DOCKET NO. **SA-510**

NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C.

B737 Maneuvering Speeds

Boeing Commercial Airplane Group
P.O. Box 3707
Seattle, WA 98124-2207

October 6, 1994
B-U01B-14949-ASI

BY FACSIMLIE: ([redacted]

BOEING

Mr. Chuck Leonard
National Transportation Safety Board
Northeast Regional Office
Suite 203
2001 Route 46
Parsippany, New Jersey 07054

Subject: US Air 737-300 Accident, N513AU/PP033 Near Pittsburgh, Pennsylvania, September 8, 1994 - Maneuvering Speeds

Reference: Your facsimile to Rick Howes, September 26, 1994

Dear Mr. Leonard:

This letter is in response to the reference request. Maneuvering speeds are speeds which allow the airplane to be maneuvered and maintain level flight within certain bank angle limits such that the airplane will not encounter stick shaker (to provide stall protection). The Flight Crew Training Manual for the 737 series cites these limits as a normal 30° bank with provision for an inadvertent 15° overshoot. That is, if the airplane is being flown at the proper maneuvering speed, and maintaining level flight, the airplane will be able to roll to a 45° bank angle before encountering stick shaker. The flap retraction/extension speed schedule represents the flap maneuvering speed schedule. Maneuver speed schedules provide adequate margin to stick shaker for maneuvering the airplane during flap extension and retraction.

In response to your second request in the reference message, the following is provided for stick shaker and stall speeds:

737-300
108,500 lb gross weight
Flaps 1, Mid CG

Bank Angle, degrees	V stick shaker, kts	V stall, kts
0	132	119.5
30	141.8	128.4
45	157	142.1

If you have additional questions, please call Rick Howes, [redacted] or me.

Very truly yours,

FLIGHT TEST

BOEING [redacted]

for John W. Purvis
Director, Air Safety Investigation
Org. B-U01B, M/S 14-HM
[redacted]

Enclosure: (reference request)

cc: Tom Haueter- NTSB

National Transportation Safety Board

Memorandum

September 26, 1994

TO: Rick Howes

FROM: Chuck Leonard

Dear Rick,

When you get an opportunity, I would appreciate the following information from either you or Mike:

1. A definition of exactly what the maneuvering speeds provide...a clear explanation.

2. The following speeds:

   a. Stick shaker & stall speeds for 108,500 for these conditions:

      * 1 unit flaps, zero bank angle
      * " , 30 degree bank
      * " , 45 " "

Thanks!!!

[redacted]

Chuck Leonard

Tele: [redacted]

FAX: