



THE SECRETARY OF TRANSPORTATION  
WASHINGTON, D.C. 20590

May 25, 2010

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

Re: OSC File No. DI-08-2854

Dear Mr. Reukauf:

I am responding to your letter of April 27, 2009, which referred for investigation safety concerns raised by Andrew G. Blosser, an Aviation Safety Inspector (ASI) with the Federal Aviation Administration's (FAA's) American Airlines Certificate Management Office (CMO). Mr. Blosser alleges that CMO officials are unwilling or unable to obtain positive corrective actions from the air carrier and the failure to enforce inspection and maintenance requirements has resulted in a poorly maintained fleet that represents a safety concern for the flying public.

Mr. Blosser identifies six areas of concern regarding American Airlines' non-compliance: (1) maintenance procedures, (2) minimum equipment list (MEL) deferrals, (3) required inspection items (RII), (4) the repair station training needs assessment (TNA), (5) the Continuing Analysis and Surveillance System (CASS), and (6) the fuel tank system (FTS) maintenance program. I delegated investigation of these matters to the Department's Office of Inspector General (OIG). Enclosed are the OIG's Report of Investigation, FAA Administrator Babbitt's response, and a supplemental response from FAA's Flight Standard Service.

In sum, the OIG investigation substantiated four of the six allegations relating to the CMO's failure to ensure that American Airlines complied with: (1) maintenance procedures, (2) MEL deferrals, (3) RII requirements, and (4) CASS requirements. OIG's review found that at the time of the whistleblower's disclosures, CMO actions to ensure compliance were not effective.

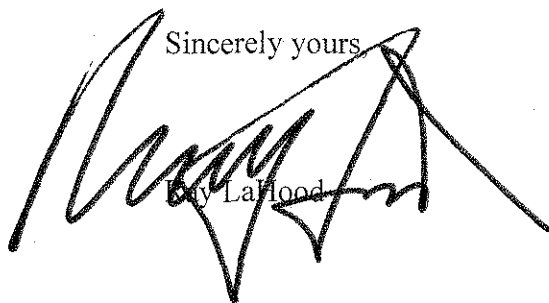
OIG's investigation did not substantiate allegations related to repair station TNAs and the improper approval of the air carrier's FTS maintenance program. Specifically, OIG's review of enforcement and inspection records for American Airlines' repair stations did not find substantial evidence that a significant compliance problem existed relating to the use of TNAs. The investigation was also unable to substantiate that the CMO's Principal Avionics Inspector improperly approved American Airlines' FTS maintenance program for the MD-80 aircraft fleet. The investigation found, however, that inaccurate and untimely FAA guidance for the review and approval of the air carrier's FTS maintenance program most likely contributed to inspectors' confusion and uncertainty as to whether the program met Federal Air Regulations and airworthiness directive requirements.

By the enclosed memorandum and supplemental response, FAA Administrator Babbitt accepted OIG's findings and will take or has taken the following corrective actions:

- The CMO will work with American Airlines to improve its compliance with maintenance procedures by adding new controls over the maintenance function. Also, American Airlines identified the failure to follow maintenance procedures as a high risk area and established a review board to address this issue to include root cause analyses. Finally, the CMO will keep American Airlines' CASS program at an elevated risk level and will specifically target the use of maintenance procedures in its surveillance.
- To address MEL deferrals, the CMO is working with American Airlines to improve its training, controls, and guidance. The CMO will also trend MEL related data to include an analysis of specific aircraft parts being deferred and associated root causes.
- The CMO will continue to conduct surveillance to ensure American Airlines complies with RII requirements, assess trends, and takes appropriate action to correct systemic problems and noncompliance.
- The CMO has scheduled performance assessments (inspections) in the second and fourth quarter of 2010 to review American Airlines CASS system and will conduct a design assessment (policy and procedure review) after American Airlines completes its CASS manual rewrite.
- Finally, FAA has initiated steps to correct its inspector guidance for Fuel Tank System maintenance programs so that it reflects the proper Boeing document reference for the MD-80 fleet. Also, on March 2, 2010, the CMO corrected its Operation Specifications to reflect the proper reference and document.

I appreciate Mr. Blosser's diligence in raising these concerns.

Sincerely yours



By La Hood

Enclosures



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

# Memorandum

Subject: ACTION: OIG Investigation #09Z000022SINV  
Re: American Airlines Certificate Management  
Office

Date: February 22, 2010

From: Robert A. Westbrooks *Robert A. Westbrooks*  
Acting Assistant Inspector General  
for Special Investigations and Analysis, JI-3

Reply to  
Attn. of: R. Engler

To: Margaret Gilligan  
Associate Administrator for Aviation Safety  
Federal Aviation Administration, AVS-1

This report describes the findings of our investigation concerning the American Airlines Certificate Management Office (CMO). In April 2009, a whistleblower reported to the U.S. Office of Special Counsel (OSC) that FAA CMO officials are unwilling or unable to obtain positive corrective actions from American Airlines, and the failure to enforce inspection and maintenance requirements has resulted in a poorly maintained fleet that represents a safety concern for the flying public. This investigation was subsequently referred to the Office of Inspector General for investigation. By law, we are required to provide a copy of our Report of Investigation and FAA's response to the Secretary, and the Secretary is required to submit the report and response to OSC.

Please review this report and respond to us in writing by March 8, 2010. Your response should include any comments, a statement of corrective action planned or taken as a result of our investigation (if any), and your timeframe for implementation of any planned corrective action.

If you have any questions or concerns about this report, please contact me at (202) 366-1415, or the Director of Special Investigations, Ronald Engler, at (202) 366-4189.



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

<b>REPORT OF INVESTIGATION</b>	<b>INVESTIGATION NUMBER</b> #I09Z000022SINV	<b>DATE</b> Feb. 22, 2010
<b>TITLE</b> Re: Failure of FAA Certificate Management Office to Effectively Oversee American Airlines' Inspection and Maintenance Program	<b>PREPARED BY:</b> Mary Hanson Supervisory Auditor - Detailed Senior Investigator Special Investigations and Analysis, JI-3	<b>STATUS</b> <b>FINAL</b>
	<b>DISTRIBUTION</b> AVS-1	<b>APPROVED BY:</b> JI-3

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### ATTACHMENTS:

1. Methodology of Investigation
2. FAA's Oversight of American Airlines' Maintenance Programs, OIG Report No. AV-2010-042, issued February 16, 2010

## BACKGROUND

On April 17, 2009, U.S. Department of Transportation Secretary Ray LaHood received an investigative referral from the U.S. Office of Special Counsel (OSC). An aviation safety inspector with the FAA American Airlines' CMO disclosed aviation safety concerns to OSC alleging that FAA CMO officials are unwilling or unable to obtain positive corrective actions from American Airlines, and the failure to enforce inspection and maintenance requirements has resulted in a poorly maintained fleet that represents a safety concern for the flying public. The aviation safety inspector identified six areas of concern regarding American Airlines' non-compliance: (1) maintenance procedures, (2) minimum equipment list (MEL) deferrals, (3) required inspection items (RII), (4) repair station training needs assessments (TNA), (5) Continuing Analysis and Surveillance System (CASS), and (6) fuel tank system (FTS) maintenance program. The Secretary delegated investigative responsibility to the Office of Inspector General (OIG). Attachment 1 describes the methodology of our investigation.

As required by Federal Aviation Regulations (FAR), an air carrier is required to comply with its established inspection and maintenance programs to ensure its aircraft operate in an airworthy condition. The use of the airline's maintenance programs is authorized by the FAA through the approval of operations specifications. Failure to comply with established maintenance procedures represents a violation of FAR requirements. Key terms related to the whistleblower's allegations are described below.

- MELs contain a list of equipment that may be inoperative without jeopardizing the safety of the aircraft. An air carrier may continue to operate the aircraft provided the equipment repairs are completed within a certain number of days (a deferral).
- RIIs are mandatory maintenance activities that, due to their importance to the overall airworthiness of the aircraft, must be independently inspected by a specially-trained inspector after the work is completed. Mechanics performing RII inspections must complete bi-annual training on current policies and procedures to maintain their authorization to perform these inspections.
- TNAs are used by American Airlines Part 145 repair stations to ensure that employees who are performing maintenance for customers (i.e., air carriers other than American Airlines) understand the unique requirements imposed by the customer before performing the maintenance.
- CASS is used to assess maintenance performed on the air carrier's aircraft. Air carrier personnel enter data into CASS to monitor the effectiveness of air carriers' inspection and maintenance programs.

- 14 CFR 121.1113(c) requires air carriers to incorporate new airworthiness limitations into its maintenance procedures and to have an FAA-approved FTS maintenance program to mitigate risks associated with ignition sources and flammability conditions in fuel tanks.<sup>1</sup> Additional FTS maintenance program requirements are prescribed in airworthiness directives (AD)<sup>2</sup> for specific air carrier fleet types (e.g., MD-80, Boeing 737 or Airbus 320).

In February 2008, the OIG received a separate complaint alleging that the overall operational reliability of American Airlines' aircraft had diminished and that previously reliable aircraft systems were failing on a consistent basis. We considered the results of this audit in assessing the CMO's oversight related to three of the six allegations raised by the whistleblower in this OSC complaint: MEL deferrals, RIIs, and CASS. A copy of the OIG audit report stemming from the February 2008 complaint appears in Attachment 2 of this Report.

## SYNOPSIS

Our investigation substantiated four of the six allegations relating to the CMO's failure to ensure that American Airlines complied with (1) maintenance procedures, (2) MEL deferrals, (3) RII requirements, and (4) CASS requirements. Our review found that at the time of the whistleblower's complaint, CMO actions to ensure compliance had not been effective.

We were unable to substantiate allegations related to repair station TNAs and the improper approval of the air carrier's FTS maintenance program. Specifically, our review of enforcement and inspection records for American Airlines repair stations did not find substantial evidence that a significant compliance problem existed relating to the use of TNAs. We were also unable to substantiate that the CMO's Principal Avionics Inspector (PAI) improperly approved American Airlines' FTS maintenance program for the MD-80 aircraft fleet. However, we found that inaccurate and untimely FAA guidance for the review and approval of air carrier's FTS maintenance programs most likely contributed to inspectors' confusion and uncertainty as to whether the program met FAR and AD requirements.

Below are the details of the allegations and our findings.

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<sup>1</sup> In July 1996 Trans World Airlines (TWA) flight 800 exploded upon take-off from New York's John F. Kennedy Airport killing all 230 people on board. The National Transportation System Board (NTSB) accident investigation that followed found the cause was faulty wiring in the center wing fuel tank of the aircraft.

<sup>2</sup> The FAA issues ADs to notify aircraft owners (e.g., air carriers) of a known safety deficiency with a specific model of aircraft, engine, avionics, or other system. ADs specify inspections that must be carried out, conditions and limitations that must be complied with, and any actions that must be taken to resolve an unsafe condition.

**DETAILS:**

**Allegation 1:** FAA CMO officials are ineffective at requiring American Airlines' maintenance workforce to comply with maintenance procedures.

**FINDINGS**

Our review of the CMO's enforcement data and interviews with Principal Inspectors substantiated that CMO inspector efforts to date have been ineffective at ensuring that American Airlines' maintenance personnel comply with the air carrier's established maintenance procedures. Specifically:

- Enforcement data obtained from the CMO shows that in FY's 2008 and 2009, a significant amount of maintenance-related enforcement cases<sup>3</sup> were initiated as a result of American Airlines personnel failing to follow maintenance procedures/manuals or the requirements of ADs. This trend continued to occur in the first quarter of FY 2010, as shown in the following table.

Time Period	Maintenance-Related Enforcement Cases		
	Total	Failure to follow procedures/AD	Percent of Total Cases
FY 2008	256	106*	41%
FY 2009	181	53	29%
1 <sup>st</sup> Quarter FY 2010	50	16	32%

\* Note: 49 of these cases were issued against individual maintenance personnel as a result of a review of a specific AD related procedures in which they fail to follow various required steps.

- Despite this trend, the CMO officials rarely took legal action to encourage compliance. Instead, CMO inspectors continued to primarily work collaboratively with the air carrier to resolve these deficiencies in FYs 2008 and 2009. For example, CMO inspectors issued letters of correction to the carrier rather than seeking civil penalties for non-compliances, and a significant number of cases resulted in no or informal action because the incident was accepted into the air carrier's Aviation Safety Action Program (ASAP).<sup>4</sup>

<sup>3</sup> When an inspector suspects that an air carrier is not complying with FARs, the inspector initiates an Enforcement Investigative Report (enforcement case). After the inspector completes the investigation and confirms that a violation has occurred, the inspector will recommend either an administrative action (e.g., letter of correction) or legal enforcement action (e.g., a civil penalty) in accordance with FAA Order 2150.3B, *FAA Compliance and Enforcement Program*. This Order requires inspectors to use the Enforcement Decision Tool to determine the type of action to be taken against an air carrier when a violation occurs. The tool is a series of questions that applies risk management principles to allocate limited agency investigative and legal resources to the most important cases for a more timely and effective compliance and enforcement system. For example, inspectors must prove the non-compliance was intentional or a high safety risk to recommend a civil penalty.

<sup>4</sup> ASAP is a joint FAA and industry program intended to generate safety information through voluntary disclosure that may not be otherwise obtainable to identify potential precursors to accidents. The program allows aviation employees to self-report



Time Period	Failure to follow procedures/AD - Action Taken/Recommended				
	Total	Legal-Civil Penalty	Administrative- (Letter of Correction/Warning)	No Action/ Informal/ ASAP	Open
FY 2008	106	6	34	66	0
FY 2009	53	1	26	14	12
1 <sup>st</sup> Quarter FY 2010	16	0	3	2	11

- Although the use of letters of correction was in accordance with FAA enforcement guidance when assessing each non-compliance individually, the guidance states that administrative action, such as a letter of correction, is not adequate when there is a trend of non-compliance for the same FAA regulation.
- Both the PAI and Principal Maintenance Inspector (PMI) indicated that they look at each case individually. They indicated that because there are few FAR citations under which maintenance deficiencies fall, there could be a wide disparity between two deficiencies cited under the same FAR. To justify legal action on the basis of a trend would require evidence to prove that the same problem exists among other enforcement cases. The PMI believed that it is the CMO's obligation to work with the company to identify a solution to correct the problem. He also expressed a concern that if the CMO becomes too aggressive in its enforcement actions, the air carrier would become reluctant to share information on problem areas, which creates an obstacle for open communication with the air carrier. Nevertheless, both Principal Inspectors confirmed that a problem exists with American Airlines' maintenance workforce not following established maintenance procedures. In our opinion, a clear trend existed which should have justified more stringent enforcement action.

The PAI and PMI attributed the trend of noncompliance with maintenance procedures to a lax safety culture within American Airlines, which according to the PMI, resulted in part from the replacement of experienced senior level maintenance personnel (who retired) with less experienced personnel who have limited operational/technical knowledge. The PAI believes that they are now in a better position to change the safety culture as the air carrier hired a new Director of Maintenance in August 2009, as well as other upper level management officials.

The Principal Inspectors also attributed the lax safety culture and noncompliance with maintenance procedures to American Airlines' policies, which state that maintenance manuals need to be "available" to maintenance personnel, but do not mandate that they physically have the manual in their possession or actually refer to the manual when performing maintenance. The Principal Inspectors indicated that they have been working

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safety violations to air carriers and FAA, including violations of Federal Aviation Regulations, without fear of reprisal through legal or disciplinary actions.

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informally with the air carrier to encourage this change. To date, no formal action has been taken to require the airline to make this change.

Finally, we found no evidence that the CMO has performed or required the air carrier to perform a root cause analysis to determine why maintenance personnel continue to fail to follow their own maintenance guidelines.

As a result of the CMO's failure to obtain compliance, incidents of maintenance personnel failing to follow procedures continue to occur. For example, in October and November 2009, inspectors identified 123 Boeing 757 aircraft that did not comply with requirements of an AD because maintenance personnel failed to follow established job instructions.

**Allegation 2:** FAA CMO officials are unable to obtain compliance from American Airlines in the use of MEL deferrals resulting in the operation of airplanes with inoperative equipment outside of established procedures.

