



U.S. Department
of Transportation
**Federal Aviation
Administration**

Memorandum

Subject: **INFORMATION:** Audit of Controls Over the
Reporting of Operational Errors

Date: MAR 11 2005

From: Assistant Administrator for Financial Services
and Chief Financial Officer

Reply to
Attn. of:

To: Principal Assistant Inspector General for Audit
and Evaluation

At the time the Federal Aviation Administration (FAA) released its FAA's October 19, 2004 response, we were unable to provide an action plan for addressing the recommendations in the subject report. A workgroup within the Air Traffic Organization (ATO) was established with responsibility to recommend actions required to ensure accurate and full reporting of operational errors.

Based on the workgroup's results, the attached provides the agency's action plan for addressing the three recommendations contained in the report.

If you have questions or need further information, please contact Anthony Williams, Budget Policy Division, ABU-100. Mr. Williams can be reached at 267-9000.

Ramesh K. Punwani

Attachment

**Federal Aviation Administration's (FAA) Updated Response to
Office of Inspector General's (OIG) Final Report:
Controls Over the Reporting of Operational Errors**

Recommendation 1: Rescind provisions in FAA's Air Traffic Quality Assurance Order 7210.56C that prevent FAA from using playback tools to identify operational errors.

FAA Response: Concur. Current orders allow the use of playback tools to identify facility operational errors. The ATO recognizes the need to improve guidance regarding audit procedures and will issue a GENOT augmenting the 7210.56C that outlines the Facility Audit process by April 1.

Recommendation 2: Establish internal audit procedures that require quality assurance staff at terminal radar approach controls (TRACON) and towers that have AMASS or ASDE-X to periodically review a sample of radar and voice data to assess whether operational errors are being fully reported. Sampling methods should (a) include periods when TRACON or AMASS/ASDE-X alerts occur, (b) target high-risk factors (e.g. peak traffic times), and (c) take into account other air traffic incidents that were not identified as operational errors.

FAA Response: Concur. To improve the accuracy of the reporting process, we will use radar replay capabilities and voice files to conduct random audits of air traffic services. This process will include the use of all automation play-back tools which are available for review at the facility i.e., AMASS, ASDE-X, RAPTOR, voice files, etc.

ATO-S will establish a systematic audit process that identifies requirements for review of air traffic services. The audit will include all air traffic operations that have replay capability such as, but not limited to, radar, voice, AMASS, and ASDE-X. ATO-S will determine the specific times, dates, type of operation and frequency of the audits.

ATO-T will ensure facilities conduct these random audits. This will include a quarterly Service Unit review with the results forwarded to ATO-S for validation and oversight. The results of each audit shall be documented and retained at the facility for a period of one year. The data associated with the audit will be retained for 45 days.

Recommendation 3: Require the air traffic evaluation staff to review and test audit records at TRACON and tower facilities to ensure these facilities are in fact conducting periodic audits of radar and voice data.

FAA Response: Concur. The ATO, as part of the response to Recommendation 2, includes secondary oversight of the facility audits. The requirement will be included in the next change of the 7110.10 (Air Traffic Safety Evaluations Order).

FACILITY AUDIT TALKING POINTS

FAA concurs with the assessment that there is a need for comprehensive audit procedures at air traffic facilities. ATO-S will establish the requirements for periodic reviews of air traffic services through replay capabilities. Additionally, existing equipment such as AMASS and ASDE-X, have limitations for on-site analysis and data extraction. While a quick assessment of AMASS is available at the facility, a complete analysis requires the system be taken off-line and the data sent to Oklahoma City. Initially, this audit will consist of sampling of data at select facilities to establish baseline needs. We will pursue development of enhanced replay platforms that are able to assimilate outputs of the variety of equipment within the NAS. A requirement for the audit procedures will provide interim guidance.

ATO-S has informed senior FAA officials of the need to incorporate the requirement for efficient, high quality, and cost effective replay methods into any newly deployed systems.

ATO-S will establish a systematic audit process that identifies requirements for review of air traffic services. The audit will include all air traffic operations that have replay capability such as, but not limited to, radar, voice, AMASS, and ASDE-X. ATO-S will determine the specific times, dates, type of operation and frequency of the audits.



**U.S. Department of
Transportation**

Office of the Secretary
of Transportation

Office of Inspector General
Washington, D.C. 20590

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Dear Ms. McMullen

Per our discussion of March 22, 2005, concerning the Dallas/Fort Worth TRACON, the following provides additional details concerning the severity classifications and separation standards as well as factors considered in determining an operational error.

