
Pilot incapacitation, Douglas DC-8-61

Micro-summary: The captain of this Douglas DC-8-61 was incapacitated in an unpressurized airplane flying at high altitude.


Event Date: 1994-03-15 at 0727 EST

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

Investigative Body's Web Site: <http://www.nts.gov/>

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		NTSB ID: NYC94LA062		Aircraft Registration Number: N817CK	
		Occurrence Date: 03/15/1994		Most Critical Injury: Serious	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place COVINGTON		State KY	Zip Code 45275	Local Time 0727	Time Zone EST
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility: 55		Direction From Airport: 45	
Aircraft Information Summary					
Aircraft Manufacturer DOUGLAS			Model/Series DC-8-61		Type of Aircraft Airplane
Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:					
<p>On March 15, 1994, at 0727, the flight crew of an American International Airways DC-8-61, N817CK, operating as Connie [Kalitta] Flight 861, made an unscheduled landing at the Greater Cincinnati Airport, Covington, Kentucky, after the captain became incapacitated. The airplane was not damaged. The captain was hospitalized with serious injuries. Visual meteorological conditions prevailed and flight 861 was operated on an instrument flight rules (IFR) flight plan under 14 CFR Part 121.</p> <p>The flight originated in Atlanta, Georgia, with an enroute stop at Charlotte, North Carolina, and then continued to Ypsilanti, Michigan. At Ypsilanti, the flight crew went to breakfast while the cargo was unloaded, and new cargo loaded on the airplane.</p> <p>While on the ground, company maintenance personnel replaced the left wing navigation light on the airplane. Access to the light was gained from the cargo compartment, through the left forward overwing emergency exit, and out onto the wing.</p> <p>The flight engineer (F/E) reported he did two walkarounds on the airplane and the overwing emergency exit appeared in place. He said he did not physically examine the emergency exits or latches.</p> <p>Witnesses reported seeing the airplane takeoff and they thought the left forward overwing exit was not in place as the airplane became airborne.</p> <p>According to flight crew interviews and written statements, the F/E was unable to maintain cabin pressurization after takeoff. The first officer (F/O) and F/E, reported there was no cockpit discussion about staying at a lower altitude until the cause of the lack of pressurization could be determined. The captain made a decision to continue the climb. The flight crew donned their oxygen masks and the flight continued. In the vicinity of FL290 both the F/O and F/E reported the captain was not responding to radio calls, however, the captain indicated via hand signals that he wanted the flight to continue the climb. The flight continued to FL330. While at FL330, the captain's condition continued to deteriorate and the F/O took command of the airplane, and requested a descent.</p> <p>Once the airplane was level at 8000 feet, the flight crew was queried by air traffic if they wanted to declare an emergency. The flight crew declined to declare an emergency and requested to continue the flight to Atlanta, its planned destination. The flight crew then requested to divert to Charlotte. After being informed of the location of the Greater Cincinnati Regional Airport, the flight crew elected to divert there for landing and medical assistance for the captain. The flight landed without incident and the captain was removed and taken to a local hospital.</p> <p>In a written statement made after the accident, the first officer stated:</p>					
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National Transportation Safety Board

FACTUAL REPORT

AVIATION

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Occurrence Type: Accident

Narrative (Continued)

...I took command when I felt that it was necessary without creating a feeling of mutiny. Since Captain XXXX is a strong willed person and when he is in command he is not to be questioned, I followed his orders....

In a written statement made after the accident, the flight engineer stated:

...It is my opinion that the only way to get the airplane to a lower altitude would be to override the captain by use of physical force. When the captain requested higher altitudes, the first officer and I strongly protested, both verbally and by hand signals. These protests were repeated at least three times during the climb...All protests were disregarded by the captain....

According to FAA Airmen Medical Records, the captain weighed 240 pounds and was 71 inches tall, the first officer was 66 inches tall and weighed 156 pounds, and the flight engineer was 72 inches tall and weighed 190 pounds.

Post accident examination of the airplane by FAA personnel from the Louisville Flight Standards District Office found the left forward over wing emergency exit laying on a cargo palette inside the airplane. In a written report, Mr. Jerry Brown stated:

...Company maintenance personnel installed the replacement emergency exit door. After the installation, I observed that on the exterior, the door did not fit flush with the outer surface of the fuselage...Inspection revealed that the door latch slide mechanism was not engaging the latch stop at the top of the door jam, thus preventing the door seal from forming a positive seal. The old door was reinstalled with the same results. Neither door could be pushed fully into the opening far enough to form a flush fit. After an on top-the-wing modification to one of the doors by the maintenance crew, it was reinstalled and a proper installation was attained. After the oxygen system was serviced, I functionally checked the captain's oxygen mask and found it to be operational in all positions.