## FINDINGS

The results of an OIG audit of the FAA's oversight of American Airlines' maintenance program (conducted independent of this investigation), inspections conducted by an independent FAA team,<sup>5</sup> and our analysis of enforcement data substantiated that potential weaknesses did exist in American Airlines' use of MEL deferrals that may increase the risk of airplanes operating with inoperative equipment outside of established MEL procedures.

- The OIG audit found that MEL deferrals increased significantly. Despite this increase, FAA only tracked the number of deferrals, but did not identify the types of aircraft parts being deferred or the causes of the deferrals. (See OIG Audit Report at Attachment 2 for full details.) Specifically, the audit found that from 2004 through the first 5 months of 2008, the air carrier's number of open maintenance deferrals increased by 32 percent, from an average of 298 per day to an average of 394 per day. We also found that since January 2007, the air carrier had submitted at least 13 self-disclosures<sup>6</sup> regarding improper use or issuance of an MEL. Finally, the audit found the CMO was 2 years past due the required 5-year period for inspecting the air

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<sup>5</sup> The independent team conducted these inspections as part of FAA's Air Carrier Evaluation Program (ACEP). ACEP is an agency program where independent air carrier evaluation teams review an air carrier's maintenance programs to confirm they meet regulatory standards.

<sup>6</sup> The self-disclosure program is intended to encourage data-sharing between FAA and air carriers to identify and address safety issues.

carrier's MEL policies and procedures. In its response to these findings, the FAA agreed with the OIG's recommendation to evaluate American's use of MEL authority and potential MEL abuse.

- An independent FAA team from outside the CMO reviewed American Airlines' MEL procedures, conducted 16 inspections between June and August 2009, and identified MEL deficiencies in 10 inspections. This team also completed a Safety Attribute Inspection (SAI)<sup>7</sup> of American's MEL program and identified weaknesses in 15 of 61 areas reviewed.
- We also reviewed enforcement records for FYs 2008 and 2009 and found that the CMO had initiated 28 enforcement cases related to the improper deferral of equipment. Despite this trend, only 7 resulted in recommendation for civil penalty action, of which 6 were identified by the whistleblower.

Time Period	MEL Enforcement Cases - Action Taken/Recommended				
	Total	Legal-Civil Penalty	Administrative- (Letter of Correction/Warning)	No Action/ Informal/ ASAP	Open
FY 2008	14	4	8	2	0
FY 2009	14	3	5	4	2
1 <sup>st</sup> Quarter FY 2010	1	0	0	0	1

The whistleblower also questioned why enforcement case 2008SW210495 was closed as "not intentional or systemic" with an administrative warning letter (i.e., letter of correction). The non-compliance for this case related to the improper MEL deferral of a component within the autopilot system for which the whistleblower had investigated six similar enforcements prior to this case. The whistleblower questioned why administrative action was taken given the history of past non-compliances and asserted that the lack of action on the part of FAA officials contributes to the likelihood that American Airlines will continue to engage in unsafe practices.

- We interviewed the inspector who recommended the letter of correction for this enforcement case. The inspector was new to the FAA at the time of his review, with less than one year experience. The inspector stated he used the enforcement decision tool as required by FAA guidance with help from his trainer (who was the whistleblower). He stated that he did not consider it systemic since it was not the same failure (i.e., component) within the autopilot system as past failures. The

<sup>7</sup> SAI is part of FAA's air carrier oversight system and requires a comprehensive review of an air carrier's policies and procedures for a specific program or area. Inspectors use the results of the SAI to identify risk areas that may require additional inspections and focus

inspector stated that he was not instructed by anyone on what type of action he should recommend.

- The PAI stated that he could not recall specifically why this enforcement case was administrative, but recalled that the incident was inadvertent, and at this same time they had convened a SAT (System Analysis Team) to address MEL issues. SATs are formed as a joint FAA and air carrier team that works collaboratively to identify root causes of deficiencies with the air carrier's systems. He believes the problem was not so much with the MEL process, but instead improper troubleshooting which could lead to deferring the wrong component.
- Although this specific incident did not result in a civil penalty, four of the enforcement cases previously identified by the whistleblower in FY 2008 resulted in over \$5 million in recommended civil penalties.

Both the PAI and PMI expressed concern regarding the air carrier's troubleshooting process, indicating it is a root cause of the improper MEL issues at American Airlines. The Principal Inspectors have taken the following actions to address this issue:

- On July 1, 2009, the CMO's PAI, PMI, and Principal Operations Inspector sent a letter of concern to American Airlines stating that the "office is observing a trend indicating that a possible degradation of [American Airlines'] ability to accurately troubleshoot aircraft malfunctions." The letter stated that the Principal Inspectors unanimously agreed that the air carrier's policy for troubleshooting may be ineffective because it implies that troubleshooting procedures are optional. They urged the air carrier to undertake a review of this policy. According to the PAI and PMI, American Airlines did not respond to this letter.
- On January 6, 2010, the PAI and PMI sent a second letter to the air carrier formally requesting that it make the use of troubleshooting procedures mandatory and offering their assistance in the review and formulation of any improvements.

**Allegation 3:** FAA CMO officials are unable to obtain compliance from American Airlines in the use of RIIs.

## FINDINGS

The results of an OIG audit of American Airlines maintenance (conducted independent of this investigation) and our examination of enforcement data substantiated that the CMO has not held American accountable for complying with requirements for RIIs.

- The OIG audit found that the FAA had not taken appropriate action to address American Airlines' longstanding failure to comply with RII procedures. (See OIG Audit Report at Attachment 2 for full details.) Specifically, the audit found that in late 2005, FAA initiated an SAT, which made 35 recommendations to improve American Airlines' compliance with RIIs, but corrective actions for the team's recommendations made in 2006 were still not complete. The audit also found that, in 2007, American self-disclosed nine non-compliances—three involved expired technician qualifications and six related to RII inspections that were not conducted. American has taken some steps to address compliance with RII requirements, such as implementing an electronic notification system to warn mechanics when their authorization to perform inspections is about to expire. According to American officials, as of December 2009, they have implemented the majority of the SAT's recommendations to improve compliance with RII requirements, with one remaining to be implemented in April 2010; and the PMI indicated that the FAA will continue to monitor American's compliance with RII requirements until it is satisfied that a long-term corrective action is in place. At the time of this audit, however, the FAA's actions have not elicited confidence that its oversight was sufficient. For example, in response to an RII allegation, the CMO assigned one inspector to review only one MD-80—American's largest fleet with 279 aircraft. In response to these findings, the FAA agreed with our recommendation to ensure that American corrects deficiencies with RIIs identified in the 2006 SAT report and air carrier self disclosures.
- We also reviewed enforcement records for FY 2008 and 2009 and found that the CMO had initiated 27 enforcement cases related to the noncompliance to RII procedures. Despite this trend, none of these cases resulted in recommendations for civil penalty or other legal action. In the first quarter of FY 2010, four additional RII enforcement cases were opened. At the time of our review, only one of these investigations had been completed and it resulted in administrative action.

Time Period	RII Enforcement Cases - Action Taken/Recommended				
	Total	Legal-Civil Penalty	Administrative- (Letter of Correction/Warning)	No Action/ Informal/ ASAP	Open
FY 2008	17	0	12	5	0
FY 2009	10	0	10	0	0
1 <sup>st</sup> Quarter FY 2010	4	0	1	0	3

The PAI provided documentation of some of the recent changes that American has implemented to ensure RII requirements are followed. For example, qualified individuals must have their authorization record available in the general location where the RII maintenance is being performed. American also established monthly and mid-month reports to notify maintenance facilities of upcoming or expired RII authorizations.

Despite these changes, in November 2009, the whistleblower identified an incident where an RII task was not signed off as required and the RII for the completed job was signed off on a blank form. This incident is still under investigation, but demonstrates that there may still be a problem in ensuring the workforce actually follows established procedures as discussed in Allegation 1 of this report.

**Allegation 4:** FAA CMO officials continue to issue letters of corrections despite evidence that American Airlines repair stations continue to violate requirements to perform TNAs.

## FINDINGS

We were unable to substantiate by a preponderance of evidence that the CMO continued to issue letters of correction inappropriately as repair stations continue to violate requirements to perform TNAs.

The whistleblower provided examples of three enforcement cases (case numbers 2007SW2100389, 2008SW210062 and 2008SW210462) where repair stations did not comply with TNA procedures occurring in 2007 and 2008 for which letters of correction were issued. We interviewed the PAI responsible for American Airlines' repair stations and reviewed inspection and enforcement records for the three American Airlines' repair stations (Tulsa, Alliance, and Kansas City<sup>8</sup>) to determine to the extent that this issue continues to occur.

<sup>8</sup> The Kansas City repair station surrendered its operating certificate in December 2009.

- Inspection records<sup>9</sup> from FY 2008 through first quarter 2010 showed that 13 inspections of repair station training programs were performed at the three repair stations. The last example provided by the whistleblower occurred in July 2008, and since that time one additional discrepancy with TNAs had been identified.

Fiscal Year	Total Training Inspections	TNA issues	Facility location and date of discrepancies
FY 2008	6	2	Alliance: November 2007* Kansas City: February 2008
FY 2009	7	1	Tulsa: February 2009
1 <sup>st</sup> Quarter FY 2010	0	0	

\* This was addressed in enforcement case 2008SW210062 as provided by whistleblower.

- We discussed the TNA issue found in 2009 with the PAI for American Airlines repair stations. The inspection identified two individuals that did not have the required TNA documents. A formal enforcement case was not opened. A letter of concern was sent to the repair station instead. The PAI stated that the inspection included the review of about 10 to 20 individuals. He also indicated that they spot check TNA records each time they go to the repair stations and have not identified any additional TNA discrepancies since that time.

Although the inspection records showed that another incident of noncompliance has occurred, the extent of TNA discrepancies, in our opinion, does not show that this is a substantial non-compliance issue that would warrant more stringent action at this time.

**Allegation 5:** FAA CMO officials have not taken appropriate regulatory measures, including enforcement actions, to address American Airlines failure to comply with requirements to have an effective CASS program.

## FINDINGS

The results of an OIG audit of FAA’s oversight of American Airlines’ maintenance (conducted independent of this investigation), a review conducted by an independent FAA team, and our examination of enforcement and inspection data substantiated that the CMO has not taken appropriate regulatory measures to address American Airlines’ failure to comply with requirements for a CASS program.

- The OIG audit found that CMO had not performed comprehensive surveillance of American Airlines’ CASS program. (See OIG Report at Attachment 2 for full

<sup>9</sup> We only reviewed PTRS codes 3661 and 5661 (Repair Station Training Program) where TNA deficiencies would be recorded.

details.) Specifically, the audit found that during a 2-year period between 2005 and 2007, CMO inspectors did not perform the required semi-annual inspections of American's CASS program. They conducted only a policy review which disclosed a lack of procedures in American's CASS program to identify root causes of identified maintenance problems, as well as inconsistencies between the airline's CASS manual and other internal guidance. Although CMO reviewed the air carrier's policies and procedures governing CASS, it did not determine whether the carrier actually followed them. The potential consequences of a poorly performing CASS were demonstrated in April 2009 when the NTSB determined that American's CASS failed to detect repeated maintenance discrepancies, which contributed to the September 2007 in-flight engine fire on American Airlines flight 1400.<sup>10</sup> American officials advised the OIG team during the audit that they have improved the air carrier's CASS program, including adding root cause analysis procedures. In addition, they are rewriting the CASS manual and all maintenance manuals, which are planned for completion in 2010. In response to these findings, the FAA agreed with our recommendation to begin a review of American's CASS system to ensure that problems are identified and needed improvements are made.

- An independent FAA team (from outside the CMO) conducted an SAI of American Airlines' CASS program between April and June 2009, and identified weaknesses in 27 of the 46 areas reviewed.
- Our examination of enforcement records from FY 2008 through the first quarter of FY 2010, found only two enforcement actions (December 2007 and January 2009) had been opened against American Airlines for its CASS program. Both of these cases were closed with administrative action (letters of correction). During this time period we also found that CMO inspectors had conducted only 15 inspections of the CASS program as compared to other programs, such as the MEL and RII, that had 139 and 152 inspections, respectively.

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<sup>10</sup> In September 2007, an engine fire forced an emergency landing of an American Airlines MD-80 soon after its departure from Lambert-St. Louis International Airport. The fire damaged the hydraulic system, rendering the plane's rudder inoperable, and the nose landing gear failed to extend during the first landing attempt. A second attempt was successful, and none of the 143 people onboard were injured. However, the plane sustained substantial structural damage.



**Allegation 6:** CMO's PAI authorized the operation of the MD-80 fleet knowing it did not meet the Fuel Tank System maintenance program requirements of 14 CFR 121.1113 and AD 2008-15-11.

## FINDINGS

We did not substantiate that the PAI improperly authorized the operation of the MD-80 fleet knowing it did not meet the FTS maintenance program requirements of 14 CFR 121.1113 and AD 2008-11-15. However, we did find that untimely and inaccurate FAA guidance for determining compliance with FTS maintenance program requirements most likely contributed to inspector confusion and uncertainty as to whether the program met FAR and AD requirements. Specifically:

- The FAA did not issue inspector guidance (FAA Order 8900.1<sup>11</sup>) for determining operators' compliance with FTS maintenance program requirements until November 10, 2008, only 36 days before the required deadline of December 16, 2008.
- The inspector guidance for the MD-80 fleet incorrectly referenced that operators were to comply with all of Boeing MD-80 Instructions for Continued Airworthiness, Maintenance Implementation Document ME80-016, Revision 2, dated October 10, 2008. However, as confirmed by the ACO, who is responsible for approving the Boeing developed FTS maintenance program, operators had to comply with only Section 3 of this document to meet 14 CFR 121.1113 FTS requirements. This was not clear when inspectors did their initial review of American Airlines FTS maintenance program. Therefore, they evaluated the air carrier's program against requirements of the entire document. The CMO submitted a corrective action request to FAA in September 2009 to have the guidance corrected. This was still in process at the time of our review.
- This Boeing document (ME80-016) was not completed and approved until October 10, 2008, which gave operators only two months to incorporate the FTS requirements.
- The PAI inadvertently identified the wrong Boeing document on the Operations Specifications for the FTS maintenance program. The Operations Specification listed Boeing document ME-MRB-80 instead of ME80-016. The PAI updated the Operations Specification on January 21, 2010, to reflect the proper document, but it still reflects the entire document instead of only Section 3.

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<sup>11</sup> Change 40: Volume 6, Chapter 11, Section 23 Evaluate/Inspect 14 CFR Part 91 Subpart K/121/125 and 129 Operators Fuel Tank System Instructions for Continued Airworthiness/Revisions

- The FTS AD for the MD-80 (2008-11-15) required operators to comply with Appendixes B, C, and D of Boeing Twinjet Special Compliance Items Report MDC-92K9145. The report caused considerable confusion to the CMO for the following reasons. First, Appendix B contained the requirements for Critical Design Configuration Control Limitations (CDCCL). For each CDCCL, the document showed the effective date as "all repairs performed after August 1, 2006." The PAI indicated that he initially interpreted this to mean that operators had to retroactively apply these requirements to all repairs completed after the August 2006 date. Eventually, the ACO clarified that the intention of the AD was to require the CDCCLs to be applied only to repairs performed after the AD effective date (December 16, 2008). This issue caused enough confusion within FAA that the ACO issued a special airworthiness bulletin (NM-09-03) on December 11, 2008, to clarify these requirements. Second, both the CMO inspectors and American Airlines personnel found errors in the manufacturer's documents, which were subsequently corrected. Finally, there were some procedures that the manufacturer had not yet developed. These procedures applied to inspections or repairs that were required within a prescribed time period (e.g., number of hours or cycles). The PAI stated that, with concurrence of the ACO, it was agreed that these procedures could be added to the air carrier's manuals after December 16, 2008, as long as a control was put in place to ensure the aircraft did not fly past the due date without the new manufacturer's inspection/repair procedures.

