

Testimony of the Honorable Christopher A. Hart
Vice Chairman
National Transportation Safety Board
Before the
Aviation Subcommittee
Committee on Commerce, Science, and Transportation
United States Senate

**Hearing on Aviation Safety: The Hudson River Midair Collision and the Safety of Air
Operations in Congested Airspace**
September 15, 2009

Good afternoon. With your concurrence, Mr. Chairman, I would like to begin my testimony with a short summary of the National Transportation Safety Board's (NTSB) actions to date regarding the investigation of the recent mid-air collision over the Hudson River. I want to emphasize that this is still an ongoing investigation and that there is significant work left for our staff. My testimony today will be limited to those facts that we have identified to date, but I will not provide any analysis or make any conclusions about what we have found so far. Although we have identified some areas of concern that have prompted us to issue safety recommendations, we have not determined the cause of this accident or the role any individual, mechanism or organization may have played in the accident.

On August 8, 2009, about 11:53 eastern daylight time,¹ a Eurocopter AS350 BA helicopter, N401LH, operated by Liberty Helicopters, and a Piper PA-32R-300 airplane, N71MC, operated by a private pilot, collided over the Hudson River near Hoboken, New Jersey. The certificated commercial pilot and five passengers aboard the helicopter and the certificated private pilot and two passengers aboard the airplane were killed. The helicopter flight was a local sightseeing flight conducted under the provisions of 14 *Code of Federal Regulations* (CFR) Parts 135 and 136. The airplane flight was a personal flight conducted under the provisions of 14 CFR Part 91. The airplane departed Teterboro Airport (TEB), Teterboro, New Jersey, about 11:49, destined for Ocean City, New Jersey, and the helicopter lifted off from the West 30th Street Heliport about 3 minutes later, at 11:52. Visual meteorological conditions prevailed and no flight plans were required or filed for either flight. However, the pilot of the airplane requested flight-following services from TEB air traffic control (ATC).² Neither aircraft was equipped with a cockpit voice recorder or a flight data recorder, nor were they required to be installed. The accident occurred in a relatively complex airspace where class B airspace meets the Hudson River class B exclusion area.

¹ All times in this testimony are eastern daylight time and based on a 24-hour clock.

² The preliminary reports for this accident, ERA09MA447A and B, are available online at <<http://www.nts.gov/ntsb/query.asp>>.

New York Terminal Airspace

The Federal Aviation Administration (FAA) has designated the area surrounding John F. Kennedy International Airport (JFK), Newark Liberty International Airport (EWR), and LaGuardia Airport (LGA) as class B airspace. Class B airspace is intended to provide positive control of flight operations near the nation's busiest airports and to separate aircraft operating under visual flight rules (VFR) from aircraft operating in the airport terminal area. According to 14 CFR 91.131, all aircraft operating within class B airspace are required to obtain ATC clearance before entry and to comply with ATC instructions while operating within the airspace. Pilots who do not have ATC clearance to enter must remain outside the class B boundaries. Part of the New York class B airspace extends from the surface to 7,000 feet above mean sea level in 4- to 8-mile radiuses around JFK, EWR, and LGA. Some other parts of the class B airspace begin at higher altitudes. This allows aircraft to arrive and depart from satellite airports, such as TEB, without obtaining class B clearance. For example, the floor of the class B airspace overlying TEB is 1,800 feet. Thus, separation between traffic at TEB and aircraft operating within the class B airspace is maintained by requiring aircraft without class B clearance to remain below 1,800 feet.

The accident occurred in the Hudson River class B exclusion area, which is a combination of class E and class G airspace³ that provides a passageway through the New York class B airspace. The Hudson River class B exclusion area permits aircraft to fly north and south along the Hudson River between, approximately, the George Washington Bridge to the north and the Verrazano Narrows Bridge to the south without authorization from air traffic controllers. The Hudson River class B exclusion area extends from the surface of the Hudson River up to and including 1,100 feet above mean sea level.

Prior to the accident, the FAA had established voluntary procedures for operating within the Hudson River class B exclusion area that were designed to minimize the risk of collision. These procedures are described on the New York VFR Terminal Area Chart and the New York Helicopter Route Chart. They state that pilots operating within the Hudson River class B exclusion area should fly at 140 knots or less; turn on position lights, anticollision lights, and landing lights; and self-announce their position on the common traffic advisory frequency (CTAF),⁴ 123.05 MHz. Another accepted procedure for helicopter operations, published in the New York Helicopter Route Chart, is for northbound helicopter flights to follow along the Manhattan shoreline, and for southbound flights to follow the New Jersey shoreline, providing lateral separation between opposite-direction traffic flows.

