



National Transportation Safety Board Aviation Incident Final Report

Location:	Dayton, OH	Incident Number:	OPS11IA271
Date & Time:	01/31/2011, 2136 EST	Registration:	
Aircraft:	EMBRAER EMB-145LR	Aircraft Damage:	Minor
Defining Event:	Runway excursion	Injuries:	32 None
Flight Conducted Under:			

Analysis

Prior to the flight landing on runway 6R, airport maintenance crews reported ice on runway 6L and the possibility of ice on runway 6R. A local air traffic controller relayed the information on possible runway conditions on runway 6R to the flight crew prior to landing; there were no braking action advisories in effect. While landing, the airplane departed the left side of runway 6R several hundred feet from the intersection of runway 6R and runway 36, coming to a stop on runway 36 facing northeast. Airport damage consisted of a damaged runway distance remaining marker. There were no injuries to the passengers or crew and the airplane suffered damage to the left main gear door, auxiliary gear door, and the No. 2 main tire.

A special weather observation taken after the incident reported wind from 070 at 8 knots, visibility of 7 miles in light freezing rain, an overcast ceiling at 1,900 feet above ground level, a temperature of -4 degrees Celsius, a dew point of -8 degrees Celsius, with the altimeter indicating 30.10 inches of mercury. Freezing rain began about 3 minutes prior to the incident and an accumulation of .01 inches of snow had fallen in the 14 minutes prior to the start of the freezing rain.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: The pilots' lack of consideration for developing and known weather conditions en route to and at the destination airport, resulting in a runway excursion and subsequent incursion.

Findings

Personnel issues	Decision making/judgment - Pilot (Cause)
Environmental issues	Snow/slush/ice covered surface - Decision related to condition

Factual Information

At 2136 eastern standard time (EST) on January 31, 2011, 0236 coordinated universal time (UTC) February 1, 2011, a runway excursion and runway incursion involving a single airplane occurred at the James M. Cox Dayton International Airport (DAY), Dayton, Ohio. The airplane involved was ExpressJet (BTA) 2693, an Embraer E145 that had departed from Cleveland Hopkins International Airport (CLE), Cleveland, Ohio with 3 crew and 29 passengers on a scheduled part 121 flight to DAY. There were no injuries to the passengers or crew. The airplane sustained damage to the left main gear door, auxiliary gear door and the number 2 main tire.

The reported weather at 2056 EST was wind 070 at 12 knots, visibility 10 statute miles, overcast ceiling at 1,900 feet above ground level (AGL). Temperature minus 5 degrees Celsius, dew point minus 10 degrees Celsius, altimeter 30.11 inches of mercury. A special observation taken after the incident at 2139 reported wind 070 at 8 knots, visibility 7 statute miles in light freezing rain, overcast ceiling at 1,900 feet AGL, temperature minus 4 degrees Celsius, dew point minus 8 degrees Celsius, altimeter 30.10 inches of mercury, freezing rain began at 2133 and snow began falling at 2119 ending at 2133 with a total accumulation of .01 inches of snow.

Automatic Terminal Information Service (ATIS) information alpha was being broadcast at the time of the incident. ATIS A reported "0155Z, wind 060 at 11, visibility 10, ceiling 1,900 overcast, temperature -5, dew point -10, altimeter 3011, landing and departing runway 6L, 6R, 36. ILS approach 6L in use. Notice to airmen taxiway W closed. Hazardous weather information available. Read-back hold-short instructions."

There were no braking action advisories in effect.

While descending en-route to DAY, BTA2693 encountered intermediate light rime icing. There was no mention of precipitation on the DAY ATIS. According to the pilot's statement, he suspected freezing rain at the airport due to temperature changes during the descent.

BTA2693 was vectored by Dayton approach control for an ILS approach to 6L before being transferred to the DAY air traffic control tower (ATCT). DAY closed runway 6L for anti ice treatment. BTA2693 elected to fly the ILS runway 6L approach, circle to land runway 6R. After reporting the airport in sight, the DAY local controller (LC) cleared BTA2693 to land on runway 6R. After issuing a landing clearance to BTA2693, the DAY local controller solicited a braking action report from an aircraft that had previously landed; Labquest 650A. Labquest 650A advised that he did not brake on landing but the "taxiways and ramps were slick." During this period of time while BTA2693 was still on the approach on the DAY local control frequency, field maintenance advised ATC on the local control frequency that there was ice present on runway 6L and a possibility of ice on runway 6R. This information was relayed by the DAY local controller to BTA2693 prior to landing. BTA2693 acknowledged with "we'll let you know".

