



National Transportation Safety Board Aviation Incident Final Report

Location:	Detroit, MI	Incident Number:	OPS10IA003
Date & Time:	12/04/2009, 1021 EST	Registration:	
Aircraft:		Aircraft Damage:	None
Defining Event:	Runway incursion veh/AC/person	Injuries:	52 None
Flight Conducted Under:			

Analysis

The Ground Control East (GCE) controller cleared Fire 2, an airport ground vehicle, to cross runway 21R at taxiway F in front of Pinnacle Airlines (FLG) flight 3720, a departing regional jet. According to crew statements, FLG3720 rotated normally and was about 150 feet above ground level when it passed the intersection of the runway and taxiway F. There was no damage to either the aircraft or the fire truck, and no reported injuries.

The Local Control East (LCE) controller cleared FLG3720 into position to hold on runway 21R at 1019:33, and was cleared for takeoff about a minute later. At 1020:29, Fire 2 contacted the GCE controller with a request, but the GCE controller could not understand the transmission and asked Fire 2 to repeat his request. Fire 2 responded, "I'm at Station 100 like [taxiway] Fox[trot] over to the [runway] 3L deice pad." The GCE controller replied, "Approved as requested." At 1021:35, Fire 2 reported clear of runway 3L. At 1021:43, GCE transmitted, "...you said the [runway] 22R deice pad." Fire 2 replied, "No, I said the [runway] 3L, sir."

DTW airport was equipped with an ASDE-X ground movement radar system that provided aircraft and vehicle tracking capabilities as well as conflict detection. According to recorded data, the system detected a conflict between Fire 2 and FLG3720 at 1021:25, just before Fire 2 entered the runway. Fire 2 completed crossing the runway and exited at taxiway F at 1021:32. FLG3720 passed taxiway F at 1021:37.

The ground controller was still in training, and was still in the process of being certified on all control positions in the tower. The day before the incident, he had been certified on the two east ground control positions by a supervisor. His certification occurred on the evening shift and took about an hour. The ground controller acknowledged that during his training he had received various comments from his instructors about scanning the airport surface, but he stated that generally they were "hit and miss" issues and did not reflect consistent deficiencies.

The supervisor said that there were no unusual conditions to help explain what had occurred. There was no construction in progress, no weather affecting the airport, no rain, and no distractions. Some aircraft had controlled departure times that needed to be assigned. However, this did not affect the operation of the time.

Since the incursion, the instructor provided some advice to the ground controller about control techniques that might help prevent him from encountering a similar problem in the future, in particular, discontinuing use of the phraseology, "proceed as requested." Issuance of specific instructions to a pilot or vehicle operator may result in a correction or other feedback from the operator. However, the instructor further noted that requiring controllers to always read back the entire request from a vehicle operator or pilot may result in lengthy, but unnecessary exchanges on the radio.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: The ground controller did not monitor the progress of the fire truck to ensure that the driver followed the expected route. A contributing factor was the ground controller's misunderstanding of the fire truck driver's requested destination on the airport.

Findings

Personnel issues	Accuracy of communication - ATC personnel (Factor) Incorrect action selection - ATC personnel (Cause)
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Factual Information

On December 4, 2009, an operational error / runway incursion occurred at Detroit Metropolitan Wayne County Airport (DTW), Detroit, Michigan when Fire 2, an airport ground vehicle, was cleared to cross runway 21R at taxiway F in front of Pinnacle Airlines (FLG) flight 3720, a departing regional jet. According to crew statements, FLG3720 rotated normally and was about 150 feet above ground level when it passed the intersection of the runway and taxiway F. There was no damage to either the aircraft or the fire truck, and no reported injuries.

The Local Control East (LCE) controller cleared FLG3720 into position to hold on runway 21R at 1019:33, and was cleared for takeoff about a minute later.

At 1020:29, Fire 2 contacted the Ground Control East (GCE) controller with a request, but the GCE controller could not understand the transmission and at 1020:45 asked Fire 2 to repeat his request. Fire 2 responded, "I'm at Station 100 like [taxiway] Fox[trot] over to the [runway] 3L deice pad." The GCE controller replied, "Approved as requested."

At 1021:35, Fire 2 reported clear of runway 3L. At 1021:43, GCE transmitted, "...you said the [runway] 22R deice pad." Fire 2 replied, "No, I said the [runway] 3L, sir."

At 1022:07, LCE instructed FLG3720 to contact departure, adding, "...and we do apologize for that – we'll take care of the problem." FLG3720 responded, "...no worries" and left the frequency.

