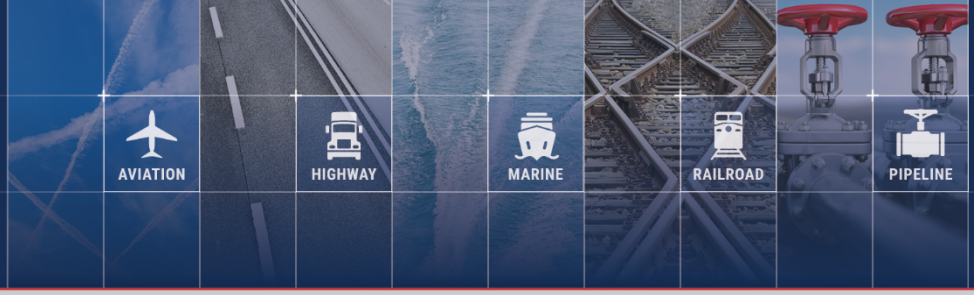

Aviation Investigation Factual Report

Location:	CHICAGO, Illinois	**Incident Number:**	CHI95IA095
Date & Time:	February 25, 1995, 19:25 Local	**Registration:**	GAWNM
Aircraft:	BOEING 747-136	**Aircraft Damage:**	None
Defining Event:		**Injuries:**	357 None
Flight Conducted Under:	Part 129: Foreign		

Factual Information

HISTORY OF FLIGHT

On February 25, 1995 about 1926 central standard time, British Airways (BA) Flight 296, from Chicago, Illinois, to London, England, and United Airlines (UA) Flight 243 from Chicago, Illinois, to Denver, Colorado, were involved in a near midair collision while the two airplanes were departing from the Chicago O'Hare International Airport. There were no injuries to the 339 passengers or crew of 18 on Flight 296, a Boeing 747-136. There were no injuries to the 140 passengers or crew of 10 on Flight 243, a McDonnell Douglas DC-10. Both flights were conducting scheduled passenger service, Flight 296 under the provisions of 14 CFR Part 129, and Flight 243 under the provisions of 14 CFR Part 121. IFR flight plans were filed for both flights. Visual meteorological conditions prevailed in Chicago.

BA Flight 296 was issued a departure clearance to climb to 5,000 feet and turn right to a heading of 070 degrees. The flight was cleared for takeoff on runway 32R at 1922:36. UA Flight 243 was issued a departure clearance to climb to 5,000 feet and turn left to a heading of 320 degrees. The flight was cleared for takeoff on runway 4L at 1923:25, 49 seconds after BA Flight 296 was cleared to takeoff. BA Flight 296 was told to contact departure control at 1924:11.

UA Flight 243 was told to fly runway heading at 1924:25 and told to make a "sharp" left turn to a heading of 270 degrees at 1924:30. At 1924:35, the flight was instructed to maintain 2,000 feet and, at 1925:00, was instructed to expedite their climb to 5,000 feet. At 1925:18, UA Flight 243 acknowledged that they had BA Flight 296 in sight "well below" them. The controller instructed UA Flight 243 to maintain visual separation.

BA Flight 296 was instructed, by departure control, to maintain 3,000 feet and turn to the north. They were subsequently instructed to maintain their present altitude. The pilot of BA Flight 296 reported they stopped the climb at 2,300 feet and were on a heading of about 050 degrees when they initiated the left turn. He reported the other airplane was "clearly visible to our right" and "several cabin crew members reported the proximity of the other airplane." One flight attendant said she heard the other airplane. The pilot reported that a TCAS traffic advisory was received after they had acquired visual contact and no resolution advisory was received. He advised departure control of the occurrence and subsequently filed a near midair collision report.

The pilot of UA Flight 243 reported that they were holding short of runway 4L, in the number two position, behind Air Canada Flight 700, a DC-9, when the controller initially cleared them on to the runway. Tower tapes disclose the flight crew alerted the controller, who rescinded the clearance. He later cleared Flight 243 onto the runway after the DC-9 departed. During a

telephone interview, the pilot of UA Flight 243 reported they were at an altitude of about 800 feet AGL, prior to flap retraction, when they were instructed to maintain runway heading. They acquired visual contact with the other airplane as they rolled right to return to runway heading. They received a TCAS traffic alert coincident with the clearance to climb to 5,000 feet and did not receive a resolution alert. He estimated the minimum separation between the two airplanes was 300 feet vertically and one mile horizontally.