Initially the PAI told his inspectors that these procedures had to be in the air carrier's manuals, but later, as he discussed this issue with the ACO, he told them they did not have to in there. This most likely led to confusion and possible misinterpretation. The PAI stated that inspectors were required to verify that the applicable inspections/repairs were properly flagged in the air carrier's controlling document (its Engineering Specification Manual) and that the procedures were incorporated into its maintenance manual before the required due dates.

The whistleblower provided OSC a list of 22 discrepancies in the FTS program that he indicated were unresolved. We reviewed this document and found the following:

- Sixteen of the discrepancies identified related to sections 1 or 2 of Boeing document ME80-016, which were not required and/or were identified when the inspectors compared Boeing task cards listed in appendix A of this document to the air carrier's task cards. However, ME80-016 noted that task cards in Appendix A were for information only and not approved by the ACO. Therefore, equivalent procedures could be used. The inspectors were not aware of this at the time they initially identified the discrepancies. Another discrepancy related to Appendix A of Boeing document MDC-92K9145, which was not required by the AD.

- We independently reviewed 4 of the identified discrepancies that clearly related to Section 3 of Boeing document ME80-016 or to Boeing document MDC-92K9145, as required by the AD. We obtained documentation for all four of these items that confirmed that they were incorporated into American Airlines' maintenance program by December 16, 2008.

We also addressed the following four specific allegations made by the whistleblower related to the CMO's review and approval of American Airline's FTS maintenance program:

- *The whistleblower could not verify compliance with CDCCL requirements because Boeing guidance did not specify where these changes were to be made or what changes should state.* The whistleblower further indicated that he was not sure that the CDCCLs were added everywhere in the air carrier's maintenance manual where they should be. ACO representatives indicated that the AD calls out the procedures or the maintenance that is expected, but it is up to the CMO to work out the details for implementation with the operator since each operator has its own processes and techniques. The ACO also indicated that the documents were coordinated with other Flight Standards groups and industry.

The PAI confirmed that it was a struggle to verify where in the air carrier's manuals that it incorporated the CDCCLs. He indicated that the air carrier directed the inspectors to the locations. We also obtained an air carrier document dated November 14, 2008, that cross referenced where the CDCCLs were located in its maintenance manuals. Finally, the list of discrepancies provided by the whistleblower identified only one discrepancy related to CDCCLs, which we verified was addressed prior to December 16, 2008. Without any additional documentation, we could not substantiate that CDCCLs were not properly incorporated into American Airlines' FTS maintenance program.

- *The whistleblower indicated that the ACO repeatedly told the CMO not to look too closely at the operator's FTS program and rather to superficially examine the program to determine if the framework was in place.* Both the PAI and ACO representative denied providing such instructions.
- *The whistleblower indicated that the PAI told him and the MD 80 team members to stop looking at the program.* During interviews with the two MD-80 team members, inspectors indicated they were not instructed to quit looking at the program or to not look too closely at the program.
- *The whistleblower alleged that contrary to 14 CFR 121.1113(f), the PAI did not approve the American Airlines' FTS Maintenance program.* Based on our review of

the FAA inspector (FAA Order 8900.1, Volume 6, Chapter 11, Section 23, paragraph 6-2702) and industry (Advisory Circular 120-97, paragraph 309) guidance, the signature of the Operations Specification represents approval. Specifically, this guidance states that the principal inspector will approve the operator's FTS program implementation on Operations Specification D070 (Integration of Aircraft Fuel Tank Maintenance and Inspection Instructions into a CAMP). The whistleblower believed that approval needed to be outside of the Operations Specifications to prevent the air carrier from making future changes to its FTS program without FAA approval. However, 14 CFR 121.1113(f) also stated that "any later fuel tank system revisions must be submitted to the Principal Inspector for review and approval." Therefore, the air carrier is required by "law" to obtain approval for any future changes to its FTS program.

Finally, it should be noted that during an inspection in July 2009, an FAA inspector found that an aircraft had multiple write-ups over several days for circuit breakers popping for various fuel pumps. The inspector found that the neither the mechanics performing the maintenance, nor the air carrier's inspector performing the required inspection, had complied with FTS maintenance procedures requiring that a continuity check be performed. This incident reconfirms the need for the FAA to take action to ensure that the air carrier follows its own maintenance procedures (Allegation 1) and requirements for RIIs (Allegation 3) to ensure future compliance to FTS program.

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## ATTACHMENT 1: METHODOLOGY OF INVESTIGATION

This investigation was led by a Supervisory Auditor from the OIG's Aviation and Special Programs Audit directorate (JA-10), who was detailed to a Senior Investigator position within the OIG's Special Investigations and Analysis. We reviewed numerous FAA records related to American Airlines' maintenance and airworthiness oversight history. These documents included inspection records, enforcement action correspondence, correspondence between the CMO and American Airlines, Boeing FTS maintenance program documents, FAA Flight Standards guidance, Federal Aviation Regulations, enforcement data maintained by the CMO and in FAA's Enforcement Information System, and American Airlines' maintenance manual documentation. We also considered the work completed during a separate OIG audit of the FAA's Oversight of American Airlines Maintenance Programs (Attachment 2). Finally, we interviewed various FAA officials from the American Airlines CMO and Los Angeles Aircraft Certification Office (ACO). These witnesses included:

- Andrew Blosser, Aviation Safety Inspector (ASI) (CMO)
- William Satterfield, PAI (CMO)
- Christopher Di Cesare, PMI (CMO)
- Calvin Tillman, ASI (CMO)
- Russell Glick, ASI (CMO)
- James Leslie, PAI (CMO-AA Part 145 Repair Stations)
- Kevin Hull, Manager ACO
- Thomas Enyart, Manager Propulsion Branch (ACO)
- Sarg Harutunian, Aerospace Engineer (ACO)
- Eric Smith, Senior Engineer (ACO)

**ATTACHMENT 2**

FAA's Oversight of American Airlines' Maintenance Programs, OIG Report No. AV-2010-042, issued February 16, 2010

**FAA'S OVERSIGHT OF AMERICAN AIRLINES'  
MAINTENANCE PROGRAMS**

*Federal Aviation Administration*

*Report Number: AV-2010-042*

*Date Issued: February 16, 2010*



# Memorandum

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

Subject: ACTION: FAA's Oversight of American Airlines' Date: February 16, 2010  
Maintenance Programs  
Federal Aviation Administration  
Report Number AV-2010-042

From: *Lou E. Dixon*  
Lou E. Dixon  
Assistant Inspector General  
for Aviation and Special Program Audits

Reply to  
Attn. of: JA-10

To: Federal Aviation Administrator

American Airlines, one of the world's largest passenger airlines, has not experienced a fatal accident in 8 years. Despite this safety record, we received a complaint in February 2008 alleging that the overall operational reliability of the airline's aircraft had diminished and that previously reliable aircraft systems were regularly failing. Specifically, the complaint included 10 maintenance-related allegations and highlighted several incidents, including 3 flights that the complainant alleged had experienced cockpit windshield failures. The complaint also included allegations of unacceptably high levels of maintenance deferrals, performance of required aircraft inspections by non-qualified personnel, and failure to perform inspections called for in an aircraft manufacturer's service bulletin.

The complainant also sent the allegations to the Federal Aviation Administration (FAA). FAA Headquarters forwarded the allegations to its American Airlines Certificate Management Office (CMO) in Fort Worth, Texas, for investigation.

Given the seriousness of these allegations, we assessed (1) FAA's oversight of American Airlines' maintenance program and identified any underlying weaknesses and (2) FAA's response to the allegations. We conducted this audit in accordance with generally accepted government auditing standards between June 2008 and December 2009. Exhibit A details our audit scope and methodology. Exhibit B lists the entities we visited or contacted.



## RESULTS IN BRIEF

FAA's oversight of American Airlines' maintenance program lacks the rigor needed to identify the types of weaknesses alleged by the complainant—at least four of which were confirmed and have potential safety implications.

- First, we confirmed the allegation that American Airlines' maintenance-related events have increased. Further, the National Transportation Safety Board (NTSB) recently found that American's Continuing Analysis and Surveillance System (CASS)—a system intended to monitor and analyze the performance and effectiveness of a carrier's inspection and maintenance programs—failed to detect repeated maintenance discrepancies, which, if found, could have prevented an in-flight engine fire that occurred in September 2007. However, during a 2-year period between 2005 and 2007, FAA did not perform required routine surveillance of American's CASS and reliability programs—two key systems for monitoring carriers' maintenance programs. While FAA reviewed the carrier's policies and procedures governing the two systems, it did not determine whether the carrier actually followed them.
- Second, we confirmed the allegation that maintenance deferrals increased significantly. From 2004 through the first 5 months of 2008, American's number of open maintenance deferrals increased by 32 percent, from an average of 298 per day to an average of 394 per day. Despite this increase, FAA only tracked the number of deferrals but did not identify the types of aircraft parts being deferred or the causes of the deferrals. As a result, FAA inspectors missed opportunities to identify potential fleet-wide maintenance issues and put corrective action plans in place.
- Third, we confirmed the allegation that American was not following procedures for required maintenance inspections. We found that FAA has not taken appropriate action to address American's longstanding failure to comply with required maintenance inspection procedures. In late 2005, FAA initiated a System Analysis Team, which made 35 recommendations to improve American's compliance, but corrective actions for the team's recommendations made in 2006 are still not complete.<sup>1</sup> In December 2007, inspections of repairs made to the aircraft damaged during an in-flight engine fire were performed by a technician whose qualifications had expired—a deficiency that was not discovered until the aircraft was ready to depart with passengers. Following this incident, FAA requested that American submit a comprehensive corrective action plan within 20 days. In September 2008—9 months after FAA's

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<sup>1</sup> According to American officials, as of December 2009, they have implemented the majority of the System Analysis Team's recommendations to improve compliance with RII requirements, with one remaining to be implemented in April 2010.

request—American submitted its plan and is continuing its efforts to implement FAA's 2006 recommendations.

- Finally, we confirmed the allegation that American did not implement a Boeing service bulletin<sup>2</sup> alerting carriers to problems with aircraft windshield heating systems that could cause the windshield to crack or shatter if left uncorrected. FAA did not identify process weaknesses in American's maintenance and engineering programs that resulted in the carrier's failure to perform planned inspections of Boeing 757 windshield heating systems. Further, FAA has yet to finalize and issue an airworthiness directive that would require carriers to address the windshield heating problem—a recommendation NTSB made in 2004.

To assess the February 2008 allegations, FAA undertook two reviews. One review was conducted by the CMO for American about 1 month after the allegations were submitted. The other review was conducted by FAA inspectors from outside the CMO utilizing an Internal Assistance Capability (IAC) process to independently review the February 2008 safety allegations.<sup>3</sup> However, neither review was comprehensive. The CMO's review of mechanical reliability focused on only one of the nine systems alleged to have experienced decreased reliability. The independent review did not include work at the air carrier. Instead, the review was performed hastily over 1 weekend and focused on the work already performed by the CMO, such as inspection reports filed by CMO inspectors. As a result, the IAC team reached a number of the same faulty conclusions made by the CMO. Additionally, the IAC's June 2008 recommendations have not been acted upon because, according to CMO managers, they did not receive a copy of the IAC's final report until June 2009.

Based on our findings, we are making several recommendations to enhance FAA's oversight in key maintenance areas at American and improve its processes for assessing safety allegations.

## **BACKGROUND**

In 1998, FAA implemented the Air Transportation Oversight System (ATOS), a data-driven, risk-based approach to air carrier safety oversight. ATOS was designed to shift inspectors away from the inspection method they had used for over 30 years, which focused on whether air carriers were complying with regulations, to an approach that proactively assessed risks within air carriers'

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<sup>2</sup> Implementing the service bulletin was not required. However, service bulletins often highlight safety issues that lead to the issuance of an airworthiness directive.

<sup>3</sup> The IAC was developed in response to an OIG recommendation: OIG Report Number AV-2007-080, "FAA's Actions Taken To Address Unsafe Maintenance Practices at Northwest Airlines," September 28, 2007. OIG reports are available on our website: [www.oig.dot.gov](http://www.oig.dot.gov).

maintenance and operations systems. Under ATOS, FAA inspectors are to use data analysis to focus their inspections on areas that pose the greatest safety risks and to shift the focus of those inspections in response to changing conditions within air carriers' operations.

CASS and reliability are two of the key air carrier systems that inspectors assess under ATOS. FAA regulations require some air carriers to have a CASS to assess maintenance performed on the carrier's aircraft.<sup>4</sup> Although not required, air carriers may have an FAA-approved reliability program, which monitors failure rates of aircraft components with the goal of achieving improved operational performance. Air carrier personnel enter reliability program data into CASS for monitoring the effectiveness of air carriers' inspection and maintenance programs. FAA inspectors are responsible for determining whether these maintenance and monitoring systems are working effectively through routine ATOS surveillance.

The February 2008 complaint raised serious questions about the effectiveness of American's CASS and FAA's oversight of the air carrier's maintenance program. Specifically, the complaint included 10 maintenance-related allegations that indicated an overall deterioration in the airline's operational reliability. The complainant's 10 allegations are listed below.

**February 28, 2008, Allegations Against American Airlines**

- Maintenance-related delays, cancellations, and diversions have increased.
- Minimum Equipment List (MEL) deferrals have increased, and MEL authority has been abused.
- A Boeing service bulletin that could have prevented some cockpit windshield failures was not implemented.
- Certain Functional Check Flights (post-maintenance test flights) were eliminated.
- Maintenance check intervals were changed, resulting in fewer maintenance checks.
- Spare parts inventories were reduced.
- Required inspections of an aircraft repaired after a September 2007 engine fire were performed by a non-qualified mechanic.
- Computerized maintenance records were inadequate.
- Maintenance records were not transparent.
- Retribution was taken against personnel who have reported maintenance problems.

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<sup>4</sup> Maintenance may be performed in-house or by other entities, such as contract facilities.

In March 2008, FAA's CMO for American—which is responsible for overseeing American's maintenance and flight operations—initiated a review to look into the allegations.

## **FAA OVERSIGHT WAS INADEQUATE TO IDENTIFY WEAKNESSES IN AMERICAN'S MAINTENANCE OPERATIONS**

FAA's oversight of American's maintenance operations was inadequate to identify the types of problems described in the February 2008 allegations. First, FAA did not conduct all required routine inspections of American's CASS and reliability programs and failed to identify weaknesses in these critical safeguards. Second, FAA did not determine reasons behind increased maintenance deferrals at American, although such deferrals could have significant safety implications or indicate financial difficulty at the carrier. Third, FAA has not held American accountable for addressing longstanding problems with required maintenance inspections. Finally, FAA did not identify internal process failures that led to American's inadequate response to Boeing's service bulletin.

### **FAA Did Not Perform Comprehensive Surveillance of American's CASS and Reliability Programs**

ATOS requires inspectors to evaluate carriers' CASS and reliability programs—from both a policy and implementation standpoint. These routine reviews are intended to ensure that air carriers comply with regulatory requirements and that their operations and maintenance programs are working effectively. FAA's guidance specifically calls for ATOS inspections at least once every 6 months and a policy review at least once every 5 years. However, during a 2-year period between 2005 and 2007, CMO inspectors did not perform the required semiannual inspections of American's CASS and reliability programs. They only conducted a policy review, which disclosed a lack of procedures in American's CASS and reliability programs to identify root causes of identified maintenance problems as well as inconsistencies between the airline's CASS manual and other internal guidance.<sup>5</sup> According to CMO officials, they did not perform the semiannual inspections because the carrier was making changes to its CASS and reliability programs in response to FAA findings. Yet, given the problems identified in its policy review, the CMO would have been prudent to comply with ATOS requirements and conduct semiannual inspections of the carrier's CASS and reliability programs.

