



THE SECRETARY OF TRANSPORTATION

WASHINGTON, D.C. 20590

December 14, 2009

William E. Reukauf  
Associate Special Counsel  
U.S. Office of Special Counsel  
1730 M Street, NW, Suite 218  
Washington, DC 20036

Re: OSC File Nos. DI-07-2471 and DI-08-1015

Dear Mr. Reukauf:

I am responding to a letter of September 19, 2008 from former Special Counsel Scott Bloch concerning whistleblower allegations of unsafe air traffic configurations at Memphis International Airport's air traffic control facilities.

The whistleblowers, Peter Nesbitt and Geoffrey D. Weiss, both Air Traffic Controllers, have raised concerns about the use of intersecting runways at Memphis Airport. These concerns were previously raised by Mr. Nesbitt and investigated by the Federal Aviation Administration's (FAA) Air Traffic Safety Oversight Office (AOV). FAA provided its earlier investigative report to OSC in December 2007. In his September 19<sup>th</sup> letter, Mr. Bloch requested that former Secretary of Transportation Peters task the Department's Office of Inspector General (OIG) with conducting an "additional review" of these allegations because of the possible perception of an "inherent conflict of interest" with the FAA investigation and because Mr. Nesbitt's previously raised concerns had not been resolved. Mr. Bloch also referred for investigation additional aviation safety concerns at the Memphis facility.

In response to Mr. Bloch's request, former Secretary Peters delegated responsibility for investigating Mr. Nesbitt's and Mr. Weiss' concerns jointly to the Department's Inspector General and the former Acting FAA Administrator, specifying that the investigation should be conducted by FAA's AOV. The OIG-AOV investigation is complete and the Inspector General has provided me the enclosed memorandum report presenting the findings and recommendations.

In summary, the investigation substantiated the conclusions in the December 2007 FAA investigative report submitted to OSC. In particular, the OIG-AOV investigation substantiated continuing noncompliance with FAA Order JO 7110.65, "Air Traffic Control," which requires air traffic control specialists to notify pilots each time they exit and re-enter Class B airspace. This issue is well-known to FAA and FAA management continues to address it. The investigation also substantiated *some* information in other allegations including that: the lack of recent air traffic controller experience with the management of FedEx aircraft crossing Runway 27 to and from the FedEx hub during the midnight shift may present safety concerns when the runway is put back in service; Memphis' surface radar system does not cover Runway 27; and aircraft have been allowed to exceed the maximum

recommended tail wind speed during take-offs and landings. The investigation also found three other operational errors committed by Memphis controllers which were not discussed in the December 2007 FAA investigative report.

Based on the investigative findings, OIG and AOV recommended that (1) within 30 days of reopening Runway 27, FAA conduct a risk assessment study regarding simultaneous independent operations on Runways 27 and 18R and AOV audit operations within 90 days of implementation; (2) FAA reemphasize to all Memphis air traffic control personnel that a suspected loss of separation be immediately reported and that remedial training be provided to personnel responsible for failing to identify the operational error; and (3) FAA require that biennial reviews of Class B airspace be documented so conclusions from the reviews can be analyzed and verified.

By the enclosed memorandum, Administrator Babbitt concurred with the recommendations.

I appreciate the whistleblowers' diligence in raising these concerns.

Sincerely yours,

Ray LaHood



Enclosures



# Memorandum

**U.S. Department of  
Transportation**


Office of the Secretary  
of Transportation

Office of Inspector General

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Subject: **ACTION:** OIG Investigation #I09Z000003SINV,  
Re: Memphis Air Traffic Control Facilities

Date: November 23, 2009

From: Calvin L. Scovel III   
Inspector General

Reply to  
Attn of:

To: The Secretary

Attached is a memorandum report of the results of our investigation into whistleblower concerns raised by two air traffic control specialists related to the Memphis International Airport Air Traffic Control Tower and the Terminal Radar Approach Control (TRACON) facilities. These concerns were disclosed to the U.S. Office of Special Counsel (OSC), and former Secretary Peters delegated the investigation to the OIG. The FAA Administrator concurred with our findings, and the Administrator's memorandum of corrective action is attached as part of our report.

If you accept the results of our investigation, we recommend that you transmit this report and FAA's response to OSC. The Department's response to OSC is due on November 30, 2009.

## **BACKGROUND**

Two air traffic control specialists separately disclosed to OSC a number of aviation safety concerns related to the Memphis International Airport Air Traffic Control Tower and the Terminal Radar Approach Control (TRACON) facilities. Because of the overlap of some of the nine collective allegations, we combined them into one investigation.

Attachment 1 contains copies of the whistleblower disclosure reports and the Secretary's delegation to OIG. Attachment 2 describes the methodology of our investigation.

One of the whistleblowers reported eight safety concerns; these included a number of specific concerns involving the manner in which air traffic is managed on Runway 27, which runs perpendicular to the airport's three parallel runways. Attachment 3 is a diagram of the Memphis airfield. This whistleblower also reported concerns pertaining to aircraft exceeding tail wind limitations, glare on radar scopes, and management of Class B airspace.

The above allegations were previously investigated by FAA and the findings were provided to OSC in December 2007. At the request of OSC, former Secretary Peters tasked the OIG with conducting an "additional review" of these allegations because of the possible perception of an "inherent conflict of interest" with the FAA investigation.

The second whistleblower reported three safety concerns, two of which are substantially similar to the first whistleblower's concerns. The third issue related to "Taxi-into-Position-and-Hold" rules.

## **SYNOPSIS**

Our investigation substantiated the conclusions in the December 2007 FAA investigative report submitted to OSC. In particular, we substantiated continuing noncompliance with FAA Order JO 7110.65, "Air Traffic Control," which requires air traffic control specialists to notify pilots each time they exit and re-enter Class B airspace. This issue is well-known to FAA, and FAA management continues to address it.

We substantiated *some* of the information in allegations 1, 3, 5, 6, 8, and 9. We also found three other operational errors committed by Memphis controllers which were not discussed in the December 2007 FAA investigative report. Specifically, we found the following:

- The lack of recent air traffic controller experience with the management of FedEx aircraft crossing Runway 27 to and from the FedEx hub during the midnight shift *may* present some safety concerns when the runway is put back in service.

- Memphis' current surface radar system for detection of aircraft, vehicles, or other objects on the ground does not, in fact, cover Runway 27. FAA is planning, however, to deploy a new system in January 2011 which will cover the runway.
- Memphis air traffic controllers have allowed FedEx and other aircraft to exceed the maximum recommended tail wind speed during take-offs and landings. However, doing so is not prohibited by FAA order.

Below are the details of the individual allegations and our findings, as well as three recommendations for corrective action arising out of our findings on Allegations 1, 3, and 8.

## DETAILS

**ALLEGATION 1:** When Runway 27 is used for arrivals, an aircraft executing a go-around or missed approach maneuver could come into conflict with traffic landing on Runway 18R. Given the frequency of go-arounds at Memphis, the use of Runway 27 for arrivals presents a significant threat to public safety.

## FINDINGS

This allegation was partially substantiated. Although aircraft arriving on Runway 27 and executing a go-around *could* come into conflict with traffic landing on Runway 18R, go-arounds arising out of Runway 27 and 18R arrival operations have not occurred with significant frequency. FAA's Performance Data Analysis and Reporting System (PDARS), a data analysis tool which translates flight track and flight plan information, showed 44,081 arrivals at Memphis from October 2008 through December 2008. These arrivals produced 118 go-arounds, 46 of which involved Runways 18R and 27. To help reduce the number of these events, Memphis has "best practices" in its Standard Operating Procedures for this operation and new employee and refresher training to instruct a controller on options to avoid such a conflict.

Moreover, in the event of a conflict, an FAA safety study concluded that a controller has sufficient time to direct an aircraft attempting to land on Runway 27 away from an aircraft approaching Runway 18R. We found that Memphis management was ordered by AOV in April 2007 to cease operating simultaneous independent arrivals involving Runways 27 and 18L and 18C, due to non-compliance with FAA Order 7110.65, until they received a waiver allowing simultaneous arrivals on intersecting flight paths. By FAA Order JO 1000.37,

“Air Traffic Organization Safety Management System,” prior to the submission of a waiver request, a facility is required to construct a Safety Risk Management Document, which must include a safety study conducted by a panel of subject matter experts. In April and May 2007, the safety study was conducted at Memphis. The panel found that, because the center line of Runway 18R does not intersect Runway 27 but passes approximately 700 feet to the left of its far end, and the distance from Runway 27’s threshold to the Runway 18R center line is about 9,600 feet or 1.82 miles, an air traffic controller has sufficient time to direct a pilot away from an aircraft approaching Runway 18R.

Even in the event of a conflict, the safety study concluded that a “near collision” (rather than a “collision” or “wake encounter”) was, in terms of “effect,” the “worst credible outcome.” The study, however, was discontinued when Memphis management chose not to apply for a waiver of FAA Order 7110.65’s requirements for intersecting runways and flight paths, but to comply with them by implementing simultaneous dependent arrivals using Converging Runway Display Aid (CRDA) technology.

Nonetheless, further analysis of this operation is warranted to help ensure its safety. Runway 27 is scheduled to return to service later this year. However, the safety study involving simultaneous independent arrivals on Runways 27 and 18R was not validated because it was discontinued.

## **RECOMMENDATION**

Within 30 days of opening Runway 27, FAA should conduct a risk assessment study regarding simultaneous independent operations on Runways 27 and 18R. In addition, we recommend AOV audit these operations within 90 days of implementation to ensure that appropriate safety mitigations are in place and complied with.

**ALLEGATION 2:** In violation of the “separation minima” set forth in FAA Order 7110.65, aircraft executing a go-around or missed approach maneuver from Runway 27 are subjected to significant wake turbulence generated by numerous heavy jet aircraft that land on parallel Runway 18R. Also, controllers improperly provide visual separation for aircraft that will encounter wake turbulence from a heavy jet.

## FINDINGS

FAA regulations do not explicitly prescribe wake turbulence separation procedures for a go-around or missed approach. Nonetheless, pursuant to FAA Order 7110.65, controllers are expected to consider the effect of wake turbulence on an aircraft executing a missed approach or go-around and issue instruction, including a wake turbulence advisory. In March 2009, FAA issued Notice JO 7110.501, “Wake Turbulence and Missed Approach/Go-Around Operations,” which highlighted the need to develop controller guidance regarding wake turbulence separation during missed approaches or go-arounds. To help address this need, FAA is collecting data nationwide regarding wake turbulence encounters.

We did not substantiate the claim that aircraft executing a go-around from Runway 27 are subjected to significant wake turbulence generated by numerous heavy jet aircraft that land on parallel Runway 18R. We found most aircraft execute the go-around or missed approach before entering the runway, so there is nearly two miles before flight paths would intersect Runways 27 and 18R. FAA has determined this distance provides ample time for controllers to direct aircraft to avoid one another and any associated wake turbulence. AOV plans, once Runway 27 is again operational, to determine how often wake turbulence is encountered by aircraft landing on either Runway 18 or 27 during simultaneous independent operations.

FAA Order 7110.65, paragraph 7-2-1, does not authorize controllers to use visual separation, in lieu of the wake turbulence separation requirements in the order.<sup>1</sup> We did not find any evidence that Memphis controllers did not comply with this

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<sup>1</sup> FAA Order 7110.65, paragraph 5-5-4, requires controllers to “[s]eparate aircraft operating directly behind, or directly behind and less than 1,000 feet below, or following an aircraft conducting an instrument approach by: 1. Heavy behind heavy - 4 miles; 2. Large/heavy behind B757 - 4 miles; 3. Small behind B757 - 5 miles; 4. Small/large behind heavy - 5 miles.”

requirement when additional wake turbulence spacing was necessary for heavy jet go-arounds or missed approaches.

**ALLEGATION 3:** On at least two occasions, a supervisor stopped an air traffic controller from preventing a loss of separation between aircraft on approach. As a result, operational errors went unreported.

## FINDINGS

This allegation was substantiated. In its December 2007 report of investigation, FAA found that a supervisor, Herbert Brown (now retired), was responsible for and failed to properly address three operational errors. In response, FAA required the supervisor to undergo remedial training, recertify on all operational positions, and be subject to direct supervision from an operations manager for one month.

We found three other operational errors involving a loss of separation between aircraft. The first whistleblower presented information on another 232 air traffic events occurring between October 1 and December 16, 2008, as possible losses of separation or other incidents of safety significance. Digital audio tapes and RAPTOR (Radar Audio Playback Terminal Operations Recordings) tapes for only 75 of the events were available for our review. From these, we determined that 35 events occurring on December 2, 3, 9, 10, 15, and 16, 2008, were most likely to present an operational error.

