NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, D.C. 20594

January 10, 2012

Group Chairman's Factual Report

OPERATIONAL FACTORS

DCA11FA084A/B

Contents

ACCIDENT

Operators:	Delta Air Lines/Atlantic Southeast Airlines
Location:	General Edward Lawrence Logan International Airport (BOS), Boston, Massachusetts, USA
Date:	July 14, 2011
Time:	1933 Eastern Daylight Time[1]
Airplanes:	Boeing B-767-332ER, Serial # 27961, Registration # N185DN and Canadair CL6002D24 [CRJ 900][2], Serial # 15219, Registration # N132EV

OPERATIONAL FACTORS GROUP

B. David Tew - Chairman Operational Factors Division (AS-30) National Transportation Safety Board 490 L'Enfant Plaza East, SW Washington, DC 20594-2000	Eric West – Member Federal Aviation Administration 800 Independence Ave, S.W. Washington, D.C. 20591
Bill Meachem – Member Air Line Pilots Association Atlantic Southeast Airlines 55 Herndon Parkway Herndon, VA 20170	Chris Avery – Member Atlantic Southeast Airlines A-Tech Center 990 Toffie Terrace Atlanta, GA 30354
John Parsons – Member Air Line Pilots Association Delta Air Lines 55 Herndon Parkway Herndon, VA 20170	Curt Adamek - Member Delta Air Lines Department 186 PO Box 20706 Atlanta, GA 30320-6001

SUMMARY

On July 14, about 1933 EDT, a Delta Air Lines B-767-300ER, N185DN, operating as Delta flight 266, was taxiing on taxiway B for departure on runway 4R at Boston Logan International Airport (BOS), Boston, Massachusetts, when its left winglet struck the horizontal stabilizer of an Atlantic Southeast Airlines CRJ900, N132EV, operating as ASA flight 4904, which was number three in

[1] All times are Eastern Daylight Time (EDT) based on a 24-hour clock, unless otherwise noted.
[2] Airplane was referred to as a CRJ 900 by airlines.

line on taxiway M waiting for departure on runway 9. As the B-767 approached and passed the intersection with taxiway M, the left winglet of the B-767 struck the horizontal tail of the CRJ900. The CRJ900 sustained substantial damage, which included damage to the horizontal tail and vertical tail, and the airplane lost fluid in all three hydraulic systems. Parts of the B-767 winglet were sheared off and embedded in the tail of the CRJ900. The passengers on the CRJ900 were deplaned on the taxiway, and the B-767 taxied back to the terminal. There was one reported neck injury to a passenger.

DETAILS OF THE INVESTIGATION

The Operations Group conducted interviews[3] with Delta Air Lines (DAL) and Atlantic Southeast Airlines (ASA) accident crew members on August 1 and 2, 2011. The group also interviewed a DAL Check Airman (CA) and a DAL simulator instructor. On August 10, the Operations Group conducted a phone interview with the Federal Aviation Administration (FAA) air crew program manager (ACPM) for the DAL B-767 fleet.

The group gathered written statements[4] from the DAL accident crew which consisted of a captain, first officer (F/O), and 8 flight attendants (F/As) and the ASA accident crew which consisted of a captain, F/O, and a F/A.

NTSB investigators reviewed DAL flight operations and training manuals.

1.0 HISTORY OF FLIGHT

On July 14, 2011 at BOS, an ASA CRJ900 airplane taxied for takeoff on runway 9 and was stopped on Mike taxiway south of runway 9[5]. The ASA CRJ was behind two other airplanes waiting on the south side of Mike taxiway for takeoff clearance.

After the ASA CRJ taxied out, a DAL B-767 taxied for takeoff on runway 4R. During the taxi, air traffic control (ATC) told the B-767 to hold short of runway 4L on Bravo taxiway. The DAL pilots said they saw other airplanes holding short of runway 4L and thought the accident ASA CRJ might have been one of those airplanes. The DAL F/O estimated that they held short of runway 4L for two to four minutes. The DAL F/O recalled that the ground controller then told the DAL B-767 to "taxi to runway 4R, hustle around the corner for landing traffic." The DAL captain recalled the ground controller said the landing traffic was four miles out on final approach. The DAL pilots stated that they looked for the landing traffic and saw a "heavy"[6] airplane approaching the airport with its landing gear extended. The crew said they were not sure if the landing traffic was going to runway 4L, runway 4R or runway 9. The DAL captain expedited his taxi to cross the runway 4L approach path and the F/O said they taxied at a groundspeed of about 20 knots when they crossed the 4L approach path.

