

**NATIONAL TRANSPORTATION SAFETY BOARD
NORTHWEST REGIONAL OFFICE
SEATTLE, WA 98188**

NOVEMBER 26, 2001

**MAINTENANCE GROUP CHAIRMAN'S FACTUAL REPORT
ADDENDUM**

A. ACCIDENT: DCA00MA026

Location: Rancho Cordova, California

Date: February 16, 2000

Time: 1951 Pacific Standard Time

Airplane: Emery Worldwide Airlines Flight 17, DC-8-71F, N8079U

B. GROUP IDENTIFICATION

**Chairman: Debra J. Eckrote
National Transportation Safety Board
Seattle, WA**

**Member: Jock A. Seals
The Boeing Company
Long Beach, CA**

**Member: Jim Owens
Emery Worldwide Airlines
Vandalia, OH**

**Member: Hugh Seagraves
Air Line Pilots Association
Ft. Worth, TX**

**Member: Onofrio "Tony" Savino
Federal Aviation Administration
Louisville, KY**

A. SUMMARY

On February 16, 2000, at 1951 Pacific standard time, a Douglas DC-8-71F, N8079U, operated by Emery Worldwide Airlines, as flight 17, a cargo flight departing from Mather Field (MHR) in Rancho Cordova, California to Dayton International Airport (DAY) in Dayton, Ohio, crashed into an auto salvage yard while attempting an emergency return to MHR. Three crewmembers onboard received fatal injuries and the aircraft was destroyed.

C. DETAILS OF CONTINUED INVESTIGATION

On September 6, 2001, the Maintenance Group Chairman requested additional documents regarding Emery Worldwide Airlines B-Check inspections. The documentation requested referenced B-3 Card No. B018, pages 7 and 8, entitled Elevator Lubrication, the DC-8 Maintenance Manual reference, and applicable sections from the Illustrated Parts Catalog (IPC).

On September 25, 2001, and October 22, 2001, the Maintenance Group Chairman requested further documentation (work cards and non-routine work cards) of the work performed by Emery personnel during the B-1 and B-2 checks accomplished December 17, 1999, and January 21, 2000 respectively. Also requested was a description of equipment and personnel at Emery's Class I stations located in Dayton, OH, and Austin, TX. Personnel and training records of the maintenance personnel involved with the maintenance tasks associated with the elevator were reviewed.

B CHECK INTERVALS

The B Check is accomplished at specific stations where Emery maintenance personnel are assigned, and on aircraft in sequential segmented checks (B-1, B-2, B-3, and B-4) each 136 flight hours unless a "C" Check is accomplished.

Three B Checks (B-1, B-2 and B-3) had been accomplished on the accident aircraft since the last C/D check that was accomplished on November 17, 1999, at 84,050:36 hours and 33,180 cycles.

The B-1 check was accomplished at Dayton, Ohio, a Class I station, on December 17, 1999, at 84179:42 flight hours, and 33,249 cycles. (129:06 flight hours after C/D Check)

The B-2 check was accomplished at Dayton, Ohio, a Class I station, on January 22, 2000, at 84,312:03 flight hours, and 33,329 cycles. (132:61 flight hours after B-1 Check)

The B-3 check was accomplished at Austin, Texas, a Class I station, on February 12, 2000, at 84,428:04 flight hours, and 33,386 cycles. (116:01 flight hours after B-2 Check)

CLASS I STATION DESCRIPTION

Emery's Maintenance Policy & Procedures Manual defines a Class I station as:

“Stations with assigned EWA personnel (with company assigned employee number). Each station has available mechanics, adequate facilities, equipment, and parts to perform both scheduled and unscheduled maintenance on all aircraft normally operating into that station.”

Emery further reported that, “A Class I facility has an increased level of equipment and aircraft material not normally required for terminating or service checks. The Class I Station is designed around B-check capability. Typical equipment would include: Scissor lifts, boom lifts, heavy volume lubrication equipment, specialty tooling, stocking of material with high failure rates, preventative maintenance stock and stock associated with typical noted discrepancies. The facilities are larger than Class II and III Stations to accommodate the additional stock, tooling, and maintenance activities. Size and location of the facility to the aircraft may vary based on the airport layout.”

CLASS I STATION LOCATION AND PERSONNEL

Emery's Class I stations are located at Dayton, Ohio (KDAY); Austin, Texas (KAUS); and Portland, Oregon (KPDX).

Emery reported that the total number of maintenance personnel used to accomplish a B-Check in KDAY is 25. The personnel consist of one (1) Manager, two (2) Supervisors, two (2) leads, and twenty (20) full-time mechanics.

The facility at KAUS used 27 maintenance personnel. The personnel consist of one (1) Manager, two (2) Supervisors, fifteen (15) full-time mechanics, and nine (9) casual mechanics. A casual mechanic is any EWA employee who fills hourly positions, or regular hourly positions temporarily.

Emery reported that the average amount of time to complete an entire B-check is about 80 man-hours for the inspection, and 15 to 30 man-hours for the non-routine tasks. The total average hours are 95.