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After the incident, the Pinnacle Airlines flight operations department contacted the pilot of FLG3720 to obtain further information. The captain reported, "DTW Tower cleared us for takeoff on RWY 21R. We lifted-off normally but as we were climbing out, I saw a DTW Rescue Fire vehicle pass from right to left across our runway well beyond our liftoff point and further down the runway. Fortunately, our aircraft did not have to take evasive action. Our climbout and flight to [Wilkes-Barre/Scranton International Airport] was normal."

The ground controller entered on duty with the FAA on August 18, 2008, and came to Detroit tower in November 2008 after completing training at the FAA Academy. He did not have any prior military controller experience or pilot licenses. His medical certificate had a restriction for corrective lenses for distant vision, and he was wearing contacts on the day of the incident.

The ground controller was still in training, and was still in the process of being certified on all control positions in the tower. The day before the incident, he had been certified on the two east ground control positions by a supervisor. His certification occurred on the evening shift and took about an hour. He stated that he was comfortable being certified on the positions, and that he had sufficient training time before certification. There were some deicing operations in progress during the incident shift, and he stated that he had encountered deicing operations earlier in his training so was familiar with them.

The ground controller acknowledged that during his training he had received various

comments from his instructors about scanning the airport surface, but he stated that generally they were "hit and miss" issues and did not reflect consistent deficiencies.

The ground controller stated that he initially became aware of Fire 2 when he looked down in response to the driver's call and saw the vehicle holding outside the fire station at the edge of taxiway F. He stated that the driver's initial transmission was garbled. He asked the driver to repeat his transmission, and thought he had asked to go to the runway 22L deice pad via taxiway F. The ground controller replied "proceed as requested" and moved on to other activities. He looked at the sequence of aircraft on taxiway M, then looked over to the south end of the terminal for aircraft moving in that area, and then checked his flight progress strip box for additional flight strips on upcoming aircraft. He heard the ASDE-X alert and looked up to see Fire 2 on the runway, and the Pinnacle Airlines flight rotating for takeoff. The supervisor asked him to confirm Fire 2's destination on the airport and he did so.

When asked what, if anything, he would do differently in this situation, the ground controller stated that he would have watched the fire vehicle longer to ensure that the driver turned in the correct direction, issued a specific route, or restated the driver's destination on the airport to prevent misunderstanding. He had been trained that if a vehicle operator states the appropriate route and destination on the airport, it was acceptable to respond with "proceed as requested." After this incident, the ground controller stated that he will begin issuing specific clearances, handling vehicles the same way as he handles aircraft, and will monitor vehicle progress along their routes better.

He described his training for ground control as consisting of four weeks of classroom training, including 20 hours of computer-based instruction, 40 hours of lab time, 40 hours of self-study, and about 40 hours of classroom instruction. Topics covered included airport layout, taxiways, runways, terminals, ILS critical areas, FAA order 7110.65 requirements, letters of agreement, local procedures, taxi routes, departure sequencing, fixes, headings used on different traffic flow plans, and which departure controllers are responsible for which fixes. In lab exercises, trainees used newly created or previously used flight strips, and a tabletop model of the airport along with model aircraft. Developmental controllers were trained on various scenarios involving taxi routes, fixes, etc.

The supervisor on duty when the incursion occurred entered on duty with the FAA on November 15, 1983, became a controller at DTW in 1991, and became a supervisor in 1997. She maintained currency on all positions in the tower cab, and worked at least eight hours of currency time on position every month.

Besides being present during the incident, she was also the ground controller's supervisor of record and was heavily involved in his training. She described him as an excellent trainee, and said that she had received good reports about his performance from other supervisors.

The supervisor reported no pressure from anyone to push developmental controllers through the training program. In November 2009, after the ground controller had been training on the GCE positions, she began to think about certifying him to work the positions alone. It is her policy to not certify a developmental unless and until the primary and secondary instructors say that the developmental is ready. She consulted with the ground controller's primary and secondary instructors, and both of them advised her that they believed he was ready for certification. On Thursday, December 3, 2009 the supervisor performed a certification skill check on the ground controller covering the GCE positions. It lasted about an hour, which she

said is unusually long for a certification check. The developmental passed the check, and she certified him to work the positions alone that afternoon about 4:10. She stated that she had absolutely no concerns about his ability to work the positions and was entirely comfortable in certifying him to do so.

