



# Blue Grass Airport

LEXINGTON-FAYETTE URBAN COUNTY AIRPORT BOARD

March 22, 2007

Mr. Joseph Sedor  
National Transportation Safety Board  
490 L'Enfant Plaza East  
Washington DC 20594

Dear Mr. Sedor:

In accordance with 49 CFR 831.14, Blue Grass Airport submits the attached Party Submission to the National Transportation Safety Board for consideration during the deliberation of the COMAIR Flight 5191 accident (DCA 06 MA 064), which occurred at Lexington, Kentucky, on August 27, 2006.

Sincerely,

(R)

John Coon  
Director of Operations

**PARTY SUBMISSION BY THE  
BLUE GRASS AIRPORT  
ACCIDENT DCA 06 MA 064**

**COMAIR Airlines Flight 5191  
Bombardier CRJ100, N431CA  
Lexington, Kentucky 0607 EDT  
August 27, 2006**

**Background**

On August 27, 2006, about 0607 eastern daylight time, COMAIR Flight 5191, a Bombardier CL-600-2B19 (CRJ-100), N431CA, crashed during takeoff from Blue Grass Airport, Lexington, Kentucky. The airplane had been cleared by air traffic control for takeoff on Runway 22 which was 7,003 feet long; however, the crew mistakenly taxied onto and attempted to take-off from Runway 26, which was 3,501 feet long and did not have any runway lights. (The Runway 26 runway lights had been disconnected since 2001 when the runway was designated as daytime use only.) The airplane ran off the end of the runway, impacted the airport perimeter fence and then struck trees off the airport property and crashed about 1,530 feet beyond the airport perimeter fence. Of the 47 passengers and three crew members on board the airplane, 47 passengers and 2 crew members were killed and one crew member received serious injuries.

**Discussion and Analysis**

The facts of the accident investigation, especially as reflected in the Cockpit Voice Recorder (CVR) Report, the air traffic control tower transcript, the taxiway and runway markings and signage, and the physical evidence on the ground beyond the end of Runway 26 and at the crash site, establish that the cause of the accident was the loss of situational and location awareness by the flight crew which led to the Captain mistakenly taxiing the airplane onto Runway 26 instead of Runway 22. The First Officer failed to detect this error and proceeded to attempt to take off despite noting aloud that the runway was not lighted. The loss of situational and location awareness was due to the unprofessional manner in which the flight crew performed their required duties after starting the airplane and during the taxi for takeoff. The flight crew engaged in continuous non-essential and distracting conversations which violated the 14 CFR Part 121 Sterile Cockpit Procedures regulation and the COMAIR Operations Manual guidance on sterile cockpit requirements.

Two specific events stand out, which, when coupled with the continuous non-essential conversation and lack of attention to duties, resulted in the positioning of the airplane incorrectly on Runway 26. First, the flight crew, especially the Captain, failed to note and emphasize during the taxi briefing that the taxi route would require the crossing of Runway 26 before reaching Runway 22. This briefing requirement is clear in the COMAIR Operations Manual, Chapter 4 – Ramp and Taxi Operations. The Operations Group Factual Report contains all of the appropriate checklists and requirements governing the taxi of the accident airplane. The failure to emphasize, as required, or note the required crossing of Runway 26, set the condition for the flight crew to mistake

Runway 26 for Runway 22. The awareness of the crossing of Runway 26 was further removed from the attention of the flight crew when, at 05:57:23.3, the First Officer said, “Let’s take it out and um, take uuuh, Alpha. Two two’s a short taxi.” There was no required reference to crossing Runway 26, which was further lost in the continued non-essential talk.

The second major event, which led to the erroneous positioning of the airplane on Runway 26, was when the Captain, who was taxiing the airplane as the First Officer read the checklists, stopped the airplane at the hold line for the wrong runway. The taxi clearance authorized the movement of the airplane across Runway 26, all the way to Runway 22. Not to excuse the First Officer, but he might have looked up from the checklist, observed a hold line and a runway, and assumed the airplane was at Runway 22. At that point the flight crew was completely unaware of where they were on the airport because they had failed to follow the required procedures, engaged in non-essential and distracting conversation, and lost situational awareness. The flight crew made these errors despite the fact that Runway 22 and Runway 26 both had appropriate runway hold position and taxi location signs at the taxiway entrance to each runway. It must be emphasized that regardless of which airport diagram or chart the flight crew might have used (if any), it was clear that the taxi route would require the airplane to cross Runway 26 and continue to taxi to Runway 22.

