



U.S. Department of  
Transportation

Office of the Secretary  
of Transportation

The Inspector General

Office of Inspector General  
Washington, DC 20590

February 15, 2007

The Honorable Jesse Jackson, Jr.  
U.S. House of Representatives  
Washington, DC 20515

Dear Representative Jackson:

This is in response to your request that we obtain information on Chicago Midway Airport's operations, capacity, and runway safety areas. Your request was prompted by the December 8, 2005, Southwest Airlines accident in which a plane skidded off the end of a runway, killing 1 person and injuring 12. As discussed in meetings with your staff, we limited our review to areas that would not be directly addressed by the National Transportation Safety Board's (NTSB) investigation of the accident. This letter also includes answers to the specific questions in your request except those related to the causes of the accident, which we are deferring to NTSB (see Enclosure).

Overall, we found that (1) Midway Airport has sufficient capacity to safely handle its current level of aircraft operations and (2) the runways at Midway Airport did not have adequate runway safety areas; however, in September 2000, the Federal Aviation Administration (FAA) determined it was not practicable for Midway to achieve FAA's runway safety area standards. Since that time, changes to FAA guidance and recent technological advancements have made it possible for Midway officials to install engineered material arresting systems (EMAS)<sup>1</sup> at the ends of its commercial runways to address this issue.

The EMAS is an FAA-approved alternative to having unobstructed runway safety areas at the end of runways used for commercial aircraft. Midway airport officials are in the process of installing EMAS on both of its commercial runways. These steps should provide Midway with an extra measure of safety for preventing future runway overruns. Further details on these issues are provided in the following paragraphs.

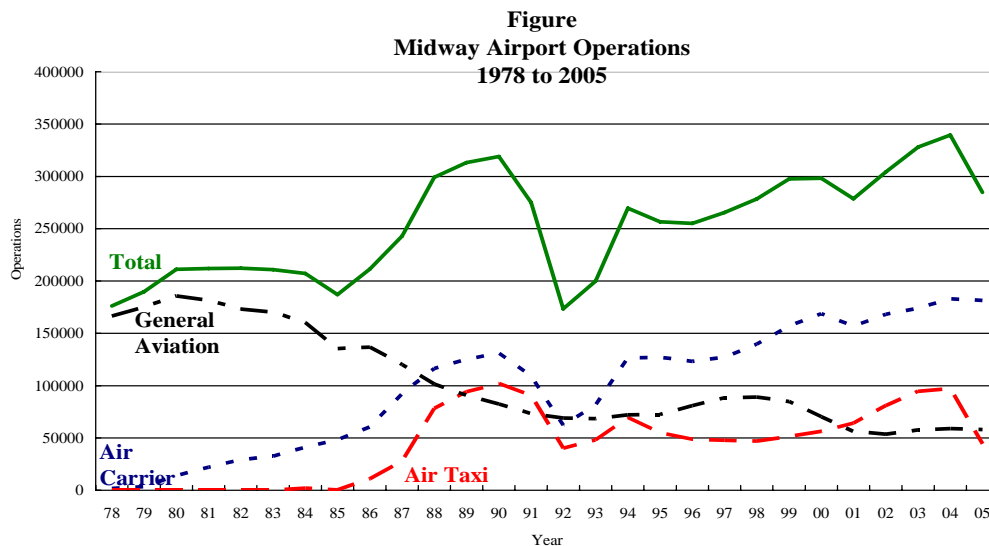
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<sup>1</sup> An EMAS uses lightweight, crushable, block-like concrete material to slow down and stop a speeding jet.

## Midway Airport Is Not Operating Over Capacity

According to the FAA's aviation system performance data, Midway Airport can handle approximately 1,600 operations per day, significantly more than the approximately 900 operations per day that it currently handles during its weekday peaks. An essential element for analyzing the operations capacity of an airport is FAA air traffic control's ability to accommodate the aircraft arrival and departure rates. The operations volume that air traffic control now handles is actually down from 2004, when the Midway tower controlled approximately 1,100 operations per day due to the presence of ATA and Chicago Express Airlines at the airport.

