



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: June 2, 2008

In reply refer to: A-08-30 and -31

The Honorable Robert A. Sturgell
Acting Administrator
Federal Aviation Administration
Washington, D.C. 20591

On October 31, 2006, about 1830 eastern standard time, a Boeing 747-400, operated by Lufthansa German Airlines as flight 403, incurred substantial damage when its left wing contacted the right wing of a Boeing 757-200 that was under tow, but stopped, at Newark Liberty International Airport (EWR), Newark, New Jersey. None of the 18 crewmembers and 294 passengers on board the Boeing 747 was injured; no one was on board the Boeing 757.¹ Night visual meteorological conditions prevailed. An instrument flight rules flight plan was on file for the 14 *Code of Federal Regulations* (CFR) Part 129 flight from Newark to Frankfurt Airport, Frankfurt, Germany.²

The National Transportation Safety Board's investigation of this event has revealed a safety issue that, though not causal or contributing to the accident, could compromise safety under other circumstances. At the time of the accident, two taxiway designations were incorrectly labeled on the Federal Aviation Administration (FAA) EWR airport diagram.³ As shown in the following figure, taxiway RG should have been labeled as taxiway M, and the ramp-side portion of taxiway J should have been labeled as taxiway RG;⁴ however, all airfield signage and marking plans were accurate at the time of the accident.

¹ The type of tug being used to tow the airplane did not require anyone in the cockpit to operate the brakes during the tow operation.

² Before the collision, the Boeing 757 was instructed to taxi northwest on taxiway A and to hold short of the taxiway RG intersection. Lufthansa flight 403 was cleared to taxi from the terminal, north on taxiway A to taxiway S, and eventually struck the wing of the Boeing 757 at the intersection of those two taxiways. More information about this accident, NYC07LA017, is available at the National Transportation Safety Board's Web site at <http://www.nts.gov/ntsb/brief.asp?ev_id=20061101X01594&key=1>.

³ Dated October 26, 2006, to November 23, 2006, the incorrect EWR diagram was in its second publication cycle at the time of the accident.

⁴ The New York/New Jersey Port Authority, the operator of EWR, published a notice to airmen on August 8, 2007, that advised flight crews of the discrepancies in the EWR airport diagram and remained in effect until a corrected diagram was published on August 30, 2007.

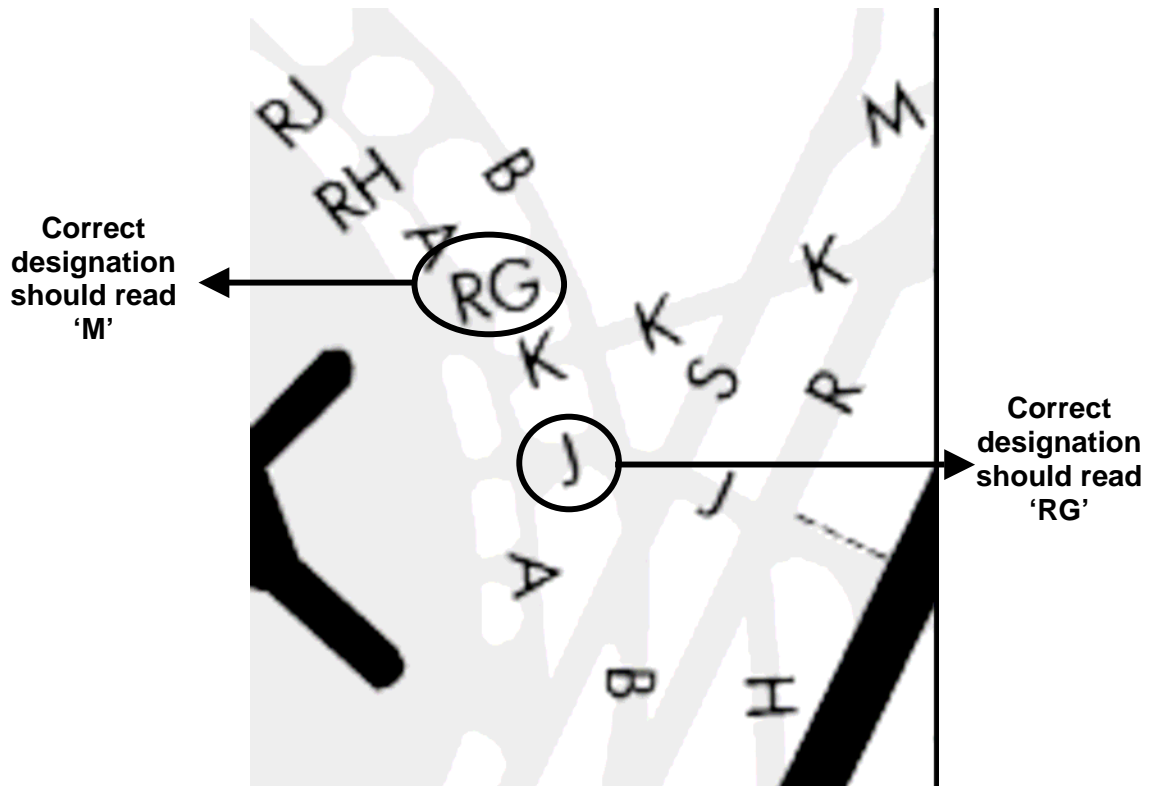


Figure. Airport diagram showing incorrect taxiway designations at Newark Liberty International Airport.