Severity Index

As detailed in our previous letter to the Special Counsel concerning this matter, operational errors are a loss of minimum separation standards between two aircraft. Each operation that is determined to be an actual operational error is given a severity rating based on a numerical formula. More specifically, points are added based on the vertical and horizontal distances, the closure rate (speed of the aircraft), the flight paths (for instance crossing course vice opposite directions), whether the air traffic controller was controlling the situation (giving corrective actions), the size of the aircraft, and the location (i.e., on approach to an airport vice flying cross county). Points range in value from 2, lest severe and 60 (for in trail flight paths with a separation loss greater that .5 miles), most severe. The points are then added together and categorized as follows:

90 points and above—HIGH

40-89 points—MODERATE

39 points and below—LOW

By way of example, an incident involving two medium sized aircraft on cross courses that approach to within 600 feet vertical and 2.57 miles horizontal without

corrective courses being issued by an Air Traffic Controller is a moderate severity based upon the following point values:

600 feet vertical separation—	16
2.57 miles horizontal separation—	02
crossing courses—	18
<u>uncontrolled incident—</u>	<u>20</u>
total—	56

Estimate of Time to Crash

The existence of an operational error does not necessarily mean that the involved aircraft, if allowed to continue on course without corrective action, would crash into one another. FAA regulations proscribe a certain separation distances between aircraft. In effect, each aircraft has a protective buffer drawn around it that extends a minimum of 3 miles laterally (5 miles if a medium to small size aircraft is in trail of a large 747-type aircraft) and a minimum of 1000 feet elevation. Therefore, if one aircraft is approaching another on a parallel course but 999 feet above—even though there is no apparent danger of a crash—at the point the upper aircraft breaks the 3 mile buffer it is classified an operational error.

Additionally, in an incident where a controller has issued instructions to an aircraft but because of course and/or speed before those instructions are completed the aircraft breaks the plane of another aircraft it is termed a loss of separation even though, at the time of the loss of separation, there was no apparent danger that the two aircraft would crash.

We asked FAA's Air Traffic Office of Safety Evaluations to review each of the operational errors we previously reported to you to determine whether any of these aircraft, left uncorrected, would have been in danger of crashing into one another. As detailed below that review determined that even without the intervention of air traffic controllers none of these aircraft were on courses that would have placed them in danger of an actual mid-air collision. Specifically, with regard to each of these incidents we determined the following:

1) March 24, 2002

These aircraft were on diverging courses. The loss of separation was experienced when one aircraft did not turn—in response to controller

instructions—as soon as anticipated. The aircraft would not have come any closer to one another.

2) February 29, 2004

The pilots of these aircraft had one another in sight and were maintaining visual separation. These aircraft—without controller intervention—never approached closer than 800 feet vertical and 1.36 miles lateral.

3) May 17, 2004

The first aircraft responded to a Traffic Alert and Collision Avoidance System advisory to climb. However, even absent this action the first aircraft would have passed approximately 1.25 miles in front of the second aircraft and at a different altitude.

4) May 17, 2004

A second incident—created by the corrected courses from the first incident—without controller intervention would have resulted in aircraft passing one another with between 500 to 1000 feet separation.

5) May 17, 2004

This incident was created by the course corrections of the above aircraft. These aircraft were on diverging courses prior to the loss of separation and would have approached one another no closer than 600 feet vertically and 2.57 miles lateral.

6) June 8, 2004

The separation in this incident was created after an aircraft—issued a late turn instruction—overshot the approach turned behind a second aircraft. When the aircraft turned back to the final approach course it lost separation when it passed behind the first aircraft at 800 feet vertically and .43 miles laterally.

7) June 26, 2004

The aircraft involved in this incident were on diverging courses and would not have collided without controller intervention. They would not have approached each other any nearer than 800 feet vertically and 2.64 miles vertically.

Based upon the above information, FAA's Air Traffic Office of Safety Evaluations asserted that, in each of these cases separation standards were violated; however, if each of the aircraft would have continued on their established course, speed and altitude profiles prior to air traffic controller intervention there was no chance for collision.

If you have any additional questions concerning this information please feel free to contact me at 202-366-0677.