We identified the following additional operational errors:

- On December 10, 2008, at approximately 0727 hours, separation was lost when one aircraft was on final approach to Runway 36L, while a second turned onto final approach to Runway 36R.
- On December 10, 2008, at approximately 0858 hours, two aircraft were on final approach to Runways 36L and 36R, when the aircraft on approach to 36L was “broken out” after separation was lost.
- On December 16, 2008, at approximately 0910 hours, two aircraft were on final approach to Runway 36R when longitudinal separation was lost and the trailing aircraft was “broken out.”



Memphis management agreed with our findings and filed an operational error report for each of these losses of separation.<sup>2</sup>

We also found that a Quality Assurance Review (QAR) of the event occurring on December 10, 2008, at 0858 hours failed to identify the operational error. We were unable to determine why the QAR did not identify the error because the QAR documents did not show how the review was conducted or why the review of the event was closed without further action. In any event, the personnel conducting the review should have discovered the event was an operational error and should have reported it to FAA headquarters. We recently issued a report (attachment 4) identifying weaknesses in FAA's process for investigating and reporting air traffic events involving a loss of separation. Our finding here regarding a lack of documentation illustrates one of these weaknesses.

## RECOMMENDATION

FAA should reemphasize to all Memphis air traffic control personnel that a suspected loss of separation must be immediately reported to a manager or controller-in-charge. FAA should also provide remedial training to the QAR personnel responsible for failing to identify the operational error.

**ALLEGATION 4:** During the midnight shift, "close calls" have resulted when aircraft from parallel Runways 18 L/C/R or 36 L/C/R cross Runway 27 during the FedEx arrival and departure "pushes."

## FINDINGS

We were unable to substantiate any "close calls" or operational errors arising out of the "pushes." A few Memphis controllers told us that before Runway 27 closed in March 2009, 200-250 FedEx aircraft arriving or departing on Runways 18 L/C/R or 36 L/C/R would cross Runway 27 during midnight "pushes."<sup>3</sup> A number of those crossings, they said, resulted in "close calls," i.e., incidents where, had someone not corrected a controller mistake, an operational error would have

<sup>2</sup> FAA Operational Error Report Numbers M03-R-08-E-001, M03-R-08-E-002, and M03-R-08-E-003.

<sup>3</sup> During the 11:00 p.m. and 1:00 a.m. arrival "push," FedEx aircraft would taxi across Runway 27 in order to reach FedEx's facility on the north side of the airport, while that runway was in use for other FedEx takeoffs and landings. During the 3:00 a.m. to 5:00 a.m. departure "push," the reverse was true. FedEx aircraft departing on the parallel runways would cross Runway 27 after leaving the north side facility.

occurred. We could not locate any records that would verify the number of aircraft crossing Runway 27 during the FedEx “pushes” or whether any were involved in “close calls.” And, although a number of air traffic controllers gave us anecdotal descriptions of close calls, they could not provide enough detail to allow us to verify they occurred. Even if we could verify these incidents, “close calls” are not the equivalent of operational errors, and we did not find any evidence that an operational error occurred during Runway 27 crossings during the FedEx “pushes” in the 10 years prior to the March 2009 closure of that runway.

Because Runway 27 has been closed since March 2009, air traffic control tower controllers do not have recent experience with aircraft from parallel runways crossing the runway during the FedEx arrival and departure “pushes.” In addition, several air traffic controllers new to Memphis have no experience with this operation. In response, Memphis management intends to retrain controllers on runway crossings and other aspects of the operation before Runway 27 is returned to service. They have prepared a four-phase training plan for operational personnel to complete prior to the restart of Runway 27 operations. We confirmed that the plan includes training on runway crossings; particularly, those by FedEx aircraft during midnight arrival and departure “pushes.”

### **Additional Information**

OSC’s whistleblower disclosure report also identified two other “safety issues” related to controllers on the midnight shift: (1) “there are [controllers] with less experience working the ... shift” and (2) some have had “minimal sleep” having worked a prior “quick-turn” shift.

Regarding the first issue, we found that, approximately three years ago, Memphis management began scheduling all controllers to work all shifts on a rotating basis. Controllers would no longer exclusively work a particular shift. Although the contention is that the rotating schedule has resulted in formerly day and night shift-only controllers working midnight shift operations, (e.g., the FedEx “pushes,” with which they were not familiar) we found no evidence that controllers new to the midnight shift have been unable to successfully adapt to its operations and conditions. Indeed, there is evidence that the midnight shift is less complex than the day and night shifts because during the “pushes,” controllers are handling only arrivals or only departures. The day and night shifts, on the other hand, involve aircraft arriving and departing at the same time.

Regarding the second issue, in essence, a controller working “quick-turn” shifts works one shift, receives at least an eight hour break, then works the next shift. The Federal Aviation Regulation at 14 CFR § 65.47, “Maximum Hours,” and

FAA Order JO 7210.3, "Facility Operation and Administration," mandate that a controller receive at least an eight hour break between shifts. Further, the order prescribes that a controller has an off-duty period of at least 12 hours following a midnight shift. We found no evidence that Memphis controllers receive shorter breaks than those prescribed by the regulation and order.

**ALLEGATION 5:** Airport Movement Area Safety System (AMASS) is not certified for use on Runway 27; thus, air traffic controllers are unable to use this radar-based safety tool when, for example, aircraft cross the runway.

## FINDINGS

This allegation was partially substantiated. AMASS/ASDE-3 is not certified for use on Runway 27. AMASS is a software enhancement to Airport Surface Detection Equipment Model 3 (ASDE-3), a radar that detects aircraft, vehicles and other objects on the surface of an airport, and presents their images on a controller display. AMASS predicts the path of aircraft landing and departing, and vehicular movements on runways. Visual and aural alarms in ASDE-3 are activated when AMASS projects a potential collision. Although placing the AMASS/ASDE-3 antenna on the air traffic control tower would have provided maximum radar coverage, this could not be done because of the antenna's weight. Instead, the antenna was placed in the best alternative location: the airfield. However, because of the location of buildings and differences in ground elevation across the airfield, complete radar coverage was available only for the three parallel runways, not Runway 27. ASDE-3/AMASS only identifies whether Runway 27 is closed.

Although ASDE-3/AMASS is not certified for use on Runway 27, FAA regulation does not require its use or the use of any other surface movement detection system. In any event, in 2011 Memphis will deploy ASDE-X, an upgraded version of ASDE-3. This system will be installed on the new Memphis tower currently under construction. It will provide sufficient height to mitigate existing physical constraints and, in conjunction with new technologies, provide complete radar coverage of all Memphis runways, including Runway 27.

**ALLEGATION 6:** Memphis air traffic controllers regularly allow aircraft, especially those in the FedEx fleet, to exceed the maximum tail wind speed for arrivals and departures established by Memphis management.

## FINDINGS

This allegation was partially substantiated. Although Memphis air traffic controllers have allowed FedEx and other aircraft to exceed the Memphis guidelines concerning recommended tail wind speed for take-offs and landings, doing so is not prohibited by FAA order. When selecting which runways to use, Memphis management considers the tail wind speed to which aircraft could be subjected, and generally will not allow take-offs and landings where the tail wind exceeds seven knots. However, FAA Order 7110.65 permits controllers to select a runway for arrival or departure which will result in the aircraft exceeding a maximum tail wind speed if doing so is “operationally advantageous”<sup>4</sup> or “requested by the pilot.” At Memphis, the decision as to which runway configuration to use typically includes input from FedEx, the largest carrier at Memphis, regarding its operational needs. Taking this and other information (e.g., the amount of other air traffic and the weather) into consideration, controllers have allowed FedEx and other aircraft to exceed the seven knot tail wind component when the pilot of the aircraft can accept the increased tail wind without exceeding the maximum tail wind speed established by the aircraft manufacturer.<sup>5</sup>

**ALLEGATION 7:** Safety is compromised by glare on the Standard Terminal Automation Replacement System (STARS) radar displays caused by overhead lights and light from computer monitor displays in the TRACON.

## FINDINGS

This allegation was not substantiated. Previously, to prevent glare on the radar displays, the TRACON control room lights were kept low. FAA’s legacy radar

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<sup>4</sup> Under FAA’s Aeronautical Information Manual, if a pilot is not comfortable with a controller’s selection of a runway because, for example, he believes the tail wind on landing would place the aircraft in jeopardy, he can request a different runway from the controller.

<sup>5</sup> Under FAA Order 7110.65’s provision regarding intersecting runway separation requirements, the seven knot maximum tail wind speed cannot be exceeded when conducting CRDA operations.

display, the “Main Display Module,” on which target aircraft were illuminated by rotating scans on monochrome screens, required operation in near-darkness. However, in 2002 those radar displays were removed from the Memphis TRACON and replaced by new displays connected to the current radar system: “STARS” (Standard Terminal Automation Replacement System). STARS uses a high resolution color digital display capable of viewing in near-standard lighting.

Although many controllers prefer a return to a darker TRACON, no evidence was found that the current lighting level in the TRACON is a safety concern. We found two FAA reports from 2007 in which the claim was made that the lighting in the TRACON interfered with viewing the STARS display. In the first report, AOV and ATO-Safety concluded that the TRACON lights were set at an acceptable level. In the second report, Memphis quality assurance personnel rejected a claim that glare was a contributing factor in a controller’s loss of separation during a training certification skill check. The quality assurance personnel determined that no distractions or environmental conditions, including those related to lighting, contributed to the loss of separation.

**ALLEGATION 8:** In violation of FAA Order 7110.65, Memphis air traffic controllers have failed to notify aircraft of their departure from Class B airspace.

## FINDINGS

This allegation was substantiated. Under FAA Order 7110.65, air traffic controller clearance is required for all aircraft to operate in Class B airspace.<sup>6</sup> Further, the order requires air traffic controllers to vector aircraft to remain in Class B airspace after entry into it, unless it is necessary to extend the flight path outside the airspace to maintain required separation of aircraft. The reasons why an aircraft may be required to leave the airspace include adverse weather or air traffic volume. Under FAA Order 7110.65, when an aircraft has left Class B airspace, a controller must notify the pilot.

FAA has already determined that Memphis air traffic controllers have not always notified pilots when their aircraft has departed Class B airspace. In May 2008, ATO-Safety personnel and a member of FAA’s Eastern Service Center Safety Assurance Group audited Memphis Class B airspace services. The audit involved

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<sup>6</sup> The Class B airspace program is designed to reduce the potential for midair collision in the congested airspace surrounding airports with high density air traffic operations by providing airspace up to 10,000 feet, wherein all aircraft are subject to certain operating rules and equipment requirements.

assessing approximately 14 hours of voice and radar data from time periods when the largest number of aircraft arrived at Memphis. The audit revealed that Memphis air traffic controllers have not always notified pilots when they exit Class B airspace. Specifically, the audit found that 20 of 40 pilots whose aircraft left Class B airspace (out of 727 aircraft arrivals reviewed) were not given the required notice.

Memphis management has acted to address controller non-compliance with FAA Order 7110.65. Memphis managers were briefed on the above audit findings. In response, controllers have received skill enhancement training and verbal briefings as part of continuing efforts to improve operational personnel compliance with Class B notification requirements.

### **Additional Information**

Required Class B airspace evaluations have not been documented. FAA Order JO 7400.2, "Procedures for Handling Airspace Matters," requires service area office personnel to biennially evaluate existing and candidate Class B airspace. We found that Memphis Class B airspace was last modified in 2002, and the most recent biennial evaluations of this airspace were in September 2009 and September to December 2007. We were told that neither evaluation identified issues warranting a proposal to modify the existing airspace. However, we could not confirm this information because the evaluations were not documented. Moreover, we found FAA does not require they be documented.

### **RECOMMENDATION**

FAA should require the biennial reviews of Class B airspace be documented so conclusions from the reviews can be analyzed and verified.

**ALLEGATION 9:** Taxi-into-Position-and-Hold (TIPH) rules contribute to dangerous go-arounds on Runway 27; without ASDE-3/AMASS for that runway, TIPH rules do not permit aircraft to receive clearance to land if there is an aircraft holding on the runway.

### **FINDINGS**

This allegation was partially substantiated. Although TIPH rules do not permit an aircraft on final approach to receive clearance to land if there is another aircraft holding on Runway 27 (and, therefore, the aircraft attempting to land must execute a go-around), the evidence does not indicate this is a significant safety concern. We confirmed that FAA has reviewed Memphis TIPH operations annually, as

required by FAA Order JO 7210.3, "Facility Operation and Administration." The 2008 and 2009 reviews did not identify any safety concerns. Further, ATO-Safety monitors, tracks, and classifies daily, all TIPH incidents nationwide for trends associated with safety risks. ATO-Safety did not identify any adverse trends associated with Memphis Runway 27 operations. We also confirmed that the Memphis air traffic controller training program includes annual TIPH refresher training, as required by FAA Order 3120.4, "Air Traffic Technical Training."

