

To The

National Transportation Safety Board

Regarding The Aircraft Accident Involving

Emery Worldwide Airlines, Inc.

Flight 17, DC-8-71F, N8079U

Rancho Cordova, California

February 16, 2000

Supplement to the Party Submission of

Tennessee Technical Services, L.L.C.

of Proposed Findings, Probable Cause and Safety

Recommendations

I. INTRODUCTION

On December 20, 2002, Tennessee Technical Services, L.L.C. (hereinafter "TTS") filed its submission with the National Transportation Safety Board (hereinafter the "Board") in connection with the investigation into the crash of Emery Worldwide Airlines (hereinafter "EWA") flight 17 on February 16, 2000.

On December 27, 2002 EWA and the other parties (Air Line Pilots Association and The Boeing Company) filed their submissions.

In the interest of ensuring that the record is accurate and complete, TTS respectfully submits this supplement to clarify and correct certain erroneous proposed facts and findings made in EWA's submission.

II. EWA'S REFERENCE TO MANUAL THAT WAS NOT APPLICABLE AT THE TIME THE MAINTENANCE WAS PERFORMED

In its submission, EWA makes several references to its Maintenance Policy and Procedure Manual (hereinafter "MPPM"). The MPPM which EWA has submitted is the 21st revision, which became effective on January 15, 2000. The bulk of the maintenance procedures performed on the subject aircraft occurred before this MPPM was effective. In order for the Board to have an accurate record, a copy of the previous MPPM should be procured and made part of the record, so that it can be determined whether or not the citations made by EWA in its submission are accurate.

III. ELEVATOR DAMPER REVERSAL

In section 1.6.2.1 of its submission, EWA contends that TTS installed the elevator dampers in the reversed positions on the overhauled elevator. In this same section, EWA implies that TTS should have identified the problem when the unit was inspected by TTS' shipping and receiving department.

The elevators were overhauled by Complete Controls Inc. (hereinafter "CCI") and when received by TTS were presented as airworthy according to Form 8130-3 and FAR 43.9.

TTS performed a complete receiving inspection in accordance with TTS' policies and procedures which comply with the applicable FAR's. This inspection included a review of the applicable paperwork, which was in order, and an examination of the unit for shipping and external damage, none which was observed.

The dampers are internal to the elevator; the only way to visually determine the correct positioning of dampers during the receipt inspection is to compare part numbers for the components. This was not part of the current receiving inspection procedure of TTS FAA accepted CRS Inspection Procedures Manual.

The elevators being received with 8130-3 tags from CCI would indicate the elevators were being supplied in their correct configuration.

Therefore, if the dampers were reversed when received by TTS it was not noted. Subsequently, after being advised that the dampers were allegedly found reversed during a subsequent maintenance procedure, TTS issued a Quality Assurance Alert and thereafter implemented a new procedure specifically related to the receipt of elevators. These procedures now included an inspection of the dampers and comparison of part numbers to ensure installation in the correct positions.

IV. CONTROL TAB FAIRING & B CHECKS

In section 2.3.3.3 EWA still contends that the Control Tab Fairings should not have been removed during the B Check inspections

This position continues to deny logical and safe maintenance practices. The time required to remove and replace the fairing that covers this critical attachment point is minimal (estimated to be less than 10 minutes). The intent of work card B009 and the B Check in general is to ensure that there are no signs of corrosion and that the attachment points are secure on the entire system, not just the readily visible portions.

EWA continues to contend that the elevator control tab fairing does not need to be removed to comply with B009 B Check work card. The time required to remove and subsequently replace the fairing is approximately 10 minutes. The unwillingness to remove the fairing to comply with the work card that is specifically calling out for visual inspection of the "... elevators and tabs for general condition, corrosion, leakage and security of attachment" clearly defines the lackadaisical approach to aircraft maintenance at EWA. This action denied the last documented opportunity to inspect the very area, on January 20/21, 2000, which is believed to be the leading cause of the tragic accident on February 16, 2000. EWA contends that The Boeing Company concurs with the decision to not remove the fairing while complying with the B009 work card that inspects the elevator and tabs for "security of attachment". Yet, this subject is not mentioned at all anywhere in the Boeing's submission.

V. THE D CHECK

In section 2.3.4.2 of EWA's submission it is contended that TTS did not properly document all the procedures related to the installation of the elevator. EWA's MPPM Chapter 4, page 40, paragraph 3(f) requires the maintenance representative to see that necessary maintenance was done properly and that all paper work has been properly accomplished.

This is not true. TTS was obligated and did follow the EWA work cards as required by FAR 145.2. Unfortunately, the work card, in this instance number 3504D, which was utilized called for multiple procedures, but called for only one signature to verify the entire installation.

This work card (EWA work card 3504D) does not provide for multiple signatures of mechanics performing individual steps of this maintenance task. However, it is also not uncommon to have one individual sign for compliance of tasks that require more than one mechanic, when the said individual is in a leadership role and present for the maintenance. EWA contends that TTS did not document which maintenance manual it referenced during the completion of the work card. Yet, the work card does not provide a defined area to insert that data. In parallel the 3504D work card also does not provide a direction for the mechanic to locate the proper effectivity manual, in that it has been defined by as a very cumbersome maintenance manual system used by EWA. As a Part 145 TTS is mandated to use current FAA or manufacturer's data in the performance of maintenance. It was also established during the Public Hearing, that there was no engineering department at EWA, when this very work card was developed.