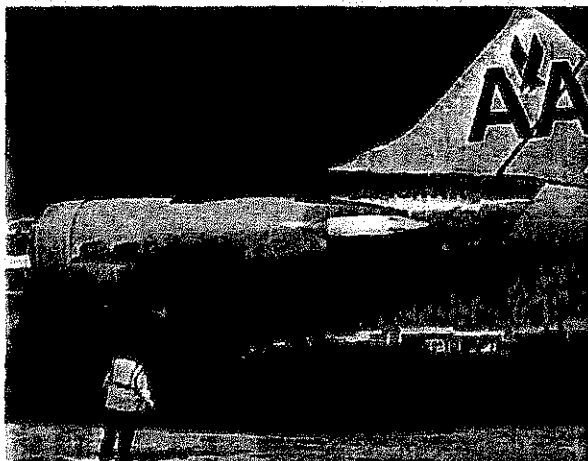
The potential consequences of a poorly performing CASS were demonstrated in April 2009 when the NTSB determined that American's CASS failed to detect

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<sup>5</sup> American officials advised us that they have improved the carrier's CASS program, including adding root cause analysis procedures. In addition, they are rewriting the CASS manual and all maintenance manuals, which are planned for completion in 2010.

repeated maintenance discrepancies, which contributed to the September 2007 in-flight engine fire on American Airlines flight 1400 (see figure 1).<sup>6</sup>

**Figure 1. American Airlines September 2007  
In-Flight Engine Fire**



Source: NTSB

Specifically, in the 13 days prior to the flight, the aircraft's left engine air turbine starter valve had been replaced six times in an effort to address an ongoing problem with starting the engine using normal procedures. None of the valve replacements solved the engine start problem, and the repeated failures to address the issue were not recognized by the airline's CASS personnel. According to the NTSB, if these maintenance discrepancies had been found, the engine fire could have been prevented.

The NTSB recommended that American evaluate and correct deficiencies in its CASS. American officials have completed their internal review and are preparing a response to the NTSB.

While we did not identify any immediate safety-of-flight issues, our analysis of maintenance-related incidents at American Airlines found that the carrier's overall operational reliability has decreased since 2004, which increases the risk of serious incidents. The rate of operational events across all fleets—including cancellations, in-flight diversions, and other delays—rose from 3.9 events per 100 departures in January 2004 to 5.8 events per 100 departures in December 2008. In June 2008, the CMO inspected American's CASS and concluded that American had improved its event analysis by including day-to-day operational events, rather than just events that the airline deemed to be "significant." Despite this improvement, inspectors expressed concern that American's CASS audit division was understaffed in relation to the complexity and size of the airline.<sup>7</sup>

The CMO inspectors for American also performed reliability inspections in early 2008 but disagreed with the complainant's allegation that operational reliability

<sup>6</sup> In September 2007, an engine fire forced an emergency landing of an American Airlines MD-80 soon after its departure from Lambert-St. Louis International Airport. The fire damaged the hydraulic system, rendering the plane's rudder inoperable, and the nose landing gear failed to extend during the first landing attempt. A second attempt was successful, and none of the 143 people onboard were injured. However, the plane sustained substantial structural damage.

<sup>7</sup> According to American officials, the carrier has added nine auditors and plans to add four CASS analysts in 2010.

had decreased. The CMO's conclusion, however, was based on limited inspections of American's MD-80s and A-300s, which account for only half of American's aircraft in its six<sup>8</sup> fleets and exclude American's Boeing 757 fleet, the carrier's second-largest with 124 aircraft. Further, inspectors did not review automated reliability data that American provides to the CMO on a regular basis,<sup>9</sup> and principal inspectors did not analyze or reconcile differences in inspection results. For example, inspection records for the MD-80 and A-300 show that one inspector identified problems with the carrier's CASS and reliability systems while the other concluded there were no problems. Ultimately, the CMO reviewed the performance of only one of the nine mechanical systems that the complainant alleged were failing at an increasing rate—the MD-80 nose landing gear—which experienced 27 failure-to-retract events in 2008, compared to 8 in 2005.<sup>10</sup> Based on this limited review, the CMO concluded that American's fleet-wide operational reliability had not decreased. In contrast, we found that operational reliability had decreased for all nine systems, which included hydraulics, electrics, flight controls, and the MD-80 nose landing gear.

Finally, FAA assessed the allegation that American Airlines had reduced the number of Functional Check Flights (FCF)<sup>11</sup> it performs and that this action had resulted in increased numbers of mechanical failures following heavy maintenance. However, FAA's assessment lacked the rigor needed to verify or refute the allegation. While Federal Aviation Regulations require an FCF program, FAA lacks guidance detailing what attributes a properly functioning FCF program should contain, according to FAA inspectors. The inspectors added the FCF program to their risk management action plan but noted that they struggled with how to proceed with their inspections and that guidance would be helpful in performing their oversight duties. We verified that American has reduced the number of FCFs it performs on its Boeing 767 fleet but were unable to determine if this negatively affected aircraft mechanical reliability.

### **FAA Did Not Perform Comprehensive Analyses of Maintenance Deferrals**

FAA guidance recommends that safety inspectors monitor the number of Minimum Equipment List (MEL) deferrals. MELs list the instruments and equipment that may be inoperative without jeopardizing the safety of the aircraft. This allows a carrier to continue to operate the aircraft provided it makes the repairs within a certain number of days. While FAA prescribes the number of

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<sup>8</sup> American retired its A-300 fleet in late August 2009.

<sup>9</sup> We also determined that inspectors were not regularly reviewing these automated data as part of their risk assessments and routine surveillance.

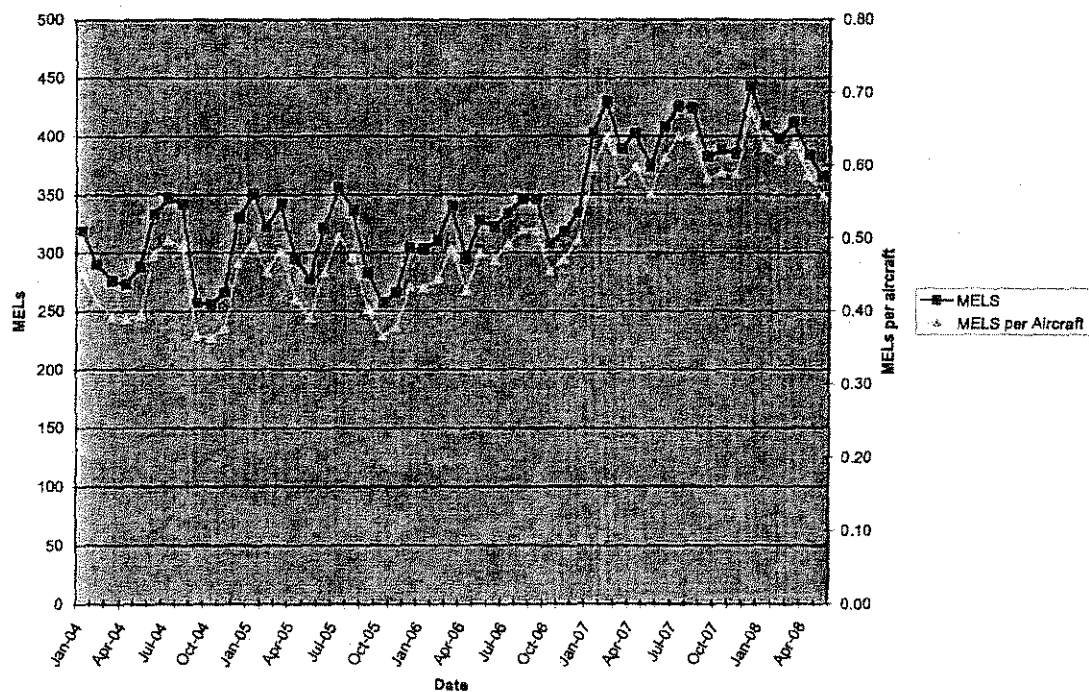
<sup>10</sup> According to American officials, the carrier made multiple maintenance program changes in response to the MD-80 nose landing gear issue, which resulted in significantly improved performance in the first quarter of 2009.

<sup>11</sup> A Functional Check Flight is a test flight of an aircraft performed after major airframe maintenance to ensure that the aircraft is functioning normally.

days an air carrier can defer maintenance for each listed component, there is no limit on the number of MEL deferrals a carrier can have. An increase in deferrals does not necessarily indicate an increased safety risk, but analyses of trends and the types of deferrals can uncover fleet-wide maintenance issues or potential financial difficulty, which can have safety implications if the carrier forgoes needed maintenance to remain viable. While CMO inspectors track the number of maintenance deferrals across American's fleet, inspectors have not analyzed trends or monitored the types of components being deferred.

As alleged by the complainant, we confirmed that the number of open fleet-wide MEL deferrals increased by 32 percent between 2004 and the first 5 months of 2008, from an average of 298 per day to an average of 394 per day (see figure 2). On a per-aircraft basis for this period, the number of average open MELs per aircraft rose from 0.42 per aircraft to 0.60 per aircraft.<sup>12</sup>

**Figure 2. Average Daily Open MELs, January 2004 to May 2008**



Source: OIG analysis of FAA data

Since January 2007, American has submitted at least 13 self-disclosures regarding improper use or issuance of an MEL. Instances of misuse included deferring maintenance on a navigational component that was not listed in an MEL and

<sup>12</sup> Since May 2008, the number of maintenance deferrals has trended downward. In November 2009, the number of average open fleet-wide was 254 per day, or 0.42 per aircraft (just under the 2004 level).

therefore could not legally be deferred. FAA has several open enforcement investigations regarding MEL authority and, in August 2008, proposed a civil penalty of \$4.1 million against American for inappropriate use of an MEL to return an aircraft to service.<sup>13</sup>

In March 2008, the principal maintenance inspector reported to senior FAA managers on the CMO's response to the MEL allegations and indicated that the complainant did not provide any substantiating data to support the claim of MEL abuse. Consequently, the CMO did not assess this allegation or inspect American's MEL program.<sup>14</sup> However, in April 2008, FAA identified American's MEL program as one of the programs that was 2 years overdue for an inspection. CMO inspectors completed the inspection in May 2008—almost 7 years since the previous inspection.

### **FAA Has Not Held American Accountable for Addressing Longstanding Problems with Required Maintenance Inspections**

FAA has also failed to require American Airlines to comply with procedures for required inspection items (RII).<sup>15</sup> Mechanics performing RII inspections must complete biannual training on current policies and procedures to maintain their authorization to perform these inspections. However, American has a history of noncompliance with RII requirements. For example, in 2007, American self-disclosed nine noncompliances—three disclosures involved expired technician qualifications, and six disclosures related to RII inspections that were not conducted.<sup>16</sup> In late 2005, FAA and air carrier representatives initiated a System Analysis Team (SAT)<sup>17</sup> to correct American's failure to comply with RII inspection requirements. In May 2006, the SAT made 35 recommendations, including promptly notifying employees whose qualifications are about to expire.

Despite the SAT's numerous recommendations, we confirmed the allegation that an American Airlines technician with an expired authorization performed an RII inspection on the fire-damaged MD-80 after mechanics had performed significant repairs on the aircraft.<sup>18</sup> American did not discover the RII noncompliance until the aircraft had been returned to service and was at a gate ready to depart with

<sup>13</sup> American officials disagreed with FAA's proposed penalty. As of December 2009, the case remains open.

<sup>14</sup> The CMO is required to inspect a carrier's MEL policies and procedures every 5 years.

<sup>15</sup> Required inspection items are mandatory maintenance activities that, due to their importance to the overall airworthiness of the aircraft, must be independently inspected by a specially trained inspector after the work is completed.

<sup>16</sup> The self-disclosure program is intended to encourage data-sharing between FAA and air carriers to identify and address safety issues.

<sup>17</sup> A System Analysis Team is a group of FAA and air carrier personnel that FAA CMO management can establish when it determines that a practice or process in place at an airline should be reviewed. Upon completing the review, the team makes recommendations for improvement.

<sup>18</sup> The complainant alleged that repeat maintenance discrepancies may have led to the September 2007 in-flight fire. We did not perform a detailed review of this allegation since it was part of an ongoing NTSB investigation.



passengers. American self-disclosed this noncompliance to FAA in December 2007. Following American's self-disclosure, FAA requested that American submit a comprehensive corrective action plan within 20 days.<sup>19</sup> FAA granted American an extension, and in September 2008—9 months after the self-disclosure—American submitted its plan, which proposed addressing the incident by counseling and retraining the mechanic involved.

American has taken some steps to address compliance with RII requirements, such as implementing an electronic notification system to warn mechanics when their authorization to perform inspections is about to expire. According to American Airlines officials, as of December 2009, they have implemented the majority of the SAT's recommendations to improve compliance with RII requirements, with one remaining to be implemented in April 2010.

According to FAA's principal maintenance inspector, FAA will continue to monitor American's compliance with RII requirements until it is satisfied that a long-term corrective action is in place. To date, however, FAA's actions have not elicited confidence that its oversight is sufficient. For example, in response to the RII allegation, the CMO assigned 1 inspector to review only 1 MD-80 aircraft—even though the MD-80 fleet is American's largest, with 279 aircraft.

#### **FAA Did Not Identify Internal Process Weaknesses at American that Led to the Carrier's Failure To Perform Needed Inspections**

FAA did not identify process weaknesses in American's maintenance and engineering programs that resulted in the carrier's failure to perform planned inspections of Boeing 757 windshield heating systems. In 2006, Boeing issued a service bulletin alerting carriers to a problem with a windshield heating component on its 757 aircraft and instructed air carriers on procedures for correcting the problem. Left uncorrected, the component could overheat, cause smoke to enter the cockpit, and crack or shatter the aircraft's cockpit windshield. Although American took steps to implement the inspections, neither FAA nor the carrier ensured the mechanics performed the work. For example:

- The engineer responsible for drafting the engineering change order—which is required to issue work cards to mechanics—left the company, and the order was never released. Without the order, American personnel could not issue work cards instructing mechanics to perform the work. The CMO incorrectly concluded, however, that American cancelled the order because it opposed the replacement windshields called for in the service bulletin.

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<sup>19</sup> FAA can accept self-disclosures and absolve carriers of any penalty if the carriers develop a comprehensive solution to keep reported safety problems from recurring.

- According to American officials, its engineers verbally requested in 2006 that quality assurance representatives inspect the Boeing 757's windshield heat components as they came in for maintenance. However, the engineers did not document the request or inspection results, so we were unable to verify that the inspections were performed.

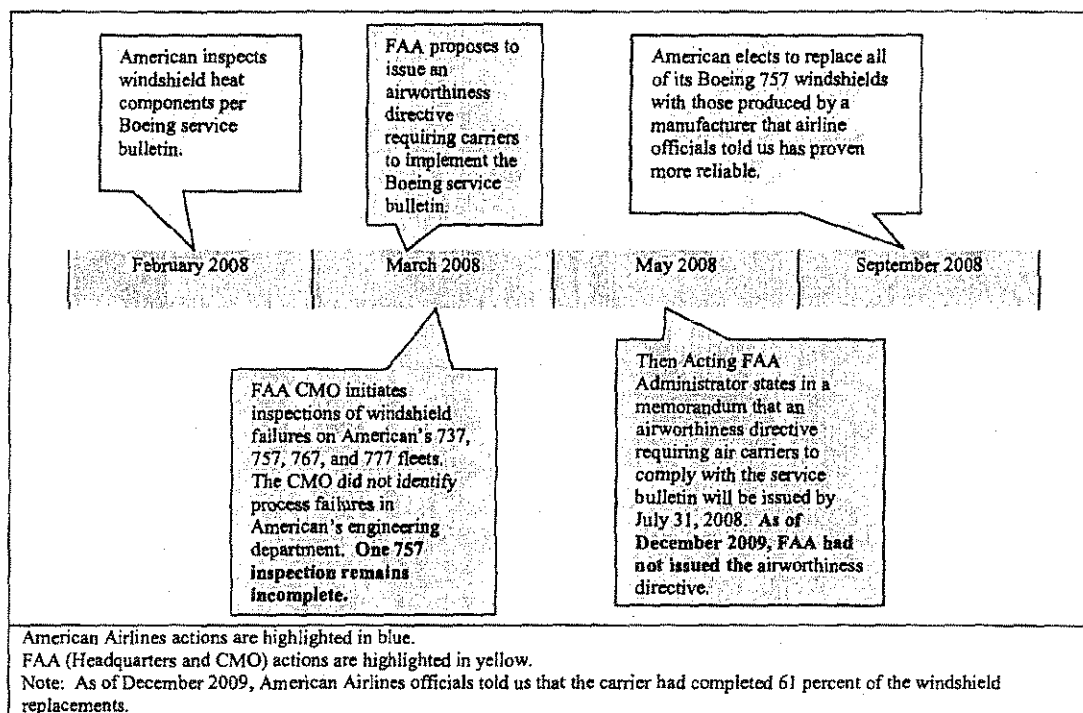
Implementing the service bulletin was not required, and, according to Boeing officials, correcting the identified problem would not have prevented a January 2008 incident as the complainant alleged. This incident involved an American Boeing 757 making an emergency landing after the cockpit filled with smoke and the inner pane of the co-pilot's windshield shattered, blocking visibility.<sup>20</sup> However, service bulletins often highlight safety issues that lead to the issuance of an airworthiness directive. While an airworthiness directive has not been issued, Boeing stated that the bulletin did have safety implications based on prior incidents and that all air carriers were expected to comply. Yet, as of January 2008, American had not performed planned inspections of Boeing 757 windshield heating systems.