[3] See attachment 1 – Interview Summaries
[4] See attachment 2 – Written Statements
[5] See attachment 3 – ASA Jeppesen 10-9 page depicting BOS airport
[6] Heavy – aircraft capable of takeoff weights of 300,000 pounds or more whether or not they are operating at this weight during a particular phase of flight

After crossing the runway 4L approach path, ATC said "nice job, contact tower on 132.22, be ready, you are number one for 4R". The DAL F/O said he started dialing the tower frequency and when he looked up, he saw that they were closing the distance to the ASA CRJ faster than he had thought they would. The DAL F/O said "hey, watch out for that guy" and pointed at the ASA CRJ. The F/O said he considered whether he should apply braking but decided to stay off the brakes because he was not sure they would collide. He said he was also concerned that applying the brakes could have caused injuries to the F/As. The DAL captain said that after turning the corner on Bravo taxiway, he did notice the ASA CRJ that was stopped on Mike taxiway just north of Bravo taxiway and said the CRJ looked clear of Bravo taxiway. The captain said it looked like his airplane would clear the ASA CRJ as they passed. The captain said it looked like the distance between the airplanes was going to be close so he steered his B-767 slightly to the right of the Bravo taxiway centerline and applied light braking. The captain estimated that he had moved his nosewheel about three feet to the right of centerline when their left wing blended winglet collided with the tail of the ASA CRJ. The DAL captain said that when he felt the airplanes collide, he brought the B-767 to a stop and estimated his nosewheel was about five feet to the right of the Bravo taxiway centerline when they stopped.

The DAL captain asked a flight attendant (F/A) if anyone was injured and she replied there were no injuries. The captain asked a F/A to look outside to see if there was wing damage or any leaking fluids. The F/A looked through the cabin windows and reported back that there was a jagged edge to the winglet but there were no leaking fluids visible. The captain elected not to perform an emergency evacuation. The pilots said that the only way to deplane the B-767 without stairs being brought to them was to use emergency ropes or slides. The DAL pilots asked the Aircraft Rescue Fire Fighting (ARFF) responders for an inspection of their airplane. The responders later confirmed the damage reported by the F/A and said there were no leaking fluids. After determining the damage to their airplane, the DAL crew asked ATC for clearance to taxi back to their terminal. They then taxied to a gate.

The ASA F/O said he noticed the DAL B-767 as it was turning the corner on Bravo taxiway. He said it was "moving faster than normal." He did not have any concern that the B-767 would hit them, but said it was closer than normal. The F/O said he would have spoken up if he thought the B-767 was going to hit them. The ASA captain said he saw the DAL B-767 on Bravo taxiway and thought it was moving "mighty fast". He said he was concerned but did not think the B-767 would hit them or he would have said something. The ASA F/O stated that the captain said, in a joking manner, "I hope he doesn't hit us" which the F/O characterized as a "ha ha statement". The F/O stated that they had "no thoughts of moving, nowhere to go."

After being hit by the DAL B-767, the ASA pilots noted some warning lights and indications in the cockpit including low pressure indications in the #1 and #3 hydraulic systems. The F/O began doing the quick reference handbook (QRH) HYD 1 & 3 LO PRESS[7] checklist. When the emergency responders arrived, the crew asked for an assessment of their airplane. The emergency responders reported there was substantial damage to their airplane and that hydraulic fluid was leaking out. The ASA F/O went outside the airplane to look at the damage and

[7] HYD 1 & 3 LO PRESS checklist was for a condition where the #1 & #3 hydraulic systems were indicating low hydraulic pressure.

reported the damage to the captain and also reported there was a 10 foot wide hydraulic spill. The ASA pilots determined that the airplane could not be taxied back to the gate.

The ASA captain said he thought that the best place for the passengers was on the aircraft. He saw no need to evacuate, saw no fire and was not told that there was a fire. The emergency responders had not told them to evacuate and the crew said they were also concerned about exposing the passengers to jetblast from the DAL B-767 engines. Buses arrived and transported the passengers back to the terminal. One passenger was removed from the airplane and transported to the hospital after reporting neck injuries. The crew remained with the airplane as instructed by their chief pilot.