Sincerely

James L. Muhlenkamp
Director, Integrity Investigations Section

Attachment

(1) Loss of Separation Severity Index



U.S. Department
Of Transportation

Federal Aviation
Administration

7210.56C *Air Traffic Quality Assurance*



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August 15, 2002

Prepared by the Air

Evaluations and Investigations Staff,
AAT-20

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7210.56C

8/15/02

CHAPTER 6. SEVERITY INDEX

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6-1-1. DEFINITIONS

a. Severity Index: a method to determine the gravity, or degree that the separation standard was violated, for operational errors that occur in-flight.

b. Operational Error/Operational Deviation Steering Committee: as established by Memorandum of Understanding (MOU) to address national quality assurance issues contained within this order and other matters including, but not limited to, trend analysis, program effectiveness, compliance, and ongoing positive efforts. The committee meets as necessary to review and address quality assurance matters. The steering committee is comprised of two representatives from NATCA and two representatives from AAT-20.

c. Controlled Event: an operational error where the employee was aware of the impending conflict and takes corrective action to increase the separation.

d. Uncontrolled Event: an operational error where the employee was unaware of the conflict takes no corrective action and/or became aware of the conflict but did not have enough time to effectively mitigate the loss of separation.

e. Technical Violation: Operational errors that are classified as low severity and all operational deviations or operational errors that cannot be reviewed by radar data or a playback tool will be initially classified as a low severity if all indications are that 80% minima was maintained.

6-1-2. SEVERITY CLASSIFICATIONS

a. Airborne operational errors that can be reviewed by a playback tool will be classified by AAT-20 as high, moderate, or low severity.

b. Any dispute regarding the value of any component specific to an event shall be elevated to the OE/OD Steering Committee. The committee will attempt to resolve all disputes within 10 days of elevation. Should the parties not agree, the parties are free to pursue whatever course of action is available to them under the collective bargaining agreement and the Federal Service Labor-Management Relations Statute.

6-1-3. FINAL SEVERITY CLASSIFICATIONS

a. Facility managers shall ensure that radar OE's in domestic airspace are investigated in enough depth to accurately report closest proximity distances. The distances recorded with Operational Error Detection Program (OEDP) alerts in Air Route Traffic Control Centers (ARTCC) and conflict alert printouts in terminal radar approach controls (TRACON) may

not necessarily be the same as those values derived from analysis of radar plots or any playback tool. Consequently, radar extractions through National Track Analysis Program (NTAP) and Continuous Data Recording (CDR) are required to accurately determine those distances. With this in mind, facility personnel are required to supply radar and voice data to AAT-200 as soon as possible. Several methods of transferring extracted radar and voice data are available. An AAT-200 file transfer protocol (FTP://172.22.8.31) secured intranet site has been established so any facility can post digital data for efficient transfer of requested information. Also, an AAT-200 dedicated post office box (address 7-AWA-AAT-210) has been established to receive digital data. Additionally, overnight parcel express is also available and occasionally printed data may be faxed to AAT-200 (202-267-7389 or 9356) that will enable investigators to assess each event. This data needs to be prepared in one of several different forms as listed below. Any question regarding what data and what is the best transfer method should be directed to AAT-200 at 202-267-7010 or 9569.

b. For all En-Route Facilities (ARTCC), prepare a SATORI, with voice, on each OE within 72 business hours of the event and place the SATORI on the AAT-200 SATORI network server, SATORI directory. Name each file using the facility identification, error number, sector number and video map name/number, e.g., ZXX_00_002_r35_35. Each ATD shall ensure facility personnel are proficient at placing SATORI files on the AAT-200 server. If unable to prepare a SATORI in this time frame, forward a chronology, and an NTAP to AAT-200 as soon as possible via the agreed upon method. The NTAP shall comply with FAA Order 7210.56 requirements and shall contain LST 5 data for target coordinates. Target coordinates are necessary for distance calculations when the SATORI playback is not available.

c. For TRACON's, on each OE within 72 business hours of the event, perform a CDR extraction via the PC-Editor using only the time and sensor filters. ARTSIIIA systems use data classes TD and TG; and ARTSIIIE and IIIIE systems CR, TA, TU, and TG data classes. Save the extraction as a single text file. This data shall be posted on the AAT-200 file transfer protocol (FTP://172.22.8.31) secured intranet site within 72 business hours. Voice segments should be prepared in digital form as a WAV file and sent electronically as a voice re-recording with time channel, sent overnight to AAT-200, or recorded over the telephone as requested by AAT-200.

