



**U.S. Department of
Transportation**

Office of the Secretary
of Transportation

The Inspector General

Office of Inspector General
Washington, DC 20590

April 9, 2008

The Honorable Frank R. Lautenberg
United States Senate
Washington, DC 20510

Dear Senator Lautenberg:

Thank you for your letter of November 6, 2007, expressing your concerns about reports of increased minimum and emergency fuel declarations¹ on flights into the Newark Liberty International Airport (Newark Liberty). In response to your request that we review this matter, we analyzed Federal Aviation Administration (FAA) air traffic flight records and field office inspection records. We also met with FAA and airline officials and reviewed a sample of airline fuel data. We briefed your staff on the results of our review on February 12, 2008.

In establishing aircraft fuel quantities, FAA requires airlines to consider unforeseen events that pilots might encounter, such as weather, unplanned traffic delays, or other operational events beyond the control of the aircrew. Each aircraft should have enough fuel to fly to the planned destination or to an alternate airport if it is not possible to reach the planned destination. Aircraft should also carry additional fuel for 45 minutes of flight beyond the alternate airport.

We found that minimum and emergency fuel declarations had increased on flights into the Newark area; however, there were no instances where aircraft landed with fuel levels below those required by FAA (based on the 20 flights we reviewed). The increases were attributable to several factors, including differences in pilot and controller interpretation of minimum and emergency fuel declarations and air carrier use of smaller planes on international routes. FAA has begun reviewing these declarations and clarifying its guidelines for minimum and emergency fuel declarations. It is too soon, however, to determine the effectiveness of FAA's actions.

¹ A minimum fuel declaration alerts controllers that flight crews will need to have little or no delay in landing upon reaching their destination. Emergency fuel declarations alert controllers that flight crews need priority in landing due to dangerously low fuel quantities.

Minimum and Emergency Fuel Declarations Have Increased for Flights Into Newark Liberty International Airport

The overall results of our review are as follows:

- A breakdown occurred with the incident reporting process and with communication between FAA's Flight Standards and Air Traffic Control Divisions. FAA requires air traffic controllers to record emergencies on accident/incident forms, which are then submitted to the appropriate Flight Standards District Office for review. Although not required to do so, air traffic personnel at the New York Terminal Radar Approach Control facility (TRACON) filed accident/incident reports for minimum fuel declarations because of their frequent occurrence. The TRACON submitted these reports to the local Flight Standards District Office for review. However, we found that FAA Flight Standards inspectors did not investigate 11 of 12 incident reports filed by Air Traffic in 2007 regarding minimum and emergency fuel declarations.
- FAA does not require controllers to record minimum fuel declarations or file incident reports when they occur.
- The majority (66 percent) of minimum and emergency fuel declarations at Newark Liberty airport occurred on international routes. Continental Airlines accounted for 96 of the 151 minimum and emergency fuel declarations (64 percent).
- Our review of 20 Continental Airlines flights into Newark Liberty, for which pilots declared either minimum or emergency fuel, disclosed that aircraft landed with an average of 64 minutes of fuel remaining and never landed with amounts below the required 45-minute fuel reserve level.

Several Contributing Factors Could Be Causing the Increase in Minimum and Emergency Fuel Declarations

Several factors may have contributed to the increase in minimum and emergency fuel declarations for flights into Newark Liberty: air carrier fuel-saving measures; aircraft type used on international flights; and unusually strong headwinds, especially on transatlantic flights from Europe. In addition, we found that there is confusion among pilots and controllers regarding the use of the terms "minimum" and "emergency" fuel.

- **Fuel-Saving Measures:** We were concerned that fuel-saving measures may have contributed to the low fuel declarations because of two pilot bulletins issued by Continental Airlines in 2007. In a February 2007 bulletin, Continental Airlines officials expressed concerns with the higher-than-expected number of fuel stops pilots were making due to unusually strong headwinds on flights from Europe into Newark Liberty. The bulletin stated that it was the airline's strong desire to

reduce the number of 757 fuel stops. In an October 2007 bulletin, Continental Airlines stated that there continued to be an opportunity to reduce unwarranted crew-initiated fuel additions. This bulletin further stated that adding fuel indiscriminately without critical thinking ultimately reduces profit sharing and possibly pension funding.