2.0 FLIGHT CREW INFORMATION

The DAL accident flight crew consisted of a captain and first officer.
Both crewmembers were current and qualified under DAL and FAA requirements.

The ASA accident flight crew consisted of a captain and first officer.
Both crewmembers were current and qualified under ASA and FAA requirements.

2.1 Captain Daniel Todd Jewell – ASA CRJ Accident Captain

Date of hire with ASA was April 20, 1987.
Captain Jewell was 53 years old.

2.1.1 FAA records of Captain Jewell indicated that:

Private Pilot - Airplane Single and Multiengine Land, Instrument - Airplane certificate was issued on August 14, 1977.

Commercial Pilot – Airplane Single and MultiEngine Land, Instrument - Airplane certificate was issued on February 23, 1979.

Airline Transport Pilot Airplane MultiEngine Land certificate was issued on December 31, 1998.

Flight Instructor Airplane Single and MultiEngine, Instrument Airplane certificate was issued on October 20, 1987.

Ground Instructor Basic Ground Instructor certificate was issued on June 26, 1979.

A Notice of Disapproval was issued on July 10, 1998 when he failed the complete Oral Examination for his CL-65[8] type rating. He was retested and passed on December 12, 1998.

A Notice of Disapproval was issued on June 8, 1979 when he failed the Ground Reference Maneuvers portion of his flight test for a Flight Instructor certificate. He was retested and issued the Flight Instructor certificate on June 9, 1979.

[8] CL-65 is the designation the FAA used for the Canadair CL600 airplane.

A review of FAA records found no prior accident, incident or enforcement actions.

2.1.2 Pilot certificates and ratings held by Captain Jewell at time of the accident:

AIRLINE TRANSPORT PILOT (issued February 5, 2009)
AIRPLANE MULTIENGINE LAND
CE500, EMB-110, EMB-120, CL-65 CIRCLING APPROACH - VMC ONLY
COMMERCIAL PRIVILEGES
AIRPLANE SINGLE ENGINE LAND
PRIVATE PRIVILEGES ROTORCRAFT - HELICOPTER

GROUND INSTRUCTOR (issued June 26, 1979)
BASIC GROUND INSTRUCTOR

MEDICAL CERTIFICATE FIRST CLASS (issued March 17, 2011)
Limitations: Must wear corrective lenses.

Captain Jewell said he was wearing the corrective lenses at the time of the accident.

2.1.3 Training and Proficiency Checks:

Hired as Captain on the EMB-120 on April 4, 1987
Initial Type Rating CL-65: August 3, 1998
Date of initial upgrade to captain on CL-65: December, 1999
Last recurrent ground training: June 21, 2011
Last Proficiency Check in CL-65: December 22, 2010
Last Line Oriented Flight Training (LOFT): March 28, 2011

Captain Jewell failed an ASA Initial Proficiency Check on the CL-65 on July 10, 1998. He was subsequently retested and passed.

Captain Jewell failed an ASA Upgrade Line Check on the CL-65 on January 27, 1999. He was subsequently retested and passed.

2.1.4 Flight Times[9]

Total pilot flying time	About 25,000 hours
Total CL-65 flying time	About 5,432 hours
Total CL-65 Pilot-in-command (PIC) time	About 5,432 hours
Total flying time last 24 hours	About 3 hours
Total flying time last 30 days	About 60 hours

[9] Approximate based on interviews and ASA employment records.

Total flying time last 90 days	About 155 hours
Total flying time last 12 months	About 715 hours

2.1.5 Reported Activities

The following pre-accident information was obtained from a post-accident interview.

Captain Jewell was asked to describe his activities during the 72 hours prior to the accident as he recalled them.

On the day of the accident, Thursday, July 14, 2011

- Good night sleep the night before

The day before the accident, Wednesday, July 13, 2011

- Two leg commute from Lubbock, TX. He stayed in a hotel in ATL.

Two days before the accident, Tuesday, July 12, 2011

- He did not recall anything unusual

2.1.6 Medications:

Captain Jewell said he was in good health and was not taking any medications at the time of the accident.

Post-accident toxicology tests were negative.

2.2 First Officer Eric Sellers – ASA RJ Accident First Officer

F/O Sellers was 32 years old.
His date of hire at ASA was: November 14, 2005

2.2.1 FAA records of F/O Sellers indicated that:

Private Pilot - Airplane Single & Multi-Engine Land – Instrument Airplane certificate was issued on February 7, 2003.