The number of operations at Midway Airport has fluctuated significantly over time, as shown in the Figure below. While operations have trended upward since the early 1990s, data from 2004 to 2005 show a 16.2-percent decline in operations. In fact, there were fewer operations at Midway in 2005 than in any of the previous 3 years.



Source: Midway Airport

Based on our analysis of current and historical operations data, air traffic control data, and estimates regarding capacity, we have concluded that Midway Airport has sufficient capacity to handle its current level of aircraft operations. Therefore, FAA air traffic controllers and airport operations managers can safely accommodate planes landing at Midway.

While airport operations do not appear to be a problem area, the December 2005 accident did highlight the fact that Midway Airport, like many other U.S. airports, does not have adequate runway safety areas.

## **FAA Determined That It Was Not Practicable for Chicago's Midway Airport To Comply With Runway Safety Area Standards**

The runways used by commercial passenger aircraft at Midway Airport are 2 of the approximately 300 commercial runways nationwide that do not have runway safety areas that substantively meet FAA airport design standards. These standards, implemented by FAA in 1988, require that runways used by commercial aircraft have unobstructed safety areas to reduce personal injuries and damage in the event of aircraft overruns, undershoots (touching down too soon), and veer-offs. A standard runway safety area is 1,000 feet long and 500 feet wide. FAA regulations do not require runways that were constructed before December 1987, like the ones at Midway Airport, to comply with the runway safety area standards if it is not practicable to bring them into compliance.

As provided for in FAA guidance,<sup>2</sup> in September 2000, FAA's Chicago Airports District Office officials determined that it was not practicable to bring Midway's runway safety areas completely up to standards. Realigning roadways to extend the runway safety areas would result in significant impacts to the surrounding neighborhoods and significant costs. At that time, FAA requested that Midway Airport perform a detailed study to analyze the practicality of runway safety area alternatives and their effect on airport operations.

The resulting airport consultant's report, issued in May 2004,<sup>3</sup> estimated that full compliance with runway safety area requirements would involve moving 80 to 130 commercial buildings and 350 to 700 residential buildings. Subsequently, the City of Chicago estimated that property acquisition costs alone for the project would have totaled between \$200 and \$300 million. The consultant's report also concluded that none of the alternatives for improving Midway's runway safety areas were practicable, including installation of a standard EMAS. At the time, an EMAS was not an option for Midway because the limited area beyond the runway ends could not accommodate a standard EMAS.

## **Midway Airport Is Installing a Non-Standard EMAS**

Recent changes to FAA guidance and improved technology allow the airport to pursue installation of a non-standard EMAS. Where FAA determines that it is not practicable for an airport to install a standard EMAS, a non-standard EMAS is an alternative that would provide the airport with an added measure of safety. According to FAA, 17 of the 22 EMAS currently in place are non-standard. Midway Airport had not installed an EMAS previously because it lacked the space to install a standard EMAS that was set back 75 feet from the end of the runway and could stop an aircraft leaving the runway at 70 knots. FAA's September 30, 2005, guidance clarified the acceptability of non-standard EMAS alternatives that stop an aircraft

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<sup>2</sup> FAA Order 5200.8, *Runway Safety Area Program* (1999).

<sup>3</sup> Chicago Midway International Airport Runway Safety Area Practicability Study, May 18, 2004.

leaving the runway at only 40 knots. In addition, researchers have developed a new coating that will better protect the EMAS from destruction caused by jet blast. This will allow the distance that the EMAS is set back from the runway to be only 35 feet instead of 75 feet. Prior to the Midway accident, only one airport had the shorter 35-foot setback that Midway needs for its systems. Subsequently, 2 more airports have added EMAS with setbacks of 35 feet or less.

Midway is in the process of constructing EMAS at the ends of both of its commercial aircraft runways. The project is estimated to cost \$40 million and is being done in phases. FAA awarded the Chicago Department of Aviation \$15 million in Federal funds in June 2006 for Phase 1 of the project. Construction is nearly complete on the runway end where the Southwest accident occurred. The project has been shut down for the winter but is expected to be complete this spring. The airport also plans to install EMAS at the remaining ends of the commercial runways by the end of 2007.