The Safety Board's investigation of the details that led to the incorrect EWR airport diagram revealed that the New York Airports District Office (ADO) submitted a marked-up diagram (correctly reflecting multiple changes resulting from a planned taxiway reconstruction) to the Cartographic Standards Branch at FAA headquarters on June 12, 2006. The Cartographic Standards Branch forwarded the revisions to the National Aeronautical Charting Office (NACO) for incorporation and publication in the August 3, 2006, edition of the Airport/Facility Directories (A/FD).⁵ Although some revisions were made correctly, NACO introduced the taxiway labeling errors during the revision process, and the errors were not detected until after the accident.

Currently, all offices responsible for implementing revisions to airport diagrams and reviewing them for accuracy after publication are part of the FAA's Air Traffic Organization. Specifically, as provided in FAA Order 7910.4C, *Airport Diagrams* (dated January 7, 2004), the Cartographic Standards Branch is the designated recipient of diagram revisions, NACO incorporates revisions and publishes new and revised diagrams, and regional air traffic divisions are responsible for periodically reviewing diagrams for airports in their jurisdiction. During an October 2007 meeting with Safety Board investigators, representatives from the FAA's Air Traffic Organization and Office of Airport Safety and Standards explained that the Cartographic Standards Branch can receive revisions to airport diagrams from several sources in a variety of

⁵ NACO publishes airport diagrams in both the U.S. Terminal Procedures Publications and A/FDs every 56 days, in accordance with International Civil Aviation Organization standards.

formats before diagrams are sent to NACO for publication. For example, revisions may be submitted by airport owners/operators,⁶ by an ADO, or even by pilots who notice an error. Requested revisions can be submitted in the form of text explaining changes, a marked-up diagram indicating desired changes, or a combination of these two methods. If a revision is submitted as text only, the cartographer at the Cartographic Standards Branch calls the airport to discuss and verify the proposed changes. However, if a marked-up diagram is provided, the cartographer generally does not contact the airport to verify requested changes. The FAA cartographer then forwards requested revisions to NACO for incorporation and publication.

The cartographer at the Cartographic Standards Branch repeated the same stages in the process when interviewed about it and stated that a similar revision process exists within NACO, where a cartographer makes the necessary changes and a reviewer then verifies the changes before publication. Investigators requested documentation of the diagram revision process as it was explained at the October 2007 meeting but were told that no formal documentation existed.

Although discussions at the October 2007 meeting with FAA staff indicated that the process for revising airport diagrams includes quality assurance reviews, the incorrect EWR airport diagram suggests that such reviews are not being performed consistently. FAA staff indicated that in compliance with Order 7910.4C, regional air traffic divisions are supposed to review diagrams within their region after each publication cycle, as well as every January. FAA staff also reported that, in 2006, the regional air traffic divisions underwent a significant reorganization. Under the new organization, the Eastern Terminal Service Area within the Atlanta Service Center is responsible for reviewing diagram revisions for EWR. Given that the incorrect diagram was published in October 2006 and the inaccuracies went undetected until shortly before a related August 2007 notice to airmen was issued, the designated reviewer for EWR missed several occasions to note the errors.

The Safety Board is concerned that the FAA's lack of formal written procedures for the airport diagram revision and publication process allows parts of the process to be overlooked, potentially compromising safety. Therefore, the Board believes that the FAA should develop and document formal guidance for the revision, publication, and review of airport diagrams that contains, at a minimum, a review of draft diagrams before publication, as well as a control to ensure that reviews are performed each publication cycle as required in FAA Order 7910.4C, *Airport Diagrams*.

The Safety Board is also concerned that FAA organizations outside of the Air Traffic Organization are not currently part of the diagram publication/review process and may be more functionally suited to detecting any diagram errors. For example, although FAA ADOs are part of the distribution list for Order 7910.4C, these offices currently are not responsible for reviewing airport diagrams for accuracy. The Board notes, however, that because ADOs continually work with airport sponsors within their regions to assist with future planning, approve proposed construction, and allocate grant money for airport improvement projects, these offices are generally well informed about proposed changes and ongoing projects at airports. They would

⁶ Guidance available on the FAA's Web site advises, "in the interest of aviation safety, all airport owners/managers are encouraged to frequently update information about their airport by contacting the local Flight Service Station or Aeronautical Information Services."

therefore be able to ensure that proposed revisions are made correctly and determine whether any other changes need to be made. Further, in the instance at EWR, the ADO submitted the change and could have easily verified whether it had been made correctly. Therefore, the Board believes that the FAA should revise FAA Order 7910.4C, *Airport Diagrams*, to ensure ADOs review revised airport diagrams in their respective regions each publication cycle.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Develop and document formal guidance for the revision, publication, and review of airport diagrams that contains, at a minimum, a review of draft diagrams before publication, as well as a control to ensure that reviews are performed each publication cycle as required in FAA Order 7910.4C, *Airport Diagrams*. (A-08-30)

Revise FAA Order 7910.4C, *Airport Diagrams*, to ensure airport district offices review revised airport diagrams in their respective regions each publication cycle. (A-08-31)

In response to the recommendation(s) in this letter, please refer to Safety Recommendations A-08-30 and -31. If you would like to submit your response electronically rather than in hardcopy, you may send it to the following e-mail address: correspondence@ntsb.gov. If your response includes attachments that exceed 5 megabytes, please e-mail us asking for instructions on how to use our Tumbleweed secure mailbox procedures. To avoid confusion, please use only one method of submission (that is, do not submit both an electronic copy and a hardcopy of the same response letter).

Chairman ROSENKER, Vice Chairman SUMWALT, and Members HERSMAN, HIGGINS, and CHEALANDER concurred with these recommendations.

[Original Signed]

By: Mark V. Rosenker
Chairman