Recent FAA traffic estimates indicate that over 200 aircraft a day pass through the Hudson River class B exclusion area. The Hudson River class B exclusion area and associated transition procedures have been in use for more than 30 years, and until the accident, the safety

³ Class E and Class G airspace each allow pilots to operate under VFR without mandatory service from air traffic controllers. The main practical difference between class E and class G airspace is the minimum ceiling and visibility requirements for flight under VFR. The Hudson River class B exclusion area is class E airspace from 700 feet to 1,100 feet above mean sea level and class G airspace below 700 feet.

⁴ CTAFs allow pilots to exchange traffic information while operating near airports without operating control towers. CTAF procedures may also be established in other circumstances where direct pilot-to-pilot communications will contribute to safety.

record for operations in the area had been good. The NTSB has no record of previous collisions between aircraft operating in the Hudson River class B exclusion area. A review of the FAA Near-Midair Collision (NMAC) database and the National Aeronautics and Space Administration Aviation Safety Reporting System (ASRS) database revealed 11 reports of NMACs between aircraft in the area since 1990. Only one report was filed in the past 10 years. Although ASRS reporting is voluntary, the number of reports received is very low relative to the number of flight operations through the Hudson River class B exclusion area.

Previous Recommendation Addressing New York Terminal Airspace

The NTSB previously addressed the conduct of VFR flights in the New York Terminal Airspace following the investigation of the 2006 crash of a Cirrus Design SR20 into an apartment building in Manhattan. The aircraft, with two pilots on board (one of whom was New York Yankees pitcher Cory Lidle), had departed TEB at about 14:29 on October 11, 2006, operating under Part 91 with no flight plan filed. The pilots had acknowledged to ATC that the aircraft would stay out of the New York class B airspace. After takeoff, the aircraft turned southeast and climbed to an altitude of about 600 to 800 feet mean sea level. When the flight reached the western shore of the Hudson River, it turned south, remaining over the river, then descended to 500 feet. The flight continued southbound over the Hudson River until abeam of the southern tip of Manhattan, at which point, the flight turned southwest. The aircraft flew around the Statue of Liberty, then headed northeast to fly over the East River. About a mile north of the Queensboro Bridge, the aircraft made a left turn to reverse its course. The aircraft impacted a 520-foot tall apartment building 333 feet above street level. The NTSB determined that the probable cause of the accident was the pilots' inadequate planning, judgment, and airmanship in the performance of a 180-degree turn maneuver inside the limited turning space over the East River.

Two days following the accident, the FAA published Notice to Airmen (NOTAM) 6/3495 prohibiting fixed-wing operations (except amphibious fixed wing aircraft landing or departing New York Skyports Inc. Seaplane Base) in the East River class B exclusion area from the southwestern tip of Governors Island to the north tip of Roosevelt Island unless authorized and controlled by ATC. The NTSB strongly supported the FAA's quick response and issued a recommendation (A-07-38) that FAA make the NOTAM permanent. In an update to the NTSB in early 2008, the FAA indicated that it was developing a rulemaking project for a redesign for the New York and New Jersey airspace, a rulemaking project it expected to take at least two years. Recommendation A-07-38 is classified "Open—Acceptable Response."

The Flights in the Hudson River Accident

The pilot of the accident airplane contacted the clearance delivery controller in the ATC tower at TEB about 11:40:01, requesting departure clearance and VFR radar traffic advisory service en route to Ocean City, New Jersey, at 3,500 feet. The pilot's requested route and altitude required that the flight enter the class B airspace overlying TEB. The clearance delivery controller issued the pilot a discrete transponder code. While the airplane was taxiing to the runway, the TEB ground/local controller offered the pilot the option of departing TEB over the river. The pilot elected to fly down the Hudson River, which necessitated eventual coordination

with controllers at EWR for authorization to climb into the class B airspace. Existing procedures did not require TEB controllers to coordinate for class B clearance for the pilot, and the local controller did not do so.