There are at least eight examples of inattention and lack of focus by the flight crew, especially by the First Officer, all of which illustrated the lack of professionalism by the pilots:

- The wrong airplane was pre-flighted and started;
- 5:50:14.1 CVR: The First Officer did not copy the clearance and had to have a read back from the controller;
- 5:52:24.5 CVR: The First Officer stated that he was missing some of his required navigation charts;
- 5:56:34.1 CVR: The First Officer did not remember the runway to which they were cleared to taxi (he referenced Runway 24 instead of Runway 22);
- 5:58:17.1 CVR: The First Officer called for taxi clearance with the wrong ATIS;
- 6:05:15.1 CVR: The First Officer called for takeoff clearance with the wrong flight number;
- The flight crew failed to push the HDG Knob before takeoff. If this had been done when in takeoff position, the heading bug would have moved about 40 degrees to the right on the HSI, providing an instrumentation visual cue that the aircraft was on the wrong runway.

Another important operational consideration involves local NOTAM A 1682, in effect on the accident date and which stated: “T/W A closed north of R/W 26”. This information was not provided to the flight crew with the COMAIR dispatch package or on the ATIS. If it had been given to the flight crew, it might have caused them to make the required evaluation of the taxi route and the airport configuration. However, in light of the Captain’s failure to specifically note the Runway 26 crossing in his briefing, the

continuous extraneous cockpit conversations and the First Officer's statement of taking Alpha to Runway 22, it is unknown whether the NOTAM information would have made a difference in the crew's decision-making process.

There is one final, crucial consideration with respect to this accident. COMAIR Flight 5191 was taxied from the ramp to the Runway 26 hold line/threshold. Regardless of any discussion about the airport, the runways and taxiway changes due to the Runway 4-22 safety area construction project, and differences in airport diagrams, none of such events had an impact on the taxi route taken by the accident airplane. There were no changes whatsoever to any part of the ramp or the taxiways south of the Runway 26 threshold along the taxi route of COMAIR Flight 5191, and in all cases the aircraft was required to cross Runway 26 in the taxi to Runway 22.

The key issues with respect to the Blue Grass Airport and this accident are whether the airport taxiways, marking, lights and signage were proper and in compliance with 14 CFR Part 139, and whether the Airport Department of Public Safety met all of its 14 CFR Part 139 regulatory requirements with respect to responding to an airplane accident.

The answer to both of these issues is an unqualified yes.

The accident investigation, and especially the record compiled by the Survival Factors (Airports) Group, the Air Traffic Control Group, and the Operational Factors Group, document that the Blue Grass Airport was in compliance with 14 CFR Part 139 and had met all appropriate regulatory requirements. There was no condition or situation related to any runway, taxiway, signage, lighting or marking that created an unsafe situation or confusion for pilots, air traffic controllers or airport users. There had been no reports of any unsafe or confusing conditions resulting from the taxiways, runways, signage or markings, and none had been reported to airport management or any air traffic control personnel. Runway 22 and Runway 26 both had appropriate runway hold position and taxiway location signs at the taxiway entrance to each runway.

At the time of the accident, the Blue Grass Airport was in the final stages of the Runway 4-22 Safety Area Improvements Project (BGA Project No. 0502-39). Attachment 7 to the Survival Factors Factual Report provides a detailed report of the planning, development, and coordination of the project with the FAA. Throughout the construction phase of the project, which began in 2003, the Airport had worked closely with several FAA offices to ensure that all regulatory requirements and safety guidelines were met. In fact, there had been no safety violations related to any aspect of the Runway Safety Area Improvements Project during any of the 14 CFR Part 139 compliance inspections conducted during the three years prior to August 27, 2006.

The successful implementation of the project was dependent on several key dates jointly agreed upon by the Airport and the FAA.

- June 19, 2006, deadline for the Runway 4 ILS flight check data to meet the August 3, 2006, chart publications date;

- August 3, 2006, chart publication date for the new Standard Instrument Approach Procedures (SIAP) chart and the new Airport Facilities Directory (AFD);
- August 18-20, 2006, weekend closure of runway 4-22 for repairing and remarking of runway and connector taxiways, including new taxiway designations and signage;
- October 10, 2006, deadline for the Runway 22 ILS, the Runway 4 MALSR and the Runway 22 PAPI flight check submittal for chart publication;
- November 23, 2006, chart publication of new SIAP for the Runway 22 ILS.

The Airport, in coordination with the various FAA offices, met all of the above dates and provided the data required to produce the required charts and airport diagram developed by the FAA. The initial understanding and expectation of the Airport was that when the various charts and diagrams were produced by the FAA and Jeppesen on August 3, 2006, the AFD would reflect the actual physical layout of the runways and taxiways that would be in place until the new taxiway A7 was constructed. The airport also expected that the new Runway 4 ILS SIAP would be published on August 3, 2006.