We were concerned that these types of bulletins might put pressure on pilots to either not stop for fuel when needed or to carry insufficient amounts of fuel. When we presented these bulletins to Continental Airlines representatives, they stated that it was not their intention to place efficiency before safety or to negatively influence fuel decisions. According to these officials, the February 2007 bulletin was intended to provide information and outline various steps underway to improve flight performance during abnormally strong, often unexpected transatlantic headwinds. They explained that the October 2007 bulletin was drafted to draw attention to the fact that excessive levels of additional fuel are not necessarily safety enhancements.

- **Aircraft Type:** Air traffic controllers and Continental Airlines' Air Line Pilots Association Safety Chairman expressed concerns regarding the use of Boeing 757s on long, overseas routes. They were concerned that use of this aircraft type and flights into congested areas, like the northeastern United States, were contributing to the increased number of minimum fuel declarations. For example, on flights from Barcelona to Newark, a route that Continental Airlines has served since May 2006, air traffic controllers reported that pilots were declaring minimum fuel on a regular basis. Our analysis disclosed that pilots for this flight declared minimum fuel 23 times during 2007, the highest number of any individual flight that we reviewed.
- **Use of Fuel Terminology:** We determined that there were different interpretations of the terms "minimum" and "emergency" fuel. For example, air traffic controllers have declared emergencies when pilots only meant to advise controllers that they could not accept any undue delay. However, controllers told us that if pilots do not clearly communicate their fuel status, they will err on the side of caution and give them priority handling.

FAA Has Begun Addressing the Increasing Emergency and Minimum Fuel Declarations Into Newark Liberty and Gathering Nationwide Data

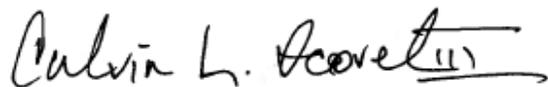
In February 2008, we briefed FAA on the results of our review. We determined that FAA had conducted a concurrent congressionally requested review of data related to increases in minimum and emergency fuel declarations. FAA concluded that there were no violations of the regulatory requirements for fuel planning or unsafe conditions. However, FAA did initiate actions to address issues identified during its review, which were similar to those we identified. For example, in February 2008, FAA issued two bulletins to all air carriers to provide a common reference for pilots and air traffic controllers on the terms “minimum” and “emergency” fuel.

FAA’s review found, as ours did, that there may be confusion among flight crew members and air traffic controllers about the difference between minimum and emergency fuel declarations. FAA also began closely reviewing minimum and emergency fuel declarations for aircraft operating into Newark Liberty and working with airlines that operate into that airport to review their dispatch and release records on flights from Europe. Finally, FAA began working with airlines, not only at Newark Liberty, but throughout the country, to gather fuel management information from various sources.

According to FAA, the information gathered will allow it to thoroughly review this issue and take appropriate action. We will continue to monitor FAA’s actions to ensure they fully address the problems that we identified at Newark Liberty. The results of our review are detailed in the enclosure to this letter.

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, Ted Alves, at 202-366-6767.

Sincerely,

A handwritten signature in black ink that reads "Calvin L. Scovel III". The signature is written in a cursive style with a horizontal line at the end.

Calvin L. Scovel III
Inspector General

Enclosure



Emergency and Minimum Fuel Declarations on Flights Into Newark Liberty International Airport



Office of the Inspector General
Congressional Briefing Provided to
Senator Lautenberg
on
February 12, 2008



Senator Lautenberg's Request

- **On November 6, 2007, the Senator requested that we review emergency and minimum fuel declarations by pilots on flights into the Newark Liberty International Airport (Newark Liberty). Specifically, the Senator expressed concerns that:**
 - The number of emergency and minimum fuel declarations on flights into Newark Liberty had greatly increased over the last year.
 - A large number of emergency and minimum fuel declarations could also be occurring at other airports within the New Jersey-New York region.
 - The large number of emergency and minimum fuel declarations could be a safety concern to the flying public.