6-1-4. RADAR OE SEVERITY INDEX EN-ROUTE CHART

VERTICAL SEPARATION 1,000 feet required	POINTS	HORIZONTAL SEPARATION* 5-mile separation requirement	POINTS
Less than 500 feet	25	Less than ½ mile	25
500 feet to 599 feet	20	½ mile to 0.999 mile	25
600 feet to 699 feet	16	1 mile to 1.499 miles	24
700 feet to 799 feet	12	1.5 miles to 2 miles	24
800 feet to 899 feet	6	2 miles to 2.499 miles	23
900 feet to 999 feet	2	2.5 miles to 2.999 miles	22
VERTICAL SEPARATION 2,000 feet required	POINTS	3 miles to 3.499 miles	20
Less than 500 feet	25	3.5 miles to 3.999 miles	16
500 feet to 599 feet	25	4 miles to 4.499 miles	10
600 feet to 699 feet	24	4.5 miles to 4.999 miles	5
700 feet to 799 feet	24	CLOSURE RATE	POINTS
800 feet to 899 feet	23	700 knots and greater	10
900 feet to 999 feet	22	300 knots to 699 knots	8

1,000 feet to 1,099 feet	20	100 knots to 299 knots	6
1,100 feet to 1,199 feet	18	Less than 100 knots	4
1,200 feet to 1,299 feet	16	FLIGHT PATHS	POINTS
1,300 feet to 1,399 feet	14	Converging - Opposite Courses	20
1,400 feet to 1,499 feet	12	Converging - Crossing Course	18
1,500 feet to 1,599 feet	10	Same Course	10
1,600 feet to 1,699 feet	8	Diverging/Non-Intersecting	0
1,700 feet to 1,799 feet	6	ATC CONTROL FACTOR	POINTS
1,800 feet to 1,899 feet	4	Uncontrolled	20
1,900 feet to 1,999 feet	2	Controlled with TCAS RA	15
		Controlled with no TCAS RA	4

6-1-5. RADAR OE SEVERITY INDEX TERMINAL AND EN-ROUTE SINGLE SITE CHART

VERTICAL SEPARATION	POINTS	HORIZONTAL SEPARATION* 3-mile separation requirement	POINTS
Less than 500 feet	25	Less than ½ mile	25
500 feet to 599 feet	20	½ mile to 0.999 mile	18
600 feet to 699 feet	16	1 mile to 1.499 miles	14
700 feet to 799 feet	12	1.5 miles to 2 miles	10
800 feet to 899 feet	6	2 miles to 2.499 miles	6
900 feet to 999 feet	2	2.5 miles to 2.999 miles	2
CLOSURE RATE	POINTS	HORIZONTAL SEPARATION 2.5-mile requirement	POINTS
700 knots and greater	10	Less than ½ mile	25
300 knots to 699 knots	8	½ mile to 0.999 mile	20
100 knots to 299 knots	6	1 mile to 1.499 miles	16
Less than 100 knots	4	1.5 miles to 1.999 miles	10
FLIGHT PATHS	POINTS	2 miles to 2.499 miles	POINTS
Converging - Opposite Courses	20	ATC CONTROL FACTOR	POINTS
Converging - Crossing Course	18	Uncontrolled	20
Same Course	10	Controlled with TCAS RA	15
Diverging/Non-Intersecting	0	Controlled with no TCAS RA	4

* When wake turbulence separation standards are governing, **DO NOT** include any vertical point value. Instead use the appropriate in trail separation index below, as well as other applicable factors.

IN TRAIL SEPARATION 4-mile separation requirement	POINTS	IN TRAIL SEPARATION 5-mile separation requirement	POINTS
3.499 miles and less	60	4.499 miles and less	60
3.5 miles to 3.999 miles	35	4.5 miles to 4.999 miles	35
		IN TRAIL SEPARATION 6-mile separation requirement	POINTS

5.499 miles and less	60
5.5 miles to 5.999 miles	35

SEVERITY CLASSIFICATION*90 points and above – HIGH**40-89 points – MODERATE**39 points and below – LOW*

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U.S. Department of
Transportation

Office of Inspector General
Washington, D.C. 20590

May 24, 2005

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Dear Ms. McMullen:

Per our discussion with Tracey Biggs of your office on May 24, 2005, by this letter we are providing additional information concerning our investigation of operational error reporting at Dallas Fort Worth (DFW) TRACON. Below are our responses to the specific questions you raised:

1. When did JoEllen Casilio, DFW TRACON Manager, first become aware of the TRACON policy concerning the investigation of operational errors?