## **ACTIONS TAKEN OR PLANNED AS A RESULT OF THE INVESTIGATION**

By memorandum dated November 16, 2009 (Attachment 5), FAA Administrator Babbitt concurred with our findings and recommendations. We consider the memorandum responsive to our report.

If I can answer any questions, please contact me at 6-1959, or my Deputy, David Dobbs, at 6-6767.

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cc: FAA Administrator

Attachments





## **ATTACHMENT 1: DELEGATION LETTERS**

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U.S. Department of Transportation – Office of Inspector General

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THE SECRETARY OF TRANSPORTATION  
WASHINGTON, D.C. 20590

October 28, 2008

**MEMORANDUM TO: THE INSPECTOR GENERAL  
ACTING ADMINISTRATOR FEDERAL AVIATION  
ADMINISTRATION**

**FROM:**

*Mary E. Peters*  
Mary E. Peters

**SUBJECT:**

**Whistleblower Complaint Referral by the Special  
Counsel: OSC File Nos. DI-07-2471; DI-08-1015  
(Runway Safety/Memphis International Airport)  
and DI-08-2225 (Runway Safety/Newark Liberty  
International Airport)**

On September 19, 2008, Special Counsel Scott J. Bloch referred to me three whistleblower complaints filed with the U.S. Office of Special Counsel (OSC File No. DI-07-2471, DI-08-1015, DI-08-2225) relating to safety concerns surrounding the use of intersecting runways at Memphis International Airport and Newark Liberty International Airport.

The first complaint (DI-07-2471), filed by Air Traffic Controller Peter Nesbitt, was originally referred on October 3, 2007, and assigned to FAA for investigation. FAA completed its investigation and sent its report to OSC on December 3, 2007, and a supplemental report on December 21, 2007. The investigation did not substantiate the allegations that runway operations at Memphis Airport created a substantial or specific danger to public safety. In his September 19 letter, the Special Counsel states that Mr. Nesbitt has reported to OSC concerns that the runway safety issues he previously raised have not been resolved. As a result, the Special Counsel has determined that Mr. Nesbitt's whistleblower disclosures have not been resolved and states that he is not prepared to accept FAA's report as the final report in this matter. He also expresses a concern that there exists an inherent conflict of interest when FAA investigates allegations of its own misconduct. For these reasons, and because the OIG is currently investigating similar allegations involving intersecting runways at Detroit Metropolitan Airport, the Special Counsel requests that OIG undertake an additional review of Mr. Nesbitt's allegations.

The second complaint (DI-08-1015), filed by Air Traffic Controller Geoffrey D. Weiss, also alleges public safety disclosures about the same runways at Memphis International Airport. In accordance with his statutory authority, the Special Counsel determined that the information disclosed in this complaint evidences a substantial likelihood of a substantial and specific danger to public safety. As a result of this determination, the Department must conduct an investigation of these allegations and submit a report setting forth findings to the Special Counsel.

The third complaint (DI-08-2225), filed by ATC Raymond Adams, raises public safety disclosures about two runway configurations at Newark Airport. Mr. Adams alleges that a simultaneous arrival configuration involving runways 221 and 11 create a potential safety hazard. He also contends that FAA committed to complete a safety analysis by May 1, 2008, and implement necessary changes by July 1, 2008, of the simultaneous arrival procedures for this runway configuration but that, to date, FAA has not completed these commitments. Mr. Adams also alleges that the runway 29 overhead approach at Newark creates a potential safety hazard. He contends that these safety issues have been raised with FAA management at Newark but FAA has not taken appropriate action to reduce the safety hazard. The Special Counsel has determined that these allegations reveal a substantial likelihood of gross mismanagement and a substantial and specific danger to public safety. As a result of this determination, the Department must conduct an investigation of these allegations and submit a report setting forth findings to the Special Counsel

Although section 1213(c) of Title 5, United States Code, requires the head of the agency to conduct an investigation of the referred matter and section 1213(d) requires the report to the Special Counsel to "be reviewed and signed by the head of the agency," my authority to conduct an investigation is subject to delegation. I have determined that it is appropriate to delegate joint investigative responsibilities for these complaints, as well as any related subsequent whistleblower allegations, to both of you, as Inspector General and as FAA's Acting Administrator. With respect to FAA's role in this joint investigation, I request that FAA's Acting Administrator delegate responsibility to Air Traffic Safety Oversight Service (AOV), which provides independent safety oversight of the Air Traffic Organization and was involved in the previous investigation of Mr. Nesbitt's concerns. I have attached copies of the Special Counsel's letters and complaints.

The Department's report to the Special Counsel must be submitted within 60 days after the date the Department received the information unless the Special Counsel agrees in writing to a longer period of time. Thus, the report is due on November 20, 2008. Please inform me of the results of your offices' review and completion of the investigation of this matter and promptly apprise me of any issues that may arise in investigating these allegations.

Attachments

## ATTACHMENT 2: METHODOLOGY

We conducted our investigation with an OIG supervisory investigator, investigator, and special agent, who received technical assistance from several FAA Air Traffic Investigators (also certified as Air Traffic Control Specialists), and an analyst assigned to AOV. To address the whistleblowers' concerns, we interviewed and held discussions with the following individuals:

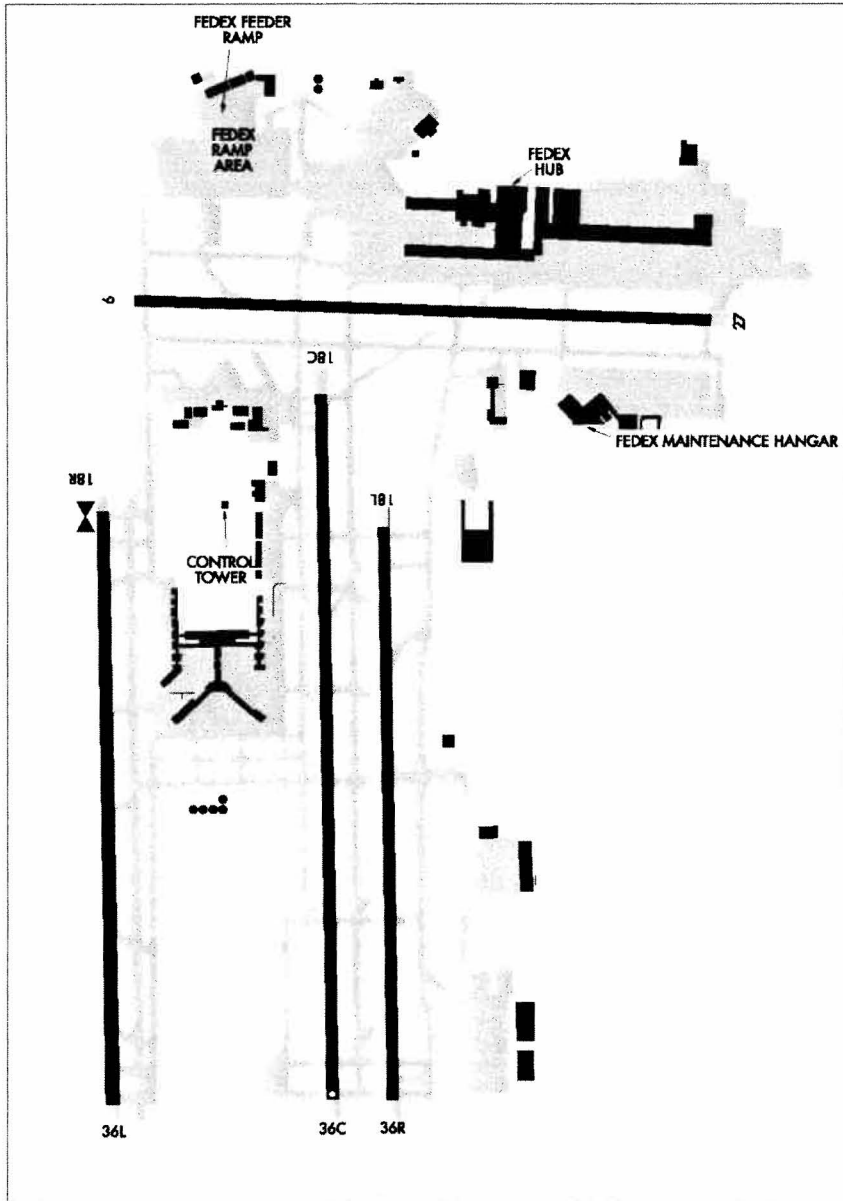
- Peter Nesbitt, former Memphis Air Traffic Control Specialist
- Geoffrey D. Weiss, former Memphis Air Traffic Control Specialist
- Michael W. Baker, Acting Air Traffic Manager, Memphis Air Traffic Control Tower
- Bobby Parker, Support Manager, Memphis Air Traffic Control Tower and TRACON
- John Wallin, Memphis Air Traffic Control Specialist
- Pete Sufka, Memphis Air Traffic Control Specialist
- Three current Memphis Air Traffic Control Specialists (whom we are not identifying to protect their confidentiality)
- Stephen Creaghan, Chief, Operations Risk Assessment and Terminal Systems Division, USDOT Volpe Center, Cambridge, MA
- Greg Dunne, Traffic Management Officer (IAH/I90), Fort Worth, TX
- Joseph Teixeira, Director, Safety Programs, Air Traffic Organization-Safety (ATO-S)
- Anthony Ferrante, Director, Air Traffic Safety Oversight Office (AOV)
- Dianne Bebble, Manager, AOV
- Darryl Lewis, Unsatisfactory Condition Report (UCR) Program Coordinator, Safety Assurance Group, Eastern Service Center

In addition, our investigative team reviewed numerous records and documents at the Memphis Air Traffic Control Tower and FAA headquarters; these included: memoranda, emails, airport diagrams, facility logs, unsatisfactory condition reports, quality assurance review reports, FAA regulations, orders, and notices, selected training materials, and numerous hours of radar and voice data. The team also reviewed safety analysis documents regarding:

- Memphis Air Traffic Control Tower simultaneous independent arrivals to Runway 27 during south operations,
- Memphis Air Traffic Control Tower STARS Converging Runway Display Aid (CRDA) adaptation, and
- TIPH procedures.

Several team members also toured the Memphis Air Traffic Control Tower and TRACON to better understand operations.

### ATTACHMENT 3: DIAGRAM OF MEMPHIS AIRFIELD



SOURCE: FAA

**ATTACHMENT 4: OIG MEMORANDUM REPORT ON FAA'S PROCESS  
FOR REPORTING AND INVESTIGATING OPERATIONAL ERRORS**

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U.S. Department of Transportation – Office of Inspector General

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# **FAA'S PROCESS FOR REPORTING AND INVESTIGATING OPERATIONAL ERRORS**

*Federal Aviation Administration*

*Report Number: AV-2009-045*

*Date Issued: March 24, 2009*



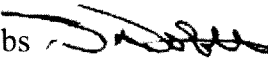


# Memorandum

**U.S. Department of  
Transportation**  
Office of the Secretary  
of Transportation  
Office of Inspector General

Subject: **ACTION:** FAA's Process for Reporting and  
Investigating Operational Errors  
Federal Aviation Administration  
Report Number AV-2009-045

Date: March 24, 2009

From: David A. Dobbs   
Deputy Inspector General

Reply to  
Attn. of: J-2

To: Acting Federal Aviation Administrator

This report presents the results of our review of the Federal Aviation Administration's (FAA) process for reporting and investigating operational errors. Operational errors (when a controller fails to maintain separation between two aircraft) can be extremely serious incidents that can lead to a catastrophic accident. Ensuring that all events involving a loss of separation are accurately reported, investigated, and addressed is critical to the safe operation of the National Airspace System.

In October 2007, Congressman James Oberstar, Chairman of the House Committee on Transportation and Infrastructure, and Congressman Jerry Costello, Chairman of the House Subcommittee on Aviation, requested that our office audit FAA's process for identifying and reporting operational errors. This request was prompted by our then-ongoing investigation at the Dallas Fort-Worth (DFW) Terminal Radar Approach Control (TRACON) facility, which we conducted after whistleblowers alleged that facility management was intentionally misclassifying operational errors.<sup>1</sup>

Our investigation at DFW had found that Air Traffic managers at the TRACON were, in fact, intentionally misclassifying operational errors as either pilot deviations or "non-events."<sup>2</sup> We identified 62 operational errors and deviations that were either incorrectly reported as pilot deviations (39) or misclassified as "non-events" (23). Further, FAA's Service Area and Headquarters safety oversight processes and controls failed to uncover this practice despite FAA's prior assurances to our office in 2005 that it would not allow operational errors to go unreported.