In the same section of its submission EWA also contends that TTS did not properly document work stoppages during the elevator installation. This is also not true.

TTS work form IPM 26 and form 84 are not used to document work stoppages. The instructions for their use are defined in the FAA accepted Inspection Procedures Manual. Both the forms 26 and 84 are for use on TTS paperwork only. The forms are not intended or approved to be attached/intermixed to the customer's work cards. Daily status reports (TTS Form 62) were at all times maintained by the TTS Maintenance and Quality departments, however, there is no requirement to maintain these forms for any duration of time after aircraft delivery. Unfortunately, by the time TTS was notified of this incident these documents (Form 62's) were, in accordance with TTS' routine procedures, already discarded.

The subject nut, bolt and cotter pin were properly installed and inspected by TTS during the D Check. This is evidenced by the signatures on work card 3504D. The installation was verified by TTS inspector Kenny Hall. Mr. Hall at the Public Hearing reiterated that his procedure was to observe the torquing of the bolt and to touch the cotter pin to ensure proper installation before signing off on the work card. Mr. Hall has over 30 years of experience in aircraft maintenance and is one of the most highly regarded employees of TTS. He further testified that he would not have executed the work card until his inspection was completed.

EWA also alleges in this section that only one inspector witnessed the installation of the right hand elevator control tab, but in reality it was inspected by multiple mechanics/inspectors. Work cards 3405D, 3502D and 3504D include inspection buyoff points that place many TTS inspectors into the subject area; Right Hand Elevator and Tabs. In total, 5 TTS inspectors performed inspection activities in this area. This fact has already been established in the main body of the TTS' submission.

EWA also contends that TTS inspectors did not follow the maintenance manual. This is not true: TTS employees complied with the EWA supplied work cards and

referenced the appropriate effectivity maintenance manual during the maintenance activities.

Temporary installation of the Control Tab Fairing is accomplished so that when dimensional checks are taken during the rigging process, the fairing is readily available, yet out of the way from damage on the work stand. The aft most trailing edge of the fairing is used to measure elevator travels. A measurement for trailing edge up and down is taken from this point and the rigging rivet installed on the fuselage of the aircraft. This is not an uncommon practice to "tack panels in place" so they are located at their identified positions. The temporary attachment is accomplished in such a way that panel would be easily identified as it would require repositioning to insert all the attaching hardware. The fairing is attached to the elevator in such a way that it could not be mistaken for a permanent installation during the above mentioned rigging process.

VI. EWA'S PROPOSED FINDINGS AND PROBABLE CAUSE ARE UNSUPPORTED BY THE FACTS AND ARE INCORRECT

There is no basis to conclude that the missing bolt, nut and cotter pin resulted from any act or omission of TTS or its employees during the D Check inspection.

To the contrary, the evidence shows that EWA personnel performed maintenance after the aircraft D Check that likely caused the bolt to dislodge. The specifics of these actions are detailed in the main body of TTS' submission.

The Boeing Company also comments in their submission, regarding the November 25, 1999 pilot report for Excessive Force during flare of the aircraft; "the elevator dampers are not specifically mentioned as an area to check for friction and binding. However, the tab pushrods and their linkage are to be checked for binding and interference", Elevator and Tab Troubleshooting 27-30-0 Code 1, pages 101-102 (Page 8 of 11 Boeing submission). This further reinforces what the industry is stating would have isolated the elevator anomaly that was present November 25, 1999 and addressed by EWA mechanics in Dayton Ohio. None of these activities were documented during this troubleshooting.

EWA also contends that they provided adequate ongoing oversight. EWA states that they used periodic CASE-type audits and followed applicable FAR (Part 121.373) and Maintenance Manual requirements. If this is the case, EWA should have detected any maintenance or documentation irregularities.

EWA's FAA Operations Specifications D090, paragraph (b) specifically states that the certificate holder (EWA) retains primary responsibility for the airworthiness of parts and materials processed through any vendor or contractor approved for use by the certificate holder.

If EWA, in accordance with their Operations Specifications, were performing the oversight that they claim then any maintenance or documentation irregularities should have been detected.

VII. PROPOSED FINDING

In addition to the Proposed Finding set forth in the main body of its submission, TTS based on the evidence and the parties' submissions amends same to include the following:

30. Prior to the crash, EWA employed a practice of rigging flight controls on its DC-8 aircraft to procedures outlined in the McDonnell Douglas Maintenance Manual.
31. Maintenance on the subject aircraft N8079U (previously owned by United Airlines) was governed by the United Airlines Maintenance Manual.
32. EWA re-rigged the flight controls on all aircraft that were returned to service after departing maintenance at TTS.
33. TTS rigged the flight controls on N8079U in accordance with the procedures in the United Airlines Maintenance Manual.
34. The actions performed by EWA mechanics on November 25, 1999 in Dayton, Ohio on aircraft N8079U in response to a pilot write-up claiming "Elevator requires more back pressure than normal to flair aircraft" was not the proper corrective action for the write-up.

VIII. PROPOSED PROBABLE CAUSE

TTS stands by the Proposed Probable Cause set forth in the main body of its submission.

IX. SAFETY RECOMMENDATIONS

TTS respectfully submits the following additions to the Proposed Safety Recommendations set forth in the main body of its submission.

5. Redesign the Control Tab Fairing with some type of window or quick removal panel so that the nut, bolt and cotter pin can be inspected without having to remove the fairing.
6. Mandate that work cards related to the installation of the elevator system on all DC-8 aircraft include a place for mechanic's signatures throughout each step of the installation.