## Bird ingestion and dual engine failure, Boeing 757, February 22, 1999

Micro-summary: This Boeing 757 ingested a flock of Starlings into both engines during rotation.

Event Date: 1999-02-22 at 1455 EST

Investigative Body: National Transportation Safety Board (NTSB), USA

Investigative Body's Web Site: http://www.ntsb.gov/

## Cautions:

1. Accident reports can be and sometimes are revised. Be sure to consult the investigative agency for the latest version before basing anything significant on content (e.g., thesis, research, etc).

2. Readers are advised that each report is a glimpse of events at specific points in time. While broad themes permeate the causal events leading up to crashes, and we can learn from those, the specific regulatory and technological environments can and do change. Your company's flight operations manual is the final authority as to the safe operation of your aircraft!

3. Reports may or may not represent reality. Many many non-scientific factors go into an investigation, including the magnitude of the event, the experience of the investigator, the political climate, relationship with the regulatory authority, technological and recovery capabilities, etc. It is recommended that the reader review all reports analytically. Even a "bad" report can be a very useful launching point for learning.

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National Transportation Safety Board		NTSB ID: NYC99LA064 Aircraft Registration Number: N682DA										
FACTUAL REPORT	FACTUAL REPORT Occurrence Date: 02/22/1999							Most Critical Injury: None				
AVIATION	Occurrence Type: Accident Investigated By: NTSB											
Location/Time												
Nearest City/Place	State	zip Code Local Time Time Zone										
COVINGTON	KΥ	45275 1455 EST										
Airport Proximity: On Airport Distance From Landing Facility: Direction From Airport:												
Aircraft Information Summary												
Aircraft Manufacturer Model/Series Type of Aircraft												
Boeing 757 Airplane												
Sightseeing Flight: No Air Medical Transport Flight: No												
Narrative												
Delta Air Lines as flight 338, penetrated a flock of birds during takeoff from Cincinnati/Northern Kentucky International Airport, Covington, Kentucky. The airplane was substantially damaged. The 2 flight crewmembers, 5 flight attendants, and 125 passengers were not injured. Visual meteorological conditions prevailed, and an instrument flight rules flight plan had been filed for the scheduled passenger flight destined for Washington, District of Columbia. The flight was conducted under 14 CFR Part 121.								l by nern The sual for was				
taxing, he heard no mention of a bird hazard by another aircraft or ATC. After reaching the runway, the captain initiated the takeoff with the first officer at the controls. The takeoff roll was normal until passing approximately 150 knots; at that point, a flock of birds traveling from left to right passed in front of the airplane. The captain advised the first officer of the hazard and asked him to attempt to climb over the flock. The first officer increased pitch angle, but the airplane still penetrated the flock. At the time of penetration, the nose wheel was in the air and the main landing gear was just becoming airborne. The captain advised ATC of the event, and was cleared to land.								nile the roll from zard the and was				
After advising ATC, the flight crew performed left traffic for runway 18L, landed, and taxied to the gate without further incident. The captained observed no change in engine performance or flight characteristics during or after the event. He added that the birds were small and brown, with white spots.								and gine were				
A review of the flight data record revealed that approximately 1 second after the airplane's main landing gear transitioned from ground to flight, the N1 on the left engine dropped from 81.88 percent to 56.00 percent, and the right engine dropped from 81.25 to 71.63 percent. In both cases, throttle positions remained constant. In addition, pitch was 19.16 degrees nose up, and airspeed was 152.5 knots at the time of the event.								the pped In up,				
Examination of both engines by the operator, revealed damage to the first stage of the compressor sections on the number 1, and number 2 engines. The section were changed, and the aircraft was returned to service.												
On February 23 and 24, 1999, a Federal Aviation Administration Wildlife Biologist examined the airport operations area (AOA). In his report, he wrote, "The starlings [Sturnus vulgaris] involved in the strike appear to have been a random foraging flock. Careful inspection of the area where the starlings were just prior to the strike did not reveal any anomalies or anything remarkably different from virtually every other grassed area within the AOA."								ined ris] area hing				
He continued, "It is	dif	ficul	t to say	with any degre	e of certai	nty wł	nether or not	the				
FACTUAL REPORT - AVIATION Page 1												