Since the January 2008 incident and subsequent February 2008 allegations, American and FAA have initiated or taken actions to address windshield heating system concerns (see figure 3).

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<sup>20</sup> The January 2008 flight landed safely, but the cockpit crew was treated for injuries from the shattered glass.

**Figure 3. Air Carrier, FAA, and CMO Actions Taken in Response to Cockpit Windshield Heating Concerns**



The effectiveness of FAA's actions, however, is unclear. For example, despite the number and proximity of reported incidents<sup>21</sup> involving problems with windshields and American's failure to release an engineering change order for the windshields, FAA concluded that increased oversight was not warranted. Consequently, FAA inspectors were unaware of the process failures that led to American's failure to perform the windshield inspections recommended by Boeing. FAA's failure to complete other actions—including issuance of an airworthiness directive—further exacerbates risks. Specifically, as early as 2004, the NTSB recommended that FAA issue a directive to address the windshield heating problem on Boeing 747, 757, 767, and 777 aircraft. However, FAA did not propose the directive until March 2008, nearly 4 years later. FAA officials stated the delay was partly due to the need to obtain technical data from Boeing on other aircraft in addition to the 757.

<sup>21</sup> In February 2008, two additional unscheduled American landings occurred due to windshield failures—one on a Boeing 737 and one on a 757.

## **FAA'S INDEPENDENT REVIEW OF ALLEGATIONS WAS NOT COMPREHENSIVE**

As we recommended in September 2007, FAA developed an IAC process to independently review safety allegations. FAA assembled an IAC team to assess the CMO's response to the maintenance allegations. The team met on May 31 and June 1, 2008—the weekend before we began our audit at the FAA CMO. In its 2-day assessment, the team identified problems with the thoroughness of the CMO's review, such as not resolving differences of opinion between two inspectors on the airline's reliability. However, the team's review focused on the work already performed by the CMO, such as inspection reports filed by CMO inspectors, and did not conduct independent work at the air carrier. As a result, the IAC team reached a number of the same faulty conclusions made by the CMO, including that American had knowingly cancelled its engineering change order to address aircraft windshield problems. In addition, the IAC team did not review 4 of the complainant's 10 allegations, including the allegation regarding MEL abuse. A more comprehensive review—one that included work at the carrier—would likely have enabled the team to better determine the sufficiency and accuracy of the CMO's inspections as well as the validity of the complainant's allegations.

In June 2008, we recommended that FAA establish an independent organization to investigate safety issues identified by FAA employees. In response, FAA established a new organization in its Office of Chief Counsel to carry out these responsibilities. While we are still assessing whether this action addresses our concerns, we have questions about the extent to which the new office will coordinate IAC's safety-related independent reviews to maximize the effectiveness of the independent review process and avoid unnecessary delays in taking needed actions. For example, CMO managers did not act on the IAC's June 2008 recommendations because they did not receive a copy of the report until June 2009. According to FAA officials, the Agency has not decided whether IAC reviews will be coordinated through this new organization.

## **CONCLUSION**

Although various factors underlie each of American Airlines' maintenance-related events, a lack of adequate FAA oversight is a critical thread. This raises significant concerns about potential maintenance weaknesses going uncorrected—not just at American but at other air carriers. FAA's failure to assess carriers' maintenance programs, identify root causes of maintenance deferrals, ensure properly trained mechanics perform RII inspections, and ensure carriers promptly respond to recommendations and service bulletins escalates these concerns. Additional action is needed from FAA to enhance its routine oversight of air

carriers, including American, and improve the Agency's processes for assessing industry-wide safety allegations.

## RECOMMENDATIONS

We recommend that FAA:

1. Begin a review of American's CASS and reliability system to ensure that problems are identified and needed improvements are made. These steps should include a review of why American's CASS did not detect repeat maintenance discrepancies that led to an in-flight fire in September 2007.
2. Conduct comprehensive inspections of the allegations regarding operational reliability, MELs, RII requirements, and windshield inspections. Specifically, require inspectors to:
  - a. assess operational reliability for all fleets and the nine systems mentioned in the allegations;
  - b. evaluate American's use of its MEL authority and potential MEL abuse;
  - c. ensure American corrects deficiencies with required maintenance inspections identified in the 2006 SAT report and carrier self-disclosures, including problems with mechanics' expired RII qualifications; and
  - d. verify that American is identifying and correcting problems with windshield heat components and that controls are in place to prevent internal engineering and maintenance process failures.
3. Improve data analyses by requiring the CMO analyst and inspectors to regularly and thoroughly review available operational reliability data, track the types of maintenance items that are deferred, closely monitor trends in maintenance deferrals, and identify reasons for any significant negative changes in reliability or increases in deferrals.
4. Issue the proposed airworthiness directive that would require implementation of the Boeing service bulletin on repairs to windshield heating components on 757s.
5. Improve the independent review process by:
  - a. performing verification work at air carriers rather than just reviewing FAA inspection records and ensuring that the review results are shared with the office under review.

- b. coordinating all safety-related independent reviews conducted using the IAC process through its new Office of Audits and Evaluations.
6. Determine why FAA's oversight did not identify the weaknesses discussed in this report and whether these are Agency-wide issues or limited to American's CMO.

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

We provided our draft report to FAA on December 22, 2009, and received its formal response on February 1, 2010. American Airlines officials also reviewed our draft report and requested that we include information on actions they have taken in response to the issues we found. We have updated the report where appropriate. FAA concurred with recommendations 1 through 5 and partially concurred with recommendation 6. We are requesting additional information from FAA on recommendations 1, 2, 3, and 6 to ensure actions taken or planned are well supported and fully responsive. FAA's response is included in its entirety as an appendix to this report.

In summary, FAA claimed that it had already identified most of the issues found in our report through its own oversight processes and that no further action was necessary on many of the issues. However, we take exception to this assertion based on the following points. First, actions are still underway, and the effectiveness of these actions as well as those FAA has completed is still uncertain. Second, FAA has not completed its national assessments to address the issues we identified that were potentially cross-cutting or industry-wide. Finally, it is important to point out that where FAA has taken action, it only did so after we briefed Agency officials on the need for them; therefore, we will remain vigilant in overseeing FAA's implementation.

Regarding recommendation 1, FAA responded that the events surrounding flight 1400 (in-flight engine fire in 2007) were not due to CASS issues. Based on American Airlines, the NTSB's, and our observations, we disagree with this assertion. Specifically, both American Airlines and the NTSB agreed that changes to American's CASS were needed since failures in American's maintenance program led to this incident. In response to the NTSB's recommendations, American officials took several actions to improve CASS, including improved oversight and tracking of repeat maintenance items and improved communication between their maintenance operations control and CASS departments.

FAA asserted that no further actions are needed to address recommendations 1, 2, and 6. However, recognizing that many of the actions are still underway, we are

requesting supporting documentation to validate that these issues are fully addressed. Specifically, we request that FAA provide:

- Actions taken or planned to monitor American Airlines' changes to its CASS made in response to the NTSB's flight 1400 recommendations. (Recommendation 1)
- The final results of its ACEP review of American Airlines, including the comparative analysis of ACEP findings versus those found in routine surveillance. (Recommendations 1, 2, and 6)
- Actions taken or planned to assess overall deterioration in operational reliability at American across all fleets and the nine systems mentioned in the allegations. (Recommendation 2.a.)
- Actions taken or planned to address the internal process failures we identified at American that led to the failure to perform planned inspections. (Recommendation 2.d.)

Finally, while FAA fully concurred with recommendation 3, we are also requesting information to verify that the new data analysis process being developed by the CMO will include a review of operational reliability data and types of maintenance items deferred, as we recommended.

## **ACTIONS REQUIRED**

FAA's planned actions and target dates for recommendations 4 and 5 are responsive, and we consider these recommendations addressed but open pending completion. In accordance with Department of Transportation 8000.1C, we request that FAA provide, within 30 days of this report, additional and clarifying information for recommendations 1, 2 (2.a and 2.d), 3, and 6. We appreciate the courtesies and cooperation of FAA and American Airlines representatives during this audit. If you have any questions concerning this report, please contact me at (202) 366-0500 or Robin Koch, Program Director, at (404) 562-3770.

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cc: Assistant Administrator for Financial Services and Chief Financial Officer  
FAA Associate Administrator for Aviation Safety  
Director of Flight Standards Service  
Martin Gertel, M-100  
Anthony Williams, ABU-100

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

We conducted this audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence that provides a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We conducted this review between June 2008 and December 2009. We used the following scope and methodology in conducting this review.

To assess FAA's oversight of American Airlines' maintenance program, identify any underlying weaknesses, and evaluate FAA's response to the allegations, we performed audit work at FAA Headquarters and FAA's Certificate Management Office for American Airlines in Fort Worth, TX. We interviewed FAA inspectors and the operations research analyst and analyzed inspection data from FAA inspection databases to determine the validity of the allegations. We obtained inspection reports from these data sources to identify strengths and weaknesses in FAA's surveillance of American Airlines as related to the allegations in the complaint. We also reviewed the IAC team's final report and interviewed team members.

While we did not perform an audit of American Airlines, we did assess FAA's oversight by interviewing officials at American Airlines' headquarters in Fort Worth, TX. In addition, we performed work at American Airlines' largest maintenance base in Tulsa, OK. We reviewed American Airlines' fleet reliability data and interviewed American Airlines' maintenance and engineering personnel. We also reviewed NTSB findings and recommendations concerning maintenance at American.

We interviewed industry safety experts (e.g., NTSB) to obtain their opinions on the windshield heating issue and contacted appropriate Boeing Commercial Airplane Company representatives regarding service bulletin processes to determine their view of the importance of the service bulletin related to windshield heating units on certain models of Boeing aircraft.



**EXHIBIT B. ENTITIES VISITED OR CONTACTED****Federal Aviation Administration (FAA)****Headquarters:**

Flight Standards Service Washington, DC

**Certificate Management Offices (CMO):**

American Airlines CMO Fort Worth, TX

**Air Carrier**

American Airlines Headquarters Fort Worth, TX

American Airlines Maintenance & Engineering Facility Tulsa, OK

**Other Industry Representatives or Organizations**

Allied Pilots Association (APA) Fort Worth, TX

Transport Workers Union (TWU) Tulsa, OK

National Transportation Safety Board (NTSB) Washington, DC

The Boeing Commercial Airplane Company Seattle, WA

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

<b><u>Name</u></b>	<b><u>Title</u></b>
Robin Koch	Program Director
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Christopher Frank	Senior Auditor
Travis Wiley	Analyst
Doneliya Deneva	Auditor
Karen Sloan	Communications Officer
Andrea Nossaman	Writer/Editor

## APPENDIX. AGENCY COMMENTS

**Federal Aviation  
Administration**

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**Memorandum**

Date: February 1, 2010

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

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

Prepared by: Anthony Williams, x79000 *R. Punwani*

Subject: OIG Draft Report: FAA's Oversight of American Airlines Maintenance Programs

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Safety is at the heart of the Federal Aviation Administration's (FAA) mission, and every day thousands of inspectors around the country work to identify and ensure that appropriate action is taken to address safety issues on air carriers large and small. Our system of maintenance oversight is multifaceted and looks at both specific problems and seeks to identify trends characteristic of systemic issues. The agency requires carriers to take action and make corrections and does not hesitate to level civil penalties to further effect change in maintenance practices. In fact, over the last 24 months the Agency's routine oversight has resulted in around \$4.4 million in proposed civil penalties related to American Airline's maintenance programs.

The FAA's oversight of safety programs at American Airlines resulted in the implementation of strong and effective measures in ten specific areas of the air carrier's maintenance program. After careful review of the Office of Inspector General's (OIG) draft report, FAA has determined that the issues identified in the report are largely the same items that the FAA previously documented using its safety oversight processes. While not described in the OIG report, the actions on these measures have either been completed or are underway. The FAA will continue to ensure the carrier fully and effectively completes the actions through enhanced oversight by its American Airlines Certificate Management Team (CMT).

The FAA launched an Air Carrier Evaluation Program (ACEP) of American Airlines last year as a result of routine oversight by the CMT, which found problems with the carrier's airworthiness directive compliance. The ACEP revealed many of the same weaknesses detailed in the OIG audit, including: a high number of open maintenance deferrals; airworthiness directive compliance and management; and handling of engineering, major repairs, and alterations. FAA has been working to ensure the carrier elevates its maintenance practices and makes needed changes, including overhauling its Continuing Analysis and Surveillance System (CASS).

FAA's evaluation of American Airlines also clarified some areas where the Agency's maintenance oversight could be further strengthened. As a result, the Agency initiated three actions that will enhance oversight of all carriers. First, FAA launched a national Air Carrier Evaluation Program that uses a risk-based targeting process to make certain all part 121 air carriers are evaluated by national teams on a recurring basis. Second, FAA is using the new Corrective Action Tracking Tool (CATT) in the Air Transportation Oversight System (ATOS) software to track timely, effective completion of corrective actions. CMT managers and inspectors are required to use this tool to document required corrective actions so the FAA knows they were completed by the air carrier on time. Finally, the Flight Standards Evaluation Program (FSEP) is auditing FAA field offices to make sure they are operating according to national procedure.

As noted above, the FAA has taken a number of actions that are responsive to the findings and recommendations in the OIG report. However, we appreciate the recommendations enumerated by the OIG, and believe they further support FAA's previous findings and corrective actions. The OIG's efforts continue to provide a positive contribution to our continuous efforts to further strengthen and fine tune our approach to safety oversight.

**OIG Recommendation 1:** Begin a review of American's CASS and reliability system to ensure that problems are identified and needed improvements are made. These steps should include a review of why American's CASS did not detect repeat maintenance discrepancies that led to an in-flight fire in September 2007.

**FAA Response:** Concur. FAA initiated efforts, based on the findings from the CMT and the ACEP as indicated above, which have already resulted in significant improvements to American Airlines' CASS. This includes enhanced CASS program staffing at the airline, revised and improved CASS guidance, and improved information systems.

While FAA continues to closely monitor the effectiveness of American Airlines' actions with respect to its CASS program, it is important to recognize that CASS is intended to provide a strategic tool to help airlines identify trends that may lead to safety issues and is not intended to be a tactical tool capable of addressing individual component failures. While the complainant's allegations led OIG to focus on the accident involving American Airlines flight 1400 as a failure of American Airlines' CASS, FAA's review of maintenance records indicate that the systems performance issues involved in the accident would not typically be identified through CASS as a chronic problem. Specifically, FAA's review identified an error in the National Transportation Safety Board's (NTSB) data. While NTSB's data indicated the errant start valve was changed six times, further review indicates it was actually changed four times and the third valve operated normally for 25 flights over the course of seven days. The fourth valve failed after installation and was deferred the very next flight (flight 1400). This performance would not typically be flagged as an issue by the CASS program. As a result of the changes already implemented, and the data error issue, no further action is necessary to address American Airlines' CASS with regard to the issues surrounding flight 1400.