In a TCAS simulation summary, ARINC, Inc. of Cambridge, Massachusetts, a contractor tasked by the FAA to investigate TCAS incidents, reported that at a range of approximately 1.7 miles, TCAS thresholds for traffic advisories were satisfied for both airplanes. TCAS resolution advisories were not issued because "the rapid climb established by TCAS #2 resulted in vertical separation projections in excess of the minimum thresholds of 300 and 600 feet for corrective and preventative resolution advisories, respectively."

The minimum lateral separation required between two heavy airplanes in the Chicago terminal area is four miles. Controllers have the option of providing visual separation, and reduced separation standards, between other airplanes, but this option is not available for heavy airplanes.

The Chicago O'Hare Air Traffic Control Tower (ATCT) was staffed with two local controllers at the time of the incident. The north local controller was responsible for landing traffic on runway 9L and departing traffic on runways 4L, 32R, and 9L. Additionally, a relieving north local controller, a local control monitor, an area supervisor, and an area manager were monitoring traffic. During interviews, several controllers described the traffic as "fairly busy" and the configuration as "complex" but not abnormal for the O'Hare ATCT.

The heavy Boeing 747, BA Flight 296, normally would have departed on runway 32L, however, runway 32L was closed due to damage to the surface of the runway. Airplanes were departing on runways 4L, 9L, and 32R. Airplanes were arriving on runway 4R with simultaneous instrument landing system (ILS) approaches to runways 9R and 9L.

The occurrence was classified as an operational error by the FAA. Findings of the FAA were that there was a "momentary lapse of the required separation" and the error was categorized as "human."

Safety Board Investigators interviewed the North Local Controller, the East Departure Controller, the relieving North Local Controller, the North Local Control Monitor, the Area Supervisor, and the Area Manager.

During a personal interview with NTSB investigators, the North Local Controller reported that he was preparing to brief the controller who was scheduled to relieve his position. He planned a sequence to depart BA Flight 296, but the flight was not initially on his frequency when he was ready to issue takeoff clearance. He modified his planned sequence, eventually issued takeoff clearance to BA Flight 296, and continued briefing the relieving controller. He issued a

takeoff clearance to UA Flight 243, handed off BA Flight 296 to departure control, and soon realized the potential conflict. He had considered the alternative of requesting that UA Flight 243 abort their takeoff, but the airplane had accelerated about 3,000 feet down the runway and he believed it would not be a good technique to request an abort at that point.

The controller stated that minimum separation standards were violated as soon as UA Flight 243 became airborne. He immediately began taking action to prevent a more severe occurrence.

He commented during the interview that he had an excellent working relationship with his supervisors in the tower. He believed they did not put undo pressure on him to keep traffic moving and said "the only pressure is pressure I put on myself"

The relieving North Local Controller, during a personal interview, reported he had been briefed on a few items from the relief briefing card, and had just plugged into the station when UA Flight 243 was cleared for takeoff. He commented "what heading you got BA on?" He stated that he believed that it was at this time the North Local Controller realized there was a traffic conflict.

The Tower Supervisor reported that part of his duty was to "see where people may need some assistance." At the time of the incident, he was assisting the inbound and outbound ground controllers on the opposite side of the tower cab. He realized a conflict had occurred and observed the Area Manager move over to the north local control position. At that point he "stood back" and continued assisting the ground controllers.

The Area Manager reported that his duties included "the oversight of operations and to recognize trouble spots", and to make on the spot corrections of any problems with controller performance. At the time of the incident he was working on a schedule for the next day. He focused his attention on the north local control position when he heard the controller say "... give me a tight left turn ...." He saw the targets and believed they were going to merge. He asked the controller "what's happening." The controller responded "I've got visual."