FACTUAL REPORT Occurrence Date: 02/22/1999   AVIATION Occurrence Type: Accident	National Transportation Safety Board	NTSB ID: NYC99LA064
AVIATION Occurrence Type: Accident	FACTUAL REPORT	Occurrence Date: 02/22/1999
	AVIATION Ery BON	Occurrence Type: Accident

## Narrative (Continued)

starlings involved in the strike had been roosting in the terminal area trees. In that part of the country, starlings will form large winter roost wherever they can find suitable habitat conditions. Some winter roost can contain several million birds. Winter roosting starlings will fly up to 50 miles (one-way) daily to feed. The starlings involved in the strike could have come from the terminal roost area or they could have come from a roost many miles from the airport."

The FAA publication titled Hazardous Wildlife Attractants On Or Near Airports, states that "All species of wildlife can pose a threat to aircraft safety." In addition, it stated that starlings comprised 5 percent of all damaging animal strikes to U.S. aircraft from 1993 to 1995.

FACTUAL REPORT - AVIATION

National Transportation Safety Board	TSB ID:	NYC9	9LA064								
FACTUAL REPORT	FACTUAL REPORT Occurrence Date: 02/22/1999										
AVIATION	01	Occurrence Type: Accident									
Landing Facility/Approach Inform	ation										
Airport Name	Airp	Airport ID: Airport Elevation Runway Used Runway Length Runway									
CINCINNATI INTERNATION	CV	VG 897 Ft. MSL 18L 10000					)	15	0		
Runway Surface Type: Asphalt				L						I	
Runway Surface Condition: Dry											
Type Instrument Approach:											
VFR Approach/Landing:											
Aircraft Information											
Aircraft Manufacturer Boeing		Model/SeriesSerial7572695						Serial N 26958	Number B		
Airworthiness Certificate(s): Transport											
Landing Gear Type: Retractable - Tricycle											
Homebuilt Aircraft? No Num	d Max Gross W	∕t.		232000	Numbe	r of Engine	əs: 2				
Engine Type: Turbo Fan	En P	Engine Manufacturer:Model/Series:P&WPW2037						Ra 37	ted Power: '000 LBS		
- Aircraft Inspection Information											
Type of Last Inspection	Dat	Date of Last Inspection Time Since Last Inspection							Airframe T	otal Time	
Continuous Airworthiness		Hours						ours		Hours	
- Emergency Locator Transmitter (ELT)	Information				·						
ELT Installed? Yes	ELT Operated? ELT Aided in Locating Accident Site?										
Owner/Operator Information											
Registered Aircraft Owner		Street Address 1020 DELTA BLVD									
DELTA AIR LINES		City State							Zip Code		
	AILANIA GA 30320 Street Address								30320		
Operator of Aircraft	Same as Reg'd Aircraft Owner										
Same as Reg'd Aircraft Owner		City						State	Zip Code		
Operator Does Business As: DELTA AIR LINES Operator Designator Code: DALA											
- Type of U.S. Certificate(s) Held:											
Air Carrier Operating Certificate(s): Flag Carrier/Domestic											
Operating Certificate:				Operator 0	Certifica	ate:					
Regulation Flight Conducted Under: Par	rt 121: Air Carrie	r									
Type of Flight Operation Conducted: Scl	heduled; Domes	tic; Pas	ssenger	/Cargo							
FACTUAL REPORT - AVIATION Page 2											