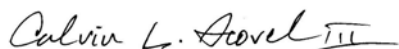
### **All Airports Must Comply With Runway Safety Area Standards by 2015**

The 2006 Transportation Appropriations Act<sup>4</sup> mandated that all airports comply with FAA regulatory requirements for runway safety areas by 2015. Airports can comply with the mandate by constructing adequate runway safety areas or installing EMAS to the extent practicable. EMAS have already been installed on 22 runways nationwide; including LaGuardia, John F. Kennedy, and Fort Lauderdale International Airports; and have arrested at least 4 overruns to date.

The Act also required that FAA report to Congress annually on the Agency's progress toward improving runway safety areas. FAA is currently in the process of finalizing its first annual report.

If I can answer any questions or be of further assistance in this or any other matter, please feel free to contact me at (202) 366-1959 or my Deputy, Todd J. Zinser, at (202) 366-6767.

Sincerely,



Calvin L. Scovel III  
Inspector General

Enclosure

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<sup>4</sup> Transportation, Treasury, Housing and Urban Development, the Judiciary, the District of Columbia, and Independent Agencies Appropriations Act, Public Law 109-115.

## **ANSWERS TO REPRESENTATIVE JACKSON'S QUESTIONS**

### **1. How many operations was Midway Airport originally built to handle?**

The original design plans for Midway Airport were not available for comparison with current plans and operations. According to the Chicago Department of Aviation's Assistant Commissioner for Aviation Planning and Real Estate, either the plan never existed or it has been lost over time. He said it is likely that the airport "just evolved." Midway Airport provided operations data from the 1920s, which were compiled from city council meetings, but airport officials were not sure of the data's accuracy. According to these data, operations in the 1950s exceeded current operations.

### **2. How many operations does Midway Airport currently handle?**

According to FAA statistics, the airport conducted just over 290,000 operations in 2005, down from the previous 3 years (2002 to 2004). Current operations are far below Midway's historical high of 431,400 operations in 1959, when it was the busiest airport in the world. By 1962, however, Midway operations dropped to just over 100,000 with the opening of O'Hare International Airport and its longer runways, which more easily accommodated jet aircraft.

### **3. How many operations over the original plan and design does Midway Airport currently handle?**

As stated in Question 1, original design plans are not available.

### **4. What was the original planned annual rate of growth of operations at Midway Airport?**

Original planned growth data is not available according to Chicago Department of Aviation officials.

### **5. What is the current annual growth rate compared to the original plan?**

Our analysis of FAA operations data showed an average annual growth of 1.8 percent since 1978. However, operations at Midway have been very erratic over time (see Figure on page 2 of the letter). For example, from 1985 until 1990, total Midway operations grew at an average rate of 11 percent per year, as air carrier and especially air taxi operations grew significantly and general aviation operations continued to weaken.

From 1990 to 1992, operations declined sharply—this period marked the start of the Gulf War, the associated spike in jet fuel prices, and the dissolution of Midway Airlines. Midway's fortunes reversed once again with the longest period of sustained growth from 1992 until 2004. During this 12-year time period, operations grew, on average, 5.8 percent per year. Most recently, from

2004 to 2005, Midway's operations again showed a marked decline as air taxi operations plummeted. This decrease in operations coincides with the spike in oil prices, in excess of \$50 per barrel.

**6. Were any safety rules stretched or compromised by the U.S. Department of Transportation (DOT), the FAA, or the City of Chicago's Department of Aviation in addressing the capacity problem at Midway Airport?**

Based on our analysis of current and historical operations data, air traffic control data, and estimates regarding capacity, we have concluded that Midway Airport has sufficient capacity to handle its current level of aircraft operations. Therefore, there is no need for FAA air traffic controllers or airport operations managers to compromise or stretch safety rules to accommodate more aircraft.

We also reviewed Midway Airport's airport certification safety inspections for the past 5 years, which found the airport to be in compliance with FAA regulations. The June 2005 FAA inspection noted that Midway was an "excellent operation" and that it had no violations.