On December 4, the day of the incident, the supervisor came to work at 1000. The operational error occurred at 1021. She had completed some initial administrative duties and was at the supervisor position in the tower monitoring the operation. She heard the local controller instruct FLG3720 to taxi into position and hold on runway 21R. She stood up to watch the local controller clear the aircraft for takeoff and ensure that he scanned the runway when he did so. The ground controller was standing just to the left of the local controller. The supervisor sat down at her desk, and then heard the ASDE-X alarm go off. She stood up again and looked at runway 21R. She saw a large yellow fire truck crossing the runway, with a Pinnacle Airlines aircraft departing over the fire truck. She recognized that an operational error had occurred, and called the break room for two controllers to come to the cab so that she could get the ground and local controllers off position. She also contacted the quality assurance department to advise them that a runway incursion had occurred and ask them to pull the tapes on the incident. She got the two controllers relief, and then went to the quality assurance department to help get the initial report completed.

The supervisor said that there were no unusual conditions to help explain what had occurred. There was no construction in progress, no weather affecting the airport, no rain, and no distractions. Some aircraft had controlled departure times that needed to be assigned. However, this did not affect the operation of the time. She stated, "I have absolutely no explanation for what happened."

Asked how often the phraseology "proceed as requested" is used, the supervisor stated that it is not common. Use of that phraseology was restricted by a memo requiring issuance of specific routes to aircraft and vehicles even when the desired route was stated by the vehicle or aircraft operator at the time of the request. She had been off-duty on leave for the since the incursion occurred, so she was uncertain whether the facility has taken any follow-up actions related to the incident.

Asked to explain control procedures for fire trucks operating on the airport, the supervisor stated that the fire truck operators call the tower, state where they are, and describe what they want to do. They always call when they want to go onto the movement area. She noted that heavily loaded fire trucks often cannot use the access roads in non-movement areas because of their weight, and must travel on the taxiways or cross runways to move around the airport.

The on-the-job-training instructor who provided most of the ground controller's training described him as very sharp and noted that he has been doing "really well" in training. He was very complimentary of the ground controller's overall performance, stating, "...I'm happy to be his trainer. He's good."

Since the incursion, the instructor provided some advice to the ground controller about control techniques that might help prevent him from encountering a similar problem in the future, in particular, discontinuing use of the phraseology, "proceed as requested." Issuance of specific instructions to a pilot or vehicle operator may result in a correction or other feedback from the operator. However, the instructor further noted that requiring controllers to always read back the entire request from a vehicle operator or pilot may result in lengthy, but unnecessary

exchanges on the radio.

Asked about the movement of fire trucks on the airport, the instructor stated that the fire truck drivers always call the tower when they need to enter a movement area.

History of Flight

Takeoff	Runway incursion veh/AC/person (Defining event)
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Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Registration:
Model/Series:	Aircraft Category:
Year of Manufacture:	Amateur Built:
Airworthiness Certificate:	Serial Number:
Landing Gear Type:	Seats:
Date/Type of Last Inspection:	Certified Max Gross Wt.:
Time Since Last Inspection:	Engines:
Airframe Total Time:	Engine Manufacturer:
ELT: Not installed	Engine Model/Series:
Registered Owner:	Rated Power:
Operator:	Air Carrier Operating Certificate: Commuter Air Carrier (135)
Operator Does Business As:	Operator Designator Code: REXA

Meteorological Information and Flight Plan

Observation Facility, Elevation: DTW, 645 ft msl	Observation Time: 0953 EST
Distance from Accident Site:	Condition of Light: Day
Direction from Accident Site:	Conditions at Accident Site: Visual Conditions
Lowest Cloud Condition: Few / 3000 ft agl	Temperature/Dew Point: -1° C / -7° C
Lowest Ceiling:	Visibility: 10 Miles
Wind Speed/Gusts, Direction: 17 knots/ 21 knots, 240°	Visibility (RVR):
Altimeter Setting: 30.12 inches Hg	Visibility (RVV):
Precipitation and Obscuration:	
Departure Point: Detroit, MI (DTW)	Type of Flight Plan Filed: IFR
Destination: Wilkes-Barre, PA (AVP)	Type of Clearance:
Departure Time: EST	Type of Airspace:

Airport Information

Airport:	Detroit Wayne County (DTW)	Runway Surface Type:	Concrete
Airport Elevation:	645 ft	Runway Surface Condition:	Dry
Runway Used:	21R	IFR Approach:	None
Runway Length/Width:	8501 ft / 200 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	4 None	Aircraft Damage:	None
Passenger Injuries:	48 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	52 None		

Administrative Information

Investigator In Charge (IIC):	Scott J Dunham	Adopted Date:	06/04/2010
Additional Participating Persons:			
Publish Date:	06/04/2010		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=75179		

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