In a telephone interview, Mr. Brown reported that the latches on the emergency exit door would not engage the latch plate on the door frame, even though the handle was extended to the locked position. The overwing emergency exit door would stay in place due to force fit, but it was not locked in place. There was a cargo liner on the emergency exit door that had to be bent out of the way to see if the latches were engaged. He said after to door was worked on by a company mechanic, it fit properly, and the latches engaged. Additionally, Mr. Brown said that the improperly fitting door was recessed against the fuselage and visible when viewed from outside the airplane.

The captain's oxygen mask and regulator were removed and tested by the USAF at Brooks Air Force Base. In a written report, they stated, "...Dynamic impedance tests on the regulator, hose and mask system, with proper sealing and use, yielded acceptable values...In summary, test results indicate that the performance of this oxygen regulator is consistent with factory specifications....

Examination of the minimum equipment list revealed restrictions for an unpressurized dispatch. No FAA or company restrictions were found for unpressurized flight when it originated after the dispatch, other than the flight must meet the oxygen requirements of 14 CFR Part 121. The emergency section procedures of the FAA Approved DC-8 Flight Manual contained procedures for a loss of pressurization at altitude and a descent to lower altitudes. No procedure was found for a loss of pressurization at low altitudes and a voluntary climb to high altitude.

According to the printout of the flight data recorder, the airplane had achieved an altitude of FL330, 18 minutes after takeoff. The flight stayed at that altitude for approximately 4 minutes and then initiated a descent to 10,000 feet. After 2 minutes at 10,000 feet, the descent continued to 8,000 feet.

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According to the American International Airways, Inc. instructors guide, initial and recurrent ground training covered the following:

1. GENERAL SITUATION TRAINING

g. Rapid Decompression hyperventilation formation	1) Respiration 3) Time of useful consciousness 5) Physical phenomena and actual incidents	2) Hypoxia, hypothermia and 4) Gas expansion/bubble
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This section is part of a group assigned 4 hours of training. According to company manuals, recurrent training is conducted using 1/2 the programmed number of hours of training. According to company records, the pilot last completed recurrent training which covered, General Emergency Training/Drills, Recurrent, on October 30, 1993.

According to Advisory Circular 61-107, dated January 23, 1991, OPERATIONS OF AIRCRAFT AT ALTITUDES ABOVE 25,000 FEET MSL AND/OR MACH NUMBERS (Mmo) GREATER THAN .75:


i. When nitrogen is inhaled, it dilutes the air we breathe. While most nitrogen is exhaled from the lungs along with carbon dioxide, some nitrogen is absorbed by the body. The nitrogen absorbed into the body tissues does not normally present any problem because it is carried in a liquid state. If the ambient surrounding atmospheric pressure lowers drastically, this nitrogen could change from a liquid and return to its gaseous state in the form of bubble. These evolving and expanding gases in the body are known as decompression sickness....


(2) Evolved Gas. When the pressure on the body drops sufficiently, nitrogen comes out of solution and forms bubbles which can have adverse effects on some body tissues. Fatty tissue contains more nitrogen than other tissue; thus making overweight people more susceptible to evolved gas decompression sickness.

(ii)...Paresthesia is a third type of decompression sickness, characterized by tingling, itching, a red rash, and cold and warm sensations, probably resulting from bubbles in the central nervous system (CNS). CNS disturbances can result in visual deficiencies such as illusionary lines or spots, or a blurred field of vision. Some other effects of CNS disturbances are temporary partial paralysis, sensory disorders, slurred speech, and seizures.

Dr. Stephen Veronneau, with the FAA Civil Aeromedical Institute (CAMI), interviewed the pilot and reviewed his medical treatment records. Dr. Veronneau reported the pilot was a smoker, and overweight. The pilot had last complete physiological training (altitude chamber) in 1982. In the Executive Summary, of his Medical, Pathological and Human Performance Factual Report, he stated:

...The fact that he was the only reported injury may be due to obesity, a known risk factor predisposing to more severe decompression illness....