Casilio told our office that she first became aware of Ross Schulke's restriction on the use of playback equipment in late July 2004 when notified of the policy by OIG's investigative team. Casilio stated playback equipment was utilized when she was the DFW TRACON manager, and she specifically denied the policy originating or existing when she was the manager at the DFW TRACON. Further, Casilio said that when she was promoted to the SW Region she had no particular reason to believe that an internal policy concerning the use of playback equipment would have changed. Accordingly, she said she had no particular reason to look at the policy or DFW Operations to note that the policy had changed.

2. Did JoEllen Casilio's Assistant Manager participate in OIG interviews of TRACON personnel?

Casilio told our office that during the initial OIG investigation she did not have an Assistant Manager and was not aware that anyone other than union representatives and members of the investigative team were present for the interviews. Casilio advised that if any TRACON management personnel participated in interviews it was not at her direction and was without her knowledge.

3. What specific disciplinary actions did FAA take as a result of our investigation?

FAA reported that disciplinary action was taken against all of the controllers, supervisors, and managers identified during our investigation as not reporting or failing to investigate operational errors. All of those having operational errors were decertified, retrained, and provided an opportunity to recertify. Five TRACON employees and supervisors, including JoEllen Casilio, were placed on an Opportunity to Develop Proficiency (ODP), an FAA performance improvement plan for failing to properly investigate operational errors.

Of those placed on ODPs, one failed to meet the ODP expectations—demonstration of his ability to safely control air traffic at DFW and was decertified. He was reassigned to the Austin, TX air traffic facility at a loss in pay.

According to Casilio, upon completion of their ODPS for failing to properly investigate, each of the above identified personnel were placed on a subsequent ODP for failing to reduce the number of operational errors at the facility. While not placed on ODPs, an additional 4 controllers were decertified for operational errors identified subsequent to our investigation. Three have since been recertified at the facility, while one is still under going the process.

Further, according to Casilio, two operational supervisors stepped down, one to a regular controller position, one to a traffic management position in Seattle, WA. Their decision, Casilio said, was a result of not wanting to follow the management's policy of holding controllers accountable. Moreover, one supervisor and one controller who would have been placed on ODPS as a result of

our investigation chose to retire than to face administrative sanctions by the FAA. Another controller, facing a 14 day suspension for operational errors not identified by us, and unrelated conduct and discipline issues also retired rather than accept the suspension and ODP.

One decertified controller, while managing to pass his recertification, chose to move to Kansas and work in a level 10 facility. Casilio stated the controllers feel acute embarrassment over the recertification and retraining. She asserted that part of what makes them a good controller is their arrogance concerning their ability to control aircraft, as long as that arrogance is controlled.

4. Additional corrective measures taken by JoEllen Casilio

According to JoEllen Casilio, there have been six operational errors at DFW since January 2005. This low number, according to Casilio, is the result of Delta Airlines removing their hub operations from DFW, reducing the number of planes in the sky by 20%, and due to the number of controllers who underwent retraining and decertification. Casilio said that there is more accountability at the facility holding controllers to a very strict standard. She related that recent actions they have taken have gotten the attention of controllers and she believes has made a significant difference in the safety of operations at DFW.

Specifically, Casilio asked members of great lakes and southwest region air traffic management to evaluate the facility's policies and procedures to *"ferret out areas in the every day policies and practices at DFW and determine items which needed improvement or clarification."* As a result of this evaluation, they determined DFW failed to delineate "hot spots"—spaces in the DFW airspace which are more dangerous simply by virtue of traffic movement through the area. These evaluators met with Casilio and the controllers and created a consensus list from which they built a refresher training course which is now taught as a regular part of the training curriculum.

Additionally, Casilio directed the creation and implementation of a facility evaluation program which randomly selects data to review on a weekly basis. Without establishing this program through a facility order, management could not simply pull data to look at without a triggering event. Casilio said she implemented this program so that data can be randomly examined and controllers held accountable.

Finally, the facility is undergoing an audit on June 6, 2005, by the newly created FAA Office of Air Traffic Safety Oversight. They will be auditing DFW first, and later in the year Philadelphia. This audit again, will provide oversight and evaluation of the facility's procedures and practices.

If I can answer any questions or be of further assistance, please feel free to contact me at (202) 366-0677.

Sincerely,

James L. Muhlenkamp
Director
Integrity Investigation Unit