Aviation Investigation Final Report

Location:	AMSTERDAM,	**Incident Number:**	MIA96IA039
Date & Time:	December 10, 1995,	**Registration:**	N616FF
Aircraft:	Boeing 747-212B	**Aircraft Damage:**	Minor
Defining Event:		**Injuries:**	306 None
Flight Conducted Under:	Part 121: Air carrier - Scheduled		

Analysis

The captain was flying the aircraft as the flight made a ILS approach to runway 19R. During the landing flare a fog bank rolled over the runway and he lost sight of the runway. A go-around was initiated. The digital flight data recorder showed that as the go-around was initiated the roll attitude of the aircraft increased from wings level to 24 degrees right wing down over 5 seconds. The radio altimeter increased from 1.8 feet to 29.2 feet over the same 5 second period. Recorded radar data showed the aircraft veered off to the right and flew a course parallel to the runway during the go-around. The flight returned for another approach and after an uneventful approach and landing on runway 19R, parked at the gate. After parking at the gate, the flight crew was informed by ground personnel that the No. 4 engine nacelle and right wing tip were damaged. Debris from the No. 4 engine nacelle was found on the right side of the runway, about 1400 meters from the threshold. No scrape marks were found on the runway.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: The failure of the captain to maintain a level wings attitude during a go-around resulting in the right wing dragging on the ground.

Findings

Occurrence #1: DRAGGED WING,ROTOR,POD,FLOAT OR TAIL/SKID
Phase of Operation: MISSED APPROACH (IFR)

Findings
1. WEATHER CONDITION - FOG
2. MISSED APPROACH - PERFORMED - PILOT IN COMMAND
3. (C) AIRCRAFT HANDLING - IMPROPER - PILOT IN COMMAND

Factual Information

On December 10, 1995, about 0945 Universal Time Coordinated [UTC], N616FF, a Boeing 747-212B, operated by Tower Air, Inc., as flight No. 069, a 14 CFR Part 121 scheduled international passenger flight, from Bombay, India, to Amsterdam, Netherlands, dragged the right wig tip and the No. 4 engine nacelle during a missed approach on runway 19R at Schiphol Airport, Amsterdam, Netherlands. Instrument meteorological conditions prevailed at the time and an instrument flight rules flight plan was filed. The airplane sustained minor damage, and the airline transport-rated captain, first officer, flight engineer, 1 extra crew, 14 flight attendants and 288 passengers reported no injuries. The flight had originated from Bombay, India, the same day about 0045.

The flight crew stated the captain was flying the instrument landing system approach (ILS) to runway 19R. Upon reaching the decision height the runway environment was in sight and the approach was continued. During the landing flare, fog rolled in and the crew lost sight of the runway. A missed approach was initiated and the flight received radar vectors for another ILS approach to runway 19R. The second approach and landing was uneventful and the aircraft was parked at the gate. The crew was then notified by ground personnel that the No. 4 engine nacelle and right wing tip had made ground contact. Airport personnel stated they found components from the No. 4 engine nacelle on the right side of runway 19R, about 1400 meters from the runway threshold. No scrape marks were located on the runway surface.

Transcripts of communications between air traffic controllers and the flight crew of Tower Air flight 69 showed that during the initial approach to runway 19R, at 0932:23, for the first attempt at landing, the flight crew reported receiving the most recent Automatic Terminal Information Service (ATIS) information, GOLF. The approach controller also reported that the runway visual range in the touchdown zone of runway 19R was 700 meters. The approach chart for the Category I ILS approach to runway 19R requires a minimum visibility of 550 meters. At 0941:45, the flight was told to contact the control tower. At 0943:25, the local controller cleared the flight to land. At 0945:19, the flight crew reported to the local controller that they were performing a go-around. The flight was then instructed to contact the approach controller.

At 0946:04, the flight crew contacted the approach controller and requested another approach. At 0952:17, the approach controller informed the crew that the touch zone visual range was now 450 meters. At 0954:40, the flight was cleared for another approach. At 0955:43, the approach controller reported that the touchdown zone visual range was now 600 meters. The flight was then instructed to contact the control tower. At 0956:52, the flight was cleared to land. At 0959:31, the flight is told to turn left off the runway and contact the ground controller. See attached ATC transcripts.

