the tower, the flight was cleared to land on runway 30. She asked for flaps 1/4, then 1/2, gear down, and "before landing check." When the flight was over the threshold, she, "pulled the power back to flt idle I was about either 30 ft or 50 ft an I remember the aircraft hit so hard on the mains the aircraft bounced up I screamed paula, paula, paula, I was scared I gave the control to paula and the aircraft veering to the right...."

According to a transcription of communications with the Opa Locka Air Traffic Control Tower (ATCT), at 2022:06, a flightcrew member contacted the ATCT. The flightcrew was advised to fly a straight-in approach to runway 30, and at 2022:32, the controller advised the flightcrew that the wind was from zero three zero degrees at 8 knots. The transmission was acknowledged by the flightcrew. The airplane was then cleared to land which was also acknowledged by the flightcrew.

Review of radar data from Miami Approach Control revealed that the last reported radar target of the accident flight was at 2024:47, when the airplane was at 100 feet and the ground speed was 118 knots.

Examination of the airplane following recovery revealed that the nose landing gear was displaced aft approximately 50 degrees, and the right main landing gear yoke assembly was rotated to the right approximately 85 degrees. The boss on the yoke which attaches the lower torque link assembly, was fractured. The right main landing gear yoke assembly was retained for further examination. Approximately 45 percent of the outer wheel assembly for the No. 3 main landing gear tire was missing; no tire was present. The No. 4 main landing gear tire was

missing several sections of tread and the wheel assembly was missing several sections. Examination of the right propeller blades revealed all blade tips were curled aft with course chordwise gouges noted at the blade tips. The left propeller blade tips were also curled aft with no evidence of course chordwise gouges at the blade tips. The nose structure beginning at fuselage station 32 was displaced down approximately 9 inches. Compression wrinkles were noted on the lower wing skin adjacent to the wing extension splice location for both wings. The fuel control units from both engines were retained for further examination.

Examination of the runway revealed skid marks to the right of the runway centerline located 484 feet from the approach end of the runway. The skid marks measured 119 feet in length; associated with them were 13 gouges that were oriented perpendicular to the length of the runway. Also associated with the skid marks were deep gouges in line with the skid marks. A second skid mark which began 210 feet 6 inches from the end of the first skid mark, was noted to be 24 feet 5 inches in length and was also located to the right of the runway centerline. Skid marks from all landing gears were noted beginning approximately 131 feet from the end of the second skid mark location. The skid marks associated from the right main landing gear were continuous from that point to where the airplane departed the runway. Examination of the 13 gouges on the runway associated with the right propeller revealed the distance between the center of the first to the center of the second gouge was 17.5 inches.

According to an NTSB program which asks for the distance between propeller slashes in inches (17.5), the number of propeller blades (4), the engine to propeller gear ratio (26 to 1), the diameter of the propeller (8.83 feet), and the engine rpm (41,730), using this information, the ground speed was calculated to be 92 knots.

Following the accident, a check for rigging of the engine controls was accomplished by the NTSB and the FAA. The results of the rigging check at the flight idle position for both engines revealed no discrepancies. The rigging check indicated discrepancies when checking the right engine full reverse high and low at the propeller governor. Additionally, the FAA inspector noted in his statement, "there is a lot of play in the right engine throttle/propeller linkage. This play seems to be in the engine linkage between the fuel control and the power governor." A copy of the inspector statement is an attachment to this report.

Examination of the fuel control units from the left and right engine was accomplished at the manufacturers facility in the presence of an FAA inspector. The results of both indicate proper operation with field adjustments. A copy of the reports is an attachment to this report.

Metallurgical examination of the right main landing gear yoke assembly was performed by the NTSB Materials Laboratory, located in Washington, D.C. The results indicate that the fracture surfaces were typical of an overstress separation. A copy of the report is an attachment to this report.

Review of the Aircraft Flight Log sheets from September 27, 1999, to the accident flight date, revealed no discrepancies reported similar to the captains report of the accident flight. A discrepancy which was entered by the accident captain on September 27, 1999, indicates, "a/c pulls to right on touchdown-full reverse on left engine w/rt. Engine barely over the gate is needed to maintain centerline." The corrective action block indicates that the propeller blade angle was found to be out of rig; the blade angles were reset. The sheets indicate that 2 days later, a discrepancy listed by a different flightcrew indicates, "a/c pulls to the right w/no nws 80 % rpm needed on #2 engine to maintain straight." The corrective action block indicates

that a flat left hand nose tire was found. A copy of the discrepancy sheets are an attachment to this report.

The airplane minus the retained left and right fuel control units was released to Mr. Carlos E. Martinez, base manager for Merlin Express, Inc., on January 21, 2000. The retained fuel control units were released also to Mr. Carlos Martinez on February 18, 2000. The right main landing gear yoke was retained by the NTSB on February 24, 2000, and was released to Mr. Jeff Domrese, of Merlin Express, Inc., on May 8, 2000.

Pilot Information

Certificate:	Commercial	Age:	23, Female
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
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 Medical Exam:	04/21/1999
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	1977 hours (Total, all aircraft), 1720 hours (Total, this make and model), 740 hours (Pilot In Command, all aircraft), 252 hours (Last 90 days, all aircraft), 107 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Fairchild	Registration:	N438MA
Model/Series:	SA227-AC SA227-AC	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	AC-721B
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	10/09/1999, AAIP	Certified Max Gross Wt.:	16000 lbs
Time Since Last Inspection:	6 Hours	Engines:	2 Turbo Prop
Airframe Total Time:	17968 Hours	Engine Manufacturer:	Garrett
ELT:	Installed, not activated	Engine Model/Series:	TPE-331
Registered Owner:	TEXTRON FINANCIAL CORP.	Rated Power:	1000 hp
Operator:	MERLIN EXPRESS, INC.	Air Carrier Operating Certificate:	Supplemental; On-demand Air Taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	OPF, 8 ft msl	Observation Time:	2025 EDT
Distance from Accident Site:	0 Nautical Miles	Direction from Accident Site:	0°
Lowest Cloud Condition:	Unknown / 0 ft agl	Temperature/Dew Point:	27° C / 23° C
Lowest Ceiling:	Broken / 3500 ft agl	Visibility	10 Miles
Wind Speed/Gusts, Direction:	8 knots, 30°	Visibility (RVR):	0 ft
Altimeter Setting:	29 inches Hg	Visibility (RVV):	0 Miles
Precipitation and Obscuration:			
Departure Point:	MIAMI, FL (MIA)	Type of Flight Plan Filed:	None
Destination:	(OPF)	Type of Clearance:	VFR
Departure Time:	2020 EDT	Type of Airspace:	Class D

Airport Information

Airport:	OPA LOCKA (OPF)	Runway Surface Type:	Asphalt
Airport Elevation:	8 ft	Runway Surface Condition:	Dry
Runway Used:	30	IFR Approach:	
Runway Length/Width:	6800 ft / 150 ft	VFR Approach/Landing:	Full Stop; Straight-in

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):	TIMOTHY W MONVILLE	Adopted Date:	12/05/2000
Additional Participating Persons:	MICHAEL D KEANE; MIAMI, FL ROBERT E LUNA; WEST CHICAGO, IL EDWARD LEACH; ROCKTON, IL ROBERT D HARDWICK; MIAMI, FL		
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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