Summary of Conclusions

- The number of emergency and minimum fuel declarations at Newark Liberty increased from 44 in 2005 to 151 in 2007. A similar trend did not occur at John F. Kennedy and LaGuardia airports.
- The majority (66 percent) of minimum and emergency fuel declarations occurred on international routes. In 2007, Continental Airlines had 96 (64 percent) of the 151 minimum and emergency fuel declarations.
- Neither the Federal Aviation Administration (FAA) nor the air carrier track minimum fuel incidents; therefore, they had not identified this trend. Continental Airlines monitors fuel amounts upon landing and has not identified any adverse safety trends.
- Even if aircraft are landing with sufficient fuel amounts, as Continental Airlines claims, the increased number of minimum fuel declarations creates a burden on the air traffic system and an extra distraction for controllers in an already busy air traffic environment.



Summary of Conclusions

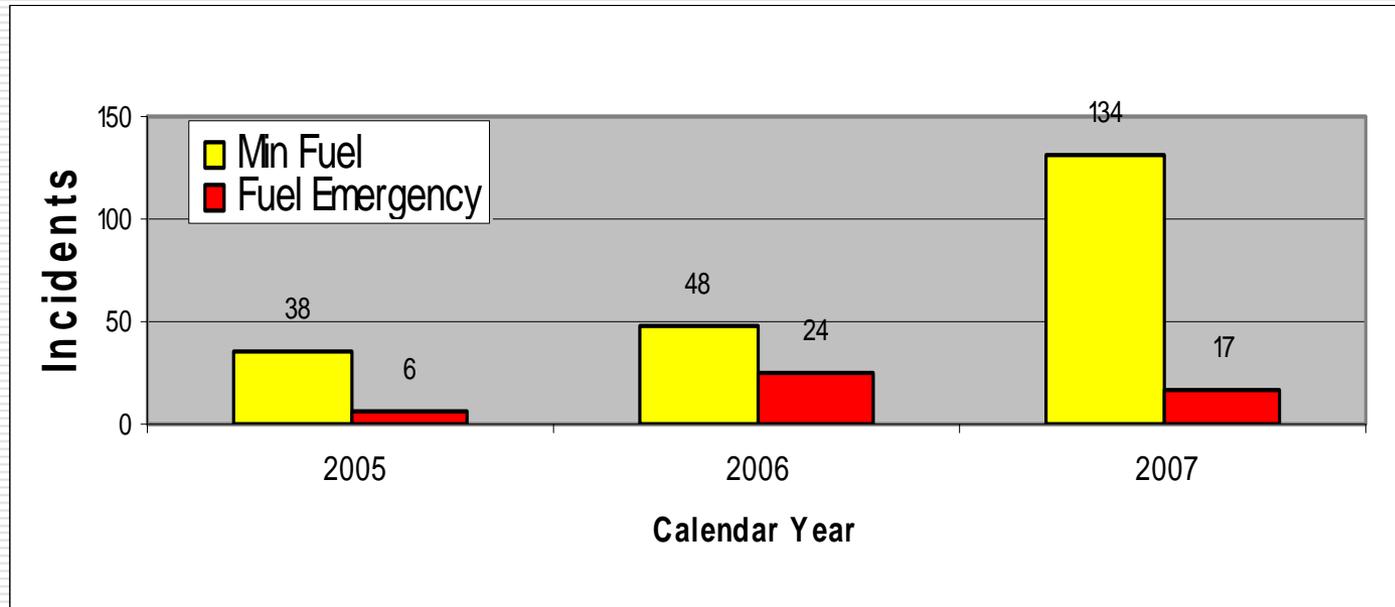
- We identified several factors that may have contributed to the increase in minimum and emergency fuel declarations for flights into Newark Liberty: air carrier fuel-saving measures; aircraft type used on international flights; and unusually strong headwinds, especially on transatlantic flights from Europe.

