



National Transportation Safety Board Aviation Incident Final Report

Location:	Chicago, IL	Incident Number:	OPS15IA011A
Date & Time:	02/17/2015, 2145 CST	Registration:	
Aircraft:	EMBRAER EMB 145LR	Aircraft Damage:	None
Defining Event:	Runway incursion veh/AC/person	Injuries:	53 None
Flight Conducted Under:			

Analysis

The flight crew of GJS3710 was heads down during taxi and missed the turn from taxiway F to taxiway N, did not observe the flashing runway guard lights at the edge of runway 28R and taxiway F, and taxied onto runway 28R without clearance, nearly colliding with ENY3084. The closest proximity between center of each airplane was estimated to be about 94 feet, which corresponds to approximately 20 to 30 feet between wingtips.

According to interviews with the flight crew of GJS3710, the first officer was head down doing cockpit tasks and coordinating with the flight attendant for pre-takeoff passenger requirements. The captain, operating the aircraft, gave way to an inbound 757 on taxiway A. The captain stated that as he was approaching taxiway F, he looked down to confirm the frequency settings in the cockpit and when he looked up again, he thought he was passing taxiway B on taxiway F, but was actually passing taxiway N on taxiway F. He stated that he did not see the runway guard lights at the intersection of taxiway F and runway 28R. This loss of situation awareness resulted in GJS3710 entering runway 28R without clearance.

The ASDE-X was working normally and alarmed, indicating a conflict on runway 28R; however, the air traffic control front-line manager on duty in the tower stated that there was insufficient time to cancel ENY3084's takeoff clearance. ENY3084 maneuvered to the left of runway centerline to avoid GJS3710, and then continued takeoff.

Following the event, taxiway F was closed from taxiway N to taxiway P, removing direct access to the runway from the terminal ramp on taxiway F.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be:

The flight crew's failure to manage cockpit tasks during taxi resulting in a loss of situation awareness and subsequently taxiing past a required turn point and onto an active runway without clearance. Contributing to the runway incursion was the ground controllers ineffective monitoring to ensure issued taxi instructions were followed.

Findings

Personnel issues

Identification/recognition - ATC personnel (Factor)

Factual Information

On Tuesday, February 17, 2015, at 2145 central standard time, an Embraer E145, N698CB, operated by American Airlines Group as ENY3084, was on takeoff roll on runway 28R from intersection EE at the Chicago O'Hare International Airport (ORD), Chicago, Illinois. A Canadair Regional Jet CRJ-700, N154GJ, operated by GoJet Airlines as GJS3710 was taxiing to runway 28R via taxiways F and N. GJS3710 did not turn left at taxiway N as instructed and instead entered runway 28R and made a left turn toward the departing ENY3084. According to the pilot of ENY3084, he maneuvered to avoid GJS3710, and continued his departure. ENY3084 was a regularly scheduled flight from ORD to Port Columbus International Airport (CMH), Columbus, Ohio. GJS3710 was a regularly scheduled flight from ORD to the Lester B. Pearson International Airport (YYZ), Toronto, Ontario, Canada. Both flights were operating under the provisions of Title 14 *Code of Federal Regulations* Part 121. Night visual meteorological conditions prevailed, and

ENY3084 was departing ORD from runway 28R at the taxiway EE intersection and had been cleared for takeoff. GJS3710 was on the outbound taxi from taxiway H to U to F to N to taxiway EE.

According to recorded Airport Surface Detection Equipment, Model X (ASDE-X) data, ENY3084 began departure roll at 2145:17. GJS3710 was about 265 feet north of the runway 28R edge line, taxiing south on Taxiway F at approximately 11 knots.

At 21:45:28, an ASDE-X alert was issued when ENY3084 met the velocity and acceleration parameters that are required by the ASDE-X to be considered a departure. ENY3084 was traveling at approximately 56 knots and was approximately 1041 feet from the runway 28R/taxiway F intersection. GJS3710 was on taxiway F approximately 42 feet from crossing the runway 28R edge line and was traveling at approximately 11 knots.

At 21:45:30, ENY3084 was about 831 feet from the runway 28R/taxiway F intersection, traveling about 66 knots. GJS3710 entered runway 28R traveling at about 11 knots and turned east toward ENY3084 before coming to a stop on the north side of Runway 28R at taxiway F.

When GJS3710 entered the runway from taxiway F, an aural alert of "Warning Runway Two Eight Right Occupied" was voiced in the tower and the corresponding alert text "RWY 28R|ENY3084, GJS3710|RWY OCCUPIED" was displayed on the ASDE-X displays.