As the investigation record showed, there were differences between the AFD airport diagram, the Jeppesen airport chart and the actual airport taxiway configuration on the day of the accident. These differences, as explained in detail in Attachment 7, resulted from decisions of the FAA and a failure of Jeppesen to publish the data that the Airport had provided the FAA on June 9 and June 21, 2006. The Airport had proposed that the FAA publish an interim AFD airport diagram that would depict the actual physical layout. The FAA's discretionary decision instead was that the Airport Facilities Directory and chart publications would depict the ultimate final runway and taxiway configurations. The differences would then be addressed by Airport-issued NOTAMs. Subsequently, however, the data the Airport provided the FAA on June 21, 2006, was not published on August 3, 2006, because of a Jeppesen computer software error.

The chart information and revised diagram for the runway 4 ILS SIAP had been developed by the FAA on June 9, 2006. However, the Airport learned on July 28, 2006, that this information was not included on the respective charts for the August 3 publication date. The explanation from the FAA was that one of the "fix" points in the SIAP was an en route fix. This fact had not been noted previously by the FAA. The Airport was told by the FAA that an assumption had been made that the new SIAP was a local procedure. However, since the SIAP was determined to be an en route procedure, the data had to be submitted two to three weeks earlier. Consequently, the deadlines were missed for the Runway 4 ILS SIAP. However, the Airport had, in good faith, met all of the requirements for the publication cycle as originally developed by the FAA.

On August 3, 2006, a new Airport Facilities Directory airport diagram was published by the FAA depicting the ultimate runway and taxiway configuration. At the same time, the new SIAP charts and the new Jeppesen diagram of the airport were not published. The consequence was the existence of an AFD airport diagram depicting the ultimate runway and taxiway configuration and a Jeppesen chart depicting the old or pre-August 20, 2006, airport configuration.

At no time between August 3, 2006, and August 27, 2006, were there any concerns or comments from Blue Grass Air Traffic Control staff or from any airport tenants or pilot/airline users about any possible confusion caused by any discrepancies between the AFD airport diagram and the actual airport configuration. In fact, the Jeppesen charts and airport diagram accurately depicted the airport configuration until August 20, 2006. On that date, the Airport issued NOTAM A 1682 which stated "T/W A closed north of R/W 26". This NOTAM reflected the difference between the actual airfield configuration and the then current Jeppesen diagram and AFD diagram. The NOTAM had also been discussed with the FAA during the June 19 and 20, 2006, teleconferences.

Throughout the entire construction schedule for the Runway 4-22 Safety Area Improvement Project, the Airport worked closely with the FAA and met every milestone for information and data delivery. During the entire period, the Airport was in compliance with applicable safety standards and certification requirements and was subjected to regular inspections by the FAA. The Airport had fully expected that the correct information would be published on the appropriate charts and documents on August 3, 2006, and had provided the FAA the flight check data for the new Runway 4 SIAP on June 9, 2006, and the data for the AFD on June 21, 2006.

The differences related to the charts and diagrams for the Blue Grass Airport were the result of (1) a unilateral decision made by the FAA for various reasons, and (2) the failure of Jeppesen to publish the data the Airport had provided the FAA on June 9 and June 21, 2006. However, despite the differences that existed between the AFD airport diagram and some of the charts that existed on August 3, 2006, there was no unsafe situation created, and there were no reports of instances where pilots, controllers, airlines or other airport users were confused or misled. In fact, according to the Official Airline Guide, about 55 daily airline Part 121 flights used Runway 4-22 from the time of issuance of the August 20, 2006, NOTAM until the time of the accident on August 27, 2006. This daily number included approximately eight daily departures during conditions of darkness. Consequently, during the time period that the NOTAM was in effect, about 330 Part 121 flights used Runway 4-22, including approximately 48 departures in conditions of darkness, and including two Part 121 flights on the accident date immediately preceding the ill-fated Comair flight. All of these flights operated at the Blue Grass Airport without any confusion or difficulty. These numbers do not include Part 135 or Part 91 day and night departures from Runway 4-22 during the week the NOTAM was in effect.

The Airport issued NOTAM A 1682 on August 20, 2006, which provided correct information to supplement the existing airport charts and diagrams. This NOTAM was provided to the appropriate FAA offices, including the Lexington Air Traffic Control Tower and all airport tenants, including COMAIR.