 - A breakdown occurred with the incident reporting process and with communication between FAA's Flight Standards and Air Traffic Control Divisions. As a result, FAA Flight Standards inspectors did not investigate 11 of 12 incident reports filed by Air Traffic in 2007 regarding minimum and emergency fuel declarations.

 - There is some confusion between pilots and controllers regarding the use of the terms "minimum" and "emergency" fuel.
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Emergency and Minimum Fuel Declarations Have Increased Since Calendar Year 2005 on Flights Into Newark Liberty



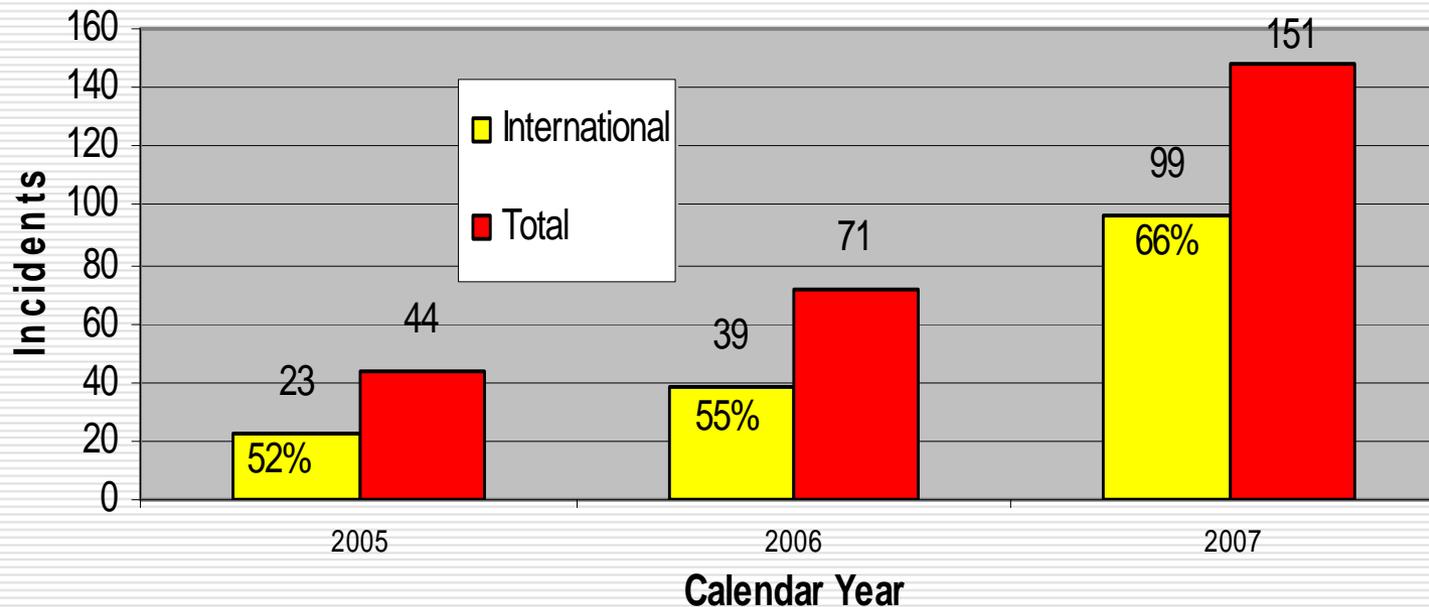
- ❑ Minimum fuel incidents have increased from 38 in 2005 to 134 in 2007.*
- ❑ Emergency fuel declarations increased from 6 in 2005 to 17 in 2007 and were at a high of 24 in 2006.

*The Newark Tower Manager noticed an increase in minimum fuel incidents in 2007 and requested that his supervisors make sure to record minimum fuel declarations.