According to the flight crew of ENY3084, they were traveling at about 100 knots when they first observed GJS3710 enter the runway and stated they maneuvered the aircraft to the left of centerline to avoid a collision.

According to the pilot of GJS3710, after he realized that he had missed the turn to taxiway N and had entered runway 28R, he made an immediate left turn and saw what looked like an Embraer 145 aircraft taking off. He stated he turned his aircraft to face the departing aircraft in order to present the lowest profile. His primary concern was keeping the tail section of his aircraft away from the runway centerline. He recalled that the centerline of his aircraft was on

the north side of the painted runway edge, so only the right half of his aircraft was on the runway proper. He saw the nose gear of the Embraer and recalled seeing the main landing gear of the Embraer come off the ground as the Embraer passed his aircraft. He estimated that the aircraft wingtip to wingtip clearance had been 15-20 feet.

At 21:45:36, ENY3084 passed GJS3710 on runway 28R. The ASDE-X could not resolve the minimum separation distance. The positional accuracy of the ASDE-X is +/- 20 feet.

GJS3710 then exited runway 28R at taxiway P. The pilot of GJS3710 called his flight dispatcher and then the tower supervisor to discuss the event and then continued the flight to CMH.

Airport Surface Detection Equipment Model X

The air traffic control front-line manager on duty in the tower stated that the airport surface detection equipment, model X (ASDE-X) alarmed; however, there was insufficient time to cancel ENY3084's takeoff clearance. The distance between taxiways EE and F was approximately 1,900 feet.

ASDE-X data for this investigation was obtained from the Federal Aviation Administration. Figure 1 shows the ASDE-X presentation just prior to ENY3084 starting takeoff roll. Figure 2 illustrates the ASDE-X presentation as GJS3710 is approaching runway 28 on taxiway F.



Figure 1 – ASDE-X presentation of ENY3084 and GJS3710 at 2145:13.