<sup>1</sup> OIG Report Number CC-2007-083, Alleged Cover-Up of Operational Errors at DFW TRACON," April 18, 2008.  
OIG reports are available on our website: [www.oig.dot.gov](http://www.oig.dot.gov).

<sup>2</sup> Non-events are those incidents that facility personnel reviewed but determined there was no loss of separation.

Specifically, Chairmen Oberstar and Costello requested that we determine whether the operational error reporting problems found at the DFW TRACON were occurring at other Air Traffic facilities. Accordingly, our audit objectives were to (1) determine whether FAA has adequate policies and procedures to ensure accuracy and consistency in operational error reporting and (2) review the roles and responsibilities of the Air Traffic Organization and FAA's Aviation Safety line of business in reporting and investigating operational errors.

We conducted this audit between November 2007 and December 2008 in compliance with generally accepted Government Auditing Standards as prescribed by the Comptroller General of the United States. Exhibit A details our review scope and methodology, and exhibit B lists the FAA offices and facilities we visited.

## **BACKGROUND**

To ensure that safe distances are maintained between aircraft while under the control of air traffic controllers, FAA has minimum separation standards that must be maintained based on the aircraft's phase of flight and size. During the en route phase of flight,<sup>3</sup> aircraft must be separated 5 miles laterally or 1,000 to 2,000 feet vertically (depending on altitude). During the departure and arrival phase of flight,<sup>4</sup> aircraft must be separated by 3 miles or more horizontally (depending on aircraft size) or 1,000 feet vertically.

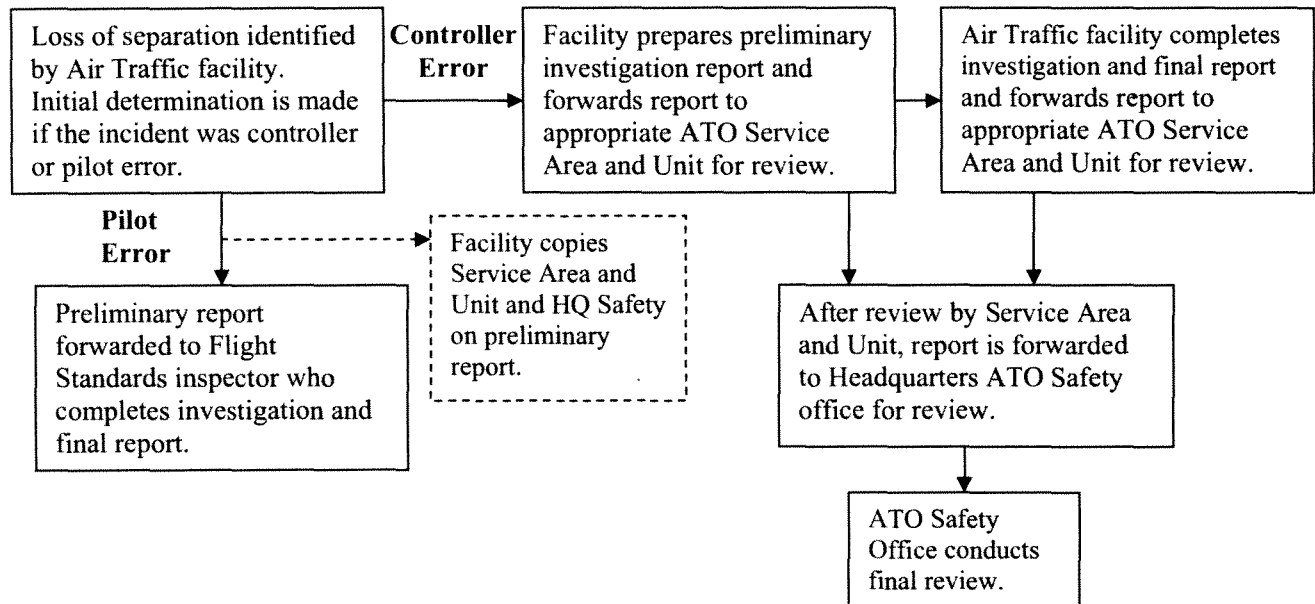
To maintain these minimum separation standards, controllers are responsible for providing instructions to pilots. If a loss of separation occurs between two aircraft, in most cases it is classified as either an operational error (if the controller's actions caused the loss), a pilot deviation (if the pilot's actions caused the loss), or both. When a suspected loss of separation occurs, the Air Traffic facility where the incident occurred is responsible for initially investigating and classifying the incident and preparing a preliminary report. The Air Traffic facility then forwards the operational error report to the appropriate Air Traffic Organization (ATO) Service Area (Regional office) and Service Unit (Headquarters' Terminal or En Route office) for review, after which it is forwarded to Headquarters ATO Safety Office for final review. Pilot deviations are forwarded to the responsible Aviation Safety Flight Standards office, which will conduct a full investigation and prepare a final report (see figure 1 below).

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<sup>3</sup> The en route phase includes aircraft flying at higher altitudes, generally above 17,000 feet under the control of en route facilities.

<sup>4</sup> This phase includes aircraft within the immediate area of an airport, generally within 0 to 40 miles of the airport under the control of tower and TRACON (i.e., terminal) facilities.

**Figure 1. FAA's Process for Reporting and Investigating Incidents Involving a Loss of Separation**



## RESULTS IN BRIEF

### Events at DFW TRACON Were Not Systemic, but Significant Weaknesses Exist in FAA's Processes for Reporting and Investigating Incidents Involving a Loss of Separation

We found that the problems identified at the DFW TRACON were not systemic. To determine this, we randomly selected 13 Air Traffic facilities for review and statistically selected and reviewed 166 pilot deviations that had a loss of separation. We also judgmentally reviewed 206 other “non-events” at the 10 facilities we visited. We found only 3 misclassified incidents (out of the total 372 examined) that should have been reported as operational errors—significantly less than the 62 reported at DFW. Based on this sample, we statistically project that there were between 1 and 7 pilot deviations systemwide (excluding DFW) in fiscal year (FY) 2007 that should have been classified as operational errors.<sup>5</sup>

However, we did identify control and oversight weaknesses in FAA's process for reporting and investigating losses of separation caused by pilots and controllers that could allow similar problems to occur in the future. Contributing factors to these weaknesses were inadequate FAA guidance on how to investigate these events and insufficient staffing in the ATO Safety Office. We identified four areas where FAA should focus its actions to ensure all losses of separation are accurately reported and investigated.

<sup>5</sup> Based on a 90-percent confidence level and a universe of 484 pilot deviations involving a loss of separation.

**Additional actions and follow-up are needed from FAA's Flight Standards Service to improve the procedures for reporting and investigating pilot deviations.** We found that Flight Standards Service did not consistently investigate pilot deviations because of control weaknesses in FAA's guidance. For example, we found inspectors did not always verify the accuracy of Air Traffic's preliminary report and even failed to investigate incidents altogether when they were referred to the airlines' Aviation Safety Action Program (ASAP).<sup>6</sup> In other incidents, it was unclear if inspectors performed a thorough investigation because they did not document their results.

During our review, FAA issued new guidance to address these control weaknesses. For example, inspectors are now required to verify the accuracy of all data in preliminary reports, including those referred to ASAP, and must fully describe the pilot deviation, including causal factors. FAA trained its managers on the new requirements in August 2008 and completed its training for field inspectors in October 2008. While those actions represent progress, FAA will need to follow up once the requirements are implemented to ensure inspectors are complying with the new procedures.

**FAA needs to consistently evaluate losses of separation caused by both controllers and pilots.** Unlike its process for operational errors, FAA does not rate the proximity of (i.e., how close two aircraft came to one another) or have a goal for reducing the risk of pilot deviations that cause a loss of separation. This is despite the fact that pilot deviations can pose the same risk for a catastrophic accident as operational errors. FAA rates controller operational errors by proximity—from category A to C—and maintains goals for reducing category A and B incidents. (Category A is the most serious, i.e., the aircraft came very close to one another. Category C is the least serious, i.e., most of the required separation was maintained.)

For example, on July 6, 2007, while under control of the Atlanta TRACON, two regional jets narrowly avoided a collision when a pilot flew in the wrong direction. The aircraft were at the same altitude and came within about 3,300 feet of each other horizontally. Had this been a controller operational error, it would have been classified as a serious event. However, because it was a pilot deviation, the severity was not measured and no analysis was conducted to determine if similar deviations were occurring so that corrective actions could be taken systemwide.

We applied FAA's proximity rating system for operational errors (using distance and altitude parameters for categories A through C) to estimate the severity of pilot deviations that occurred while under control of en route and TRACON facilities during FY 2007.

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<sup>6</sup> ASAP is a program in which air carrier employees can report potential safety issues without fear of enforcement action from FAA. Incident data obtained by the air carrier through the ASAP process is maintained by the air carrier and protected from disclosure.

*Of the 478 pilot deviations, we estimate that 33 percent would have been rated as serious category A or B incidents.*

If FAA were to categorize the severity of losses of separation caused by pilots in a similar manner, it could focus on the most serious incidents, identify potentially systemic issues, and take corrective actions on those that require attention at the national level. For example, within our sample of 166 pilot deviations, we found:

- 53 incidents occurred when the pilots acknowledged and read back the correct altitude assigned but then deviated to a different altitude;
- 27 incidents occurred because the pilots either had equipment malfunctions or did not accurately program their aircraft navigational equipment; and
- 19 incidents occurred because the pilots did not follow established departure or arrival procedures, including those established by newly implemented area navigation (RNAV) procedures.

To effectively reduce the risk of mid-air collisions, FAA should establish a process to rate the severity of pilot deviations that cause a loss of separation and establish a corresponding goal to reduce the most severe incidents.

**FAA needs to implement the Traffic Analysis and Review Program (TARP) as a full-time separation conformance tool to ensure all losses of separation are accurately reported.** Unlike en route centers, terminal facilities do not have a system to automatically report losses of separation. Instead, managers at terminal facilities rely on controllers to self-report those incidents. FAA is aware of this problem and is developing TARP—an automated tool that will allow FAA to identify when operational errors (or other losses of separation) occur at terminal facilities.

FAA plans to implement TARP as an audit tool only at all TRACONs by the end of 2009. According to FAA managers, additional technical and infrastructure changes will be needed before TARP can be used reliably on a full-time basis. However, FAA has not established milestones and deadlines for when the system will be fully operational.

While using TARP as an audit tool should help FAA to determine if operational errors have been misclassified, it does not provide full assurance that losses of separation at TRACON facilities are being reported and investigated. For this to occur, FAA must implement the system as a full-time separation conformance tool. To effectively deploy TARP, FAA must establish milestones for implementation and operational use and hold managers accountable for meeting them.

**Additional FAA actions are needed to improve the ATO's oversight of the reporting and investigation process.** We found that the ATO's Safety Office did

not have adequate oversight processes and controls for reporting and investigating loss of separation events. For example, neither the ATO Headquarters nor Service Center Safety offices discovered or challenged the incidents that were misclassified by DFW TRACON (62 incidents). These weaknesses occurred, in part, because the ATO Safety Services did not have enough staff in its Investigation and Evaluations office. Over the last 10 years, the number of employees in this office has decreased from 79 to 24 (as of March 2008). FAA is aware of this concern and initiated a complete review of ATO Safety Services to determine what additional resources are needed to meet its oversight responsibilities.

ATO Safety Services is also making procedural and organizational changes to improve its oversight of reporting and classification of losses of separation. For example, it plans to establish an independent quality assurance office in the three ATO Service Areas. This new office—not the facility manager—will determine whether a loss of separation was a pilot or controller error. These changes are planned for completion by the summer of 2009 and should improve how FAA oversees reports and investigations for all losses of separation. Once the changes are implemented, FAA should initiate an internal audit by an independent organization, such as its Aviation Safety Oversight Office (AOV), to ensure these actions have been implemented and are being complied with.

## **SUMMARY OF RECOMMENDATIONS**

Our recommendations include establishing (1) a follow-up mechanism to ensure Flight Standards inspectors comply with new guidance for investigating pilot deviations, (2) a process to rate the severity of pilot deviations and a corresponding goal to reduce the most severe incidents, (3) milestones for fully implementing TARP, and (4) an internal audit of the planned changes to the ATO's safety oversight. We are making a total of 7 recommendations, which are listed on page 12 of this report.