National Transportation	Safety Board	1	NTSB ID:	NYC99LA	064								
FACTUAL RI	FACTIAL REPORT Occurrence Date: 02/22/1999												
Occurrence Type. Accident													
First Pilot Information													
Name					City					State	D	ate of Birth	Age
On File On File On File 55										55			
Sex: M Seat Occupied:	Left	Pr	incipal Profes	sion: Civilia	an Pilot				Ce	rtificate N	lumbe	er: On File	•
Certificate(s): Airline Transport													
Airplane Rating(s): Multi-engine Land													
Rotorcraft/Glider/LTA: None													
Instrument Rating(s): Airplane													
Instructor Rating(s): None													
Type Rating/Endorsement for Accident/Incident Aircraft? Yes Current Biennial Flight Review?													
Medical Cert.: Class 1 Medical Cert. Status: Valid Medicalno waivers								Dat	e of La	ast Medio	cal Exa	am: 09/1998	
- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Airplane Night Actual				Instrument	istrument Simulated		rcraft	Glider	Lighter Than Air
Total Time	18000	2771											
Pilot In Command(PIC)													
Instructor													
Last 90 Days	156	156											
Last 30 Days													
Last 24 Hours	Last 24 Hours												
Seatbelt Used? Yes Shoulder Harness Used? Yes						Toxico	ology F	Performed	? No		Sec	cond Pilot? Ye	S
Flight Plan/Itinerary													
Type of Flight Plan Filed: IF	R												
Departure Point						State Air		Airport le	Airport Identifier		Departure Time		Time Zone
Same as Accident/Incident Location							C		CVG		1455		EST
Destination							•	Airport le	irport Identifier				
WASHINGTON DC DCA													
Type of Clearance: IFR													
Type of Airspace: Class	С												
Weather Information													
Source of Briefing:													
Mathematics													
ivietnoa of Briefing:													
			FACTUAI	REPORT	- AVL	ATIO	N						Page 3