The Majority of Minimum and Emergency Fuel Declarations Occurred on International Flights Into Newark Liberty

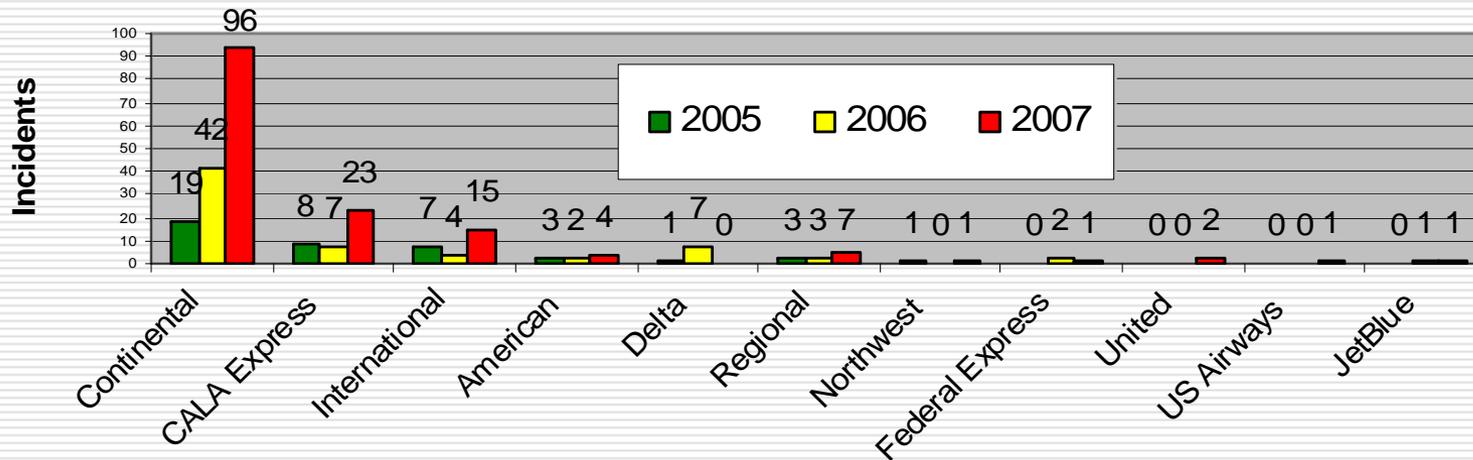
Percent of International vs. Total Flights into Newark with Minimum/Emergency Fuel Declarations





* Continental Airlines Had the Most Minimum/Emergency Fuel Declarations Into Newark Liberty

Incidents of Minimum and Emergency Fuel Declarations
by Air Carrier at Newark



Note: Could not identify the air carrier for four incidents in 2006 and two incidents in 2005
*(Continental flights account for 70 percent of all flights into Newark Liberty)



Tower Managers for John F. Kennedy (JFK) and LaGuardia Airports Indicated Minimum and Emergency Fuel Declarations Had Not Increased

- We asked the Airport Tower Managers for JFK and LaGuardia whether minimum and emergency fuel declarations had increased over the last 3 years.
 - The Kennedy Airport Tower Manager stated there had been no increases in fuel incidents from the beginning of 2005 through the end of 2007, with only a few incidents occurring over that period.
 - The LaGuardia Tower Manager stated there was no concern over minimum and emergency fuel declarations at his tower because there had been only a few incidents from 2005 through 2007.
 - The New York Terminal Radar Approach Control (TRACON) facility's Daily Records of Facility Operation we reviewed confirmed the low and stable numbers that the Tower Managers reported. In 2007, there were only 15 minimum and emergency declarations recorded for JFK and 13 for LaGuardia.
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FAA Does Not Track Minimum Fuel Declarations and Has Not Adequately Investigated Incident Reports From Air Traffic

- ❑ FAA does not require controllers to record minimum fuel declarations or file incident reports when they occur.
- ❑ Although not required to do so, the Newark Tower Manager requested supervisors to make sure they recorded minimum fuel declarations because of the apparent increase. In addition, the New York TRACON filed seven incident reports from January to July 2007 because of concerns regarding the number of minimum fuel declarations that were occurring.
- ❑ TRACON controllers were concerned that Continental Airlines' aircraft appeared to declare have made minimum fuel a standard practice on flights arriving from Europe.