Commercial Pilot – Airplane Single and Multi-Engine Land – Instrument Airplane certificate was issued on April 4, 2003.

Flight Instructor – Airplane Single and Multi Engine – Instrument Airplane certificate was issued on September 3, 2003.

A Notice of Disapproval was issued on November 14, 2002 when he failed 3 areas on the flight test for a Private Pilot Single Engine Land certificate. He was retested and issued a Private Pilot Single Engine Land certificate on November 19, 2002.

A Notice of Disapproval was issued on February 3, 2003 when he failed 3 areas of the flight test for a Private Pilot Multi-Engine certificate. He was retested and issued the Private Pilot Multi-Engine certificate on rating on February 7, 2003.

A Notice of Disapproval was issued on July 23, 2003 when he failed 2 areas of the flight test for a Flight Instructor Airplane Single Engine certificate. This was the first failure while testing for this certificate.

A Notice of Disapproval was issued on August 1, 2003 23, 2003 when he failed 1 area of the flight test for a Flight Instructor Airplane Single Engine certificate. This was the second failure while testing for this certificate. He was retested and issued a Flight Instructor Single Engine Airplane certificate on August 2, 2003.

A Notice of Disapproval was issued on August 30, 2003 when he failed 3 areas of the flight test for a Flight Instructor Instrument Airplane certificate. He was retested and issued the Flight Instructor Instrument Airplane certificate on rating on September 3, 2003.

A review of FAA records found no prior accident, incident or enforcement actions.

2.2.2 Pilot certificates and ratings held by F/O Sellers at time of accident:

COMMERCIAL PILOT (issued March 7, 2006)
AIRPLANE SINGLE AND MULTIENGINE LAND
INSTRUMENT AIRPLANE
CL-65
Limitations:
CL-65 SIC PRIVILEGES ONLY
CL-65 CIRCLING APPROACH - VMC ONLY

MEDICAL CERTIFICATE FIRST CLASS (issued August 17, 2011)
Limitations: None

2.2.3 Training and Proficiency Checks:

Originally transitioned to F/O on: November 14, 2005
Originally transitioned to F/O on the CL-600 on: April 7, 2009
Last Proficiency Check in CL-600: February 10, 2011
Last recurrent ground training: February 8, 2011

First Officer Sellers had no record of failures during company training.

2.2.4 Flight Times[10]

Total pilot flying time	About 6,016 hours
Total pilot-in-command time	About 2.160 hours
Total CL-65 flying time –all SIC[11]	About 1,636 hours
Total flying time last 24 hours	About 3 hours
Total flying time last 30 days	About 59 hours
Total flying time last 90 days	About 209 hours
Total flying time last 12 months	About 801 hours

2.2.5 Reported Activities

The following pre-accident information was obtained during a post-accident interview:

F/O Sellers was asked to describe his activities during the 72 hours prior to the accident as he recalled them.

On the day of the accident, Thursday, July 14, 2011:

- Woke up at about 0930 and commuted from Panama City, FL at 1100 (Central Time) for a 1400 report did not recall any sleep problems that night

The two previous days before the accident, Wednesday, July 13, 2011 and Tuesday, July 12, 2011:

- He said the two earlier days were too long ago and he had no recollection of all activities but they were normal days at home.

2.2.6 Medications:

He took Advare for asthma.

Post-accident toxicology tests were negative.

2.3 Captain David Bennett Farmer – DAL Accident Captain

Captain Farmer was controlling the airplane during taxi for takeoff.
Captain Farmer was 53 years old.
Date of hire with NWA[12] was August 23, 1985.

2.3.1 FAA records of Captain Farmer indicated that:

Private Pilot - Airplane Single Land certificate was issued on July 3, 1980.

[10] Approximate based on interviews and Comair Airlines employment records.
[11] SIC – second-in-command [first officer]
[12] DAL purchased NWA in 2008. DAL and NWA began operating on a single operating certificate on January 1, 2010. As of May 1, 2010, the DAL and NWA B-767/757 flight crews began operations as a single pilot group.

Commercial Pilot –MultiEngine Land, Instrument – Airplane, B-707& B-720, certificate was issued on March 29, 2011.