The accident airplane departed TEB about 11:49 and was issued a traffic advisory for a helicopter arriving at the airport. The pilot acknowledged the traffic call. The local controller instructed the pilot to remain at or below 1,100 feet, which is the “top” of the exclusion airspace in that area. The airplane flew southbound until the local controller instructed the pilot to turn left (southeast) and join the Hudson River. About 11:52:20, the pilot acknowledged an instruction from the TEB local controller to change frequencies and contact controllers at EWR. The pilot read back to the controller an incorrect frequency; ATC recordings do not indicate that the incorrect read-back was heard or corrected by any air traffic controller. A preliminary review of recorded ATC communications showed that the pilot did not contact EWR before the accident. We are reviewing ATC tapes for other frequencies to see if the pilot was attempting to contact EWR on the incorrect frequency. In any case, about 11:53:17, approximately the time of the accident, the TEB local controller contacted the EWR controller to ask about the airplane and was told that the pilot had not called. There are no known additional ATC contacts with the airplane.

The accident helicopter departed from the West 30th Street Heliport, which is in the Hudson River class B exclusion area, about 11:52, for a 12-minute tour. The initial part of the tour was to be flown below class B airspace, so the pilot was not required to contact ATC. Although the nature of any transmissions made by aircraft on the CTAF is not known because the CTAF is not recorded, a Liberty Helicopters pilot waiting to depart from the West 30th Street Heliport reported that the pilot of the accident helicopter made a position report on the CTAF just before the collision. The first radar target for the accident helicopter was detected by the FAA's EWR radar about 11:52:27, when the helicopter was west of the heliport, approximately mid-river, and climbing through 400 feet. According to recorded radar data, the helicopter flew to the west side of the river and then turned south to follow the Hudson River. The accident helicopter continued climbing southbound until about 11:53:14, when the collision occurred at about 1,100 feet.

ATC Procedures

After the accident airplane departed from TEB, the local controller instructed the pilot to remain at or below 1,100 feet and to turn east toward the Hudson River (to avoid the final approach course for runway 22 at EWR). A review of radar data shows that the accident airplane was level at about 1,100 feet for about 2 minutes before the accident, and that, at the time the airplane turned toward the Hudson River, there were no apparent traffic conflicts that would have precluded the airplane from climbing into the class B airspace. Because there was no coordination between TEB and EWR controllers regarding the pilot's request to climb to 3,500 feet, the airplane could not expeditiously enter the class B airspace. Instead, the airplane continued toward the Hudson River class B exclusion area at about 1,100 feet. About 11:52:19, almost 4 minutes after departure, when the TEB local controller instructed the pilot to contact EWR ATC, the airplane was about 2 miles away from the point of collision with the helicopter.

Aircraft operating in the Hudson River class B exclusion area depend on CTAF reports to maintain traffic awareness. However, because the pilot of the accident airplane was in contact with TEB ATC awaiting further instructions and was then instructed to contact EWR, the pilot may not have been making and monitoring the CTAF position reports. Instead, the pilot likely expected to continue to receive flight-following services from ATC. Making and monitoring CTAF reports while remaining in contact with ATC would have required the pilot to be actively transmitting and receiving on two different radios at the same time, which is especially difficult in a busy ATC environment such as the New York area. Even if the pilot had attempted it, his monitoring of CTAF would likely have been hindered by his simultaneous monitoring of ATC communications. Consequently, it is likely that the pilot did not hear any transmissions from the accident helicopter, including the helicopter pilot's self-announcement that the other Liberty Helicopters pilot reported hearing. In addition, the pilot was not advised to use the CTAF as he entered the Hudson River class B exclusion area, nor were such advisories required.

Before departure, the pilot of the airplane had requested radar traffic advisories and was advised of "radar contact" by TEB after departure, indicating that, workload permitting, the service was being provided. According to FAA Order 7110.65, *Air Traffic Control*, providing traffic advisories to VFR aircraft is an additional service that, as the FAA order states, "is required when the work situation permits." After the initial post-departure traffic call, ATC did not advise the accident airplane pilot of potential conflicts with other aircraft ahead in the vicinity of the Hudson River class B exclusion area. Because the first radar target for the accident helicopter was detected about 11:52:27, the helicopter was not yet visible on radar when the TEB local controller issued the frequency change to the airplane's pilot. Therefore, before the frequency change, the TEB local controller could not have detected the impending conflict between the accident airplane and the accident helicopter or issued a warning to the airplane pilot about the accident helicopter. However, radar had detected other aircraft in the vicinity of the Hudson River class B exclusion area that were potential conflicts at that time. The TEB local controller did not advise the airplane pilot of the other traffic ahead. The EWR tower controller observed the existing traffic in the vicinity of the Hudson River class B exclusion area and called the TEB local controller to ask that he instruct the airplane pilot to turn toward the southwest to resolve the situation. The call may have overlapped the pilot's acknowledgment of the radio frequency change instruction from the TEB local controller. The TEB controller did not hear the EWR controller's instruction clearly and requested that it be repeated. The TEB controller then attempted to contact the airplane, but the pilot did not respond. The collision occurred about 1 minute after the frequency change instruction and 26 seconds after the TEB local controller's last attempt to contact the pilot.