## **SUMMARY OF AGENCY COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE**

We provided FAA with our draft report on December 30, 2008, and received its response on March 12, 2009. FAA generally agreed with our recommendations and provided acceptable corrective actions with two exceptions.

First, FAA did not agree with our recommendation to establish a process to rate the severity of pilot deviations and a corresponding goal to reduce the most severe incidents. In its response, FAA stated that it “addresses the seriousness of the violation during the investigation and adjusts punishment according to the degree of the violation.” However, our recommendation was *not* aimed at rating the severity of pilot deviations to assess punitive actions against pilots on a case-by-case basis.

Rather, we intended for FAA to assess the severity of incidents to advance its risk-based approach to safety oversight. This would allow FAA to gather macro-level data, which it could use to identify possible trends, potentially systemic issues, and corrective actions needed at the national level.

FAA already uses a similar severity rating approach to identify systemic issues for virtually all other aviation incidents including operational errors, near midair collisions, and runway incursions. In fact, FAA currently rates the severity of pilot deviations that occur on the ground (i.e., runway incursions) but not pilot deviations that occur in the air. Given that aviation safety is FAA's primary mission, we are concerned that the Agency would bypass an opportunity to advance its risk-based approach at the national level. Accordingly, we believe FAA needs to reconsider its position.

Second, FAA did not agree with our recommendation to assign a regional Flight Standards liaison (which could be a collateral position) to assist the ATO Safety Services staff in determining whether losses of separation are pilot or controller errors. In its response, FAA stated that "ATO-S will continue to work with [aviation safety inspectors] to resolve reported violations of air traffic rules and procedures, eliminating the need to assign a regional Flight Standards Liaison."

However, the intent of our recommendation was to allow Flight Standards to have more timely input into losses of separation that were or should have been classified as a pilot deviation rather than waiting until after the entire ATO investigation process is completed. FAA's response seems to indicate that it intends to simply maintain the status quo. We therefore request that FAA reconsider its position on how it plans to ensure that Flight Standards has input into the accurate classification of losses of separation at the "front end" of the process.

FAA's comments, our response, and further Agency actions required are fully discussed on pages 13 and 14. FAA's entire response is included at the appendix to this report. We appreciate the courtesies and cooperation of FAA representatives during this audit. If you have any questions concerning this report, please contact me at (202) 366-1427 or Daniel Ravielle, Program Director, at (202) 366-1405.

#

cc: Acting FAA Deputy Administrator  
Anthony Williams, ABU-100

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## **FINDINGS**

We found that the events that transpired at DFW TRACON were not systemic. However, we did identify control and oversight weaknesses in FAA's process for reporting and investigating losses of separation caused by pilots and controllers that could contribute to similar problems in the future. These weaknesses were due in part to inadequate FAA guidance for investigating these events and insufficient staffing in the ATO Safety Office. Further, FAA's current processes do not ensure that all losses of separation are accurately reported across terminal and en route facilities or consistently evaluated for severity.

FAA has initiated actions to correct some of these weaknesses, but additional actions and follow-up are still needed to ensure that all losses of separation are accurately reported and investigated. Specifically, FAA needs to improve its process for reporting and investigating losses of separation by (1) improving inspectors' procedures for investigating pilot deviations, (2) evaluating losses of separation caused by pilots and controllers consistently, and (3) implementing TARP as a full-time separation conformance tool.

FAA also needs to enhance the ATO's oversight role in ensuring that losses of separation are reported accurately by (1) implementing planned organizational changes in a timely manner (2) involving Flight Standards early in the event determination process, and (3) improving its facility oversight during Air Traffic facility audits.

### **Events at DFW TRACON Were Not Systemic**

Our sample results identified only 3 incidents (out of the total 372 events sampled—166 pilot deviations and 206 other or "non-events") that should have been reported as operational errors or proximity events in FY 2007.<sup>7</sup> Therefore, we conclude that the problems identified at DFW were not occurring on a system-wide basis.

To evaluate whether the reporting problems that occurred at DFW TRACON were occurring at other facilities, we reviewed pilot deviations, quality assurance reviews (QARs), and Operational Error Detection Program (OEDP) alerts and related supporting documentation (e.g., radar and voice data). Our analysis is fully discussed below.

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<sup>7</sup> Proximity events are minor losses of separation between two aircraft where 90 percent or greater of the required separation is maintained in either the horizontal or vertical plane.

- **Pilot Deviations:** Our sample results identified *only one pilot deviation* (at Chicago TRACON) that should have been reported as an operational error. We reviewed a statistical sample of 166 pilot deviations (with a loss of separation) that occurred during FY 2007 at 13 randomly selected Air Traffic facilities. We selected these from a total universe of 484 pilot deviations with a loss of separation that occurred at 63 TRACON and en route facilities.<sup>8</sup>

Based on the results of our sample, we can statistically project (with a 90-percent confidence level) that the percentage of misclassified pilot deviations is between 0.2 and 1.4 percent. In other words, we can project that between 1 and 7 loss of separation events in FY 2007 were misclassified as pilot deviations when they should have been classified as operational errors. This is significantly less than the 39 operational errors and deviations that were misclassified as pilot deviations at DFW TRACON alone.

- **QAR/OEDP Alerts:** We also judgmentally sampled 206 QARs and OEDP alerts that occurred in FY 2008 at the 10 facilities we visited. Our sample results identified *only 2 incidents* (1 percent) that should have been reported as proximity events (at Chicago TRACON and Denver Center). Again, this is significantly less than the 23 operational errors and deviations that were erroneously reported as “non-events” at DFW TRACON.
  - *QARs* are reviews conducted of other Air Traffic incidents that do not involve an operational error (e.g., pilot complaints, emergencies, etc.). These incidents are recorded on facility daily logs and reviewed by facility management or other staff to evaluate controller performance. At DFW TRACON, we found that the facility improperly recorded 23 operational errors as QAR “non-events.”
  - *OEDP* alerts are generated by a system at en route facilities that automatically detects and alerts management when a loss of separation occurs. Each OEDP alert is investigated to determine if it is an operational error, pilot deviation, or non-event.<sup>9</sup> At en route centers, we judgmentally sampled OEDP alerts that the facility investigated and classified as either a pilot deviation or a “non-event.” We were unable to do similar tests at TRACON facilities because they do not have a corresponding automatic system to identify when a loss of separation occurs.

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<sup>8</sup> All TRACONs and en route centers that reported a pilot deviation with a loss of separation. We excluded DFW TRACON from our universe.

<sup>9</sup> OEDP alerts may be non-events for several different reasons. For example, an OEDP alert may be for aircraft flying under Visual Flight Rules (VFR). Under VFR, FAA prescribed separation standards do not apply and pilots assume responsibility for maintaining safe separation from other aircraft. The OEDP may also alert when military formation flights are operating; again, FAA separation standards do not apply between the military aircraft in such situations.

## Findings

As shown in the table below, we identified 3 discrepancies at 2 of the 13 facilities randomly selected: Chicago TRACON and Denver Center.

**Table. OIG Review of Pilot Deviation and QAR/OEDP Alert Sample Results by Facility**

Facility	PDs Reviewed	PDs that should be OEs	QAR/OEDP Alerts Reviewed	QAR/OEDP Alerts that should be OEs
Atlanta TRACON	11	0	13	0
<b>Chicago TRACON</b>	<b>10</b>	<b>1</b>	<b>13</b>	<b>1 (PE)</b>
No. Cal. TRACON	9	0	13	0
Salt Lake TRACON	5	0	10	0
So. Cal. TRACON	31	0	14	0
Atlanta Center	30	0	19	0
Cleveland Center	11	0	30	0
<b>Denver Center</b>	11	0	<b>30</b>	<b>1 (PE)</b>
LA Center	24	0	40	0
Miami Center	13	0	24	0
Minneapolis TRACON	1	0	N/A*	N/A
Portland TRACON	2	0	N/A*	N/A
Seattle Center	8	0	N/A*	N/A
<b>TOTAL</b>	<b>166</b>	<b>1</b>	<b>206</b>	<b>2</b>
<i>Key: PD – Pilot Deviation      OE – Operational Error      PE – Proximity Event</i> * N/A – We did not visit these three facilities and therefore did not review their QAR/OEDP alerts.				

## Findings

## **FAA Flight Standards Service Needs To Take Additional Actions To Ensure All Losses of Separation Are Accurately Reported and Investigated To Reduce Potential Safety Risks**

While problems that occurred at DFW TRACON were not systemic, we did identify control weaknesses in FAA's overall reporting and investigating process for loss of separation events. Specifically, we found that pilot deviations were not always investigated thoroughly due to inadequate FAA guidance. During our review, Flight Standards issued guidance to address many of the weaknesses in the investigation process. However, additional actions and follow-up are needed to ensure that pilot deviations are properly reported, classified, investigated, and addressed.

### *Pilot Deviations Were Not Always Investigated Thoroughly*

During this review and our prior investigation at DFW TRACON, we found evidence that Flight Standards inspectors responsible for investigating pilot deviations did not perform a thorough investigation of the incidents. For example:

- Inspectors did not review pilot deviations that were referred to the airline's Aviation Safety Action Program (ASAP). Instead, we found that some inspectors relied solely on the facility's classification of pilot deviations that were referred to ASAP and did not review or validate the accuracy of the report. At least 19 of the 166 pilot deviations we reviewed were submitted through ASAP.
- In addition, 20 pilot deviation reports<sup>10</sup> from our sample of 166 pilot deviations did not appear to be fully investigated by the inspector. For instance, either the inspector's final report did not provide any details about cause of the incident or the narrative section of the inspector's report was entirely blank. Therefore, it was unclear if inspector performed a thorough investigation of the incident. We also identified incidents where the inspector erroneously concluded that the Air Traffic controller caused the loss of separation when, in fact, we determined it was due to pilot error.

### *Flight Standards Has Issued Guidance To Address Many of the Control Weaknesses in Its Pilot Deviation Investigation Process*

In February, March, and July of 2008, Flight Standards issued guidance that addressed many of the control weaknesses identified during the DFW TRACON investigation and this review. For example, Flight Standards guidance now requires inspectors to:

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<sup>10</sup> Note: Not all final reports were available for review.

- verify the accuracy of data in Air Traffic's preliminary report, including those referred to ASAP.
- include a full description of the pilot deviation, causal factors, and recommendations for systemic correction action. For ASAP pilot deviations, inspectors are to request this information from the ASAP Event Review Committee.
- have a review of the final report conducted by the office management and the regional office.
- provide full justification when their investigation determines the pilot deviation should be reclassified.

Also, in August 2008, FAA trained its Flight Standards managers on the new requirements and completed its training of field inspectors on their responsibilities for investigating operational errors and pilot deviations in October 2008.

While these actions represent progress, FAA Flight Standards will need to follow up once the requirements are implemented to ensure inspectors are complying with the new procedures.

#### *FAA Does Not Retain Flight Radar Data, Which Could Be Used To Validate Inspector Investigations of Losses of Separation*

Flight Standards Service inspectors have 90 days to complete their investigation of an event (e.g., to determine whether the pilot actions constitute a violation of Federal Aviation Regulations). However, en route and terminal facilities maintain flight radar data for only 15 and 45 days, respectively. Therefore, if an inspector's investigation determines that an event was caused by controller error, key radar data from the flight may be unavailable to validate the conclusion. FAA's current guidelines only specifically require that the voice data be retained for 2½ years for pilot deviations. Maintaining the radar replay data for pilot deviations with a loss of separation for a longer period would greatly increase the value and accuracy of third-party reviews of loss of separation events.

During our review, we were unable to determine if the controller contributed to the loss of separation for four pilot deviations because radar replay data was not available. For instance, at one en route facility, we questioned whether the controller may have contributed to the loss of separation by not instructing the pilot to turn the aircraft sooner or in a different direction. However, we were unable to verify this because the radar data were not available to evaluate the controller's options at the time of the incident.

## **Findings**

## **FAA Needs To Ensure Losses of Separation Caused by Controllers and Pilots Are Evaluated Consistently**

Unlike its process for operational errors, FAA does not rate the proximity of (i.e., how close aircraft came to one another) or have a goal for reducing the risk of pilot deviations that cause a loss of separation. This is despite the fact that pilot deviations can pose the same risk for a catastrophic accident as operational errors. Loss of separation events can vary from minor incidents (where there was no threat of a collision) to severe incidents (where a collision was barely avoided). Categorizing the severity of events allows FAA to focus resources on identifying the root cause and taking immediate corrective actions for those incidents where there is the greatest potential for another, possibly catastrophic, incident. FAA rates controller operational errors based on proximity—from A (most serious) to C (least serious) and maintains goals for reducing category A and B incidents.

