



National Transportation Safety Board Aviation Incident Final Report

Location:	SALINA, KS	Incident Number:	CHI99IA100A
Date & Time:	03/02/1999, 1040 CST	Registration:	N40061
Aircraft:	McDonnell Douglas DC-10	Aircraft Damage:	None
Defining Event:		Injuries:	3 None

Flight Conducted Under: Part 121: Air Carrier - Scheduled

Analysis

A Federal Express DC-10-10F sustained no damage during a near mid-air collision with an American International Airways Lockheed L-1011-385-1-15, 30 miles west of Salina, Kansas. The aircraft came within an estimated 1/2 mile horizontal and 0 feet vertical separation of each other. The FAA issued a Final Operational Error/Deviation Report. The report indicated that an ATC controller '...dropped the data block on FDX3207 [DC-10] without transferring communications...' to another controller. The report also indicated that another ATC controller, '...issued CKS303 [L-1011] a frequency change to 125.67 instead of the correct frequency of 127.65. CKS303 acknowledged the wrong frequency correctly by reading back 125.67.' ATC recognized that both airplanes were NORDO but were unable to reestablish radio communications, although several means were tried. The CKS303 First Officer reported he saw the DC-10 at their 8 o'clock position at 1/2 mile and same altitude. He reported he turned to the right 30 degrees. The FDX3207 pilots reported they did not see the L-1011 but felt its wake turbulence. Current FAA regulations do not require any aircraft used exclusively for cargo operations to be equipped with any version of TCAS.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: the ARTCC personnel failed to maintain radio communications with both airplanes and failed to maintain IFR separation standards. Factors relating to the incident were the FAA does not require cargo airplanes to be equipped with TCAS and neither airplane was equipped with TCAS.

Findings

Occurrence #1: NEAR COLLISION BETWEEN AIRCRAFT

Phase of Operation: CRUISE

Findings

1. (C) RADIO COMMUNICATIONS - NOT MAINTAINED - ATC PERSONNEL(ARTCC)
2. (C) IFR SEPARATION STANDARDS - NOT MAINTAINED - ATC PERSONNEL(ARTCC)
3. (F) COMM/NAV EQUIPMENT - NOT INSTALLED
4. (F) INSUFFICIENT STANDARDS/REQUIREMENTS,AIRCRAFT - FAA(ORGANIZATION)

Factual Information

History of Flight

On March 2, 1999, at 1039 central standard time (CST), a Federal Express DC-10-10F, N40061, flight number 3207, sustained no damage during a near mid-air collision with an American International Airways Lockheed L-1011-385-1-15, N106CK, flight number CKS303, 30 miles west of Salina, Kansas. The aircraft came within an estimated 1/2 mile horizontal and 0 feet vertical separation of each other. Neither aircraft was equipped with a Traffic Alert and Collision Avoidance System (TCAS). Neither aircrew reported injuries. Visual meteorological conditions prevailed at the time of the event. Both 14 CFR Part 121 flights were operating on instrument flight plans and were flying at 33,000 feet (FL330). The scheduled domestic cargo flights were operating in Kansas City Air Route Traffic Control Center's (ARTCC) airspace, but the air traffic controllers were unable to establish radio communications with either aircraft to warn them of the converging flight paths. The Federal Express flight originated from Portland, Oregon, and was en route to Memphis, Tennessee. The American International Airways flight departed Los Angeles, California, and was en route to Indianapolis, Indiana.

The First Officer of the L-1011 reported that he had turned to speak to the Captain when he, "...noticed a FEDEX DC-10 at our 8 o'clock position cruising at the same altitude (F/L 330). The DC-10 appeared to be approximately 1/2 mile away, slightly behind our aircraft at a slower speed and closing at about a 30 degree converging angle to our Aircraft." He reported he, "...immediately brought the FEDEX DC-10 to the Captains attention and turned our aircraft approximately 30 degrees to the right to reduce the intercept angle. This resulted in a new heading of approximately 110 degrees. The FEDEX DC-10 passed behind us and to our right."

The First Officer reported the Captain, "...then attempted to contact ATC to report the event on the selected and prior frequencies. There was no answer from ATC on either frequency." He reported the Captain tried several frequencies without success. He finally contacted a Flight Service station on 122.2 and obtained a good frequency for contacting Kansas City Center.