According to the airplane captain, the first officer (FO) was flying the airplane on the final approach with the precipitation alternating between ice and rain. As the airplane reduced speed for approach and landing, the icing developed from moderate mixed to moderate clear

icing. The FO turned on his windscreen wipers which blurred his view of the field. The captain's view was clear so he took over as the flying pilot and continued flying for the remainder of the approach and landing. The initial roll out was without incident. As the airplane decelerated through 80 to 60 knots the captain noticed a small amount of sliding slightly to the right. The captain said he corrected the aircraft to maintain centerline at which time the aircraft began to slide significantly to left. The captain said he used full thrust reversers to slow the airplane with negligible effect. The airplane continued toward the left side of the runway. The captain said he applied and maintained light brake pressure, full right rudder, and differential thrust reverser (full right), but could not correct the leftward motion of the aircraft. As the aircraft continued toward the left side of the runway, the captain said he "retracted the left thrust reverser, added positive thrust on the left engine and full reverse on the right engine trying to steer the airplane to the right like a boat." When it was apparent that the airplane's path could not be altered and that the airplane was going to depart the runway, the captain re-applied the left thrust reverser and added maximum reverse on both engines.

BTA2693 departed the left side of runway 6R several hundred feet from the intersection of Runway 6R and runway 36, coming to a stop on runway 36 facing northeast. BTA2693 departed runway 6R resulting in a runway excursion. BTA2693 came to a stop on runway 36, an active runway resulting in a runway incursion. There were no other aircraft using runway 36 at the time and there was no risk of ground collision.

The pilots stated that they did not notice any type of lurching or loud sounds that could have been associated with airplane damage and that there was no sense that the landing gear were sinking into the ground. The pilots also stated that the grassy area in the vicinity of the intersection of runway 6R and 36 was frozen tundra with 6-12 inches of snow and ice. Post incident photographs taken by Atlantic Southeast Airways on the evening of the incident captured the tire tracks in the grassy area where BTA2693 exited the left side of the runway 6R, a damaged distance remaining marker and the base stand of the distance remaining marker. The photographs show very little accumulation of snow and ice.

An exterior inspection of the airplane by airport operations personnel and a test of the airplane steering and rolling system by the pilots indicated no apparent damage preventing the airplane from taxiing. After airport operations sanded the taxiway, BTA2693 taxied under its own power to the gate.

The DAY local controller advised BTA2693 of possible ice on runway 6R prior to landing however weather observation at the time of approach and landing did not include precipitation. After landing BTA2693 reported to the tower that they had nil braking action and were off the runway. When BTA2693 reported that they were off the runway to the DAY local controller, the transmission was made at the same time as an airfield vehicle was making a report to the same controller. The simultaneous transmissions conflicted with each other. BTA2693 advised that they were at the intersection of runway 6R and runway 18 and that they required an inspection prior to taxiing to the gate. The DAY local controller was not aware that BTA2693 had departed runway 6L. Since the DAY local controller said he was not aware of a runway excursion, no notification of an incident was reported to the FAA until February 10, 2011.

History of Flight

Landing-landing roll	Runway excursion (Defining event) Collision with terr/obj (non-CFIT)
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Aircraft and Owner/Operator Information

Aircraft Manufacturer:	EMBRAER	Registration:	
Model/Series:	EMB-145LR	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:		Serial Number:	145123
Landing Gear Type:		Seats:	55
Date/Type of Last Inspection:		Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	2 Turbo Fan
Airframe Total Time:		Engine Manufacturer:	ALLISON
ELT:		Engine Model/Series:	AE3007C SER
Registered Owner:		Rated Power:	6442 lbs
Operator:		Operating Certificate(s) Held:	Commuter Air Carrier (135)
Operator Does Business As:		Operator Designator Code:	C2XA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night
Observation Facility, Elevation:	KDAY, 992 ft msl	Observation Time:	2056 CST
Distance from Accident Site:		Direction from Accident Site:	
Lowest Cloud Condition:		Temperature/Dew Point:	-5° C / -10° C
Lowest Ceiling:	Overcast / 1900 ft agl	Visibility	10 Miles
Wind Speed/Gusts, Direction:	12 knots, 70°	Visibility (RVR):	
Altimeter Setting:	30.11 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:			
Departure Point:		Type of Flight Plan Filed:	
Destination:		Type of Clearance:	
Departure Time:		Type of Airspace:	

Airport Information

Airport:	James M. Cox Dayton Internatio (KDAY)	Runway Surface Type:	Unknown
Airport Elevation:	992 ft	Runway Surface Condition:	
Runway Used:	06R	IFR Approach:	Circling; ILS
Runway Length/Width:	7285 ft / 150 ft	VFR Approach/Landing:	

Wreckage and Impact Information

Crew Injuries:	3 None	Aircraft Damage:	Minor
Passenger Injuries:	29 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	32 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	Daniel J Bartlett	Adopted Date:	11/03/2011
Additional Participating Persons:			
Publish Date:	11/03/2011		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=78285		

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