Prior to the accident, there were no procedures or instructions directing controllers to prevent, where possible, aircraft from entering the Hudson River class B exclusion area while remaining in communication with ATC or to ensure, traffic permitting, that aircraft requesting class B clearances receive approval to climb before entering the Hudson River class B exclusion area. Effective communication on the CTAF is a fundamental component of the safety procedures established for VFR operations in the Hudson River class B exclusion area. The NTSB believes that New York area ATC facilities must account for the importance of CTAF communications and ensure that aircraft operating near the Hudson River class B exclusion area are either cleared into class B airspace before reaching the Hudson River class B exclusion area

or are directed to switch to the CTAF in time to engage in effective communications with other pilots operating in the Hudson River class B exclusion area. Further, if circumstances require that an aircraft in communication with ATC enters the Hudson River class B exclusion area, controllers should place a high priority on providing the pilot with timely traffic advisories and safety alerts, as required by FAA Order 7110.65, *Air Traffic Control*, because the pilot is less likely to be communicating on CTAF and receiving traffic information directly from other pilots.

On the day of the accident, the TEB tower was staffed with five controllers. At the time of the accident, there were two controllers in the tower cab: one controller was working the ground control, local control, and arrival radar positions and also acting as the controller in charge of the facility; a second controller was working the flight data and clearance delivery position. The two other controllers were on a break, and the frontline manager had left the facility temporarily on a personal errand about 11:45. The local controller initiated a telephone conversation unrelated to his work about 11:50:31, about 2 minutes after he cleared the accident airplane for takeoff. The conversation continued until 11:53:13.

NTSB Recommendations

Based on the data collected thus far in the investigation, on August 27, 2009, the Safety Board issued five safety recommendations to the Federal Aviation Administration:

Revise standard operating procedures for all air traffic control (ATC) facilities, including those at Teterboro airport, LaGuardia airport, and Newark Liberty International airport, adjoining the Hudson River class B exclusion area in the following ways:

- a) establish procedures for coordination among ATC facilities so that aircraft operating under visual flight rules and requesting a route that would require entry into class B airspace receive ATC clearance to enter the airspace as soon as traffic permits,
- b) require controllers to instruct pilots with whom they are communicating and whose flight will operate in the Hudson River class B exclusion area to switch from ATC communications to the common traffic advisory frequency (CTAF) and to self-announce before entering the area,
- c) add an advisory to the Automatic Terminal Information Service broadcast, reminding pilots of the need to use the CTAF while operating in the Hudson River class B exclusion area and to self-announce before entering the area, and
- d) in any situation where, despite the above procedures, controllers are in contact with an aircraft operating within or approaching the Hudson River class B exclusion area, ensure that the pilot is provided with traffic advisories and safety alerts at least until exiting the area. (A-09-82)

Brief all air traffic controllers and supervisors on the air traffic control (ATC) performance deficiencies evident in the circumstances of this accident and emphasize the requirement to be attentive and conscientious when performing ATC duties. (A-09-83)

Amend 14 *Code of Federal Regulations* Part 93 to establish a special flight rules area (SFRA) including the Hudson River class B exclusion area, the East River class B exclusion area, and the area surrounding Ellis Island and the Statue of Liberty; define operational procedures for use within the SFRA; and require that pilots complete specific training on the SFRA requirements before flight within the area. (A-09-84)

As part of the special flight rules area procedures requested in Safety Recommendation A-09-84, require vertical separation between helicopters and airplanes by requiring that helicopters operate at a lower altitude than airplanes do, thus minimizing the effect of performance differences between helicopters and airplanes on the ability of pilots to see and avoid other traffic. (A-09-85)

Conduct a review of all class B airspace to identify any other airspace configurations where specific pilot training and familiarization would improve safety, and, as appropriate, develop special flight rules areas and associated training for pilots operating within those areas. (A-09-86).

On September 2, 2009, the FAA announced plans to modify the airspace over the Hudson River. The NTSB will review the changes, once they are completed and published, and determine if they meet the intent of our recommendations.

Mr. Chairman, this concludes my presentation, and I would be pleased to answer any questions.