Airline Transport Pilot - Airplane MultiEngine Land, B-707, B-720, B-757, B-767 certificate was issued on May 22, 1998.

Flight Engineer Turbojet Powered certificate was issued on October 23, 1985.

Captain Farmer had no prior accidents, violations or enforcement actions.

2.3.2 Pilot certificates and ratings held by Captain Farmer at time of the accident:

AIRLINE TRANSPORT PILOT (issued August 27, 2010)
AIRPLANE MULTIENGINE LAND
B-707, B-720, B-757, B-767
PRIVATE PRIVILEGES
AIRPLANE SINGLE ENGINE LAND

FLIGHT ENGINEER (issued November 8, 1985)
TURBOJET POWERED

MEDICAL CERTIFICATE CLASS I (issued April 6, 2011)
No Limitations.

2.3.3 Training and Proficiency Checks:

Initial Type Rating B-767/B-757[13]: May 22, 1998
Upgrade to captain on June 12, 1998
Last recurrent ground training: April 30, 2011
Last Proficiency Check in B-767: April 30, 2011

DAL reported Captain Farmer had no record of failures during company training.

2.3.4 Flight Times[14]

Total pilot flying time	About 7,915 hours
Total PIC flying time	About 4,414 hours
Total B-767 flying time	About 129 hours
Total B-767 PIC time	About 129 hours
Total flying time last 24 hours	0 hours
Total flying time last 30 days	About 71hours
Total flying time last 90 days	About 162 hours

[13] The FAA issued a dual type rating for the B-767 and the B-757. Captain Farmer was originally qualified on the B-757 while flying for NWA. NWA did not have B-767 airplanes at that time.
[14] Approximate based on interviews and DAL employment records.

Total flying time last 12 months	About 396 hours

2.3.5 Reported Activities

The following pre-accident information was obtained from a post-accident interview.

Captain Farmer described his activities during the 72 hours prior to the accident. He said the times were approximate.

On the day of the accident, Thursday, July 14, 2011:

- He woke up around 0930 EDT.
- He slept well.
- He read, did computer work, checked emails in his room after getting up.
- He ate lunch about 1130 and took a nap from 1300-1500.
- He went for 4-5 mile run by the Charles River.
- They had a pick up around 1730.

On the day before accident, Wednesday, July 13, 2011:

- He had a 0525 report and got up around 0400.
- They flew from Minneapolis-St Paul International/ Wold-Chamberlain Airport (MSP), Minneapolis, Minnesota to Hartsfield – Jackson Atlanta International Airport (ATL) and then flew to La Guardia Airport (LGA), New York, New York. They then deadheaded[15] to BOS and arrived about 1600.
- F/O flew the first leg.
- He flew ATL-LGA leg.
- He went to bed at 2400-0100.

Two days before the accident, Tuesday, July 12, 2011]

- He had a 0800 wake up.
- He read and did normal household duties. He played golf for 4 hours –had a 1340 tee time.
- He went to bed at 2200 and slept okay.

2.3.6 Medications

Captain Farmer stated that he was not taking any medications at the time of the accident.

Post-accident toxicology tests were not administered. The DAL accident crew was informed by a Delta duty officer that toxicology tests were not required based on the level of the incident. They were released to the hotel[16].

[15] Deadheaded – a common term used to describe a crewmember being transported from one location to another location while on duty.

[16] See attachment 4 - statement from Delta on reason crew was not drug-tested.

2.4 First Officer Michael Jay Richman – DAL Accident First Officer

Date of hire with DAL was May 22, 2000

2.4.1 FAA records of F/O Richman indicated that:

Private Pilot - Airplane Single Land, Instrument - Airplane certificate was issued on July 1, 1993.

Commercial Pilot – Airplane Single and MultiEngine Land, Instrument - Airplane certificate was issued on September 14,1993.

Airline Transport Pilot Airplane MultiEngine Land certificate was issued on December 31, 1997.

Flight Instructor Airplane Single and MultiEngine Land, Instrument - Airplane certificate was issued on May 5, 2010.

Ground Instructor Instrument certificate was issued on September 26, 1994.

Flight Engineer Turbojet Powered certificate was issued on August 8, 2000.

F/O Richman had no prior accidents or enforcement actions. F/O Richman stated that in March 2011, he had an altitude deviation and received a Letter of Correction. He said it was handled through the Aviation Safety Action Program (ASAP[17]). He said when he had the altitude deviation, the captain reset the altitude to missed approach altitude before he had reached assigned altitude and had altitude hold and the captain did not verify the change. He had no training as a result of the deviation.