FAA Does Not Track Minimum Fuel Declarations and Has Not Adequately Investigated Incident Reports From Air Traffic (Continued)

- In fact, Air Traffic reported that pilots on one flight from Barcelona were declaring minimum fuel on a regular basis. Our analysis showed that pilots of this flight declared minimum fuel 23 times during 2007.

- Neither the FAA Teterboro Flight Standards District Office (FSDO) personnel responsible for conducting investigations of these minimum fuel incident reports nor the FAA Certificate Management Office (CMO) responsible for oversight of Continental investigated these reports. The FSDO personnel told us they never received the reports, and CMO managers told us they were not aware of the reports.



FAA Does Not Track Minimum Fuel Declarations and Has Not Adequately Investigated Incident Reports From Air Traffic (Continued)

- Additionally, the Teterboro FSDO only investigated 3 of the 16 *emergency* fuel declarations that occurred during 2007. None of these three were for Continental Airlines. For these three—United, Thai Airways International, and South African Airways—FAA concluded that no violations occurred because the aircraft dispatch release showed adequate planned fuel.

- The Teterboro FSDO did investigate four Continental Airlines fuel emergencies in 2006, and concluded there was no violation of the regulations. In an August 2006 inspection record, the investigating inspector commented that the frequency of these incidents gives reason for concern that Continental is using fuel declarations as a “flight planning tool” to simply reach a destination rather than going to an alternate airport. The inspector discussed this issue with the Newark Chief Pilots Office and warned them that he would issue a violation if this situation continued.



Several Contributing Factors Could Be Causing the Increase in Minimum and Emergency Fuel Declarations for Flights Into Newark Liberty

- These factors include air carrier fuel saving measures; aircraft type used on international flights; and unusually strong headwinds, especially on transatlantic flights from Europe, may be causing pilots to declare minimum or emergency fuel.
 - FAA approval of a 2004 change in Continental Airline's operations specifications lowered requirements for en route fuel reserves from 10 percent to 5 percent for international flights.
 - Continental Airlines is closely monitoring its fuel levels to reduce fuel consumption due to the high price of fuel. The air carrier issued two fuel-related pilot bulletins during 2007, which may have put pressure on pilots to declare minimum fuel rather than stopping for fuel or diverting to an alternate airport.
 - **Continental Airlines' February 2007 bulletin stated:** Deployment of the Boeing 757 to Europe is a key part of Continental's international growth strategy. In 2006, flights on two segments made a higher than expected number of fuel stops because of unusually strong headwinds. Fuel stops from Europe result in lengthy arrival delays into Newark. *It is our strong desire to reduce the number of 757 fuel stops.* To meet this goal, Continental has taken several actions, such as holding seats, and using the most fuel efficient 757 aircraft.



Contributing Factors (Continued)

- **Continental Airlines' October 2007 bulletin stated:** There continues to be an opportunity to improve on reducing unwarranted crew-initiated addition of fuel. Adding fuel indiscriminately without critical thinking ultimately reduces profit sharing and possibly pension funding.

- Other factors contributing to the increase in minimum and emergency declarations include air traffic delays caused by extended maneuvering in congested airspace, unplanned ATC assigned altitudes, marginal ceilings, and delayed landings. In addition, dispatching the aircraft with insufficient fuel amounts could be causing the problem; however, according to FAA, the air carrier is properly dispatching aircraft with the fuel amounts required by regulation.

- According to the Continental Air Line Pilots Association Safety Chairman, using the 757 aircraft on long overseas routes and flying into congested areas, such as the northeastern United States, is contributing to minimum fuel declarations.