The Captain of the DC-10 reported, "The flight conditions were VMC with unlimited visibility, the ride smooth. The First Officer went to the back to use the lavatory, leaving his seat unoccupied. The Second Officer and myself remained at our stations. During the First Officer's absence, at approximately 1638 (1038 am CST) in the vicinity of SLN (Salina, Kansas), we experienced a sudden and unexpected jolt of turbulence. I looked left and observed an L1011 off our left wing, at our altitude, laterally displaced several thousand feet and moving constantly away from our position. At this point in time, no evasive action was needed and none was taken. The L1011 appeared to have moved from right to left through our position. We were unable to [ascertain] if it had passed above us or below us."

The DC-10 Captain reported that he, "...immediately attempted, unsuccessfully, to make contact with the controlling agency. We then discovered that GOC [Global Operations Control Center] had messaged our ACARS instructing us to contact Kansas City Center on 133.92. We complied and quarried Center concerning the loss of separation. They confirmed the incident, then informed us that they had made repeated and unsuccessful attempts to contact us. They informed us that they'd had no luck contacting the L1011 as well."

Personnel Information

The DC-10 Captain had 7,616 total flight hours and 5,008 hours in make and model airplane

since hired by Federal Express. The First Officer had 1,053 total flight hours and 668 hours in make and model since hired by Federal Express.

The L-1011 Captain's and First Officer's total flight hours and hours in make and model were not obtained.

Aircraft Information

Neither the DC-10 nor the L-1011 was required by FAA regulations to be equipped with TCAS. Neither aircraft was equipped with TCAS when delivered to their respective companies.

Communications

The FAA issued a Final Operational Error/Deviation Report concerning the incident. It reported the following information:

At 0948:50, "ZLC16 dropped the data block on FDX3207 [DC-10] without transferring communications to ZDV34R."

At 1005:00, "both the ZDV34 controllers and ZDV33 controllers advised the Area 5 Operations Supervisor that FDX3207 was NORDO [lost communications]."

The report indicated that FDX3207 flew through numerous ATC sectors in a NORDO status as it continued to its destination airport. The incident occurred at approximately 1038.

At 1016:03, "Employee A, working the ZDV Sector 28 Radar controller position (ZDV28R, located in Area 3), initiated an automated handoff to ZDV17 on CKS303 [L-1011], and at 1017:01 ZDV17R accepted the handoff. At 1017:39, Employee A issued CKS303 a frequency change to 125.67 instead of the correct frequency of 127.65. CKS 303 acknowledged the wrong frequency correctly by reading back 125.67. (Note 125.67 is a frequency adjacent to the west side of Area 3. Area 3 controllers use both 125.67 and 127.65 on a daily basis.) A review of the voice tapes for frequency 125.67 did not indicate that CKS303 reported on frequency." The report indicated that attempts were made to establish radio contact with CKS303.

At approximately 1021 CST, the Area 2 Operations Supervisor from the Denver ARTCC was advised that both FDX3207 and CKS303 were NORDO. The supervisor contacted San Francisco ARINC and asked them to contact both airplanes and have them contact the Denver ARTCC on frequency 127.65. The messages via ARINC proved unsuccessful. The report indicated that the Area 2 Operations Supervisor and the ATC controllers attempted to establish communications with the two NORDO airplanes by using various frequencies including the emergency frequency 121.5, but without success.

At 1030:30, "ZDV17R advised ZKC that FDX3207 and CKS303 were coming together, were NORDO, and the ARINC had been notified."

At 1035:52, "The Conflict Alert activated between FDX3207 and CKS303."

At 1038:45, "Standard separation was lost between FDX3207 and CKS303. Due to missing radar data, the closest known proximity based on radar data was 1.4 NM and 0.0 ft. Standard separation was reestablished at 1640:45 UTC [1040:45]." (See FAA Final Operational Error/Deviation Report)

Flight Recorders

The Captain of the DC-10 (FDX3207) pulled the Cockpit Voice Recorder (CVR) circuit breaker

shortly after the incident occurred. The CVR was sent to the Vehicle Recorders Division of the National Transportation Safety Board (NTSB). A Cockpit Voice Recorder Group Chairman's Factual Report was completed. The CVR report indicated the following information:

At 1038:57, "[sound of creaking and rattling over a period of approximately four seconds]"

At 1039:00, "# (Expletive)."

