National Transportation Safety Board
Office of Aviation Safety
Washington, D.C.

October 20, 1995

ADDENDUM TO THE STRUCTURES GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

FLIGHT CREW SEAT TRACK DOCUMENTATION

A. ACCIDENT : DCA-94-MA-076

LOCATION	:	Aliquippa, PA
DATE	:	September 8, 1994
TIME	:	1904 Eastern Daylight Time (EDT)
AIRCRAFT	:	Boeing 737-3B7, N513AU

B. STRUCTURES GROUP

Chairman : Cynthia L. Keegan
National Transportation Safety Board
Washington, D.C.

Member : Olney Anthony
International Association of Machinists and
Aerospace Workers
Moon Township, PA

Member : David Supplee
International Association of Machinists and
Aerospace Workers
Tampa, FL

Member : Steve Skupien
Air Line Pilots Association
New Boston, NH

Member : Tony Autrey
Boeing Commercial Airplane Group
Seattle, WA

C. SUMMARY

The structures group convened on July 6, 1995, in Washington, D.C. at the National Transportation Safety Board Materials Laboratory to examine and document the flight crew's seat positions relative to their fore and aft locations on the seat tracks. The two identifiable sections of flight crew seat tracks had been recovered from the wreckage of flight 427 stored at the USAir AI Hangar in Pittsburgh, Pennsylvania. The captain and first officer's seat track sections were identified using Boeing Engineering drawings.

D. DETAILS OF THE INVESTIGATION

The Boeing 737-3B7 captain and first officer's seat tracks are comprised of two parallel track segments for each seat. The seat tracks are mounted to the cockpit floor structure and extend from body station 219.8 to 244.1 (24.30 inches in total length). The seats are secured to the seat tracks with two, 2.0 inch long boggies located 12.5 inches apart on each seat track. Attached to the forward face of the rear boggies are locking pins that restrain fore and aft motion of the seats with respect to the tracks. The seat range of fore and aft adjustment is equivalent to 9 inches of travel.

Both sections of seat tracks exhibited severe impact and fire damage. The floor structure normally attached to the periphery of the seat tracks was fractured and missing from both segments of track, and only the forward outboard boggie for the captains seat attachment remained attached to the seat tracks. The examination of the recovered sections of seat track revealed no evidence of indentations or scoring corresponding to the position of the seat boggies at impact.

1.0 Captain's Seat Track

The forward 11.0 inches of the inboard seat track was fractured and missing. The aft portion of inboard seat track exhibited a 2.0-inch section of missing fractured track 3.90 inches forward of the track rear mounting hole (corresponding to STA 239.40).

The outboard track was fractured 12.0 inches from the forward end and exhibited a 7.0-inch crack in the aft end of the lower web. The fractured section of the forward portion of the outboard track matched the fractured section of the aft portion of the outboard track. The fractured forward section of track contained a boggie located 4.0 inches aft of the forward mounting hole for the seat track (equivalent to STA 224.3), however, the boggie was free to move forward and aft on the track. The track exhibited a 7.50-inch section of missing and fractured upper flange and web aft of the fractured forward track. The aft edge of the fractured upper outboard track was parallel to the 2.0 inch missing section of the inboard track.