- The Continental CMO inspector responsible for the 757 fleet indicated some concern with using that aircraft type on long, overseas flights because of its limited range, even with full tanks.



Perspectives from Continental Airlines and Local FAA Certificate Management Office

- There is no pilot reporting requirement for minimum fuel declarations, only emergency declarations. Therefore, neither Continental Airlines nor the local FAA CMO track minimum fuel declarations.
- Continental Airlines has a monthly process to review fuel amounts, and neither Continental Airlines nor the local FAA CMO have noticed any safety trends overall or specific flights with repeat problems.
- According to the carrier, it is getting more proficient in fuel planning given that, with its fuel efficiency program, it has seen a 9-percent drop in fuel use from 2002 through 2007.
- According to Continental Airlines, its statistics show that, on average, Continental Airlines flights arrive with 1 hour and 30 minutes of fuel remaining.
- Carrier officials were also concerned that there are different interpretations of the terms "minimum" and "emergency" fuel and that controllers often declare an emergency when the pilot did not intend for it to be an emergency. Air Traffic officials acknowledged that this could be happening.



FAA Headquarters Is Conducting a Parallel Review of Minimum and Emergency Fuel Declarations

- In response to a November 2007 request from Senator Robert Menendez, FAA is also examining the increase in minimum and emergency fuel declarations.

- FAA's Office of Aviation Safety Analytical Services (ASA-1) has been analyzing air traffic records and has come to conclusions similar to ours: there has been an increase in minimum and emergency declarations for flights into Newark, international flights represent the greatest percentage, and the Boeing 757 aircraft is the type of aircraft with the most declarations.

- FAA issued a response letter to Senator Menendez on February 7, 2008. FAA reported that, thus far, the Agency has not identified an unsafe condition. However, because of the increase in fuel declarations, FAA plans to conduct focused surveillance at Newark and review fuel management practices throughout the country. In addition, FAA has issued clarifying guidance on the proper use and meaning of minimum and emergency fuel.

- We will continue to monitor the results of FAA's review.



Appendix A: Scope and Methodology

To address your concerns, we:

- ❑ Analyzed air traffic records for Newark Liberty to determine the number of emergency and minimum fuel declarations that occurred between January 1, 2005, and December 15, 2007.
- ❑ Reviewed FAA Flight Standards inspection records for 2005 through 2007 to determine the number of incidents investigated and conclusions reached.
- ❑ Met with personnel at Newark Liberty Tower, Teterboro FSDO and New York TRACON, including National Air Traffic Controllers Association representatives. We also interviewed officials at Continental Airlines, and the Continental Airlines CMO.
- ❑ Held a teleconference with Garden City FSDO, Continental Airlines CMO, Tower Managers at LaGuardia and JFK airports, Air Line Pilots Association International, Continental Airlines, and the National Aeronautical and Space Administration Ames Research Center.



Appendix B: Background

FAA has set minimum fuel requirements for commercial air carrier flights

- Generally, Federal Aviation Regulation (FAR) 121.639 directs that a commercial carrier aircraft carry enough fuel to fly to the point of intended landing, fly to an alternate airport, and then fly for 45 minutes under normal cruise power.
 - FARs 121.641 through 121.647 allow variations for more or less fuel to be carried based on weather forecasts at destination or the type of flight plan filed. For example, flights under Visual Flight Rules require less fuel to be carried than those under Instrument Flight Rules.
 - These rules are intended to add a margin of safety in case there are any unforeseen circumstances that arise, such as a closed runway due to an emergency landing, weather severity beyond what was initially forecasted, or unexpected air traffic delays.
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Appendix B: Background (Continued)

Controllers are required to provide priority handling for emergency but not minimum fuel declarations.

- **Emergency Fuel:** If at any time, the remaining usable fuel supply suggests the need for traffic priority to ensure a safe landing, the pilot should declare an *emergency* and report fuel remaining in minutes.