Recorded radar data from the Schiphol ATC Approach Control, showed that Tower Air 069 flew a normal approach to runway 19R. At about 09:44:41, the flight crossed over the approach end of runway 19R. At 09:44:53, the flight was over the runway and starting to veer to the right. At 09:45:17, the aircraft was off to the right side of the runway and starting to climb. See attached recorded radar data.

Readout of the digital flight data recorder (DFDR) showed that 1 second before main landing gear contact with the runway, as recorded by the tilt switch parameter, the control column position and pitch attitude began to increase in the nose-up direction. The main landing gear made runway contact for 2 seconds. As runway contact was made the engine thrust values began a symmetrical increase from a steady value of about 1.3 EPR. One second after main landing gear contact the radio altimeter increased to 7.8 feet, the pitch increased to 11.9 degrees nose up, and the roll increased to 13.2 degrees right wing down. Three seconds after main landing gear contact the radio altimeter passed 30 feet, the roll had increased to 24 degrees right wing down and the pitch attitude had increased to 14 degrees nose up. For the 10-second period from 1 second before main landing gear touchdown to 9 seconds after main landing gear touchdown, the aircraft's heading changed from 178 degrees to 199 degrees. The remaining data was consistent with a go-around and subsequent landing on runway 19R. See attached Flight Data Recorder Group Chairman Factual Report.

The Netherlands Aviation Safety Board has delegated the investigation and responsibility for reporting of this incident to the United States NTSB in accordance with ICAO Annex 13.

Pilot Information

Certificate:	Airline transport	**Age:**	44,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:**	June 13, 1995
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	12400 hours (Total, all aircraft), 8800 hours (Total, this make and model), 6000 hours (Pilot In Command, all aircraft), 244 hours (Last 90 days, all aircraft), 87 hours (Last 30 days, all aircraft), 9 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Boeing	**Registration:**	N616FF
Model/Series:	747-212B 747-212B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Transport	**Serial Number:**	21939
Landing Gear Type:	Retractable - Tricycle	**Seats:**	506
Date/Type of Last Inspection:	November 16, 1995 AAIP	**Certified Max Gross Wt.:**	820000 lbs
Time Since Last Inspection:	245 Hrs	**Engines:**	4 Turbo fan
Airframe Total Time:	61448 Hrs	**Engine Manufacturer:**	P&W
ELT:	Installed, not activated	**Engine Model/Series:**	JT9D-7Q
Registered Owner:	FIRST SECURITY BANK OF UTAH	**Rated Power:**	51900 Lbs thrust
Operator:	TOWER AIR, INC.	**Operating Certificate(s) Held:**	Flag carrier (121), Supplemental
Operator Does Business As:		**Operator Designator Code:**	TWRA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	EHA	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:		**Direction from Accident Site:**	190°
Lowest Cloud Condition:	Unknown	**Visibility**	
Lowest Ceiling:	Overcast / 200 ft AGL	**Visibility (RVR):**	1600 ft
Wind Speed/Gusts:	5 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	130°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	-2°C / -2°C
Precipitation and Obscuration:	N/A - None - Fog		
Departure Point:	BOMBAY (VABB)	**Type of Flight Plan Filed:**	IFR
Destination:	(EHAM)	**Type of Clearance:**	IFR
Departure Time:		**Type of Airspace:**	Class B

Airport Information

Airport:	SCHIPHOL EHAM	**Runway Surface Type:**	Asphalt
Airport Elevation:	-11 ft msl	**Runway Surface Condition:**	Wet
Runway Used:	19R	**IFR Approach:**	ILS
Runway Length/Width:	10827 ft / 148 ft	**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	18 None	**Aircraft Damage:**	Minor
Passenger Injuries:	288 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	306 None	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	Alston, Andrew
Additional Participating Persons:	ED STROSCHEINE; NEW YORK , NY B A GROENENDIJK; AMSTERDAM , OF
Original Publish Date:	July 11, 1996
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=37917