**7. Will the U.S. DOT Inspector General and the National Transportation Safety Board seek any and all documents from the regional FAA office and the Chicago Department of Aviation as part of its inquiry that justified extending the operations from the maximum allowable under the original design to the present number of operations?**

As noted previously, the original design plans and planned growth data are not available according to Chicago Department of Aviation officials. According to FAA's Washington Office of Airports, improvements made to the airport over the years enable Midway to operate safely with the current air traffic activity. In addition, we met with and collected documents from officials at the regional FAA office and Midway Airport. Based on our meetings and review of documents, we concluded that the airport has sufficient capacity to handle its current level of aircraft operations.

**8. What agency—the U.S. Department of Transportation, the Federal Aviation Administration, or the City of Chicago's Department of Aviation—granted a "waiver" to conduct landings at Midway with short clear zones at the end of runways? Will the Inspector General seek any and all documents related to the granting of this waiver?**

There is no specific waiver required for landings at Midway with respect to the short runway safety areas (short clear zones). Instead, airports like Midway are exempted by the regulations. FAA regulations do not require runways constructed before December 1987 to comply with the runway safety area design criteria if it is not practicable.

In October 1999, FAA established its Runway Safety Area Program and required that FAA regional and/or district airport offices perform periodic analyses to determine whether runway safety areas meet current FAA design standards and, if not, if they can be improved to meet standards. In September 2000, FAA concluded that it was not practicable for Midway to achieve runway safety area standards. However, with recent technological advancements, it is now practicable for Midway to install engineered material arresting systems (EMAS) at the end of its runways. Midway is in the process of constructing EMAS at the ends of both of its commercial aircraft runways. The project should be completed by the end of 2007.

The remaining questions in your letter all relate to safety issues regarding the Southwest accident and are therefore part of NTSB's ongoing accident review. We are deferring these questions to NTSB.

- **Since 80 percent of the delays at Midway and O'Hare Airports are weather related, has the U.S. DOT, the FAA, or the City of Chicago's Aviation Department taken any shortcuts beyond the "waiver" mentioned above in order to land more planes at Midway?**
- **Did the officials responsible for operations at Midway Airport allow sufficient time between operations to clear the runways for planes to land safely under these weather conditions?**
- **Did constraints on the local air space have any effect in determining which runway should be used in landing Southwest Flight 1248?**
- **Did constraints within the local air space have any impact or casual effect with respect to the accident?**
- **Could the accident have been avoided if the airplane had landed on a different runway?**

The following page contains the textual version of the chart found in this document. This page was not part of the original document but has been added here to accommodate assistive technology.



**Letter to Representative Jackson on Chicago Midway Airport Operations,  
Capacity, and Runway Safety Areas**

**Section 508 Compliant Presentation**

**Figure. Midway Airport Operations 1978 to 2005**

<b>Year</b>	<b>Air Carrier</b>	<b>Air Taxi</b>	<b>General Aviation</b>	<b>Total</b>
1978	1,687	0	166,444	176,049
1979	3,360	0	175,068	189,698
1980	13,947	0	185,845	211,177
1981	22,036	0	181,518	212,028
1982	29,175	0	173,165	212,343
1983	32,457	174	170,206	210,833
1984	41,199	2,012	160,366	207,174
1985	48,394	368	135,424	186,987
1986	60,644	10,974	136,870	211,360
1987	92,279	27,891	120,144	242,964
1988	116,287	78,269	101,525	299,012
1989	125,088	94,079	90,707	313,143
1990	131,091	102,143	82,379	318,999
1991	109,252	90,626	73,276	275,186
1992	62,153	40,125	68,939	173,489
1993	81,480	48,031	68,407	199,830
1994	126,663	69,459	72,075	269,652
1995	127,234	55,000	72,332	256,572
1996	123,295	48,589	80,821	255,045
1997	127,294	47,832	88,304	265,543
1998	139,678	47,059	89,047	278,517
1999	157,009	51,427	84,822	297,619
2000	168,747	56,477	70,374	298,115
2001	156,918	64,136	56,207	278,734
2002	168,141	81,078	53,599	304,336
2003	174,086	94,607	57,792	328,025
2004	183,006	97,138	58,876	339,508
2005	181,390	44,369	57,988	284,618

Source: Midway Airport

The above table shows that while operations have trended upward since the early 1990s, data from 2004 to 2005 show a 16.2 percent decline in operations. There were fewer operations at Midway in 2005 than any of the previous 3 years.