- **Minimum Fuel:** Use of the term "*minimum fuel*" indicates recognition by a pilot that the fuel supply has reached a state whereupon reaching destination, little or no delay can be accepted. This is not an emergency situation, but merely an advisory that indicates an emergency situation is possible should any undue delay occur. A minimum fuel advisory does not imply a need for traffic priority.



Appendix B: Background (Continued)

Controllers are required to provide priority handling for emergency, but not minimum fuel declarations.

- However, under FAA Order 7110.65R, if controllers are in doubt that a situation constitutes an emergency or potential emergency they have the authority to declare emergencies. Personnel at the New York TRACON told us that they are especially sensitive to fuel declarations because of the January 25, 1990, crash of Avianca flight 52 scheduled for arrival into JFK.

 - Controllers did not realize Avianca Flight 52 was desperately low on fuel until it was too late. The pilot never declared a fuel emergency to air traffic control and the flight crashed, killing 73 people.

 - Controllers are required to record emergency fuel declarations, but not minimum fuel declarations.
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The following pages contain textual versions of the graphs and charts contained in this document. These pages were not a part of the original document but have been added here to accommodate assistive technology.

**Emergency and Minimum Fuel Declarations on Flights Into Newark Liberty
International Airport
Office of the Inspector General Briefing Provided to Senator Lautenberg on
February 12, 2008**

Section 508 Compliant Presentation

**Slide 5: Emergency and Minimum Fuel Declarations Have Increased Since
Calendar Year 2005 on Flights Into Newark Liberty**

Minimum Fuel Declarations:

- In 2005, the number of minimum fuel declarations was 38.
- In 2006, the number of minimum fuel declarations was 48.
- In 2007, the number of minimum fuel declarations was 134.

Emergency Fuel Declarations:

- In 2005, the number of emergency fuel declarations was 6.
- In 2006, the number of emergency fuel declarations was 24.
- In 2007, the number of emergency fuel declarations was 17.

**Slide 6: The Majority of Minimum and Emergency Fuel Declarations Occurred on
International Flights Into Newark Liberty**

Figure: Percent of International versus Total Flights into Newark with
Minimum/Emergency Fuel Declarations

- In 2005, the percent of international flights into Newark with minimum or emergency fuel declarations was 23. This represents 52 percent of the total 44 flights into Newark.
- In 2006, the percent of international flights into Newark with minimum or emergency fuel declarations was 39. This represents 55 percent of the total 71 flights into Newark.
- In 2007, the percent of international flights into Newark with minimum or emergency fuel declarations was 99. This represents 66 percent of the total 151 flights into Newark.

**Slide 7: Continental Airlines Had the Most Minimum/Emergency Fuel Declarations
Into Newark Liberty** (Note 1: Could not identify the air carrier for four incidents in
2006 and two incidents in 2005. Note 2: Continental flights account for 70 percent of all
flights into Newark Liberty.)

Figure: Incidents of Minimum and Emergency Fuel Declarations by Air Carrier at Newark

- Continental had 19 declarations in 2005, 42 in 2006, and 96 in 2007.
- CALA Express had 8 declarations in 2005, 7 in 2006, and 23 in 2007.
- International had 7 declarations in 2005, 4 in 2006, and 15 in 2007.
- American had 3 declarations in 2005, 2 in 2006, and 4 in 2007.
- Delta had 1 declaration in 2005, 7 in 2006, and 0 in 2007.
- Regional had 3 declarations in 2005, 3 in 2006, and 7 in 2007.
- Northwest had 1 declaration in 2005, 0 in 2006, and 1 in 2007.
- Federal Express had 0 declarations in 2005, 2 in 2006, and 1 in 2007.
- United had 0 declarations in 2005, 0 in 2006, and 2 in 2007.
- US Airways had 0 declarations in 2005, 0 in 2006, and 1 in 2007.
- JetBlue had 0 declarations in 2005, 1 in 2006, and 1 in 2007.