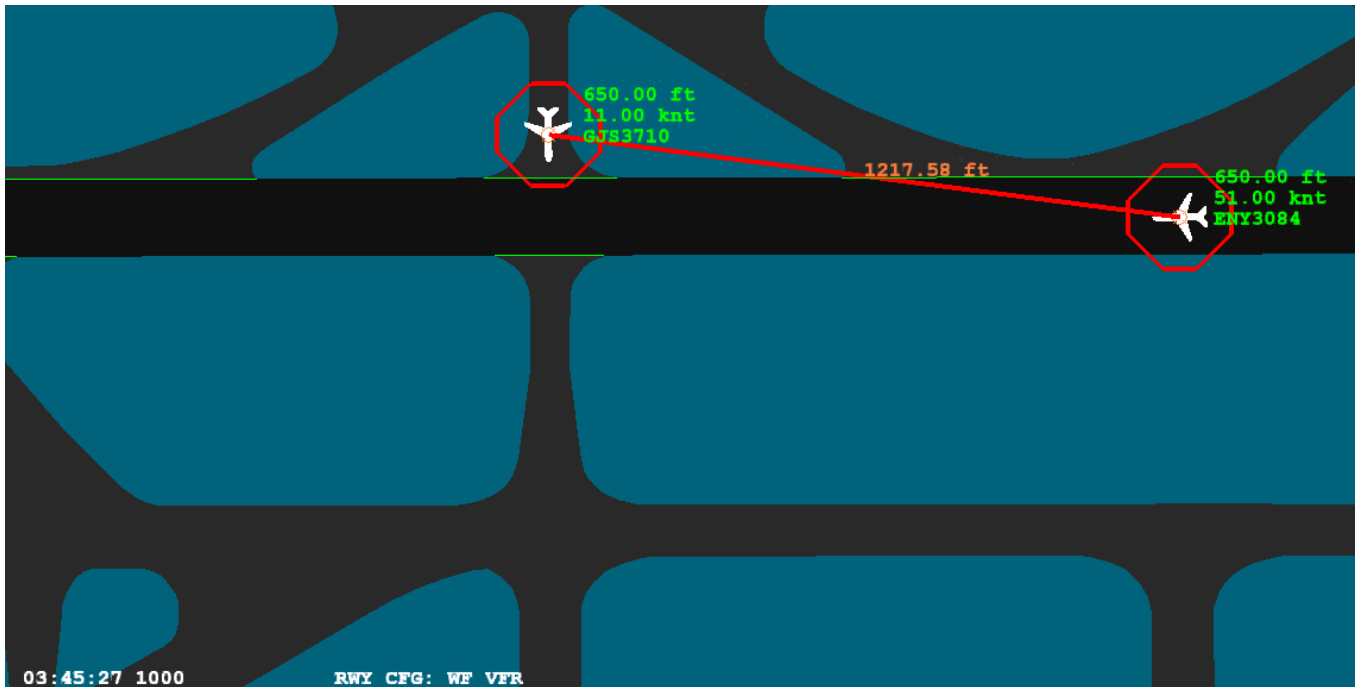


Figure 2 – ASDE-X presentation of ENY3084 and GJS3710 at 2145:27.

Weather Information

The 2051 Aviation Routine Weather Report (METAR) observation for ORD reported wind 290 degrees true at 12 knots with gusts to 18 knots, visibility 10 statute miles. Few clouds at 3,800 feet above ground level (agl), scattered clouds at 12,000 feet agl, and broken clouds at 15,000 feet agl. Temperature minus 11 degrees Celsius (C), dew point minus 18 degrees C, altimeter 29.88 inches of mercury.

Federal Aviation Administration Air Traffic Control Service

Duty Priority

FAA Joint Order (JO) 7110.65(V), *Air Traffic Control*, paragraph 2-1-2 addresses an air traffic controller's operational duty priority and stated [in part]:

- a. Give first priority to separating aircraft and issuing safety alerts as required in this order. Good judgment must be used in prioritizing all other provisions of this order based on the requirements of the situation at hand

Team Position Responsibilities

FAA Joint Order (JO) 7110.65(V), *Air Traffic Control*, paragraph 2-10-3 addresses air traffic control tower team position responsibilities and stated [in part]:

c. Primary responsibilities of the Tower Team Positions:

1. Tower Position(s) (LC or GC)

(a) Ensure separation

(b) Initiate control instructions

(c) Monitor and operate communications equipment

History of Flight

Takeoff	Runway incursion veh/AC/person (Defining event)
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Pilot Information

Certificate:	Airline Transport	Age:	115
Airplane Rating(s):	Multi-engine Land	Seat Occupied:	Unknown
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Single-engine; Instrument Airplane	Toxicology Performed:	
Medical Certification:	Unknown	Last FAA Medical Exam:	
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	EMBRAER	Registration:	
Model/Series:	EMB 145LR LR	Aircraft Category:	Airplane
Year of Manufacture:	2004	Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	14500877
Landing Gear Type:	Tricycle	Seats:	
Date/Type of Last Inspection:		Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	2 Turbo Fan
Airframe Total Time:		Engine Manufacturer:	ROLLS-ROYC
ELT:		Engine Model/Series:	AE3007 SER
Registered Owner:		Rated Power:	0 hp
Operator:		Operating Certificate(s) Held:	Flag carrier (121)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night
Observation Facility, Elevation:	ORD	Distance from Accident Site:	
Observation Time:	2051 CST	Direction from Accident Site:	
Lowest Cloud Condition:	Few / 3800 ft agl	Visibility	10 Miles
Lowest Ceiling:	Broken / 15000 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	12 knots / 18 knots	Turbulence Type Forecast/Actual:	/ None
Wind Direction:	290°	Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	29.88 inches Hg	Temperature/Dew Point:	-11°C / -18°C
Precipitation and Obscuration:			
Departure Point:	Chicago, IL (ORD)	Type of Flight Plan Filed:	IFR
Destination:	COLUMBUS, OH (CMH)	Type of Clearance:	IFR
Departure Time:	CST	Type of Airspace:	

Airport Information

Airport:	CHICAGO O'HARE INTL (ORD)	Runway Surface Type:	Asphalt; Concrete
Airport Elevation:	672 ft	Runway Surface Condition:	Unknown
Runway Used:	28R	IFR Approach:	None
Runway Length/Width:	13000 ft / 150 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	3 None	Aircraft Damage:	None
Passenger Injuries:	50 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	53 None	Latitude, Longitude:	41.971667, -87.901944

Administrative Information

Investigator In Charge (IIC):	Daniel J Bartlett	Report Date:	08/04/2015
Additional Participating Persons:	Debbie Stern; FAA Compliances Services Group AJI-131; Atlanta, GA Stephen Abraham; National Air Traffic Controllers Assoc. (NATCA); New York, NY		
Publish Date:	04/14/2020		
Note:	The NTSB traveled to the scene of this incident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=90743		

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](#).