We noted recent pilot deviations that would have been rated as severe events under FAA's criteria for operational errors. However, because these events were pilot deviations, the severity of the event was not measured and no analysis was conducted to determine if similar deviations were occurring so that corrective actions could be taken systemwide.

For example, on August 13, 2007, while under control of the Southern California TRACON, a pilot took his plane above his assigned altitude and conflicted with another aircraft even though he had read back the clearance correctly to the controller. Using FAA's operational error severity classification methodology, the event would have been classified as a serious, category A incident as the 2 aircraft narrowly missed each other by 100 feet vertically and about 1 half mile horizontally.

Using FAA's proximity rating system for operational errors, we estimated the ratings for pilot deviations that occurred while under control of en route and TRACON facilities during FY 2007. *Of the 478 pilot deviations, we estimate that 33 percent would be rated as serious category A or B incidents.*

Figure 2 below is an example of radar display of a pilot deviation (while under the control of the Seattle en route center) that, if categorized in the same method as operational errors, would have been rated as a category B event. The event occurred when a military pilot (EXP094) took his plane above his assigned altitude and conflicted with a regional air carrier (QXE397). The aircraft came within 300 feet vertically and 2.96 miles horizontally of each other. The Flight Standards inspector closed the report with no action, in part, because he did not think it was significant enough.

## **Findings**

**Figure 2. Radar Display of a Serious Pilot Deviation**



By evaluating losses of separation caused by pilots in the same manner as those caused by controllers, FAA would have a clearer understanding of the causes of these incidents and could use this information to improve both the accurate classification of the incidents and the safety of the National Airspace System. To illustrate, we reviewed pilot deviations in our sample and noted several trends that may need national attention. For example we found that:

- 53 of the incidents occurred when the pilots acknowledged and read back the correct altitude assigned but deviated to a different altitude;
- 27 occurred because the pilots either had equipment malfunctions or did not accurately program their aircraft navigational equipment (e.g., forgot to enter changes in the Flight Management System, entered the wrong altitude, or set the altimeter incorrectly, etc.); and
- 19 occurred because the pilots did not follow established departure or arrival procedures, including those established by newly implemented area navigation (RNAV) procedures.

FAA should establish a process to rate the severity of pilot deviations that cause a loss of separation and establish a corresponding goal to reduce the most severe incidents.

### **FAA Needs To Implement TARP as a Full-Time Separation Conformance Tool To Ensure That All Losses of Separation Are Accurately Reported**

FAA will not have adequate assurance that losses of separation at TRACON facilities are reported accurately until it fully implements TARP as a full-time separation conformance tool. TARP is an automated tool that will identify when losses of separation occur at terminal facilities. FAA began developing TARP in

### **Findings**

2005 to improve operational error reporting in response to our and the National Transportation Safety Board's longstanding recommendations. FAA plans to implement TARP in three phases.

- During Phase 1, TARP will be used only to conduct terminal facilities' required 2-hour monthly radar audits. FAA plans to complete this phase by the end of calendar year 2009.
- In Phase 2, facilities will continue to use TARP as an audit tool but for increasing periods of time beyond the current 2-hour requirement. FAA will not finalize its Phase 2 implementation strategy until April 30, 2009.
- In Phase 3, facilities will use TARP continuously (24/7) in the operating quarters as a separation conformance tool. However, this will require additional technical improvements and infrastructure to operate reliably in this capacity. At the time of our review, FAA had not established milestones for developing an implementation strategy for this phase.

It will be important that FAA moves expeditiously to implement TARP as a full-time separation conformance tool. To do this, FAA will need to address potential barriers. For example, managers expressed concerns that TARP may have a significant impact on workload. That is, if TARP is constantly alerting for very minor errors<sup>11</sup> that otherwise cannot be detected on the controller's radar scope, it could consume a substantial amount of resources to investigate each alert due to their sheer volume. FAA officials indicated that they plan to mitigate such workload issues by programming TARP to automatically fill out the proximity event form and not require a full investigation.

While FAA is working to address this potential barrier, history shows that additional barriers or challenges are likely to occur during the implementation of new systems. One way to proactively mitigate them is to establish a method to share best practices among facilities. We interviewed personnel from seven facilities that had received TARP (six certified facilities and one where TARP was in the testing stage). We found that most thought TARP was a very user-friendly system and agreed that a process for sharing best practices in using the system would be helpful. In addition, as FAA develops its implementation strategy for Phase 2 implementation, it needs to work aggressively in developing milestones for implementing Phase 3 of TARP.

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<sup>11</sup> TARP can identify losses to the hundredth of a mile.

## Findings



## **FAA Needs To Take Additional Actions To Improve the ATO's Oversight Role of Reported Losses of Separation**

FAA has taken several actions to improve its oversight of reporting and investigating losses of separation caused by pilot and controllers, but additional actions are still needed to ensure these incidents are reported and classified accurately. Prior to our DFW TRACON investigation, there was little or no oversight provided over the accurate classification of losses of separation.

### *ATO Oversight Processes Were Not Adequate To Identify Potential Reporting Problems*

We found that the ATO Safety Office's oversight process of reporting and investigating losses of separation was inadequate. For example, neither the ATO Headquarters nor the Service Center Safety offices discovered or challenged the incidents that were misclassified by DFW TRACON. In addition, ATO Safety Office personnel did not routinely review pilot deviations to ensure they were accurately reported. Also, if the Flight Standards inspector disagreed with Air Traffic's initial classification of a pilot deviation, ATO Safety personnel did not follow up to verify whether a controller's actions may have contributed to the incident.

The weaknesses in the ATO's oversight occurred, in part, because ATO-Safety personnel lacked stable leadership and staffing resources to provide adequate oversight. The ATO did not have a permanent Vice President (VP) for Safety Services for more than 18 months<sup>12</sup> and has not had a permanent manager for its Evaluations and Investigations office for 2 years.

Over the last 10 years, the number of employees in this office decreased from 79 to 24 (as of March 2008). In addition, ATO officials told us that hiring qualified and experienced employees is a challenge because Air Traffic facilities do not want to give up qualified Air Traffic employees. Further, those officials told us that there were financial disincentives for employees to transfer from Air Traffic facilities to Headquarters, as they could experience substantial pay cuts—these cuts range from \$16,000 to \$41,000 depending on the pay band.

### *FAA Is Taking Actions To Revamp the ATO's Safety Oversight*

In response to the problems at DFW TRACON, FAA has either taken or plans to take several actions to improve its oversight. Specifically:

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<sup>12</sup> A permanent VP for Safety Services was hired in April 2008.

## **Findings**

- In 2007 (after problems at DFW TRACON began to surface), FAA Headquarters<sup>13</sup> and Service Center personnel began to closely scrutinize all pilot deviations with a loss of separation to determine if Air Traffic actions contributed to the incident.
- ATO Headquarters Safety personnel improved its oversight of the terminal facilities' 2-hour monthly radar audits. For example, facilities can now be selected more than once per year and are not notified in advance that their data will be audited by Headquarters. These changes have improved the facility's reporting of operational errors. For example, 6 months prior to implementing these changes, facilities reported no operational errors as a result of their monthly audits. Three months after these new procedures were implemented, facilities identified 10 operational errors and 3 proximity events as a result of their monthly audits.
- FAA's Evaluation and Investigation office now has 34 permanent staff plus 9 additional personnel on detail.
- FAA plans to establish a process whereby ATO Headquarters Safety personnel will review pilot deviations after Flight Standards investigations are completed.
- Finally, in response to our DFW TRACON report, the ATO's Chief Operating Office directed the VP for Safety Services to conduct a complete, "top-to-bottom" review of ATO Safety Services to determine what additional resources are required to meet its responsibilities.

As part of this ongoing review, FAA plans to establish an independent quality assurance function in the ATO Service Areas that will report directly to the ATO's VP for Safety Services. This function will continually oversee event reporting, make event determinations (i.e., whether a loss of separation is pilot or controller error), and ensure audit data integrity of facility reports. This change will transfer the responsibility for event determination from the facility manager to this new office. FAA expects to complete all of these organizational changes by the summer of 2009.

These actions should help alleviate ATO Safety Office staffing issues and improve oversight at the national and Service Area levels. Nevertheless, additional actions are still needed in three areas.

- First, FAA needs to closely monitor the planned actions to ensure they are completed in a timely manner. These actions include hiring a permanent

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<sup>13</sup> Reviews are being conducted by ATO staff from Safety's Evaluations and Investigations Office and En Route and Oceanic's Quality Assurance and Safety Office and by Aviation Safety's Air Traffic Safety Oversight group.

## Findings

Director for the Evaluations and Investigations office and formalizing procedures for the ATO Safety Office's review of pilot deviations with a loss of separation. FAA should initiate an internal audit conducted by its independent Aviation Safety Oversight Office (AOV) once the planned changes have been implemented to determine that they are being complied with.

- Second, once the ATO transfers the event determination responsibility from the facility to its independent quality assurance staff located in the Service Areas, Flight Standards should provide a liaison from its regional offices (co-located with the ATO Safety Areas) to assist ATO Safety staff in the event determinations when losses of separation occur. By doing so, Flight Standards will have more timely input into losses of separations that were or should have been classified as a pilot deviation rather than waiting until after the entire ATO investigation process is completed.
- Finally, FAA needs to ensure that it thoroughly evaluates the accuracy of reporting during its ATO Safety facility audit process. ATO Safety Evaluations staff is required to conduct audits of all Air Traffic facilities once every 3 years. The audits provide an independent method of assessing the facility's compliance with FAA directives and procedures, including its processes for investigating and reporting losses of separation.

In the case of DFW TRACON, the facility audit (which was completed just 4 months prior to our investigation at the facility) did not effectively identify operational error reporting weaknesses. Specifically, in March 2007, the ATO's facility evaluations group conducted a facility audit of DFW TRACON but did not identify operational error reporting problems. Further, the evaluators concluded that the TRACON's QAR process met requirements and noted that its review of QARs revealed a "commendable" process. However, our investigation at DFW (started only a few months later in July 2007) revealed that 23 (37 percent) of the 62 misreported operational errors and deviations were originally recorded as non-event QARs. Therefore, the thoroughness of facility audits in evaluating the accuracy of operational error reporting is highly questionable.

We also found that the procedures for documenting and investigating QARs varied at the facilities we visited. At one facility, we identified significant weaknesses in the QAR procedures. For example, at one location visited, after initiating a QAR to investigate a possible incident, managers either did not complete the investigation or failed to document the results of the investigation as required. Such weaknesses could indicate that the facility has a lax investigation process, which could lead to inaccurate reporting. Therefore, it is important that during its facility audit process, that ATO Safety personnel thoroughly review the facilities' QAR process.

## **Findings**

## **RECOMMENDATIONS**

We recommend that FAA:

1. Establish a follow-up mechanism to ensure that Flight Standards Service inspectors are complying with new guidance for investigating pilot deviations issued in February, March, and July of 2008.
2. Require that radar replay data for pilot deviations with a loss of separation be retained for 2½ years (similar to retention requirements for voice data).
3. Establish a process to rate the severity of pilot deviations that cause a loss of separation and establish a corresponding goal to reduce the most severe incidents.
4. Develop milestones for implementing TARP as a full-time separation conformance tool.
5. Initiate an internal AOV audit of the planned changes to the ATO's safety oversight process to ensure compliance with the new procedures.
6. Assign a regional Flight Standards liaison to assist the ATO Safety Services staff in determining whether losses of separation are pilot or controller errors.
7. Modify the ATO facility audit process by including requirements to specifically review facility QARs to determine if incidents reported as "non-events" were accurately classified.

## **AGENCY COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE**

We provided FAA with our draft report on December 30, 2008, and received its response on March 12, 2009. In its response, FAA agreed with recommendations 1, 2, 4, 5, and 7 and provided acceptable corrective actions. FAA did not agree with recommendations 3 and 6. FAA's response is summarized below and included in its entirety in the appendix to this report.

**Recommendation 1:** FAA concurred and stated that it will develop a follow-up process to ensure inspector compliance with new guidance for investigating pilot deviations by December 31, 2009. FAA's response, planned actions, and target date meet the intent of our recommendation.

**Recommendation 2:** FAA partially concurred and stated that it suggests that the recommendation be modified to state that radar and voice data retention requirements be the same for both operational errors and pilot deviations with a loss of separation, and that retained data be required to allow subsequent audit and confirmation of loss categorization. FAA further stated that "Air Traffic Oversight Services (ATO-S), the ATO System Operations Service (ATO-R), and the Flight Standards Service (AFS) will coordinate their organizations' respective directives to ensure common and compatible data retention requirements are published by September 30, 2009." FAA's alternative actions and target date address the intent of our recommendation.

