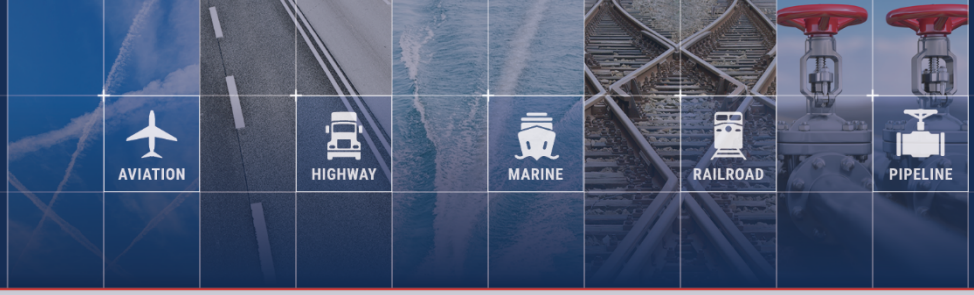

Aviation Investigation Final Report

Location:	NEWARK, New Jersey	**Incident Number:**	DCA93IA027
Date & Time:	March 4, 1993, 17:00 Local	**Registration:**	N99838
Aircraft:	AEROSPATIALE ATR42-300	**Aircraft Damage:**	None
Defining Event:		**Injuries:**	34 None
Flight Conducted Under:	Part 121: Air carrier - Scheduled		

Analysis

FLIGHT 3444 ENCOUNTERED SEVERE TURBULENCE AND ICING CONDITIONS WHILE ON APPROACH TO RUNWAY 4R AT NEWARK INTERNATIONAL AIRPORT. AN ANALYSIS OF THE WEATHER REVEALED THAT THERE WERE 'STRONG HORIZONTAL GUSTS' AND SEVERE TURBULENCE IN THE NEWARK AREA BELOW 5,000 FEET. ALSO, THE FLIGHTCREW STATED THAT THEY HAD BEEN FLYING IN ICING CONDITIONS THAT CONSISTED OF A MIXTURE OF RIME AND CLEAR ICE. THE CAPTAIN STATED THAT HE OBSERVED ABOUT 3 INCHES OF ICE ON TOP OF THE WING, BEHIND THE LEADING EDGE WING BOOT. APPROVED PROCEDURES FOR FLIGHT IN ICING CONDITIONS REQUIRE THE PROPELLER SPEED BE MAINTAINED AT 86 PERCENT OR HIGHER TO PREVENT UNEVEN ICE ACCUMULATION OF THE WING. THE DFDR INFORMATION REVEALED THE CREW HAD THE PROPELLER SPEED AT 77 PERCENT, 9 PERCENT THE REQUIRED MINIMUM.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: THE FLIGHTCREW'S FAILURE TO FOLLOW APPROVED PROCEDURES THAT REQUIRED A MINIMUM PROPELLER SPPED WHILE FLYING IN ICING CONDITION. CONTRIBUTING TO THE LOSS OF ROLL CONTROL WERE THE ENCOUNTERS WITH SEVERE TURBULENCE AND ICING CONDITIONS.

Findings

Occurrence #1: ABRUPT MANEUVER
Phase of Operation: APPROACH

Findings
1. PROCEDURES/DIRECTIVES - NOT FOLLOWED - PILOT IN COMMAND
2. (C) THROTTLE/POWER CONTROL - IMPROPER USE OF - PILOT IN COMMAND
3. (F) WEATHER CONDITION - TURBULENCE IN CLOUDS
4. WEATHER CONDITION - ICING CONDITIONS
5. AIRCRAFT CONTROL - NOT POSSIBLE - PILOT IN COMMAND

Factual Information

ON MARCH 4, 1993, AT 1704 EASTERN STANDARD TIME , AN AEROSPATIALE ATR-42-300, N99838, REGISTERED TO BRITT AIRWAYS AND OPERATING AS CONTINENTAL EXPRESS FLIGHT 3444, EXPERIENCED AN IN-FLIGHT UPSET WHILE ON APPROACH TO NEWARK INTERNATIONAL AIRPORT, NEWARK, NEW JERSEY.

THE UPSET OCCURRED WHILE THE AIRPLANE WAS FLYING IN REPORTED "SEVERE" TURBULENCE AND ICING CONDITIONS.

THE FLIGHTCREW STATED THAT THEY ENCOUNTERED ICING CONDITIONS WHILE DESCENDING OVER YARDLEY INTERSECTION, ON THE APPROACH TO RUNWAY 4R AT NEWARK. THE FLIGHTCREW STATED THAT AIRFRAME ICE WAS BEING SHED FROM THE PROTECTED AREAS, BUT THEY ALSO NOTED THAT THERE WAS AN ACCUMULATION OF ICE ON TOP OF THE WING, AFT OF THE LEADING EDGE BOOT. THE CREW ALSO STATED THAT THEY HAD BEEN IN THE ICING CONDITIONS FOR APPROXIMATELY 10 TO 15 MINUTES.