Nonetheless, FAA recognized the need to take action to address the type of situation that arose surrounding flight 1400. As a result, since this accident, the American Airlines CMT's oversight has led to improvements in American's FAA approved Reliability Program. These improvements include automated web-based reporting, standardization of product team activity reports, automated mean-time-between-unscheduled-removal reporting, FAA sponsored system analysis

## **Appendix. Agency Comments**

team (SAT), development and deployment of a web-based chronic aircraft reliability analysis tool, and the establishment of a dedicated reliability engineering group under separate company management.

**OIG Recommendation 2:** Conduct comprehensive inspections of the allegations regarding operational reliability, MELs, RII requirements, and windshield inspections. Specifically, require inspectors to:

- a. assess operational reliability for all fleets and the nine systems mentioned in the allegations;
- b. evaluate American's use of its MEL authority and potential MEL abuse;
- c. ensure American corrects deficiencies with required maintenance inspections identified in the 2006 SAT report and carrier self-disclosures, including problems with mechanics' expired RII qualifications; and
- d. verify that American is identifying and correcting problems with windshield heat components and that controls are in place to prevent internal engineering and maintenance process failures.

**FAA Response:** Concur.

- a. assess operational reliability for all fleets and the nine systems mentioned in the allegations;

The February 2008 complaint focused on a degradation of operational reliability for all fleets to include recordable in-flight events involving smoke/fire, landing gear, engines, fuel, hydraulics, electrics, radar, flight controls and air conditioning/pressurization. The only specific examples of reliability degradation cited by the complainant focused on MD-80 nose gear retraction failures, B-757 windshield failures, and an A300 yaw damper problem. Through a series of surveillance activities, the CMT assessed performance of the above mentioned systems and determined problems existed in the MD-80 nose gear retraction system, the B-757 windshield heat system, and an isolated, single event involving an A300 yaw damper malfunction.

The CMT's oversight led American to implement nose landing gear strut pressure checks on a monthly basis as well as strut fluid changes on a 14 month interval starting in April 2007. Since American flight 1400 in September 2007, American Airlines has implemented additional maintenance program changes to improve MD-80 nose landing gear retract system performance. These program improvements include improved spray deflector repair requirements and additional landing gear strut visual inspections. These changes far exceed the original equipment manufacturer recommended requirements.

The B-757 windshield heat issue is discussed in paragraph d below. The A300 yaw damper issue was investigated and the FAA determined American correctly diagnosed and repaired the malfunction. As a result, while the CMT will continue to conduct careful surveillance of American Airlines' management of maintenance issues, no further action is necessary to address this recommendation.

- b. evaluate American's use of its MEL authority and potential MEL abuse;

FAA conducted an evaluation of MEL authority and its implementation at American and found that multiple American Airlines' initiatives reduced open minimum equipment list (MEL) to

## **Appendix. Agency Comments**

approximately 354 in January 2009, with a further reduction to 254 by November 2009. According to the Air Transport Association (ATA), the industry averages approximately 0.5 open MELs per aircraft per day. Based on American Airlines' November 2009 data, American averaged 0.42 open MELs per aircraft per day, slightly below industry averages.

CMT assessments of American Airlines' MEL management since September 2007 concluded that American's MEL process design and performance is satisfactory. Further, two design assessments completed since 2007 identified deficiencies that have been addressed through program revisions. The latest design and performance assessments, conducted during the ACEP in the third and fourth quarters of fiscal year 2009, identified items of concern in performance which were evaluated and found acceptable. As a result, while the CMT will continue to conduct careful surveillance of MEL management, no further action is necessary to address this recommendation.

- c. ensure American corrects deficiencies with required maintenance inspections identified in the 2006 SAT report and carrier self-disclosures, including problems with mechanics' expired RII qualifications;

The required inspection items (RII) SAT initiated in January 2006 made 35 recommendations for program improvements. Following completion of the SAT in April 2006, the team continued as a collaborative working group (American Airlines management, Transport Workers Union, and FAA) until July 2008 to address the recommendations. American implemented numerous corrective measures, which include increased awareness of RII requirements, training, and system improvements. Of the 35 RII program recommendations produced by the SAT, the airline has incorporated 22, the working group determined 12 did not provide value to the process, and one will be implemented by April 2010.

The comprehensive fixes put in place by American Airlines can be seen in a significant reduction in RII events over the last three years. Major program improvements include identification of RII tasks in the aircraft maintenance manuals, restrictions on temporary RII authorizations, confirmation and critical items check policies were eliminated to avoid confusion with the RII program, a personalized "expired qualification" notice displayed when the employee signs on to the corporate website, a monthly "training dashboard" distributed system wide, annual RII awareness training regardless of RII authorization, and a monthly expired-qualifications report distributed system wide. The third quarter 2009 ACEP confirmed RII system design, and its performance was affirmed one month later. As a result, while the CMT will continue to conduct careful surveillance of these issues, no further action is necessary to address this recommendation.

- d. verify that American is identifying and correcting problems with windshield heat components and that controls are in place to prevent internal engineering and maintenance process failures.

American Airlines' engineering analysis demonstrated that the failures were due to design deficiencies which would not be addressed by Boeing service bulletins 757-30-19 and 757-30-20. Recognizing this shortcoming, American opted to replace all of the suspect window assemblies with new windows from a different manufacturer. American has completed more than 75% of these replacements. American's efforts in this arena go well beyond Boeing's recommendations and there have been no additional instances of windshield failure in this

## **Appendix. Agency Comments**

manner since this event in early 2008. As a result, while the CMT will continue to conduct careful surveillance of this issue, no further action is necessary to address this recommendation.

**OIG Recommendation 3:** Improve data analyses by requiring the CMO analyst and inspectors to regularly and thoroughly review available operational reliability data, track the types of maintenance items that are deferred, closely monitor trends in maintenance deferrals, and identify reasons for any significant negative changes in reliability or increases in deferrals.

**FAA Response:** Concur. The American Airlines CMT manager will establish a local process to gather and analyze data in order to better identify adverse trends in American's operation. This process will specifically focus on MEL rates, delays, cancellations, MEL extensions, and maintenance escalations.

A quarterly report of the data will be generated by the American Airlines unit operations research analyst. This report will be issued to the Principal Inspectors (PIs) and Partial Program Managers (PPMs). The PIs and PPMs will review the data looking for adverse trends that may warrant special targeted surveillance in order to reverse these adverse trends.

Preventive Action Request (PAR) P-10-81 was generated to create this process for inclusion in the American CMT's quality manual. This process will be in place and the first report produced no later than June 2010.

**OIG Recommendation 4:** Issue the proposed airworthiness directive that would require implementation of the Boeing service bulletin on repairs to windshield heating components on 757s.

**FAA Response:** Concur. On March 5, 2008, the FAA issued notice of proposed rulemaking (NPRM) 2008-NM-038-AD to address reports of window heat system malfunctions on Boeing models 757, 767, and 777 airplanes, causing electrical arcing. Specifically, the NPRM addressed the lower electrical connectors of the windshields. We received extensive comments during the NPRM comment period. We are currently reviewing the NPRM comments and expect to issue the final rule before the end of February 2010.

Although an Airworthiness Directive for the B-757 windshield failures has not been issued, American Airlines revised its maintenance program to replace all B-757 windshields with the PPG products outlined in the service bulletin. As stated above, American Airlines is 75% complete on B-757 windshield replacement. The American Airlines CMT will conduct follow-up reviews to ensure 100% completion.

**OIG Recommendation 5:** Improve the independent review process by:

- a. performing verification work at air carriers rather than just reviewing FAA inspection records and ensuring that the review results are shared with the office under review;
- b. coordinating all safety-related independent reviews conducted using the IAC process through its new Office of Audits and Evaluations.

**FAA Response:** Concur. FAA will revise its independent review process to include verification of work performed, in addition to reviewing FAA inspection records. We will also revise our independent review process to ensure the results of the review are shared with the office under review so that all safety concerns are addressed in a timely manner. These revisions will be

## **Appendix. Agency Comments**

incorporated into the Flight Standards Service (AFS) Internal Assistance Capability Document by June 30, 2010.

Flight Standards Service (AFS) Internal Assistance Capability (IAC) is devoted to fact finding, assessing, and making recommendations on matters of special interest to AFS top leadership. While AFS will continue to direct and manage this process, the FAA believes the Office of Audit and Evaluation (AAE) can add value to the process by performing quality assurance functions with respect to IAC results and reviews. Accordingly, effective immediately, AAE will review final reports from IAC reviews for accuracy and completeness. AAE will also evaluate whether the IAC review was fair and followed established AFS processes. These new responsibilities are consistent with AAE's role to coordinate and provide independent quality control of certain investigations and to assess whether investigations and resolutions are fair, impartial and in conformance with established processes.

**OIG Recommendation 6:** Determine why FAA's oversight did not identify the weaknesses discussed in this report and whether these are Agency-wide issues or limited to American's CMO.

**FAA Response:** Partially concur. As described above, FAA's oversight identified many of the weaknesses discussed in this report. For example, FAA's American Airlines CMT and the ACEP review of American Airlines identified discrepancies requiring corrective action in the following areas:

- required inspection items;
- MEL/configuration deviation list;
- AD management;
- engineering/major repairs and alterations;
- continuous analysis and surveillance;
- weight and balance program;
- extended operations (ETOPS);
- carry-on baggage;
- training of station personnel; and
- station facilities.

The ACEP evaluation of American Airlines took place from April to September 2009 and warrants discussion in the OIG report as ACEP evaluations are an important part of the FAA's oversight of part 121 air carriers. Furthermore, routine surveillance conducted by the American Airlines CMT discovered many of the weaknesses discussed in the report. In many cases, American Airlines failed to complete corrective actions in a timely and effective manner. We implemented a new software tool to help us make sure that airline performance improves in this regard (see below).

Overall, FAA initiated the following actions to strengthen its oversight of all air carriers:

1. **We are supplementing routine surveillance with a national air carrier evaluation program.** The national ACEP program uses a risk-based targeting process and ensures that all part 121 air carriers will be evaluated by national teams on a recurring basis. A component of the national program will be a comparative analysis of ACEP findings

## **Appendix. Agency Comments**



versus those discovered during routine surveillance. Where statistically significant differences exist, further analysis will seek root causes that result in system improvements such as changes to data collection tools, handbook guidance, or training curricula.

2. **We are following up on air carrier corrective actions using a new software tool.** We deployed the Corrective Action Tracking Tool (CATT) in our ATOS software to track timely, effective completion of corrective actions. CMT managers and principal inspectors must use the CATT to document corrective actions required of air carriers and to ensure that actions are completed in a timely manner.
3. **We are ensuring that inspectors follow FAA policy.** In addition to the national ACEP program, the FSEP is being used to assess whether FAA offices operate according to national policy. The objective of this program is to audit our offices to determine if they are providing surveillance and analysis of the ATOS program for performance and effectiveness and are implementing corrective action of any deficiency. This initiative was beta tested in July 2009. It was used effectively on an audit in November 2009. It is scheduled for five more audits through 2nd quarter of fiscal year 2010 and approximately 14 total audits for the fiscal year.

As a result, while FAA will continue along these and other lines to ensure that it provides useful and effective safety oversight to the nation's air carriers, no further action is necessary to address this recommendation.



# Federal Aviation Administration

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## Memorandum

Date: MAY 18 2010

To: Robert A. Westbrooks, Acting Assistant Inspector General for Special Investigations and Analysis, JI-3

From: Margaret Gilligan, Associate Administrator for Aviation Safety, AVS-1  
*Margaret Gilligan*

Prepared by: Ron Katana, AFS-10, x77220

Subject: Reply to Office of the Inspector General (OIG) Email Dated April 16  
re: OIG Investigation # 09Z000022SINV (American Airlines Certificate Management)

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Per your request to the Flight Standards Service (AFS), the attachment addresses each issue identified in your email. The attachment provides a further explanation of the actions taken and/or planned to resolve the allegations contained in the above referenced report. Please note the responses were vetted with the regional division management for the AFS Southwest Region as well as the special assistant to the Director, AFS.

Attachment

cc:  
ASW-200  
AAE-1  
AGC-30

AFS-10: File: 2010-05-07 Revised AFS supplemental reply (Final) re OIG April 16 email (grid).doc

## Attachment

Allegation 1: FAA's response (bullet 4) notes that the CASS review board "continues to take action on [the] risk" associated with the "Failure to Follow Maintenance Manual Procedures." Please describe what action the CASS review board has taken and intends to take, and whether this includes a root cause analysis (or other similar action) to determine why personnel failed to follow established job instructions.

AFS Response: The CASS review board is conducting a root cause analysis and is considering many alternative actions to ensure compliance with maintenance instructions. One of the initiatives currently underway is more direct QA/QC involvement on the floor and at the aircraft accomplishing over the shoulder inspections. Another initiative under consideration is actual maintenance manual references being required in the maintenance accomplishment documentation. The carrier is currently negotiating with the labor group to initiate the change.

Allegation 2: FAA's response (bullet 1) indicates that in July 2008 a SAT was formed "to address MEL issues." It was the OIG's understanding that this SAT was specific to MELs for the autopilot and autoland systems only. Please clarify and describe in more detail how this will address MEL deficiencies system-wide.

AFS Response: The SAT not only addressed the autopilot and autoland systems but was inclusive of all MEL issues that were being found throughout the systems. To aid the tech crew chief, a flowchart was developed and can be applied to ensure the proper issuance of the MELs across all systems.

Allegation 2: FAA's response (bullet 3) indicates that "American Airlines is developing troubleshooting training for mechanics" and that the "training will be deployed no later than December 2010." Please provide details on how the CMT will ensure compliance to MEL procedures during 2010 (in the absence of this training).

AFS Response: The carrier conducted town hall meetings, which were attended by FAA, and continues to issue maintenance awareness bulletins to enhance compliance. The CMT will continue to monitor and schedule surveillance of the MEL program during the remainder of 2010. Additionally, the partial program managers (PPMs) for each fleet will utilize the monthly operations research analyst (ORA) trending report, occurrence reports, and normal surveillance to ensure that AA's comprehensive fixes have achieved their intended outcome.

Allegation 2: FAA's response (bullet 4) states that CMT's "operations research analyst will trend MEL rates, MEL extensions and short-term escalations" and provide this information to inspectors. Please clarify whether this review will include an analysis of the types of aircraft parts being deferred and the causes of the deferrals (as specified in the OIG audit report), rather than just the number of deferrals.

AFS Response: The ORA quarterly trend report development is complete and the report is now issued to the principal inspectors (PIs) and PPMs for use in the oversight of the MEL program. Subsequent reviews by the PIs/PPMs of identified emergent adverse trends will include a further analysis of specific aircraft system part(s) being deferred and associated root causes of deferrals. On April 27, 2010, the related processes were documented in the CMT's quality manual.

Allegation 3: FAA's response states, "Data provided to and reviewed by the principal maintenance inspector demonstrates a significant reduction in RII events since the company's implementation of the comprehensive fixes." Please describe this data and how it demonstrates a significant reduction in RII events.

AFS Response: Data reviewed are the FAA surveillance reports, ASAP submissions from AA's maintenance personnel, and the Voluntary Disclosure Program. Significant reductions in findings from all the aforementioned reports indicate the training, heightened awareness of the RII process, and moving the responsibility for conducting the RII inspections to the quality assurance group has significantly reduced RII events since the comprehensive fixes were implemented.

Allegation 3: FAA's response states, "CMT will continue to conduct surveillance of American Airlines' compliance with RII requirements, assess trends of noncompliance, and take appropriate action to correct systemic problems and address regulatory noncompliance." Please describe what types of "appropriate action" may be taken; specifically, does this include seeking civil penalties or other legal action?

AFS Response: The CMT uses the enforcement decision process as outlined in Order 2150.3B in determining the appropriate type of action in areas of noncompliance (see copy of Appendix F).

Allegation 5: FAA's response (bullet 2) states, "The CMO's continued surveillance, coupled with the ACEP, resulted in significant improvements to American Airlines' CASS. Enhanced CASS program staffing at the airline in 2008 and 2009, revised and improved CASS guidance, and improved information systems also improved American Airlines' program." Please describe how surveillance and ACEP significantly improved American's CASS. Also, please describe and quantify FAA's oversight plans to address American's CASS program in 2010.