2.4.2 Pilot certificates and ratings held by F/O Richman at time of the accident:

AIRLINE TRANSPORT PILOT (issued August 27, 2010)
AIRPLANE MULTIENGINE LAND
B-737, B-757, B-767, DC-9, EMB-120
COMMERCIAL PILOT PRIVILEGES
AIRPLANE SINGLE ENGINE LAND

Limitations: ENGLISH PROFICIENT
DC-9, B-737, B-757/B-767 CIRC APCH – VMC ONLY
DC-9, B-737 SIC PRIVILEGES ONLY

Flight Instructor (issued May 5, 2010)

[17] Aviation Safety Action Programs - these programs were intended to provide air carriers with the opportunity to identify and report safety issues to management and the FAA for resolution without fear of punitive legal enforcement action being taken.

Airplane Single and MultiEngine Land, Instrument.

Ground Instructor (issued September 26, 1994)
Instrument

MEDICAL CERTIFICATE CLASS I (issued July 5, 2011)
Limitation: Holder shall wear corrective lenses.

F/O Richman stated that he was wearing his corrective lenses at the time of the accident.

2.4.3 Training and Proficiency Checks – as reported by DAL:

Initial Type Rating B-767: August 27, 2010.
Last Proficiency Check in B-767: August 27, 2010
Date of Upgrade/Transition to first officer position on the B-767: September 1, 2010.

DAL reported F/O Richman had no record of failures during company training.

2.4.4 Flight Times[18]

Total pilot flying time	About 5,078 hours
Total PIC flying time	About 1,700 hours
Total B-767 flying time	About 519 hours
Total flying time last 24 hours	0 hours
Total flying time last 30 days	About 78 hours
Total flying time last 90 days	About 64 hours
Total flying time last 12 months	About 519 hours

2.4.5 Reported Activities

The following pre-accident information was obtained from a post-accident interview.

F/O Richman described his activities during the 72 hours prior to the accident. The times were approximate. He was on a five day trip with 2 overnight layovers in Boston, Massachusetts and one overnight layover in Amsterdam, Netherlands. They were on the second day of the trip and were scheduled on that day to fly to AMS.

On the day of the accident, Thursday, July 14, 2011:

- He had slept well the night before the accident - approximately 8 to 9 hours.
- He awoke at about 0900, got lunch in Boston.
- He checked in around 1700 for an 1800 or 1900 departure.
- They were about 10-20 minutes late departing because the airplane was towed to the gate. There were no mechanical problems on the airplane.

[18] Approximate based on interviews and DAL employment records.

On the day before the accident, Wednesday, July 13, 2011:

- He had slept well and they started the day with a 0525 sign in and a 0625 departure from MSP.
- He had a long day flying domestic flights [in United States]. He flew from MSP to ATL and then flew to LGA. They then deadheaded to BOS and arrived about 1600.

Two days before the accident, Tuesday July 12.2011:

- He had normal domestic duties during the day. Later he commuted[19] from DEN after leaving home at 1600. He had an 1820 departure from DEN to MSP and he stayed at the La Quinta hotel in Minneapolis, MN where he slept well.

2.4.6 Medications

F/O Richman stated that he did not take any medications before the flight.

Post-accident toxicology tests were not administered. As previously stated, the DAL accident crew was informed by a Delta duty officer that toxicology tests were not required based on the level of the incident. They were released to the hotel.

3.0 WEATHER AT TIME OF ACCIDENT

The National Weather Service issued a METAR[20] for the BOS area at 1754. The report was: "METAR KBOS 142254Z 11003KT 10 SM FEW080 SCT250 21/10 A2997". In plain language this is interpreted as a weather report issued on July 14, 2011 at 2254 Z time. The wind was from 110 degrees at 3 knots. The visibility was greater than 10 statute miles. There were a few clouds present at about 8000 feet above ground level and scattered clouds at flight level 250. The temperature was 21 degrees with a dew point of 10 degrees. There was no precipitation indicated.