 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: NYC94LA062			
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Landing Facility/Approach Information					
Airport Name CINCINNATI	Airport ID: CVG	Airport Elevation 897 Ft. MSL	Runway Used 36R	Runway Length 10000	Runway Width 150
Runway Surface Type: Concrete					
Runway Surface Condition: Dry					
Type Instrument Approach: Visual					
VFR Approach/Landing:					
Aircraft Information					
Aircraft Manufacturer DOUGLAS		Model/Series DC-8-61		Serial Number 45887	
Airworthiness Certificate(s): Transport					
Landing Gear Type: Retractable - Tricycle					
Homebuilt Aircraft? No	Number of Seats: 4	Certified Max Gross Wt. 328000 LBS	Number of Engines: 4		
Engine Type: Turbo Fan	Engine Manufacturer: P&W	Model/Series: JT3D-3B	Rated Power: 17000 LBS		
- Aircraft Inspection Information					
Type of Last Inspection Continuous Airworthiness	Date of Last Inspection 02/1994	Time Since Last Inspection 101 Hours	Airframe Total Time 47167 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?	ELT Operated?	ELT Aided in Locating Accident Site?			
Owner/Operator Information					
Registered Aircraft Owner AMERICAN INTL AIRWAYS		Street Address 340 PIPER STREET			
		City MORRISTOWN	State TN	Zip Code 37814	
Operator of Aircraft Same as Reg'd Aircraft Owner		Street Address Same as Reg'd Aircraft Owner			
		City	State	Zip Code	
Operator Does Business As:			Operator Designator Code: CKSA		
- Type of U.S. Certificate(s) Held:					
Air Carrier Operating Certificate(s): Supplemental					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 121: Air Carrier					
Type of Flight Operation Conducted: Non-scheduled; Domestic; Cargo					
FACTUAL REPORT - AVIATION					

 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: NYC94LA062
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	Occurrence Type: Accident

First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 51
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Sex: M	Seat Occupied: Left	Principal Profession: Civilian Pilot	Certificate Number: On File
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Certificate(s): Airline Transport; Commercial

Airplane Rating(s): Multi-engine Land; Single-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?
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Medical Cert.: Class 1	Medical Cert. Status: Valid Medical--w/ waivers/lim.	Date of Last Medical Exam: 01/1994
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- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time	20000	18000				3000				
Pilot In Command(PIC)	18000									
Instructor										
Last 90 Days	149	149		149						
Last 30 Days	43	43		43						
Last 24 Hours	5	5		5						

Seatbelt Used? Yes	Shoulder Harness Used? Yes	Toxicology Performed? No	Second Pilot? Yes
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Flight Plan/Itinerary

Type of Flight Plan Filed: IFR

Departure Point YPSILANTI	State MI	Airport Identifier YIP	Departure Time 0633	Time Zone EST
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Destination ATLANTA	State GA	Airport Identifier ATL	
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Type of Clearance: IFR

Type of Airspace: Class E

Weather Information

Source of Briefing: Commercial Weather Service


Method of Briefing:

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Weather Information					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
CVG	0753	EST	897 Ft. MSL	55 NM	215 Deg. Mag.
Sky/Lowest Cloud Condition: Scattered			6500 Ft. AGL	Condition of Light: Day	
Lowest Ceiling: Broken		8500 Ft. AGL		Visibility: 10 SM	Altimeter: 29.00 "Hg
Temperature: 9 °C	Dew Point: 3 °C	Wind Direction: 260		Density Altitude: Ft.	
Wind Speed: 14	Gusts:	Weather Conditions at Accident Site: Visual Conditions			
Visibility (RVR): 0 Ft.	Visibility (RVV) 0 SM	Intensity of Precipitation: Unknown			
Restrictions to Visibility: None					
Type of Precipitation: None					

Accident Information		
Aircraft Damage: None	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
Second Pilot				1	1
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer				1	1
Cabin Attendants					
Other Crew					
Passengers					
- TOTAL ABOARD -		1		2	3
Other Ground	0	0	0		0
- GRAND TOTAL -	0	1	0	2	3

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Administrative Information

Investigator-In-Charge (IIC)
ROBERT L. HANCOCK,

Additional Persons Participating in This Accident/Incident Investigation:

RICHARD KELLEY
FAA FSDO
LOUISVILLE, KY

JERRY BROWN
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