Courrence Tatle: 02/22/1999     Occurrence Type: Accident     Work file and the term of the term of the term of term o	Nationa	al Transportation Safety	Board	NTSB ID:	NYC99	)LA064							
Occurrence Type: Accident       Work Tormation       Work Fub     Time Zone     WOF Elevator     WOF Distance From Accident Site     Direction From Accident Site       CVG     1954     EST     900 FL MSL     0 NM     0 Deg. Mag.       SkyLlowest Cloud Condition: Scattered     25000 FL AGL     Condition et Light: Day     Ight: Day       Lowest Ceiling: None     0 FL AGL     Visibility:     10     SM     Attimeter:     30.00     'Hg       Temperature:     -1 °C     Dew Point:     -14 °C     Wind Direction: Variable     Density Attitude:     FL       Wind Speed: 4     Gusts:     Weather Conditions at Accident Site: Visual Conditions     Visibility (RVR):     0     FL     Visibility: (NONe     Visibility: None       Accident Information       Arcraft Fire: None     Aircraft Fire: None     Aircraft Explosion None       Classification: U, S, Registered/U.S. Soil     1     1     1     1	FA	ACTUAL REPOR	RT	Occurren	Occurrence Date: 02/22/1999								
Weather Information     Time Zone     WOF Elevation     WOF Distance From Accident Site     Direction From Accident Site       CVG     1954     EST     900 FL MSL     0 NM     0 Deg. Mag.       Sky/Lowest Cloud Condition: Scattered     25000 FL AGL     Condition of Light: Day     0 NM     0 Deg. Mag.       Lowest Ceiling: None     0 FL AGL     Visibility:     10 SM     Attimeter:     30.00 *Hg       Temperature:     -1 *C     Dew Point:     -14 *C     Wind Direction: Variable     Density Attitude:     FL       Wind Speed: 4     Gusts:     Weather Conditions at Accident Site: Visual Conditions     Density Attitude:     FL       Yisibility (RVR):     0 FL     Visibility (RVV)     0 SM     Intensity of Precipitation: Unknown       Restrictions to Visibility: None     Atricraft Fire: None     Aircraft Explosion     None       Type of Precipitation: U.S. Registered/U.S. Soil     Intensity of Precipitation     Aircraft Explosion     None       Inscript Ibander     I     1     1     1     1     1       Second Plot     I     I     1     1     1     1     <		<b>AVIATION</b>		Occurren	ce Type:	Acciden	t		1				
Working     Time Information     Time Zone     WOF Elevation     WOF Distance From Accident Site     Direction From Accident Site       CVG     1954     EST     900 Fr. MSL     0 NM     0 Deg. Mag.       Sky/Lowest Cloud Condition: Scattered     25000 Fr. AGL     Condition of Light: Day     Condition of Light: Day       Lowest Ceiling: None     0 Fr. AGL     Visibility:     10     SM     Altimeter:     30.00     "Hg       Temperature:     -1 °C     Dew Point:     -14 °C     Wind Direction: Variable     Density Altitude:     Fl.       Wind Speed:     4     Gusts:     Weather Conditions at Accident Site: Visual Conditions     Visual Conditions       Visibility (RVR):     0 Ft.     Visibility (RVV)     0 SM     Intensity of Precipitation: Unknown       Restrictions to Visibility: None     Aircraft Fire: None     Aircraft Explosion None       Classification: U.S. Registered/U.S. Soil     Intensity of TOTAL     I     I       Fire Itot     1     1     1     I       Second Plot     1     1     1     I       Second Plot     1     1 <td< td=""><td>Weather</td><td>Information</td><td></td><td></td><td>71-</td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Weather	Information			71-		-						
CVG     1954     EST     900 FL MSL     0 NM     0 Deg. Mag.       Sky/Lowest Cloud Condition: Scattered     25000 FL AGL     Condition - Light: Day       Lowest Ceiling: None     0 FL AGL     Visibility: 10     SM     Attimeter: 30.00     'Hg       Temperature:     -1 °C     Dew Point:     -14 °C     Wind Direction: Variable     Density Attitude:     FL       Wind Speed: 4     Gusts:     Weather Conditions at Accident Site: Visual Conditions     Usual Conditions     FL       Visibility (RVR):     0     FL     Visibility (RVV)     0     SM     Intensity of Precipitation: Unknown       Restrictions to Visibility: None     Atricraft Fire: None     Aircraft Explosion None       Classification:     U.S. Registered/U.S. Soil	WOF ID	Observation Time	Time Zone	WOF Elevat	ion	WOF Di	stance From	n Accio	dent Site		Direction Fron	n Accident Site	