## **Findings**

1. The accident occurred because the flight crew mistakenly attempted to take off from Runway 26. The flight crew failed to follow COMAIR procedures, Federal Aviation Regulations, safe operating practices, and the instructions of the local controller.
2. Blue Grass Airport was in compliance with all appropriate Federal Aviation Administration (FAA) regulations and 14 CFR Part 139 on the day of the accident.
3. The Airport had worked closely and effectively with all appropriate FAA offices during the four-year Runway 4-22 Safety Area Improvement Project.
4. There had been no safety violations related to any aspect of the Runway 4-22 safety area improvement construction project during any of the 14 CFR Part 139 compliance inspections conducted during the three years prior to the COMAIR accident.
5. The Airport signage and markings for the taxi route for COMAIR Flight 5191 were appropriate, in compliance with 14 CFR Part 139, and provided proper guidance to allow the flight crew to taxi from the ramp to Runway 22.
6. There were no unsafe or confusing conditions created by the Runway 4-22 safety area improvements construction project, signage or markings that caused or contributed to the COMAIR Flight 5191 accident.
7. There were no reports by airport users of unsafe or confusing conditions made to the air traffic control staff or to the Airport staff related to any aspect of the Runway 4-22 safety area improvements construction project, taxi patterns, or airport signage.
8. The air traffic control staff at Blue Grass Airport was not aware of any safety or confusion issues regarding taxi routes or airport signage, and had never reported any such issues to airport management.
9. At the time of the accident, Runway 22 and Runway 26 both had appropriate runway hold position and taxiway location signs at the taxiway entrance to each runway.
10. The Airport proposed that the FAA publish an interim AFD airport diagram during the August 3, 2006, publications cycle, which would depict the actual physical layout of the runways and taxiways that would be in place until the new taxiway A7 was constructed.

11. The FAA elected not to publish an interim AFD airport diagram but rather published, on August 3, 2006, charts which would depict the ultimate (final) runway and taxiway configurations.
12. The Airport believed that the revised chart information and the Runway 4 ILS SIAP would be published on August 3, 2006.
13. The appropriate charts and the Runway 4 ILS SIAP were not published on August 3, 2006, because of an FAA discretionary decision or oversight, and because of an error in the Jeppesen computer software publication process.
14. After Runway 4-22 was repaved, on August 20, 2006 the Airport placed lighted, physical barriers on the old taxiway A and issued NOTAM A 1682 which stated: "T/W A closed north of R/W 26". This NOTAM was provided to the COMAIR office at the airport, and to the FAA and other airport tenants and was in effect on the accident date.
15. The differences between the actual airport physical configuration and the Jeppesen and FAA-produced charts were the result of decisions made by the FAA and a computer software error within the Jeppesen publication process.
16. The Airport Public Safety Department was properly staffed, trained and equipped to meet the requirements of 14 CFR Part 139 and to respond to an airplane accident or incident on the Airport.
17. The accident site was off Airport property, about 1900 feet from the end of Runway 26 or 1530 feet beyond the airport perimeter fence.
18. The coordination between the air traffic controller in the tower and the Public Safety Department airport dispatcher was rapid, accurate and appropriate. The coordination between the Airport AARF response and the Lexington Metro emergency response services was rapid and appropriate.
19. Regardless of which airport diagram the flight crew might have used to taxi to Runway 22, it was clear that the taxi route would require the airplane to cross Runway 26 and then continue the taxi to Runway 22.
20. The airplane was airworthy and all systems and components were capable of normal take off performance. The Flight Data Recorder was not in compliance with 14CFR 121.344, Appendix M, but this was not a factor in the accident.
21. The  $V_1$  and  $V_r$  performance data for Flight 5191 indicated ground rolls of about 3593 feet and 3744 feet respectively. Runway 26 was 3501 in length. There were tire tracks in the grass beyond the end of Runway 26.



22. Once the airplane began the taxi from the ramp, the flight crew engaged in continuous non-essential and distracting conversations, which resulted in a loss of situational/location awareness. This activity violated the 14 CFR Part 121 Sterile Cockpit Procedures and the COMAIR Operations, Manual Chapter 5, Section 5.13.2 guidance on sterile cockpit requirements.
23. The flight crew's performance of cockpit duties was unprofessional and careless, resulting in sloppy execution of checklists, the failure to note the crossing of Runway 26 as part of the taxi route, and the violation of the sterile cockpit requirements of the FAA and COMAIR, and the loss of situational/location awareness.
24. The flight crew, and especially the First Officer, committed at least eight errors that demonstrated careless and distracted performance of their required duties.
25. COMAIR did not have a process to provide NOTAM's (L) to flight crews.
26. It is estimated that between August 20 and August 27 about 330 Part 121 flights used Runway 4-22, including 48 flights during periods of darkness, without any confusion or difficulty, including the two Part 121 flights immediately preceding the Comair accident flight.

### **Probable Cause**

The probable cause of the crash of 5191 are directly related to the performance of the Captain and First Officer, they include:

- The loss of situational and location awareness which led the Captain to mistakenly taxiing the airplane onto Runway 26 instead of Runway 22.
- The loss of situational and location awareness was due to the unprofessional manner in which the flight performed their required duties after starting the airplane and during taxi for takeoff.
- The engagement in continuous non-essential and distracting conversation which violated the 14 CFR Part 121 Sterile Cockpit Procedures regulation and the Comair Operations Manual guidance on sterile cockpit requirements.