4.0 AIRPLANE INFORMATION

4.1 B-767 wingspan

The Delta Air Lines 757/767 Operations Manual, Volume II, Airplane General, Dimensions, Principal Dimensions, provided wingspan dimensions:

> *Page 1.10.1 described the B-767-300 without blended winglets as having a wingspan of 156 feet and 1 inch.*
>
> *Page 1.10.2 described the B-767-300 with blended winglets as having a wing span of 166 feet and 11 inches. This was 10 feet and 10 inches wider than the airplane without blended winglets.*

[19] Commuted – a term used to describe a crewmember traveling to or from his work station. This travel was during the crewmembers personal time and was not during official duty.
[20] METAR – an aviation meteorological weather report.

4.2 Visibility from cockpit

A review of Delta manuals did not reveal any graph(s) indicating the visibility from the cockpit. Pilots interviewed stated that the wingtips were not visible from the cockpit unless a cockpit window was opened and the pilot leaned out the window. The operations group observed this during an inspection of a B-767-300 with winglets.

4.3 Taxi Information

Interviews with the Delta accident pilots, an instructor, and a checkpilot indicated that pilots did not receive any specific guidance or training on wingtip clearance in the airplane. During their training on the B-767, the pilots did receive information about the wingspan [with and without winglets], restrictions on certain taxiways, and were advised to use caution during taxi and to stop if clearance was in doubt.

There was no cockpit camera display of the wingtips or the wingtip paths.

The Delta Air Lines 757/767-300 Operations Manual, Volume I, Normal Procedures, Amplified Procedures section, Taxi Procedures, page NP.20.48 effective March 3, 2011[21] stated in part:

CAUTION: For aircraft with winglets, the increased wing span introduces operational considerations. Review Jeppesen airport pages and Delta's 10-0 special pages for taxiway and terminal restrictions.

The Delta Air Lines 757/767 Flight Crew Training Manual, Ground Operations, Taxi, page 2.4 effective March 1, 2011[22] stated in part:

- *When ground clearance is in doubt, stop the airplane and obtain a wing walker.*
- *Do not allow ATC or anyone else to rush you.*

The Delta Air Lines IOE [Initial Operating Experience] Guide Checklist for the Boeing 757/767 dated May 2011, Taxi, Taxi Considerations, page 1 referenced the previous items in the Operations Manual Volume I and in the Flight Crew Training Manual chapter 2.

The Delta Air Lines B-757/767 IOE Guide, revision 5 dated May 2011[23], Pre-flight/ Before Start, Initial Briefing, page 3 stated in part:

- *Give taxi techniques and tips to Captains. Discuss FCTM taxi speeds, braking, 90 and 180 degree turns, visual references for main gear trucks, single engine taxi.*

[21] See attachment 5 – Delta 757/767-300 Operations Manual taxi guidance
[22] See attachment 6 – Delta 757/767 Flight Crew Training Manual taxi guidance
[23] See attachment 7 – Delta IOE Guide Checklist for the Boeing 757/767

5.0 FAA REGULATIONS AND AERONAUTICAL INFORMATION MANUAL GUIDANCE

5.1 FAA Regulations

14 Code of Federal Regulations, Chapter 1 – Federal Aviation Administration, Department of Transportation, Subchapter F - Air Traffic and General Operating Rules, Part 91 – General Operating and Flight Rules, subpart 91-113 – Right-of-way Rules, (b) - General stated in part:

"…..vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft."

5.2 FAA Aeronautical Information Manual

The Aeronautical Information Manual (AIM), dated August 25, 2011, Chapter 2 - Aeronautical Lighting and Other Visual Aids, section 3 – Airport Marking Aids and Signs, sub-section 2-3-4 – Taxiway Centerline, (b.)-Taxiway Centerline, (1.) Normal Centerline stated in part:

> *"….being centered on the taxiway centerline does not guarantee wingtip clearance with other aircraft or objects."*

The Aeronautical Information Manual (AIM), dated August 25, 2011, Chapter 4 – Air Traffic Control, section 3 – Airport Operations, sub-section 4-3-18 Taxiing, b. stated in part:

> *ATC clearances or instructions pertaining to taxiing are predicated on known traffic and known physical airport conditions. Therefore, it is important that pilots clearly understand the clearance or instruction. Although an ATC clearance is issued for taxiing purposes, when operating in accordance with the CFRs, it is the responsibility of the pilot to avoid collision with other aircraft.*

Submitted by:

_____

David Tew
Aviation Safety Investigator - Operations
January 10, 2012