CVG     1954     EST     900 Ft. MSL     0 NM     0 Deg. Mag.       Sky/Lowest Cloud Condition: Scattered     25000 Ft. AGL     Condition: ULight: Day       Lowest Ceiling: None     0 Ft. AGL     Visibility: 10     SM     Attimeter: 30.00     "Hg       Temperature:     -1 °C     Dew Point:     -14 °C     Wind Direction: Variable     Density Attitude:     Ft.       Wind Speed: 4     Gusts:     Weather Condition: at Accident Site: Visual Conditions     Density Attitude:     Ft.       Visibility (RVR):     0     Ft.     Visibility (RVV)     0     SM     Intensity of Precipitation: Unknown       Type of Precipitation:     None     Atricraft Fire: None     Aircraft Explosion     None       Classification:     U.S. Registered/U.S. Soit     Intensity of Precipitation:     Aircraft Explosion     None       First Pliot     Fatal     Serious     Minor     None     TOTAL       First Pliot     Image:     Image:     Image:     Image:       Student Pliot     Image:     Image:     Image:     Image:       Student Pliot     Image:	-												
Sky/Lowest Cloud Condition: Scattered   25000 Ft. AGL   Condition: of Light: Day     Lowest Ceiling: None   0 Ft. AGL   Visibility:   10   SM   Attimeter:   30.00   "Hg     Temperature:   .1 °C   Dew Point:   .14 °C   Wind Direction: Variable   Density Altitude:   Ft.     Wind Speed: 4   Gusts:   Weather Conditions at Accident Site: Visual Conditions   Density Altitude:   Ft.     Visibility (RVR):   0   Ft.   Visibility (RVV)   0   SM   Intensity of Precipitation: Unknown     Restrictions to Visibility: None   None   Aircraft Fire: None   Aircraft Explosion None     Classification:   None   Sold   TOTAL   Aircraft Explosion None     Classification:   U.S. Registered/U.S. Soil   Minor   ToTAL   Aircraft Fire: None   ToTAL     First Nick   Fatal   Serious   Minor   ToTAL   ToTAL   Serious   Serious   Serious   Serious   Serieus   Serieus <th< td=""><td>CVG</td><td>1954</td><td>EST</td><td>900 Ft</td><td>. MSL</td><td></td><td></td><td></td><td>0 NM</td><td></td><td></td><td>0 Deg.</td><td>Mag.</td></th<>	CVG	1954	EST	900 Ft	. MSL				0 NM			0 Deg.	Mag.
Lowest Ceiling: None   0 Ft. AGL   Visibility:   10   SM   Attimeter:   30.00   "Hig     Temperature:   -1 °C   Dew Point:   -14 °C   Wind Direction: Variable   Density Altitude:   Ft.     Wind Speed: 4   Gusts:   Gusts:   WeatterConditions at Accident Site: Visual Conditions   Conditions     Visibility (RVR):   0   Ft.   Visibility (RVV)   0   SM   Intensity of Precipitation: Unknown     Restrictions to Visibility:   None   Intensity of Precipitation: Unknown   Intensity of Precipitation: Unknown     Arcraft Damage: Substantial   Aircraft Fire: None   Aircraft Eire: None   Aircraft Eire: None   Intensity of ToTAL     Findt Damage: Substantial   Fatal   Serious   Minor   None   TOTAL     Fingt Pliot   Fatal   Serious   Minor   TOTAL   Fingt Pliot     Second Pliot   I   1   1   1   1     Second Pliot   I   I   1   1     Flight Histurdor   I   I   I   1     Flight Engineer   I   I   I   I     Flight En	Sky/Lowes	t Cloud Condition: Sca	ttered			25	5000 Ft. AG	L	Condition of	of Lig	nt: Day		
Temperature:   .1 °C   Dew Point:   .14 °C   Wind Direction: Variable   Density Altitude:   Ft.     Wind Speed: 4   Gusts:   Gusts:   Veature: Conditions at Accident Site: Visual Conditions   Image: Substantial   Image: Substantial   Image: Substantial   Image: Substantial   Image: Substantial   Aircraft Fire: None   Aircraft Fire: None     Classification: U.S. Registered/U.S. Soil   Minor   None   TOTAL   TotAl   TotAl   Image: Substantial   Fatal   Serious   Minor   TotAL   TotAL   Fight Instructor   Image: Substantial   Fatal   Serious   Image: Substantial   Serious   Serious   Image: Substantial   Fatal   Serious   Image: Substantial   Serious   Image: Substantial   Serious	Lowest Ce	iling: None		0 Ft.	AGL	Visibi	lity:	10	SM	Alti	meter:	30.00	"Hg
Wind Speed: 4   Gusts:   Weather Conditions at Accident Site: Visual Conditions     Visibility (RVR):   0   Ft.   Visibility (RVV)   0   SM   Intensity of Precipitation: Unknown     Restrictions to Visibility:   None   Intensity of Precipitation:   Unknown     Type of Precipitation:   None   Aircraft Site: Visual Conditions     Accident Information   Aircraft Fire: None   Aircraft Explosion None     Classification:   U.S. Registered/U.S. Soil   Intensity of TOTAL     - Injury Summary Matrix   Fatal   Serious   Minor   None   TOTAL     First Plot   1   1   1   1   1   1     Second Plot   1   1   1   1   1   1     Flight Instructor   1 <td>Temperatu</td> <td>ıre: -1 °C</td> <td>Dew Point:</td> <td>-14 °C</td> <td>Wind</td> <td>Direction:</td> <td>Variable</td> <td></td> <td></td> <td>De</td> <td>nsity Altitude:</td> <td></td> <td>Ft.</td>	Temperatu	ıre: -1 °C	Dew Point:	-14 °C	Wind	Direction:	Variable			De	nsity Altitude:		Ft.