**Recommendation 3:** FAA non-concurred and stated that it "addresses the seriousness of the violation during the investigation and adjusts punishment according to the degree of the violation." However, our recommendation was *not* aimed at rating the severity of pilot deviations to assess punitive actions against pilots on a case-by-case basis. Rather, we intended for FAA to assess the severity of incidents to advance its risk-based approach to safety oversight. This would allow FAA to gather macro-level data, which it could use to identify possible trends, potentially systemic issues, and corrective actions needed at the national level.

FAA already uses a similar severity rating approach to identify systemic issues for virtually all other aviation incidents including operational errors, near midair collisions, and runway incursions. In fact, FAA currently rates the severity of pilot deviations that occur on the ground (i.e., runway incursions) but not pilot deviations that occur in the air. Given that aviation safety is FAA's primary mission, we are concerned that the Agency would bypass an opportunity to advance its risk-based safety oversight by gathering data on the most severe pilot deviations to identify systemic issues and taking actions to address the root causes

at the national level. We believe FAA needs to reconsider its position and therefore consider this recommendation unresolved.

**Recommendation 4:** FAA concurred and stated that it has established in its FY 2009 Business Plan several milestones and target dates for implementing TARP. FAA's response, planned actions, and target dates meet the intent of our recommendation.

**Recommendation 5:** FAA concurred and stated that "AOV currently has an established audit mechanism that will evaluate any planned changes in ATO's Safety Oversight process when they are developed." FAA's response addresses the intent of our recommendation, but we request that FAA provide us with target dates for evaluating the planned changes to the ATO's safety oversight process.

**Recommendation 6:** FAA non-concurred and stated that "ATO-S will continue to work with [aviation safety inspectors] to resolve reported violations of air traffic rules and procedures, eliminating the need to assign a regional Flight Standards Liaison." However, the intent of our recommendation was to allow Flight Standards to have more timely input into losses of separations that were or should have been classified as a pilot deviation rather than waiting until after the entire ATO investigation process is completed. FAA's response seems to indicate that it intends to simply maintain the status quo. We therefore request that FAA reconsider its position on how it plans to ensure that Flight Standards has input into the accurate classification of losses of separation at the "front end" of the process. Accordingly, we consider this recommendation unresolved.

**Recommendation 7:** FAA concurred and stated that ATO-S is revising both its requirements for conducting Quality Assurance Reviews (QARs) and its audit processes in general. FAA expects to complete this effort by September 30, 2009. FAA's response, planned actions, and target date meet the intent of our recommendation.

## **ACTIONS REQUIRED**

We consider FAA's planned actions and target dates for recommendations 1, 2, 4, and 7 to be responsive. These recommendations are considered resolved pending completion of these actions. While FAA's actions to address recommendation 5 are also responsive, we request that FAA provide target dates for completion. In accordance with DOT Order 8000.1C, we request that FAA reconsider its position regarding recommendations 3 and 6. Please provide your written response regarding recommendations 3, 5, and 6 within 30 days of this report.

## **EXHIBIT A. SCOPE AND METHODOLOGY**

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. The audit was conducted between November 2007 and December 2008. The following scope and methodology were used in conducting this review.

To determine whether the reporting problems that occurred at DFW TRACON were occurring at other facilities, we verified the accuracy of how pilot deviation, QARs and OEDP alerts were classified. Specifically, we statistically reviewed 166 pilot deviations with a loss of separation that occurred during FY 2007 at 13 Air Traffic facilities. We also judgmentally selected 206 QAR and OEDP alerts that occurred at 10 facilities in FY 2008, which the facilities determined not to be operational errors. Our methodology in reviewing these events was consistent with the methodology used during our review of DFW TRACON.

To determine if pilot deviations, QARs and OEDP alerts were classified accurately, we:

- reviewed radar and voice data.
- reviewed preliminary and final pilot deviation reports and related documentation.
- reviewed QAR reports and related documentation.
- reviewed OEDP alert logs and related documentation.
- interviewed ATC and flight standards personnel as needed.
- reviewed operational error documentation if the pilot deviation was also an operational error.

To evaluate FAA's policies and procedures and identify the roles and responsibilities for reporting and investigating these incidents we did the following:

- Interviewed representatives from the following Air Traffic Organization (ATO) offices:
  - ATO Safety Services, Evaluations and Investigations and Vice President for Safety

- ATO Terminal Service, Quality Assurance
- En Route and Oceanic Services, Quality and Safety Assurance
- Two Service Area, Service Centers (see exhibit B)
- Ten Air Traffic Control facilities (see exhibit B), including Air Traffic Managers, Operations Managers, Quality Assurance and Safety Managers, and quality assurance staff.
- Interviewed representatives from the following Aviation Safety offices:
  - Air Traffic Safety Oversight Services
  - Flight Standards Service-Quality Assurance
  - Five Flight Standards District Offices (see exhibit B)
  - One Regional Flight Standards Division Office
- Reviewed the following FAA guidance:
  - FAA Order 7210.56C, Air Traffic Quality Assurance Order and related Notices and changes.
  - FAA Order 8900.1, Flight Standards Information Management System (FSIMS) and related Notices.
  - FAA Order 8020.11B, Aircraft Accident and Incident, Notification, Investigation, and Reporting.
  - FAA Order 8020.16, Air Traffic Organization Aircraft Accident and Incident, Notification, Investigation, and Reporting.
  - FAA Order 7110.65R, Air Traffic Control.
  - Flight Standards Quality Management System, QPM # AFS 001-020, Pilot Deviation Process.
- Reviewed the implementation status of TARP.

To determine the accuracy and completeness of the pilot deviation database used to select our statistical sample, we judgmentally sampled pilot deviation reports not included in our sample at facilities visited to ensure they did not involve a loss a separation. We also compared these reports to the pilot deviations listed on the national pilot deviation database.

## **Exhibit A. Scope and Methodology**



## **EXHIBIT B. ORGANIZATIONS VISITED OR CONTACTED**

### **FAA Headquarters, Washington, DC**

- ATO Safety Services
- ATO En Route and Oceanic Services
- ATO Terminal Services
- Aviation Safety - Flight Standards Service
- Aviation Safety - Air Traffic Safety Oversight Service

### **Service Areas/Regional Offices**

- Eastern Service Center, Safety Assurance Group
- Western Service Center, Safety Assurance Group
- Northwest Mountain Region Flight Standards

### **Air Traffic Control Facilities**

- Atlanta En Route Center
- Atlanta TRACON
- Chicago TRACON
- Cleveland En Route Center
- Denver En Route Center
- Los Angeles En Route Center
- Miami En Route Center
- Northern California TRACON
- Salt Lake TRACON
- Southern California TRACON

### **Flight Standards District Offices (FSDO)**

- Atlanta FSDO
- Denver FSDO
- Los Angeles FSDO
- Riverside FSDO
- Sacramento FSDO

## **EXHIBIT C. PRIOR AUDIT REPORTS**

Since 2000, we have issued three audit reports on operational errors.

- OIG Report Number AV-2001-11, “Actions To Reduce Operational Errors and Deviations Have Not Been Effective,” December 15, 2000.
- OIG Report Number AV-2003-040, “Operational Errors and Runway Incursions,” April 3, 2003.
- OIG Report Number AV-2004-085, “Controls Over the Reporting of Operational Errors,” September 20, 2004.

In our 2000 and 2004 reports, we specifically addressed the need for FAA to improve controls over the reporting operational errors as described below.

In December 2000, we reported that FAA was at risk of underreporting operational errors at terminal facilities because, at these facilities, FAA relied on controller self-reporting. Further, adequate documentation was not always available to confirm if an operational error occurred because radar and voice tapes were retained for only 15 days. We recommended that FAA implement NTSB’s recommendation to extend the retention period for voice and radar tapes from 15 days to 45 days.

At the time, FAA indicated that it could not extend the retention period for radar and voice data because it would create a storage problem. Therefore, it agreed to retain voice tapes and radar data for 45 days only for known or suspected incidents. Since that time FAA has updated its terminal radar and voice data with digital technology and now retains these data for 45 days.

In September 2004, we again reported that operational errors were at risk of being underreported because of FAA’s reliance on self-reporting at terminal facilities. At the time of our report, FAA indicated that because of the complexity of the airspace in the terminal environment, it could not develop an automated system to identify when operational errors occur.

In response to our 2004 recommendations, FAA established procedures in 2005 that requires terminal facilities to conduct monthly audits of radar data to identify potential unreported operational errors. Additionally, FAA Headquarters officials were also required to randomly review facility audit results to ensure compliance. Since that time, FAA began to develop a system (TARP) to automatically identify operational errors at terminal facilities. FAA is now implementing this system.

**EXHIBIT D. MAJOR CONTRIBUTORS TO THIS REPORT**

<u>Name</u>	<u>Title</u>
Daniel Raville	Program Director
Liz Hanson	Project Manager
Mark Gonzales	Senior Analyst
Tasha Thomas	Analyst
Kevin Montgomery	Analyst
Andrea Nossaman	Writer-Editor

## APPENDIX. AGENCY COMMENTS



## Federal Aviation Administration

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### Memorandum

Date: March 12, 2009

To: Lou Dixon, Assistant Inspector General for Aviation and Special Program Audits

From: Ramesh K. Punwani, Assistant Administrator for Financial Services/CEO 

Prepared by: Anthony Williams, x79000

Subject: OIG Draft Report: FAA's Process for Reporting and Investigating Operational Errors Federal Aviation Administration

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Thank you for the opportunity to review and comment on the findings and recommendations of the subject draft report dated December 30, 2008. The Federal Aviation Administration (FAA) concurs with Recommendations 1, 4, 5, and 7; nonconcur with Recommendations 3, and 6; and partially concurs with Recommendation 2.

The following is the Agency's response to each of your Recommendations.

**OIG Recommendation 1:** Establish a follow-up mechanism to ensure that Flight Standards Service inspectors are complying with new guidance for investigating pilot deviations issued in February, March, and July 2008.

**FAA Response:** Concur. Flight Standards agrees and will develop a follow up process to ensure inspector compliance by December 31, 2009.

**OIG Recommendation 2:** Require that radar replay data for pilot deviations with a loss of separation be retained for 2 ½ years (similar to retention requirements for voice data).

**FAA Response:** Partially concur with comment. ATO Directives currently require 2 ½ year retention of supporting radar data for pilot deviations similar to those required for voice and radar data in operational error investigations. However, current radar data retention requirements do not specifically require playback capability. The FAA suggests that this Recommendation be modified to state that "radar and voice data retention requirements be the same for both operational errors and pilot deviations with a loss of separation, and that retained data be required to allow subsequent audit and confirmation of loss categorization".

Air Traffic Oversight Service (ATO-S), the ATO System Operations Service (ATO-R), and the Flight Standards Service (AFS) will coordinate their organizations respective directives to ensure common and compatible data retention requirements are published by September 30, 2009.

**OIG Recommendation 3:** Establish a process to rate the severity of pilot deviations that cause a loss of separation and establish a corresponding goal to reduce the most severe incidents.

**FAA Response:** Nonconcur. Any violation of a Federal Air Regulation contained with the Code of Federal Regulation is treated as a serious violation. FAA addresses the seriousness of the violation during the investigation and adjusts punishment according to the degree of the violation. Each violation is addressed in its entirety. We will continue to focus our efforts on pilot education to reduce all forms of violations and continue to look for additional ways to measure the events.

**OIG Recommendation 4:** Develop milestones for implementing Traffic Analysis and Review Program (TARP) as a full-time separation conformance tool.

**FAA Response:** Concur. FAA has established in its Fiscal Year 2009 Business Plan the following milestones for implementing TARP. Complete TARP audit tool implementation at first 50 percent of applicable terminal sites by April 30, 2009. Finalize TARP Phase II implementation strategy plan by April 30, 2009. Complete TARP audit tool implementation at 80 percent of all applicable terminal sites by September 30, 2009. Continue the development and deployment of TARP with a targeted completion of Terminal Implementation by December 30, 2009 and NAS-wide implementation by September 30, 2011.

**OIG Recommendation 5:** Initiate an internal AOV audit of the planned changes to the ATO's Safety Oversight process to ensure compliance with the new procedures.

**FAA Response:** Concur. AOV currently has an established audit mechanism that will evaluate any planned changes in ATO's Safety Oversight process when they are developed.

**OIG Recommendation 6:** Assign a regional Flight Standards Liaison to assist the ATO Safety Services staff in determining whether losses of separation are pilot or controller errors.