2.0 First Officer's Seat and Seat Track

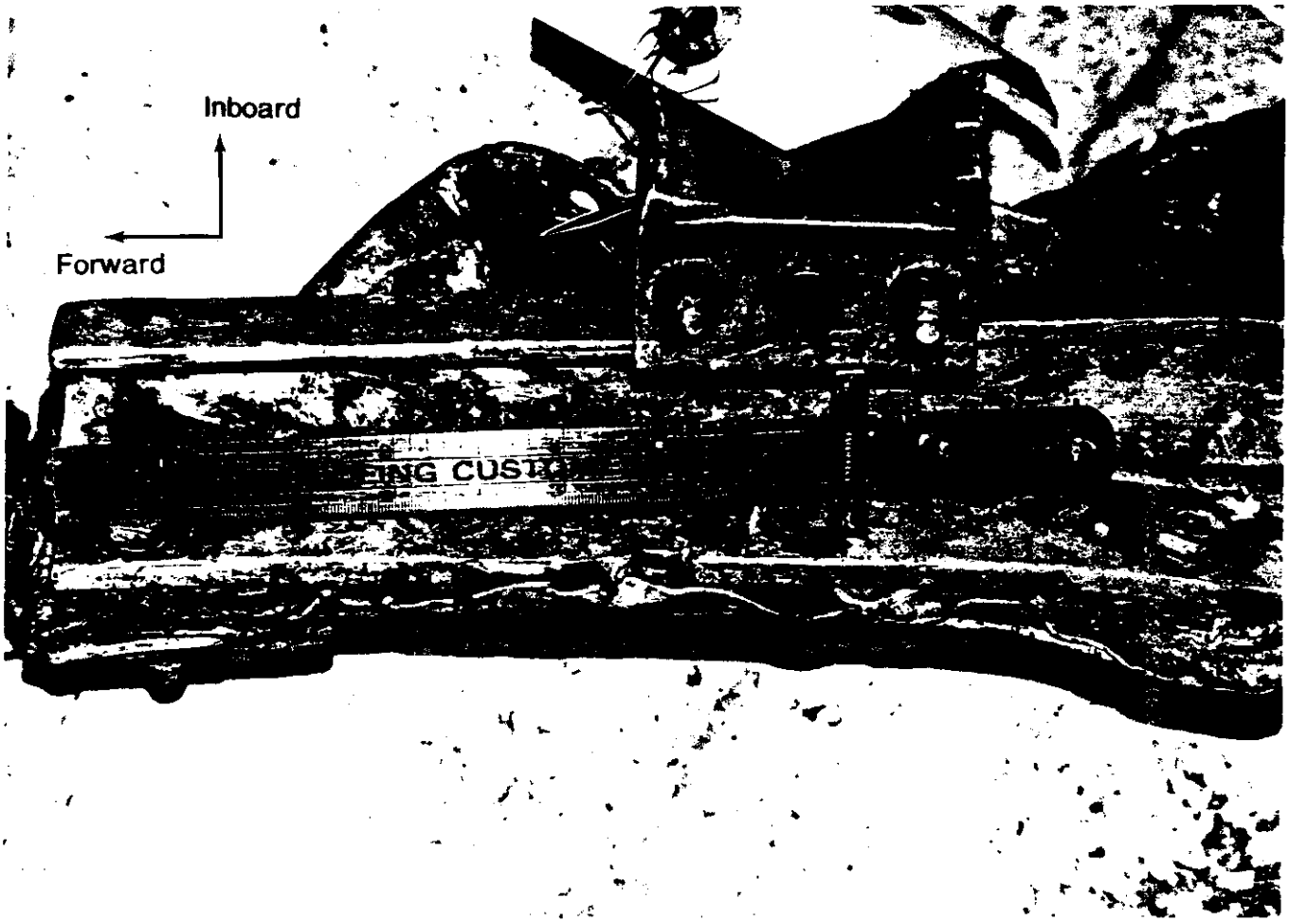
Both the outboard and inboard segments of the First Officer's seat track upper flanges were cracked at the forward locking hole and exhibited wear between the locking holes on the upper flange. Examination of the inboard seat track revealed that 4.0 inches of the aft track was fractured from the lower flange and 6.5 inches of the forward track was fractured and missing.

The outboard forward seat track was distorted 8 inches from the forward end of the track and cracked through the web 3.50 inches forward of the fractured area. The last locking hole on the outboard seat track's upper flange, parallel to the 4.0-inch section of the aft inboard track, was found elongated in the forward direction (equivalent to STA 241.4).

[redacted]

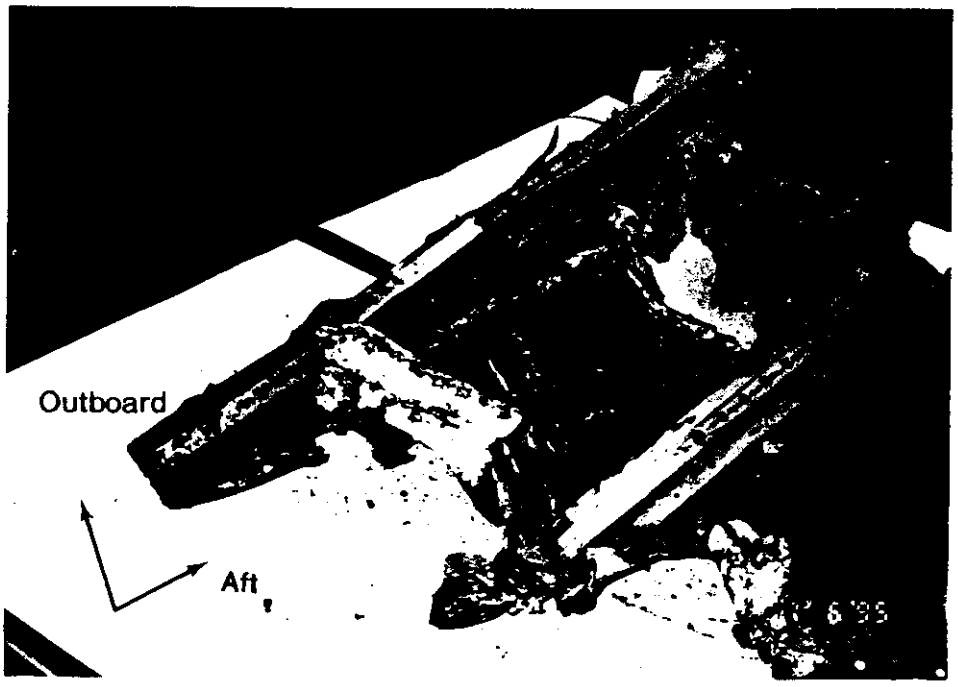
Cynthia L. Keegan
Structures Group Chairman

10/23/95



1. View of boggie and forward outboard section of Captain's seat track
Note: No evidence was observed of indentations or scoring corresponding to the position of the boggie at impact.

2. View of aft segments of the Captain's seat track. Note: the parallel fractures along the third from the last locking boggie hole in the upper flange.



3. View of the First Officer's seat track.
Note: cracking of the first forward locking holes and distortion of the forward outboard seat track.

4. View of the outboard aft upper seat track flange.
Note: elongation of the last locking hole