Visibility (RVR):   0   Ft.   Visibility (RVV)   0   SM   Intensity of Precipitation: Unknown     Restrictions to Visibility:   None   Intensity of Precipitation:   Unknown     Type of Precipitation:   None   Aircraft Damage:   None     Accident Information   Aircraft Fire: None   Aircraft Explosion None     Classification:   U.S. Registered/U.S. Soil   Aircraft Explosion None     - Injury Summary Matrix   Fatal   Serious   Minor   None   TOTAL     First Pilot   1   1   1   1   1   1     Second Pilot   2   2   2   2   2   2     Flight Instructor   2   2   2   2   2   2   2     Flight Engineer   2 <t< td=""><td>Wind Spee</td><td>ed: 4</td><td colspan="8">4 Gusts: Weather Conditions at Accident Site: Visual Conditions</td><td></td></t<>	Wind Spee	ed: 4	4 Gusts: Weather Conditions at Accident Site: Visual Conditions										
Restrictions to Visibility: None     Type of Precipitation: None     Accident Information     Aircraft Damage: Substantial   Aircraft Fire: None   Aircraft Explosion None     Classification: U.S. Registered/U.S. Soil   Injury Summary Matrix   Fatal   Serious   Minor   TOTAL     - Injury Summary Matrix   Fatal   Serious   Minor   None   TOTAL     First Pilot   1   1   1   1   1     Second Pilot   1   1   1   1     Student Pilot   1   1   1   1     Flight Instructor   1   1   1   1     Clabin Attendants   5   5   5   5     Other Crew   1   1   1   1     Passengers   1   1   1   1     Passengers   125   125   132	Visibility (R	RVR): 0 Ft.	Visibility (I	RVV) 0	SM	Intensity	/ of Precipita	ation: I	Unknown				
None     Accident Information     Aircraft Damage: Substantial   Aircraft Fire: None   Aircraft Explosion None     Classification: U.S. Registered/U.S. Soil     - Injury Summary Matrix   Fatal   Serious   Minor   None   TOTAL     First Pilot   0   1   1   1     Second Pilot   0   1   1   1     Student Pilot   0   1   1   1     Flight Instructor   0   0   0   0   0     Clabin Attendants   0   0   0   0   0   0     Passengers   0   0   125   125   125   125     -TOTAL ABOARD -   0   132   132   132   132	Restriction	s to Visibility: None					-						
Type of Precipitation:   None     Accident Information   Aircraft Fire: None   Aircraft Explosion None     Classification:   U.S. Registered/U.S. Soil   Aircraft Explosion None     - Injury Summary Matrix   Fatal   Serious   Minor   None   TOTAL     First Pilot   Image:   Minor   None   TOTAL   Image:   None     Second Pilot   Image:   Image:   Image:   Image:   Image:   Image:     Student Pilot   Image:   Image:   Image:   Image:   Image:   Image:     Flight Instructor   Image:   Image:   Image:   Image:   Image:   Image:     Gabin Attendants   Image:   Image:   Image:   Image:   Image:   Image:     Passengers   Image:   Image:   Image:   Image:   Image:   Image:     - TOTAL ABOARD-   Image:   Image:   Image:   Image:   Image:   Image:		,											
Accident Information      Aircraft Damage: Substantial   Aircraft Fire: None   Aircraft Explosion None     Classification: U.S. Registered/U.S. Soil   -   TOTAL     - Injury Summary Matrix   Fatal   Serious   Minor   None   TOTAL     First Pilot   1   1   1   1   1     Second Pilot   1   1   1   1     Student Pilot   1   1   1   1     Flight Instructor   1   1   1   1     Flight Engineer   1   1   1   1     Cabin Attendants   5   5   5   1     Passengers   1   1   1   1     1   1   1   1   1     1   1   1   1   1   1     Student Pilot   1   1   1   1   1     Cabin Attendants   5   5   5   1   1   1     Passengers   1   1   1   1   1   1   1   1   1   1   1   1   1		ecinitation: None											
Accident Information     Aircraft Damage: Substantial   Aircraft Fire: None   Aircraft Explosion None     Classification: U.S. Registered/U.S. Soil     - Injury Summary Matrix   Fatal   Serious   Minor   None   TOTAL     First Pilot   1   1   1   1     Second Pilot   2   1   1   1     Student Pilot   2   1   1   1     Flight Instructor   2   2   1   1     Flight Engineer   2   2   2   2   2     Cabin Attendants   2   2   2   5   5     Other Crew   2   2   1   2   1   2     Passengers   2   2   1   2   1   2     Other ABOARD -   3   1   3   3   3   3   3													