**FAA Response:** Nonconcur. Aviation Safety Inspectors (ASIs) do not have the background or training in the rules and regulations required of Air Traffic Controllers. However, ASIs should be responsible for the investigation into any reported violation of a Federal Air Regulation. Therefore, ATO-S will continue to work with ASIs to resolve reported violations of air traffic rules and procedures, eliminating the need to assign a regional Flight Standards Liaison.

**OIG Recommendation 7:** Modify the ATO facility audit process by including requirements to specifically review facility QARs to determine if incidents reported as "non-events" were accurately classified.

**FAA Response:** Concur. ATO-S is currently in the process of revising both its requirements for conducting Quality Assurance Reviews (QARs) and its audit processes in general. In both cases, it is the goal of ATO-S to improve the ATO's accuracy and completeness in reporting losses of separation and other indicators of risk. ATO-S will develop revised QAR, or similar risk

## **Appendix. Agency Comments**

indicator report(s), definition(s) and processes by September 30, 2009. ATO-S will establish specific audit processes and requirements to review facilities' accuracy and effectiveness in investigating suspected losses of separation.

The following pages contain textual versions of the graphs and charts found in this document. These pages were not in the original document but have been added here to accommodate assistive technology.

## FAA’s Process for Reporting and Investigating Operational Errors

### Section 508 Compliant Presentation

**Figure 1. FAA’s Process for Reporting and Investigating Incidents Involving a Loss of Separation**

- Loss of separation identified by Air Traffic facility. Initial determination is made if the incident was controller or pilot error.
- If the loss of separation is determined to be a pilot error, the Air Traffic facility forwards the preliminary report to the Flight Standards inspector who completes the investigation and final report. The Air Traffic facility also copies the appropriate Air Traffic Organization (ATO) Service Area and Unit on the preliminary report that it sends to Flight Standards.
- If the loss of separation is determined to be a controller error, the Air Traffic Facility prepares preliminary investigation report and forwards the report to appropriate ATO Service Area and Unit for review. The Air Traffic facility completes the investigation and final report and forwards the final report to the appropriate ATO Service Area and Unit for review. The ATO Service Area and Unit review both the preliminary and final reports sent from the Air Traffic Facility. After review, the ATO Service Area and Unit forward the report to Headquarters ATO Safety office for review. The ATO Safety Office conducts the final review.

**Table. Office of Inspector General Review of Pilot Deviation and Quality Assurance Reviews (QARs) and Operational Error Detection Program (OEDP) Alerts - Sample Results by Facility**

Atlanta TRACON	Pilot deviations reviewed: 11	Pilot deviations that should be classified as operational errors: 0	QAR and OEDP alerts reviewed: 13	QAR and OEDP alerts that should be classified as operational errors: 0
Chicago TRACON	Pilot deviations reviewed: 10	Pilot deviations that should be classified as operational errors: 1	QAR and OEDP alerts reviewed: 13	QAR and OEDP alerts that should be classified as operational errors: <b>1 (Proximity Event)</b>



Northern California TRACON	Pilot deviations reviewed: 9	Pilot deviations that should be classified as operational errors: 0	QAR and OEDP alerts reviewed: 13	QAR and OEDP alerts that should be classified as operational errors: 0
Salt Lake TRACON	Pilot deviations reviewed: 5	Pilot deviations that should be classified as operational errors: 0	QAR and OEDP alerts reviewed: 10	QAR and OEDP alerts that should be classified as operational errors: 0
Southern California TRACON	Pilot deviations reviewed: 31	Pilot deviations that should be classified as operational errors: 0	QAR and OEDP alerts reviewed: 14	QAR and OEDP alerts that should be classified as operational errors: 0
Atlanta Center	Pilot deviations reviewed: 30	Pilot deviations that should be classified as operational errors: 0	QAR and OEDP alerts reviewed: 19	QAR and OEDP alerts that should be classified as operational errors: 0
Cleveland Center	Pilot deviations reviewed: 11	Pilot deviations that should be classified as operational errors: 0	QAR and OEDP alerts reviewed: 30	QAR and OEDP alerts that should be classified as operational errors: 0
<b>Denver Center</b>	Pilot deviations reviewed: 11	Pilot deviations that should be classified as operational errors: 0	QAR and OEDP alerts reviewed: <b>30</b>	QAR and OEDP alerts that should be classified as operational errors: <b>1 (Proximity Event)</b>
Los Angeles Center	Pilot deviations reviewed: 24	Pilot deviations that should be classified as operational errors: 0	QAR and OEDP alerts reviewed: 40	QAR and OEDP alerts that should be classified as operational errors: 0
Miami Center	Pilot deviations reviewed: 13	Pilot deviations that should be classified as operational errors: 0	QAR and OEDP alerts reviewed: 24	QAR and OEDP alerts that should be classified as operational errors: 0
Minneapolis TRACON	Pilot deviations reviewed: 1	Pilot deviations that should be classified as operational errors: 0	QAR and OEDP alerts reviewed: not applicable (We did not visit this facility and therefore did not review its QAR or OEDP alerts.)	QAR and OEDP alerts that should be classified as operational errors: not applicable

Portland TRACON	Pilot deviations reviewed: 2	Pilot deviations that should be classified as operational errors: 0	QAR and OEDP alerts reviewed: not applicable (We did not visit this facility and therefore did not review its QAR or OEDP alerts.)	QAR and OEDP alerts that should be classified as operational errors: not applicable
Seattle Center	Pilot deviations reviewed: 8	Pilot deviations that should be classified as operational errors: 0	QAR and OEDP alerts reviewed: not applicable (We did not visit this facility and therefore did not review its QAR or OEDP alerts.)	QAR and OEDP alerts that should be classified as operational errors: not applicable

**Total pilot deviations reviewed: 166. Total pilot deviations that should be classified as operational errors: 1**

**Total QAR and OEDP alerts reviewed: 206. Total QAR and OEDP alerts that should be classified as operational errors: 2**

### **Figure 2. Radar Display of a Serious Pilot Deviation**

Figure 2 shows a radar display of a pilot deviation (while under the control of the Seattle en route center) that, if categorized in the same method as operational errors, would have been rated as a category B event. The event occurred when a military pilot (labeled on the screen as EXP094) took his plane above his assigned altitude and conflicted with a regional air carrier (labeled on the screen as QXE397). The aircraft came within 300 feet vertically and 2.96 miles horizontally of each other.

**ATTACHMENT 5: FAA MEMORANDUM IN RESPONSE TO FINDINGS  
AND RECOMMENDATIONS**

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U.S. Department of Transportation – Office of Inspector General

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# Federal Aviation Administration

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## Memorandum

Date: NOV 16 2009

To: Mr. Robert Westbrook, Acting Assistant Inspector General  
for Special Investigations and Analysis

From: J. Randolph Babbitt, Administrator *JRB*

Subject: Response to Office of the Inspector General (OIG) Investigation  
Case #I09Z000003SINV at Memphis Airport Traffic Control Tower (MEM  
ATCT) dated November 6, 2009.

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The Federal Aviation Administration has reviewed the above identified OIG Report and submits the following responses to the findings and recommendations:

1. **Finding:** The lack of recent air traffic controller experience with the management of FedEx aircraft crossing Runway 27 to and from the FedEx hub during the midnight shift *may* present some safety concerns when the runway is put back in service. (*Allegation 4: During the midnight shift, "close calls" have resulted when aircraft from parallel Runways 18 L/C/R or 36 L/C/R cross Runway 27 during FedEx arrival and departure "pushes."*)

**Response:** The facility is keenly aware of the challenges presented by the reopening of Runway 27. The management staff and training department have prepared classroom training as well as an operational implementation plan for the reopening of Runway 27. Operations Managers and Frontline Managers have adjusted their shifts to maximize a management presence in the operations when Runway 27 reopens. Personnel who have recently certified without seeing the operation with Runway 27 open, or have little experience with it, have been identified so additional emphasis can be given to focus attention to their needs. They completed tower simulator training so that they could become familiar with the operation before it is activated. The entire facility is being briefed on the reopening of Runway 27. Finally, the airport and the users have been advised that when Runway 27 is reopened, its utilization will gradually increase over several weeks until complete familiarization and potential is achieved. The operation will be constantly evaluated as Runway 27 is returned to its full use and capacity.

2. **Finding:** Memphis' current surface radar system for detection of aircraft, vehicles, or other objects on the ground does not, in fact, cover Runway 27. FAA is planning, however, to deploy a new system in January 2011 which will cover the runway.

(*Allegation 5: Airport Movement Area Safety System (AMASS) is not certified for use on Runway 27: thus, air traffic controllers are unable to use this radar-based safety tool when, for example, aircraft cross the runway.*)

**Response:** The current surface radar system for detection of aircraft, vehicles or other objects on the ground (AMASS) has never been configured to include Runway 27 because of equipment limitations regarding line of sight issues from hangars and other surface obstructions. Even though there are line of sight issues with the AMASS equipment, air traffic controllers can see Runway 27 from the existing tower and are able to provide air traffic control services in accordance with national orders and regulations. Upon completion of the new Tower, equipment will be deployed that configures the entire airport including Runway 27. The new Tower and ASDE-X are projected to be complete and operational in January 2011. This ASDE-X installation is part of the national program's waterfall schedule for ASDE-X implementation.

3. **Finding:** Memphis air traffic controllers have allowed FedEx and other aircraft to exceed the maximum recommended tailwind speed during take-offs and landings. However, doing so is not prohibited by FAA order. (*Allegation 6: Memphis air traffic controllers regularly allow aircraft, especially those in the FedEx fleet, to exceed the maximum tailwind speed for arrivals and departures established by Memphis management.*)

**Response:** Tailwind components are covered in the FAA Order 7110.65, paragraph 3-5-1. It is the pilot's responsibility to request and accept or decline a runway assignment based on the operating limitations of his particular aircraft and its particular and specific weight and configurations. Front Line Managers constantly monitor the wind during operations and make best judgment calls when warranted regarding changing the runway operation if the wind is significant enough and/or pilots advise of concern.

4. **Allegation 1 - recommendation:** When Runway 27 is used for arrivals, an aircraft executing a go-around or missed approach maneuver could come into conflict with traffic landing on Runway 18R. Given the frequency of go-arounds at Memphis, the use of Runway 27 for arrivals presents a significant threat to public safety. *Within 30 days of opening Runway 27, FAA should conduct a risk assessment study regarding simultaneous independent operations on Runways 27 and 18R. In addition, we recommend AOV audit these operations within 90 days of implementation to ensure that appropriate safety mitigations are in place and complied with.*

**Response:** Concur. The FAA will conduct a review of the simultaneous independent operations on Runways 27 and 18R within 30 days of the reopening of Runway 27. Additionally, the Office of Air Traffic Safety Oversight Service (AOV) will audit the Runway 27 - 18R operation within 90 days of implementation.

5. **Allegation 3 - recommendation:** On at least two occasions, a supervisor stopped an air traffic controller from preventing a loss of separation between aircraft on approach; as a result, operational errors went unreported. *FAA should reemphasize to all Memphis air traffic control personnel that a suspected loss of separation must be immediately reported*

*to a manager or controller-in-charge. FAA should also provide remedial training to the QAR personnel responsible for failing to identify the operational error.*

**Response:** Concur. The FAA will brief all Memphis air traffic control personnel within 30 days that a suspected loss of separation must be immediately reported to a manager or controller-in-charge. FAA will also brief all Memphis air traffic personnel within 30 days on the need to conduct Quality Assurance Reviews (QAR) in sufficient detail so as to assess the system performance with reasonable accuracy.

6. **Allegation 8 - recommendation:** In violation of FAA Order 7110.65, Memphis air traffic controllers have failed to notify aircraft of their departure from Class B airspace. *FAA should require the biennial reviews of Class B airspace be documented so conclusions from the reviews can be analyzed and verified.*

**Response:** Concur. In addition to conducting biennial reviews as specified in FAA Order 7400.2, Part 4, Chapter 15, paragraph 15-1-2, the facility has an additional requirement to conduct a monthly audit of Class B airspace. This requirement was implemented on September 30, 2009 as a result of an Office of Air Traffic Safety Oversight Service (AOV) airspace audit and was agreed to by AOV, the ATO's Office of Safety (AJS) and Terminal Services (AJT). The results of these audits are forwarded to the Service Area, AJT and AJS every quarter for analysis, review and verification.

If additional information is needed, please contact Bob Tarter, Vice President for the Office of Safety for the Air Traffic Organization at 202-267-3341.

cc: Senior Vice President, Operations, Air Traffic Operations (AJN)  
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