THE CREW DESCRIBED THE ENVIRONMENTAL CONDITIONS AS CLOUDS TOPS BEING AT 10,000 TO 11,000 FEET, THE TEMPERATURE WAS ABOVE FREEZING AT ABOUT 3,000 FEET, HOWEVER, THEY WERE FLYING IN FREEZING RAIN CONDITIONS WHILE BEING VECTORED. THE ALTITUDES WHERE ICING CONDITIONS HAD BEEN ENCOUNTERED WERE BETWEEN 5,000 AND 11,000 FEET.

THE CAPTAIN DESCRIBED THE ICING CONDITIONS AS LIGHT TO OCCASIONAL MODERATE, AND THAT THERE WAS MIXED RIME AND CLEAR ICE. HE STATED THAT THE ICE ACCUMULATED TO ABOUT 3 INCHES AFT OF THE PROTECTED SURFACES, AND AS FAR AFT AS HE COULD SEE. THE ICE WAS OBSERVED TO BE ONLY ON TOP OF THE WING. IN ADDITION, THERE WAS MODERATE TURBULENCE IN THE ICING ENVIRONMENT, INCLUDING WINDSHEAR OF ABOUT 10 KNOTS.

THE DFDR REVEALED THAT WHILE THE AIRPLANE WAS ON APPROACH, THE AUTOPILOT HAD DISCONNECTED AND THE AIRPLANE ROLL ABOUT 48 DEGREES, RIGHT WING DOWN, WHILE AT A SPEED OF 168 KNOTS. THE INITIAL ROLL EXCURSION WAS FOLLOWED BY SEVERAL MORE THAT WERE RECORDED TO BE BETWEEN 22 AND 27 DEGREES RIGHT WING DOWN. THE LAST ROLL EVENT OCCURRING AT 190 KNOTS.

FURTHER INVESTIGATION OF THE FLIGHTCREW'S OPERATION OF THE AIRPLANE, AND INFORMATION REVEALED ON THE DFDR INDICATE THAT THE CREW HAD THE PROPELLER SPEED AT 77 PERCENT DURING THE FLIGHT IN ICING CONDITIONS. ACCORDING TO CONTINENTAL EXPRESS AND ATR, THE PROCEDURES FOR OPERATING IN ICING CONDITIONS REQUIRE THE PROPELLER SPEED TO BE AT 86 PERCENT OR HIGHER TO

REDUCE THE POSSIBILITY OF UNEVEN ICE ACCRETIONS ON 100 PERCENT OF THE AERODYNAMIC CHORD OF THE WING.

FURTHER EXAMINATION OF THE WEATHER REVEALED THAT "SEVERE TURBULENCE AND STRONG HORIZONTAL GUSTS" OCCURRED IN THE NEWARK AREA BELOW 5,000 FEET.

Pilot Information

Certificate:	Airline transport	**Age:**	Male
Airplane Rating(s):	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:**	
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	9000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	AEROSPATIALE	**Registration:**	N99838
Model/Series:	ATR42-300 ATR42-300	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Transport	**Serial Number:**	
Landing Gear Type:	Retractable - Tricycle	**Seats:**	30
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	25000 lbs
Time Since Last Inspection:		**Engines:**	2 Turbo prop
Airframe Total Time:		**Engine Manufacturer:**	P&W
ELT:	Not installed	**Engine Model/Series:**	PW120
Registered Owner:	BRITT AIRWAYS	**Rated Power:**	1800 Horsepower
Operator:	BRITT AIRWAYS	**Operating Certificate(s) Held:**	Flag carrier (121)
Operator Does Business As:		**Operator Designator Code:**	BRIA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Dusk
Observation Facility, Elevation:	EWR	**Distance from Accident Site:**	
Observation Time:	16:50 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Unknown	**Visibility**	1.5 miles
Lowest Ceiling:	Broken / 1600 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	28 knots / 46 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	70°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	3°C / 1°C
Precipitation and Obscuration:			
Departure Point:	BALTIMORE (BWI)	**Type of Flight Plan Filed:**	IFR
Destination:		**Type of Clearance:**	IFR
Departure Time:	00:00 Local	**Type of Airspace:**	Class E

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	4R	**IFR Approach:**	ILS
Runway Length/Width:		**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	None
Passenger Injuries:	32 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	34 None	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	Feith, Gregory
Additional Participating Persons:	
Original Publish Date:	August 21, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=10972