Aircraft Damage: Substantial   Aircraft Fire: None   Aircraft Explosion None     Classification: U.S. Registered/U.S. Soil   -   None   TOTAL     - Injury Summary Matrix   Fatal   Serious   Minor   None   TOTAL     First Pilot   1   1   1   1   1     Second Pilot   1   1   1   1     Student Pilot   1   1   1   1     Flight Instructor   1   1   1   1     Check Pilot   1   1   1   1     Flight Engineer   1   1   1   1     Cabin Attendants   1   1   1   1     Passengers   1   1   1   1     TOTAL ABOARD -   1   1   1   1	Accident	Information											
Classification: U.S. Registered/U.S. Soil     - Injury Summary Matrix   Fatal   Serious   Minor   None   TOTAL     First Pilot   1   1   1   1     Second Pilot   1   1   1     Student Pilot   1   1   1     Flight Instructor   1   1   1     Check Pilot   1   1   1     Flight Engineer   1   1   1     Cabin Attendants   1   1   1     Passengers   1   1   1     - TOTAL ABOARD -   1   1   1	Aircraft Dar	mage: Substantial		Aircraft Fir	e: None	;			Aircraft Exp	olosio	n None		
- Injury Summary MatrixFatalSeriousMinorNoneTOTALFirst Pilot111Second Pilot111Student Pilot111Flight Instructor111Check Pilot111Flight Engineer111Cabin Attendants11Passengers1125125- TOTAL ABOARD -1132132	Classificati	on: U.S. Registered/L	LS Soil										
Highly Guinnally MultitixFractionFractionHighlyHighlyFirst Pilot111Second Pilot111Student Pilot111Flight Instructor11Check Pilot11Flight Engineer15Other Crew1125Passengers125125- TOTAL ABOARD -132132		mmary Matrix	Fatal S	Serious Min	or	None	τοται						
Net NotImage: Second PilotImage: Second PilotImage: Second PilotStudent PilotImage: Second PilotImage: Second PilotImage: Second PilotFlight InstructorImage: Second PilotImage: Second PilotImage: Second PilotCheck PilotImage: Second PilotImage: Second PilotImage: Second PilotFlight EngineerImage: Second PilotImage: Second PilotImage: Second PilotCabin AttendantsImage: Second PilotImage: Second PilotImage: Second PilotPassengersImage: Second PilotImage: Second PilotImage: Second Pilot- TOTAL ABOARD -Image: Second PilotImage: Second PilotImage: Second Pilot	First Pi					1	1						
Student PilotImage: Constraint of the state o	Second	d Pilot				1	1						
Flight InstructorImage: Check PilotImage: Check PilotImage: Check PilotFlight EngineerImage: Check PilotImage: Check PilotImage: Check PilotCabin AttendantsImage: Check PilotImage: Check PilotImage: Check PilotCabin AttendantsImage: Check PilotImage: Check PilotImage: Check PilotCabin AttendantsImage: Check PilotImage: Check PilotImage: Check PilotOther CrewImage: Check PilotImage: Check PilotImage: Check PilotPassengersImage: Check PilotImage: Check PilotImage: Check Pilot- TOTAL ABOARD -Image: Check PilotImage: Check PilotImage: Check Pilot	Studen	t Pilot					· · ·						
Check PilotImage: Check PilotImage: Check PilotFlight EngineerImage: Check PilotImage: Check PilotCabin AttendantsImage: Check PilotImage: Check PilotCabin AttendantsImage: Check PilotImage: Check PilotOther CrewImage: Check PilotImage: Check PilotPassengersImage: Check PilotImage: Check Pilot- TOTAL ABOARD -Image: Check PilotImage: Check Pilot	Flight li	nstructor											
Flight EngineerImage: Cabin AttendantsImage: Cabin AttendantsImage: Same Same Same Same Same Same Same Same	Check	Pilot											
Cabin AttendantsImage: Cabin AttendantsImage: Second StateOther CrewImage: Second StateImage: Second StatePassengersImage: Image: Second StateImage: Image: Second State- TOTAL ABOARD -Image: Image: Image: Second StateImage: Image: Image: Second State	Flight E	Ingineer											
Other Crew Image: Crew   Passengers 125   - TOTAL ABOARD - 132	Cabin A	Attendants				5	5						
Passengers     125     125       - TOTAL ABOARD -     132     132	Other C	Crew											
- TOTAL ABOARD - 132 132	Passen	igers				125	125						
	- TOTAL A	ABOARD -				132	132						
Other Ground 0 0 0 0	Other G	Ground	0	0	0		0						
- GRAND TOTAL - 0 0 0 132 132	- GRANE	D TOTAL -	0	0	0	132	132						
				FACTUAI	REPO	RT - AV	IATION					F	age 4

National Transportation Safety Board	NTSB ID: NYC99LA064	
FACTUAL REPORT	Occurrence Date: 02/22/1999	
AVIATION	Occurrence Type: Accident	
Administrative Information		
Investigator-In-Charge (IIC) DAVID S. MUZIO		
Additional Persons Participating in This Accident/Incide GERALD MILBURN FAA FSDO LOUISVILLE, KY	nt Investigation:	
ED CLEARLY 800 INDEPENDENCE AVE., SW WASHINGTON, DC		