At 1039:00, "[sound similar to cockpit alert chime]"

At 1039:01, "# (Expletive)."

At 1039:06, the Captain said, "How close did we come to hit."

At 1039:08, the Flight Engineer said, "That's what just caused this."

At 1039:10, the Captain said, "Huh?"

At 1039:10, the Flight Engineer said, "That's ATA. That that caused that."

The pilots continued to discuss the incident between 1039:10 and 1040:04.

At 1040:04, the Flight Engineer said, "Okay, ah. Kansas Center's looking for us. It didn't ding."

At 1040:09, the Captain said, "What's the frequency? Thirty three ninety two."

The pilots continued to discuss the incident between 1040:09 and 1041:36.

At 1041:36, the Flight Engineer said, "He's a freighter. We're a freighter. Nobody's got TCAS... This message came in sixteen thirty nine."

At 1041:44, the First Officer said, "Three minutes ago."

At 1041:47, the Flight Engineer said, "Yeah that thing happened about that time." (See Cockpit Voice Recorder Group Chairman's Factual Report)

Additional Information

The National Transportation Safety Board issued Safety Recommendation A-99-55 and -56 on September 9, 1999. The NTSB made the following recommendations:

"Amend 14 Code of Federal Regulations 121.356, 125.224, and 129.18 to require that all aircraft of 15,000 kilograms (33,000 pounds) or greater maximum takeoff weight or more than 30 passenger seats be equipped with Traffic Alert and Collision Avoidance System II and an appropriate Mode S transponder. (A-99-55)"

"Study and publicly report on the feasibility and safety benefits of requiring Traffic Alert and Collision Avoidance System equipment for all cargo aircraft operating under 14 Code of Federal regulations Parts 121, 125, and 129. (A-99-56)"

Federal Express reported that its goal is to have all of their aircraft operating under FAR Part 121 equipped with TCAS prior to January 1, 2003.

Parties to the investigation included the Federal Aviation Administration, Federal Express, and American International Airways.

Pilot Information

Certificate:	Airline Transport	Age:	53, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
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:	11/16/1998
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	7613 hours (Total, all aircraft), 5008 hours (Total, this make and model), 6330 hours (Pilot In Command, all aircraft), 58 hours (Last 90 days, all aircraft), 31 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	McDonnell Douglas	Registration:	N40061
Model/Series:	DC-10 DC-10	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	46973
Landing Gear Type:	Retractable - Tricycle	Seats:	7
Date/Type of Last Inspection:	03/02/1999, Continuous Airworthiness	Certified Max Gross Wt.:	446000 lbs
Time Since Last Inspection:		Engines:	3 Turbo Jet
Airframe Total Time:	38908 Hours	Engine Manufacturer:	GE
ELT:	Installed	Engine Model/Series:	CF6-6D
Registered Owner:	FEDERAL EXPRESS CORP.	Rated Power:	40000 lbs
Operator:	FEDERAL EXPRESS CORP.	Operating Certificate(s) Held:	Air Cargo; Flag carrier (121); Supplemental

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	SLN, 1272 ft msl	Distance from Accident Site:	30 Nautical Miles
Observation Time:	0953 CST	Direction from Accident Site:	90°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	17 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	360°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	9° C / 2° C
Precipitation and Obscuration:			
Departure Point:	PORTLAND, OR (PDX)	Type of Flight Plan Filed:	IFR
Destination:	MEMPHIS, TN (MEM)	Type of Clearance:	IFR
Departure Time:	0642 PST	Type of Airspace:	Class A

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	
Runway Length/Width:		VFR Approach/Landing:	

Wreckage and Impact Information

Crew Injuries:	3 None	Aircraft Damage:	None
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	JIM SILLIMAN	Report Date:	11/30/2000
Additional Participating Persons:	PAUL INFANTI; LONGMONT, CO RICHARD MILLS; YPSILANTI, MI MIKE WALES; MEMPHIS, TN		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).