B-CHECK WORK CARDS - EMPENNAGE INSPECTION

The signed-off work cards for the B-1 and B-3 Checks were made available for review. The B-2 signed work cards had been previously discarded per EWA Maintenance Policy & Procedures retention of records program. The procedure stated that for Check Inspections, the documentation is retained until same or higher inspection is complied with. EWA reported that the reason why the B-1 work cards were still in the active aircraft record files, and the B-2 were not, only represented that the B-1 check had

not yet been removed per the record keeping procedure. The non-routine work cards for the three B-Checks were retained and made available for review.

The "Elevator Lubrication" section of Work Card No. B013 (B-1) and Work Card No. B018 (B-3) was reviewed. (Attachment A) The B-1 and B-3 work task accomplishments were the same for each check. The work card instructions indicated several external points of lubrication for the elevator tab hinges (7 per side); outboard elevator hinges (5 per side); elevator geared tab link attach joints (2 per side); and the inboard elevator hinge (1 per side). The Douglas DC-8 Maintenance Manual, Chapter 12, General Servicing 12-82-1, pages 318 and 319 were used to establish the instruction on the EWA B-1 and B-3 work cards for the Elevator Lubrication task. (Attachment B)

To accomplish the work task, EWA reported that two mechanics are utilized to accomplish the lubrication and inspection. The mechanic uses a man lift and applies grease to the external flush fittings. There are no panel removal requirements to perform these tasks. At the completion of the lubrication task, an Authorized Limited Inspector or RII inspects for proper lubrication at all lube points and ensures all excess lubricant has been cleared from all areas.

During the B-1 and B-3 Elevator Lubrication work tasks, there were no non-routine maintenance items identified.

A review of the B-2 work cards (blank) identified two work cards for inspections to the Aft Fuselage and Empennage Area. Work Card No. B008 indicated an inspection for: "Through access panel 60, inspect rudder and horizontal stabilizer control linkages, cables, and hydraulic components for leaks, visible damage, and security of attachment. Tail skid for evidence of damage." (Attachment C) Access panel 60 is located just aft of the tailskid. (Attachment D) The United Airlines IPC, tail section 02-26-87 identified this panel by index #22. (Attachment E) The significant items inspected for "security of attachment" identified in the Douglas DC-8 IPC section 27-40-0, involve the tail section horizontal stabilizer fluid supply valve controls (Figure 31); tail section horizontal stabilizer position indicator controls (Figure 32); tail section horizontal stabilizer drive mechanism (Figure 33); horizontal stabilizer drive housing (Figure 34); empennage horizontal hydraulic piping (Figure 35); empennage horizontal stabilizer hydraulic piping (Figure 36) and horizontal stabilizer hydraulics (Figure 40). (Attachment F)

The second Work Card No. B009 identified inspections to the right hand and left hand horizontal stabilizer external surfaces to "Inspect external surface of RH and LH horizontal stabilizers for signs of damage, deformation, fluid leakage, and security of attachment. Inspect static dischargers for general condition and security." The right hand and left hand elevator and tab inspection involved work to, "Visually inspect elevators and tabs for general condition, corrosion, leakage, and security of attachment. Inspect static dischargers for general condition and security." (Attachment G)

The external surfaces of the flight control surfaces (Attachment H) identified in the shaded areas, for the rudder, rudder flying tab, flying tab, gear tab, elevator, and horizontal stabilizer was inspected. These external surfaces are inspected to accomplish the task of the work cards. United Airlines IPC 53-13-00 provided an overview of the empennage horizontal stabilizer assembly. IPC 27-30-01 provided an overview of the elevator assembly with tabs, and United Airlines IPC 27-32-06 identified the elevator control tab fairing that is installed over the tab-push rod. (Attachment I) EWA reported that during this inspection, the fairing installed over the elevator control tab is not removed to inspect for "security of attachment" to the elevator control tab crank fitting. The NTSB Airworthiness Group Chairman's Factual Report, dated July 31, 2001, reported that "A detailed wreckage examination of the Elevator flight control systems revealed a missing bolt at the right Elevator Control Tab crank fitting, where the Control Tab pushrod is normally installed." See Airworthiness Group Chairman's Factual Report for further details.

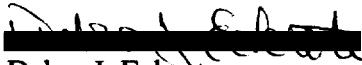
The non-routine work cards for the B-2 Check had not been discarded at the time of the review. There were no non-routine maintenance items identified for the work accomplishment in Work Card No.'s B008 and B009.

PERSONNEL RECORDS

The personnel and training records for the maintenance personnel who signed-off on the B-1 and B-3 work cards previously mentioned were reviewed.

The Airframe and Powerplant mechanics that signed off the work card accomplishment for the elevator lubrication items for the B-1 and B-3 Checks both attended the EWA Basic Indoctrination course. The B-3 mechanic also accomplished on the job training for inspections, flight controls and rudder control assembly. Both mechanics were full time status.

The mechanics that signed off the B-1 and B-3 elevator lubrication items to "Inspect for proper lubrication at all lube points and ensure all excess lubricant has been cleaned from all areas" had required inspection authorizations. The B-1 mechanic attended EWA courses to include DC-8 systems, Basic Indoctrination, and on the job training for the B-2 Check. The B-3 mechanic attended EWA courses to include DC-8 Check intervals, DC-8 General Familiarization, Basic Indoctrination, and on the job training for elevator systems.


Debra J. Eckrote
Maintenance Group Chairman
12/19/01