The Area Manager stated that he wasn't observing the relief changeover. He said he occasionally observes changeovers, on a random basis, but there is no requirement for them to be monitored.

The North Local Control Monitor, during a personal interview, reported he heard the North Local Controller comment that he had a problem. The monitor looked at the airport and looked at the radar and saw that the "aircraft were aimed at each other." He said he recommended that the controller "issue traffic." He looked back to runway 9L, "saw nobody else in position, so no other deals could occur," then resumed his duties of monitoring.

ADDITIONAL INFORMATION

The local control monitor position was established by the FAA following NTSB recommendations A-86-45 and A-86-46 which resulted from the NTSB investigation of an operational error at O'Hare on May 17, 1986. Recommendation A-86-45 stated, "Establish on a trial basis, for the north and south control operations in the Chicago O'Hare International Airport control tower, local control coordinator positions to monitor and supervise, directly, the local control positions; staff these positions whenever intersecting runways are in concurrent operation," This recommendation was classified by the NTSB as "Closed--Unacceptable Action" on August 3, 1987. Recommendation A-86-46 stated, "Evaluate the need for a local control coordinator position at all major airports that use intersecting runways in concurrent operations and establish the position where the need is evident." This recommendation was classified by the NTSB as "Closed-- Acceptable Action" on July 10, 1989.

O'Hare Operating Order 7110.65C, dated September 1, 1993, specifies that the local control monitor's responsibilities are to:

(1) Monitor the Local Controller's operation through the use of an FAA headset.

(2) Assist the Local Controller by acting as an "extra pair of eyes."

(3) Advise the Local Controller of any observed or anticipated unsafe operation.

During interviews, several controllers commented that the responsibility of the local control monitor was limited to the surface only. One controller described the position as "totally boring." Another commented that "for the most part, monitors just sit there" because the position is not an "active" job.

One controller commented that the requirement for the monitor position sometimes prevented the tower from using optimum configurations because desirable runways could not be opened due to the need for additional staffing. Several controllers, however, described situations where the monitor intervened to prevent an operational error from occurring and remarked that the position was invaluable for safe operations.

Parties to the investigation were the Federal Aviation Administration, British Airways, the National Air Traffic Controllers Association, and United Airlines.

Pilot Information

Certificate:	Airline transport	**Age:**	49,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:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	November 18, 1994
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	10100 hours (Total, all aircraft), 7000 hours (Total, this make and model), 62 hours (Last 90 days, all aircraft), 39 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BOEING	**Registration:**	GAWNM
Model/Series:	747-136 747-136	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Transport	**Serial Number:**	
Landing Gear Type:	Retractable - Tricycle	**Seats:**	418
Date/Type of Last Inspection:	Continuous airworthiness	**Certified Max Gross Wt.:**	710000 lbs
Time Since Last Inspection:		**Engines:**	4 Turbo jet
Airframe Total Time:		**Engine Manufacturer:**	P&W
ELT:	Installed, not activated	**Engine Model/Series:**	JT9D-7A
Registered Owner:	BRITISH AIRWAYS	**Rated Power:**	
Operator:		**Operating Certificate(s) Held:**	Flag carrier (121)
Operator Does Business As:		**Operator Designator Code:**	BRA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night/dark
Observation Facility, Elevation:	ORD ,667 ft msl	**Distance from Accident Site:**	
Observation Time:	18:50 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Scattered / 10000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	15 knots / 22 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	3°C / -3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:		**Type of Flight Plan Filed:**	IFR
Destination:	LONDON (LHR)	**Type of Clearance:**	IFR
Departure Time:	19:23 Local	**Type of Airspace:**	Class B

Airport Information

Airport:	CHICAGO O'HARE INT'L ORD	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	18 None	**Aircraft Damage:**	None
Passenger Injuries:	339 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	357 None	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	Robbins, Wesley
Additional Participating Persons:	PAUL INFANTE; DES PLAINES , IL JEFFREY L PLANTZ; CHICAGO , IL RICHARD DRAZICH; CHICAGO , IL BARRY ANSHELL; CHICAGO , IL
Report Date:	September 12, 1995
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=9759