

Findings

1. The captain and the first officer were properly certificated and qualified under Federal regulations. There was no evidence of any medical or behavioral conditions that might have adversely affected their performance during the accident flight. Before reporting for the accident flight, the flight crewmembers had rest periods that were longer than those required by Federal regulations and company policy.
2. The accident airplane was properly certified, equipped, and maintained in accordance with Federal regulations. The recovered components showed no evidence of any structural, engine, or system failures.
3. Weather was not a factor in this accident. No restrictions to visibility occurred during the airplane's taxi to the runway and the attempted takeoff. The taxi and the attempted takeoff occurred about 1 hour before sunrise during night visual meteorological conditions and with no illumination from the moon.
4. The captain and the first officer believed that the airplane was on runway 22 when they taxied onto runway 26 and initiated the takeoff roll.
5. The flight crew recognized that something was wrong with the takeoff beyond the point from which the airplane could be stopped on the remaining available runway.
6. Because the accident airplane had taxied onto and taken off from runway 26 without a clearance to do so, this accident was a runway incursion.
7. Adequate cues existed on the airport surface and available resources were present in the cockpit to allow the flight crew to successfully navigate from the air carrier ramp to the runway 22 threshold.
8. The flight crewmembers' nonpertinent conversation during the taxi, which was not in compliance with Federal regulations and company policy, likely contributed to their loss of positional awareness.
9. The flight crewmembers failed to recognize that they were initiating a takeoff on the wrong runway because they did not cross-check and confirm the airplane's position on the runway before takeoff and they were likely influenced by confirmation bias.
10. Even though the flight crewmembers made some errors during their preflight activities and the taxi to the runway, there was insufficient evidence to determine whether fatigue affected their performance.
11. The flight crew's noncompliance with standard operating procedures, including the captain's abbreviated taxi briefing and both pilots' nonpertinent conversation, most likely created an atmosphere in the cockpit that enabled the crew's errors.
12. The controller did not notice that the flight crew had stopped the airplane short of the wrong runway because he did not anticipate any problems with the airplane's taxi to the correct runway and thus was paying more attention to his radar responsibilities than his tower responsibilities.

13. The controller did not detect the flight crew's attempt to take off on the wrong runway because, instead of monitoring the airplane's departure, he performed a lower-priority administrative task that could have waited until he transferred responsibility for the airplane to the next air traffic control facility.
14. The controller was most likely fatigued at the time of the accident, but the extent that fatigue affected his decision not to monitor the airplane's departure could not be determined in part because his routine practices did not consistently include the monitoring of takeoffs.
15. The Federal Aviation Administration's operational policies and procedures at the time of the accident were deficient because they did not promote optimal controller monitoring of aircraft surface operations.
16. The first officer's survival was directly attributable to the prompt arrival of the first responders; their ability to extricate him from the cockpit wreckage; and his rapid transport to the hospital, where he received immediate treatment.
17. The emergency response for this accident was timely and well coordinated.
18. A standard procedure requiring 14 *Code of Federal Regulations* Part 91K, 121, and 135 pilots to confirm and cross-check that their airplane is positioned at the correct runway before crossing the hold short line and initiating a takeoff would help to improve the pilots' positional awareness during surface operations.
19. The implementation of cockpit moving map displays or cockpit runway alerting systems on air carrier aircraft would enhance flight safety by providing pilots with improved positional awareness during surface navigation.
20. Enhanced taxiway centerline markings and surface painted holding position signs provide pilots with additional awareness about the runway and taxiway environment.
21. This accident demonstrates that 14 *Code of Federal Regulations* 91.129(i) might result in mistakes that have catastrophic consequences because the regulation allows an airplane to cross a runway during taxi without a pilot request for a specific clearance to do so.
22. If controllers were required to delay a takeoff clearance until confirming that an airplane has crossed all intersecting runways to a departure runway, the increased monitoring of the flight crew's surface navigation would reduce the likelihood of wrong runway takeoff events.
23. If controllers were to focus on monitoring tasks instead of administrative tasks when aircraft are in the controller's area of operations, the additional monitoring would increase the probability of detecting flight crew errors.
24. Even though the air traffic manager's decision to staff midnight shifts at Blue Grass Airport with one controller was contrary to Federal Aviation Administration verbal guidance indicating that two controllers were needed, it cannot be determined if this

decision contributed to the circumstances of this accident.

25. Because of an ongoing construction project at Blue Grass Airport, the taxiway identifiers represented in the airport chart available to the flight crew were inaccurate, and the information contained in a local notice to airmen about the closure of taxiway A was not made available to the crew via automatic terminal information service broadcast or the flight release paperwork.

26. The controller's failure to ensure that the flight crew was aware of the altered taxiway A configuration was likely not a factor in the crew's inability to navigate to the correct runway.

27. Because the information in the local notice to airmen (NOTAM) about the altered taxiway A configuration was not needed for the pilots' wayfinding task, the absence of the local NOTAM from the flight release paperwork was not a factor in this accident.

28. The presence of the extended taxiway centerline to taxiway A north of runway 8/26 was not a factor in this accident.