AFS Response: CMT surveillance and ACEP findings were causal factors in AA's CASS improvement initiative. Utilizing the findings AA increased staffing, created databases to track and analyze audit findings, and made major program changes by instituting new tracking systems and newly created internal databases from which to draw data to aid in its CASS oversight. Additionally, the carrier has committed to integrating its CASS system into more areas of its organization throughout FY 2010. The CMT continues to plan surveillance of the carrier's CASS program throughout FY 2010 and retarget surveillance based upon risk. The CMT scheduled performance assessments in the second and fourth quarters FY 2010 and will schedule a design assessment of the CASS program upon completion of the CASS manual rewrite, in approximately the fourth quarter of FY 2010. The carrier expects that as the CASS program matures additional tools may be implemented.

Allegation 6: Although the OIG did not substantiate the allegation that the CMO's Principal Avionics Inspector improperly approved American Airlines' FTS maintenance program for the MD-80 aircraft fleet, it did identify errors in FAA's guidance and the operations specifications. Has FAA corrected these errors and, if it has, when and how did it correct them?

AFS Response: The OIG found that there was an error in FAA guidance leading to possible confusion in the initial review of the operator's program. In order to correct this error, CAR No. C-09-1434 was submitted on September 24, 2009, concerning the Fuel Tank Safety Instructions for Continued Airworthiness (ICA) and the guidance in Order 8900.1, volume 3, chapter 11, section 23.

This information was forwarded to the Flight Standards Information Management System (FSIMS) Librarian on April 20, 2010, to facilitate a change to FAA policy. In addition, prior to that action, the principal avionics inspector corrected the error in the operations specifications (D070) on March 2, 2010, and provided the OIG auditor a copy of the corrected operations specifications.



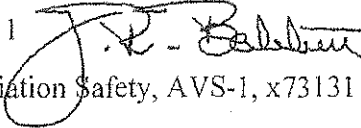
# Federal Aviation Administration

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## Memorandum

Date: 'APR 14 2010

To: Robert A. Westbrooks, Acting Assistant Inspector General for Special Investigations and Analysis, JI-3

From: J. Randolph Babbitt, Administrator, AOA-1, x73111 

Prepared by: Margaret Gilligan, Associate Administrator for Aviation Safety, AVS-1, x73131

Subject: Office of the Inspector General (OIG) Investigation # 09Z000022SINV  
re: American Airlines Certificate Management

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This is in response to the above-referenced investigation of six allegations to the U.S. Office of Special Counsel about oversight of American Airlines' maintenance programs.

The attachment describes actions taken to date or currently underway by the air carrier and the American Certificate Management Office (CMO) to address the concerns substantiated by the OIG investigation.

If you have questions or need additional information, please have a member of your staff contact Michael McCafferty, Flight Standards Executive Officer, by telephone at 202-267-3928 or e-mail at [michael.mccafferty@faa.gov](mailto:michael.mccafferty@faa.gov).

Attachment

Office of Inspector General (OIG) Project No. 09Z000022SINV

Introduction: Below are the six allegations and brief descriptions of actions already implemented by the American CMO or American Airlines or currently underway to address each concern substantiated by the OIG investigation.

OIG Allegation #1: Federal Aviation Administration (FAA) Certificate Management Office (CMO) officials are ineffective at requiring American Airlines' maintenance workers to comply with maintenance procedures.

AFS Response: The actions described below have been taken to improve American Airlines' maintenance workers' compliance with maintenance procedures:

- The CMO has worked with American Airlines to implement programs to educate employees through training on maintenance procedures and town hall meetings. The FAA attended some of these meetings and verified the validity of the information.
- In mid-2009, American Airlines began implementation of an additional control requiring its quality assurance inspectors to accomplish over-the-shoulder inspections of maintenance personnel while they are performing maintenance functions. The implementation of this new process will be completed by July 2010.
- The CMO recommended American Airlines add sign-off blocks to the maintenance procedures performed by its quality assurance personnel to ensure maintenance workers fully comply with the instructions for accomplishing airworthiness directives (AD). American Airlines agreed to implement the CMO recommendation beginning in November 2009, which resulted in greater involvement by its quality assurance personnel.
- American Airlines' Continuing Analysis and Surveillance System (CASS) identified the "Failure to Follow Maintenance Manual Procedures" issue as a high risk and elevated it to the CASS review board for action. This review board, which continues to take corrective action on this risk, is comprised of members of the Transport Workers Union and American Airlines' managing directors representing the following (in alphabetical order):
  - Aircraft engineering and overhaul;
  - Airport operations;
  - Cargo operations support;
  - Corporate safety;
  - Flight operations;
  - Maintenance operations;
  - Regulatory affairs; and
  - Quality assurance.
- CASS remains an elevated issue in the Comprehensive Assessment Plan (CAP), which will specifically target the use of maintenance procedures.

OIG Allegation #2: FAA CMO officials are unable to obtain compliance from American Airlines in the use of Minimum Equipment List (MEL) deferrals resulting in the operation of airplanes with inoperative equipment outside of established procedures.

AFS Response: As noted in the agency's response to the OIG's audit of FAA's Oversight of American Airlines' Maintenance Programs, the FAA conducted an evaluation of American Airlines' implementation of its MEL authority and found that multiple American Airlines initiatives reduced open MELs to approximately 354 in January 2009, with a further reduction to 254 by November 2009. According to the Air Transport Association, the industry averages approximately 0.5 open MELs per aircraft per day. Based on American Airlines' November 2009 data, American Airlines averaged 0.42 open MELs per aircraft per day, slightly below industry averages. The CMO continues to conduct targeted surveillance of American Airlines' use of MEL deferrals. The following actions have been taken or are underway to improve American Airlines' compliance with MEL deferral procedures:

- In July 2008, the CMO and American Airlines formed a System Analysis Team (SAT) to address MEL issues. The SAT recommended the development of a plan to train maintenance and maintenance control personnel and to establish controls to ensure compliance with MELs. American Airlines' implementation of these two recommendations began in 2008 and was completed in February 2010.
- American Airlines collaborated with the CMO in its development of a flow chart for maintenance control personnel to ensure proper troubleshooting was accomplished on MEL issues. The flow chart was reviewed by the CMO in February 2010.
- American Airlines is developing troubleshooting training to enhance the mechanics' ability to properly analyze and determine the appropriate cause of the malfunction when determining MEL deferrals. The training will be deployed no later than December 2010. The CMO will evaluate the effectiveness of the process through increased surveillance.
- The American Airlines Certificate Management Team (CMT) operations research analyst (ORA) will trend MEL rates, MEL extensions, and short-term escalations gathered from the American Airlines Daily Maintenance News Line. The ORA presents the analysis to the principal inspectors and partial program managers during airworthiness team meetings to review the data for adverse trends that may warrant special targeted surveillance in order to reverse any adverse trends. Development and implementation of the trending was completed in March 2010.

OIG Allegation #3: FAA CMO officials are unable to obtain compliance from American Airlines in the use of Required Inspection Items (RII).

AFS Response: Numerous process improvements resulting primarily from the RII SAT discussions are deployed that have and should continue to improve American Airlines' compliance with RII requirements. As noted in the agency's response to the OIG audit of FAA's Oversight of American Airlines' Maintenance Programs, American Airlines implemented numerous corrective measures, including:



- Identification of RII tasks in the aircraft maintenance manuals;
- Restrictions on temporary RII authorizations;
- Elimination of confirmation and critical items check policies to avoid confusion with the RII program;
- Display of a personalized “expired qualification” notice when an employee signs on to the corporate Web site;
- Distribution of a monthly “training dashboard” system wide;
- Annual RII awareness training regardless of RII authorization; and
- Distribution of a monthly expired qualifications report system wide.<sup>1</sup>

Data provided to and reviewed by the principal maintenance inspector demonstrate a significant reduction in RII events since the company's implementation of the comprehensive fixes.

Moreover, in July 2009, an Air Carrier Evaluation Process (ACEP) Team assessed the performance of the RII system and affirmed its performance with no issues observed. The CMT will continue to conduct surveillance of American Airlines' compliance with RII requirements, assess trends of noncompliance, and take appropriate action to correct systemic problems and address regulatory noncompliance.

OIG Allegation #4: FAA CMO officials issued letters of correction despite evidence that American Airlines' repair stations violated requirements to perform Training Needs Assessments (TNA).

AFS Response: The CMO will continue spot checks of each part 145 repair station to verify compliance with requirements to perform TNA and will take appropriate action to address any trends of noncompliance if they develop.

OIG Allegation #5: FAA CMO officials have not taken appropriate regulatory measures, including enforcement actions, to address American Airlines' failure to comply with requirements to have an effective Continuing Analysis and Surveillance System.

- AFS Response: The CMO continuously worked with American Airlines' personnel during the development of its CASS process. The CMO arranged for a subject matter expert from FAA headquarters to train American Airlines CASS and management personnel on April 10 and 12, 2007, as well as on May 13, 2008.
- The CMO's continued surveillance, coupled with the ACEP, resulted in significant improvements to American Airlines' CASS. Enhanced CASS program staffing at the airline in 2008 and 2009, revised and improved CASS guidance, and improved information systems also improved American Airlines' program.

<sup>1</sup> Of the 35 RII program recommendations produced by the SAT, the airline has incorporated 22, the working group determined 12 did not provide value to the process, and one will be implemented by April 2010.

OIG Allegation #6: CMO Principal Avionics Inspector (PAI) authorized the operation of the MD-80 fleet knowing it did not meet the Fuel Tank System (FTS) maintenance program requirements of 14 CFR section 121.1113 and Airworthiness Directive 2008-15-11.

AFS Response: After consulting the Airworthiness Partial Program Manager (PPM) for the MD-80 fleet on December 16, 2008, the PAI determined the FTS maintenance program complied with applicable regulations and guidance and then issued the appropriate Operation Specifications (D0070). Also, the PAI worked closely with the Aircraft Certification Office to ensure compliance with the FTS requirements. The PAI continues to conduct oversight of American Airlines' compliance with these requirements.



U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
National Policy

**ORDER  
2150.3B**

Effective Date:  
10/01/07

**SUBJ: FAA Compliance and Enforcement Program**

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This order contains policies, procedures, and guidelines for the Federal Aviation Administration's compliance and enforcement program. The order also articulates the FAA's philosophy for using various remedies, including education, corrective action, informal action, remedial training, administrative action, and legal enforcement action, to address noncompliance with statutory and regulatory requirements enforced by the FAA. It provides for the public a written statement of the Administrator's policy guidance for imposing sanctions for violations of such requirements.

The order is used at all levels by agency personnel who are engaged in the investigation, reporting, and processing of enforcement actions. It applies to all offices with regulatory responsibilities.

This revision of the order comprehensively updates policies, procedures, guidance, and assignments of responsibility. It reorganizes the order in a manner more useful for agency personnel and is available electronically to agency personnel and the public. The revision amends agency sanction guidance to conform to statutory changes resulting from Vision 100 Century of Aviation Reauthorization Act and incorporates guidance into the agency's compliance and enforcement program order on policies and programs that have developed since the last comprehensive order revision in 1988. Those include policies relating to the FAA's exercise of its authority to administratively assess civil penalties and guidance on the agency's voluntary safety programs.

A workgroup of agency personnel from the field and headquarters with extensive experience in statutory and regulatory enforcement reviewed the agency's policies and programs in this area to produce this comprehensive revision of the agency order on its compliance and enforcement program.

A handwritten signature in black ink, appearing to read "Robert A. Sturgeon".

Robert A. Sturgeon  
Acting Administrator

Distribution: A-W-I; A-W (AT/PS/SM)-2; A-W (PP/AM/SF/GCIFS/IA/VS)-3; A-XYZ (A T/AF/CS)-2; Z-X (AS/AM/GC/FS)-3; A-Y (AM/ARIGC)-3; A-Z (AM/AN/GC)-3; A-FAC/FACIFCS-O; A-F AF/FA T/FIA-O(L TD); ZFS-325

Initiated By: AGC-300

10/23/09

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## Appendix F. Enforcement Decision Process

### 1. Introduction

**a. Purpose.** The Enforcement Decision Process (EDP) is used by FAA enforcement personnel to assist them in carrying out the FAA's exercise of prosecutorial discretion. The EDP uses systems safety risk management principles to allocate limited agency investigative and legal resources to the most important cases, for a more timely and effective compliance and enforcement system. By using the EDP, FAA enforcement personnel achieve greater consistency and standardization in determining the most appropriate type of enforcement action to take considering all the facts and circumstances of each case.

**b. EDP Worksheet.** Each program office has developed and approved a specific EDP worksheet for use by the enforcement investigative personnel in its organization. The EDP worksheet for each program office conforms to the guidelines in subparagraph 7.b. of this appendix and is located in the appropriate order or other guidance document for the program office listed in subparagraph 1(c) of this appendix.

**c. Reference Materials.** Program office-specific guidance for using the EDP is found in the following directives or other guidance:

- (1) FAA Order 9120.1A, Drug Abatement Inspector Handbook
- (2) FAA Order 8900.1, Flight Standards Information Management System
- (3) FAA Order 5280.5C, Airport Certification Program Handbook
- (4) AIR-002-035-W1, Aircraft Certificate Service Enforcement Decision Process (EDP) and Enforcement Decision Process Worksheet (EDPW)
- (5) FAA Order 1650.9A, Transportation of Hazardous Materials
- (6) FAA Order 1600.38F, FAA Investigations Program.

**2. Applicability.** The FAA uses the EDP to determine the type of enforcement action to take (informal, administrative, or legal) in all enforcement cases, except for those that are categorically excluded as referenced in subparagraph 6.a.

**3. Definitions.** The following definitions apply to the EDP:

*Act* is an overt action and includes the failure to take an action.

*Adequate deterrent* means that the FAA action is reasonably likely to discourage the alleged violator and others similarly situated from committing the same or very similar conduct for the foreseeable future.

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*Administrative action* means a letter of correction or a warning notice.

*Constructive attitude* means that the alleged violator acts in a positive manner toward regulatory requirements, cooperates willingly with FAA investigative personnel to achieve compliance, and willingly takes actions necessary to come into and maintain compliance.

*Inadvertent* means an act is the result of both inattention and lack of purposeful choice. A violation is inadvertent when it does not result from an alleged violator's conscious decision to take or not take any action that could have prevented the violation.

*Informal action* means oral or written counseling of individuals or entities for regulatory noncompliance, documented in a program office database.

*Hazard* means a condition that could lead to injury or property damage.

*Lack of qualification* means a certificate holder lacks the skills and competency, or care, judgment, and responsibility necessary to hold that certificate.

*Likelihood* means the probability (frequent, occasional, or remote) of the worst type of injury or damage realistically occurring, considering the specific facts of the case.

*Legal action* means enforcement action other than administrative action or informal action.

*Safety risk* means the level (high, moderate, or low) of potential injury or property damage from a hazard created by an act, considering the hazard severity and the likelihood that the severity will be realized.

*Severity* means the worst type of injury or damage (catastrophic, critical, marginal, or negligible) that could realistically occur from a generic violation of the type involved in the subject violation. A generic violation refers to the basic act or failure to act absent any specific facts or circumstances.

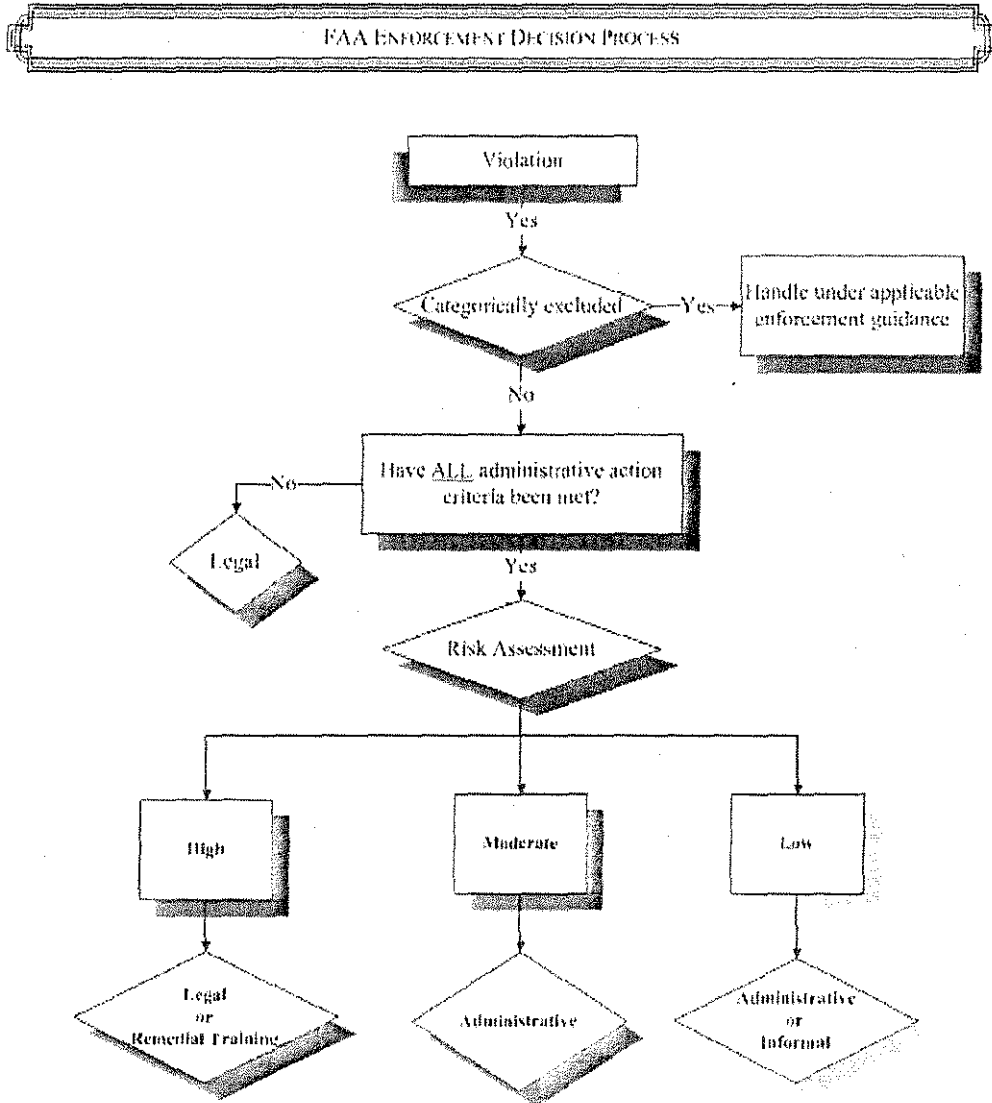
*Substantial disregard for safety or security* means in the case of a certificate holder, that the act was a substantial deviation from the degree of care, judgment, and responsibility normally expected of a person holding that certificate with that type, quality, and level of experience, knowledge, and proficiency. In the case of a violator who is not a certificate holder, substantial disregard means the act was a substantial deviation from the degree of care and diligence expected of a reasonable person in those circumstances.

**4. Applying the EDP.** FAA investigative personnel apply the EDP after they have gathered sufficient evidence and other relevant information to analyze the facts and circumstances of the apparent violation under the administrative action criteria and, if necessary, categorize its safety risk. To apply the EDP, all FAA enforcement personnel

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take the steps indicated in the flowchart below and analyze in each step the facts and circumstances indicated by the enforcement investigation or inspection results. FAA enforcement personnel document their application of the EDP on the appropriate program office EDP worksheet.



Note: FAA investigative personnel may determine if a case warrants a deviation from the enforcement action indicated by the Enforcement Decision Process. FAA investigative personnel follow the guidance in section 6.d. of this appendix to seek a deviation.

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**5. Multiple Violations.** When FAA investigative personnel find during a single investigation or inspection, multiple apparent violations by the same person, they prepare only one Enforcement Investigative Report and one EDP worksheet for all apparent violations committed by that person. In the EIR and on the EDP worksheet, FAA investigative personnel recommend one type of enforcement action to address all such violations. If the investigation or inspection reveals violations by multiple violators, then FAA investigative personnel prepare one EIR and one EDP worksheet for each violator. To determine the appropriate enforcement action that will be taken for multiple apparent violations discovered and addressed in an EIR, FAA enforcement personnel analyze under the EDP the apparent violation they determine is the most egregious among all the violations found. All apparent violations reported in the EIR will be addressed in one enforcement action with the type of enforcement action determined appropriate for the most egregious of the multiple violations.

**6. Steps of the EDP.**

**a. Determine Applicability--Is the case categorically excluded from the EDP?** FAA investigative personnel determine if the apparent violation involves any of the matters described in subparagraphs (1) through (7) below. If the apparent violation involves any of these matters, the case is categorically excluded from the EDP. If the excluded case warrants legal enforcement action, then FAA investigative personnel prepare an EDP worksheet or other documentation for the EIR indicating that the apparent violation is categorically excluded from the EDP.

(1) Voluntary Disclosure Reporting Program (VDRP). Apparent violations that are disclosed under, and meet the criteria of, the VDRP are handled under the guidance for that program.

(2) An issue involving lack of qualification, or question of qualification. For example:

(a) Drug and alcohol positives

(b) Failing to successfully complete a reexamination

(c) Failing to possess the skills and competency required for the certificate held

(d) Refusing to permit and/or submit to an inspection, reexamination, or drug/alcohol test

(e) Intentionally falsifying a record or application

(f) Cheating on a written examination

(3) Criminal activity, such as narcotics convictions.

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(4) Special emphasis enforcement programs.

(5) Person operating without having been issued a required certificate, rating or other required authorization.

(6) Military referral.

(7) Foreign airman referral.

**b. Apply Administrative Action or Informal Action Criteria--Have all criteria for taking Administrative Action or Informal Action been met?** If a case is not categorically excluded from the EDP, then FAA investigative personnel determine whether the apparent violation(s) meets the criteria for taking administrative action or informal action. These criteria are found in chapter 5, subparagraph 4.b. To take administrative action or informal action for an apparent violation(s), FAA investigative personnel must determine that all the criteria are met. If FAA investigative personnel determine an apparent violation(s) does not meet all the criteria, then they must recommend the appropriate legal enforcement action for the apparent violation(s), unless program office management approves and justifies a deviation in accordance with subparagraph 6.d. of this appendix. FAA investigative personnel indicate on the EDP worksheet for their program office whether all criteria for taking administrative action or informal action have been met. If any of the criteria have not been met, FAA investigative personnel indicate which criteria were not met on the EDP worksheet and explain why. Below is an abbreviated listing of the criteria for taking administrative action or informal action; a complete discussion of these criteria is found in chapter 5, subparagraph 4.b. Each program office may have additional guidance that explains the applicability of these criteria to apparent violations discovered by its organization.

Criteria for Administrative Action or Informal Action:

- (1) Legal enforcement action is not required by law.
- (2) Administrative action would be an adequate deterrent to future violations.
- (3) Lack of qualification is not indicated.
- (4) The apparent violation was inadvertent, i.e., not the result of purposeful conduct.
- (5) A substantial disregard for safety or security was not involved
- (6) The circumstances of the apparent violation were not aggravated
- (7) The alleged violator has a constructive attitude toward compliance.
- (8) A trend of noncompliance is not indicated



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**c. Analyzing Risk.** FAA investigative personnel analyze the risk of an apparent violation(s), only if all criteria for administrative action or informal action have been met. To determine the level of risk, FAA investigative personnel categorize the severity and likelihood of the hazard, that is, the dangerous condition, created by the apparent violation(s). They then apply the Risk Assessment and Enforcement Action Matrix ("the Matrix") to determine the level of risk for an apparent violation(s) and the corresponding enforcement action that should be taken.

**(1) Determining Severity.** Severity is the worst type of injury or damage that could realistically occur from a generic violation of this type. A generic violation refers to the basic act or failure to act without considering any specific facts or circumstances.<sup>1</sup> To determine severity, FAA enforcement personnel *do not consider the specific facts of the case*; the specific facts of the case are considered only when determining likelihood. Severity and likelihood are determined separately. Severity must be determined without considering the likelihood of that severity being realized. For example, if a plausible argument can be made that a hazard could under some circumstances result in death or severe damage, the severity is catastrophic, in spite of the fact that such an outcome from the hazard might be extremely rare. The most common error in determining severity is prematurely considering likelihood. Likelihood must be considered and determined after the severity is determined. Severity can be one of the following:

- Catastrophic (death or severe damage).
- Critical (severe injury or substantial damage).
- Marginal (moderate injury or damage).
- Negligible (minor or no injury or damage).

In assessing the severity of an act as one part of determining safety risk, the FAA considers the potential outcome, not the actual outcome that resulted from the act. The potential severity can be catastrophic, critical, marginal, or negligible regardless of whether actual injury or property damage occurred or nearly occurred. For example, a 1,000-foot altitude deviation from an ATC clearance has the same potential outcome regardless of whether there was actually another aircraft that came into conflict or not. Similarly, a fuel exhaustion occurrence has the same potential outcome irrespective of whether an actual accident resulted. In these examples, the absence of another aircraft coming into conflict or the existence of suitable forced landing sites are fortuitous (by chance) circumstances not considered in the determination of severity, since other aircraft could have been in conflict (by chance) or there could have been a lack of suitable forced

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<sup>1</sup> For example, for an altitude deviation violation, FAA enforcement personnel must consider what is the worst type of injury or damage that could realistically happen if an aircraft deviates from its assigned altitude, without considering the weather, other traffic in the area, the time of day, or other similar types of facts.

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landing sites (by chance). In determining the severity, the existence of fortuitous circumstances is not considered.

**(2) Determining Likelihood.** Likelihood is the probability of the worst type of injury or damage realistically occurring, *considering the specific facts of the case*. In other words, FAA investigative personnel determine how likely it is that the severity level would actually be realized, given the facts and circumstances involved. Likelihood can be one of the following:

(a) Frequent (likely to occur often).

(b) Occasional (likely to occur sometimes).

(c) Remote (unlikely to occur, or would seldom occur or, for purposes of the EDP, so unlikely, one can assume the severity level would not occur).

**(3) Determine the Safety Risk and the Appropriate Enforcement Action.** FAA enforcement personnel determine the safety risk (high, moderate, or low) and the appropriate enforcement action using the following matrix:

**RISK ASSESSMENT and ENFORCEMENT ACTION MATRIX**

**(This matrix is applied only if all criteria for administrative action or informal action have been met.)**

LIKELIHOOD	SEVERITY			
	Catastrophic	Critical	Marginal	Negligible
Frequent	High – Legal or Remedial Training	High – Legal or Remedial Training	Moderate - Administrative	Moderate - Administrative
Occasional	High – Legal or Remedial Training	Moderate - Administrative	Moderate - Administrative	Low - Admin or Informal
Remote	Moderate - Administrative	Moderate - Administrative	Low - Admin or Informal	Low - Admin or Informal

**d. Remedial Training.** FAA investigative personnel for the Flight Standards Service address an apparent violation by an airman with remedial training, provided all criteria for taking administrative action or informal action are met, the apparent violation presents a high safety risk, and all criteria for offering remedial training are met. The criteria for offering remedial training are:

(1) Future compliance can be reasonably ensured through remedial training alone;

(2) The airman exhibits a constructive attitude that would lead the inspector to believe the airman has a willingness to comply, so noncompliance is less likely in the future.

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(3) The conduct does not disclose a lack of, or reasonable basis to question, the airman's qualifications.

(4) The airman's record of enforcement actions does not indicate that remedial training would be inappropriate.

(5) The conduct is not deliberate, grossly negligent, or criminal in nature.

**e. Deviation from the Matrix (if applicable).** FAA investigative personnel may determine a case warrants a deviation from the enforcement action indicated by the Risk Assessment and Enforcement Action Matrix ("the Matrix"). If FAA investigative personnel select a type of action other than that indicated by the Matrix, then they must provide a justification and have approval of the division manager or equivalent. See chapter 5, subparagraph 4.d for more information on using administrative action when associated criteria are not met. The following are examples of where a deviation from the type of action indicated by the Matrix *might* be justified:

(1) In certain cases, where a business commits an apparent violation that meets the criteria for administrative or informal action but presents a high safety risk, administrative action in the form of a letter of correction may be more appropriate to improve the operator's system for system safety benefits, even though the Matrix directs legal action. For these cases, the potential safety benefits of a structured corrective action process that incorporates a corrective action plan might be preferable to respond to the high safety risk.

(2) In certain cases, where the criteria for administrative or informal action are not met because an individual's apparent violation was not inadvertent, but there is negligible safety risk involved. For example, an apparent violation by a pilot who operates an aircraft without a pilot certificate in his or her possession but is qualified and current to operate aircraft, may be more appropriately addressed with a warning notice.

## **7. Documentation.**

**a. EDP Worksheet.** FAA enforcement personnel complete the EDP Worksheet developed and approved by their program office, for every enforcement action, except those where they take on-the-spot administrative action or informal action.

**b. Guidelines for EDP Worksheet.** Each program office EDP Worksheet includes the following items:

(1) EIR or File number and Case Name.

(2) Analysis of Administrative Action or Informal Action Criteria, including an explanation why any criterion is not met.

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(3) Analysis of safety risk for apparent violations that meet the criteria for administrative action or informal action. The analysis of safety risk must include an analysis of the severity and likelihood of the hazard created by the apparent violation(s). The EDP Worksheet includes statements explaining why the severity category and the likelihood category were chosen by FAA investigative personnel.

(4) Explanation of a Deviation Request.

(5) Signatures of FAA preparer and reviewer of EDP Worksheet and date signed.

(6) Attorney signature with concurrence or explanation for nonconcurrence and date signed.

**c. EDP Worksheet in EIR.** FAA investigative personnel include the completed worksheet in the EIR for administrative and legal actions. For informal actions, FAA investigative personnel retain the worksheet in the investigating office files for informal actions. EDP Worksheets are maintained in accordance with established retention periods for EIRs and other enforcement records.

**d. Entry in Tracking Systems.** Legal and administrative actions are recorded in EIS. Informal actions do not require the preparation of an EIR, but must be documented in a program office database to support national, regional, and local systems safety analysis, and to identify trends. FAA investigative personnel record the following data on informal actions in the appropriate program office database:

- (1) Name of the individual or business
- (2) Certificate type and number of the individual or business (as applicable)
- (3) Regulations involved (include section, paragraph and subparagraph)
- (4) Date of counseling
- (5) Type of counseling (oral or written)
- (6) For businesses, name and title of person counseled
- (7) Brief description of the apparent noncompliance

## **8. Review of EDP Application.**

### **a. Program Office Review and Required Signatures on EDP Worksheet.**

Program office regional and field management are responsible for reviewing each EDP worksheet and determining that it is completed in accordance with this order and program office policies and procedures. Each EDP worksheet will be signed by the preparer and

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each reviewer in the program office. A signature will indicate that the signatory concurs in the appropriateness of the action recommended and believes the EDP worksheet is prepared in accordance with all applicable policies.

**b. Legal Concurrence.** Before initiating legal enforcement action, legal counsel determines whether the recommendation for legal enforcement action is appropriate under the EDP. If legal counsel concurs with the program office's recommendation and analysis, legal counsel signs the EDP worksheet and initiates the case. If legal counsel disagrees that legal enforcement action is appropriate or disagrees with how the EDP was applied in a case, then legal counsel and the appropriate program office discuss and attempt to resolve those disagreements before the legal action is initiated. If legal counsel still disagrees with taking legal enforcement action after discussion with the program office, then legal counsel explains the reasons for such disagreement on the EDP worksheet, signs it, and returns the EIR to the program office after review by the Regional Counsel or designate. If legal counsel disagrees with the program office's analysis under the EDP but agrees with the recommended action, legal counsel does not return the EIR to the program office. Rather, legal counsel explains the reasons for the disagreement on the EDP worksheet, signs it, and initiates the case.