Attachment V

Boeing Stopping Distance Data

COORDINATION SHEET

To:	P. S. Rosnik	4T-76	**No:**	AERO-B-BBA3-C01-0872
			Date:	July 16, 2001
cc:	R. J. Halvarson	67-32	**Job No.:**	FSS01-060
	R. R. Harrison	67-32	**Model:**	737-300
	P. A. Schmid	67-32		

Group Index: AP&P – AERO CHARACTERISTICS & FLIGHT PERFORMANCE

Subject: **Southwest Airlines 737-300 Landing Overrun Incident at Burbank, California on March 5, 2000**

References: A) Letter to P. S. Rosnik from R. Benzon of National Transportation Safety Board dated May 15, 2001
B) E-mail to A. A. Barr from T. Mazzitelli dated May 17, 2001 - "SWA DATA"

This coordination sheet documents the transmission of 737-300, N668SW landing performance data to support an incident investigation by National Transportation Safety Board (NTSB) of a Southwest Airlines (SWA) landing overrun in Burbank, California on March 5, 2000. Landing distance with several braking configurations with two flap settings were analyzed using Low Speed Performance System (LSPS). The analysis was performed assuming dry runway conditions.

Reference A contains the factual report such as weather reports and touchdown speed from the NTSB. Reference B contains actual FDR data.

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Enclosure

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Discussion

On March 5, 2000, a Southwest Airlines (SWA) 737-300/CFM56-3B overran Runway 08 at Burbank-Glendale-Pasadena Airport in Burbank, California. The airplane went through a blast fence at the end of the runway and stopped on a highway outside of the airport boundary. The aircraft had a touchdown speed of 182 knots indicated airspeed. The reported wind was approximately 6 knots of tailwind at the time of touchdown. The analysis was accomplished for the following:

Airport:	Burbank-Glendale-Pasadena Airport, California
Landing runway:	08
Runway length:	6,032 ft
Airport elevation:	775 ft MSL
Runway slope:	-0.53%
Wind:	5.96 knots of tailwind at touchdown (Based on FDR)
Landing weight:	113,700 lbs
Temperature:	9°C
Landing flap:	Flaps 30 (Intended F40)
Spoiler configuration:	Autospoilers On
Brake configuration:	Autobrakes Off
$V_{TOUCHDOWN}$:	182 KIAS
Local pressure:	29.65 in. Hg

National Transportation Safety Board requested stopping performance of minimum, medium, and maximum autobrake application as well as maximum manual braking. The 737 autobrake settings of autobrake 1, autobrake 2, and maximum autobrake were used for "minimum", "medium", and "maximum" respectively. The enclosure illustrates stopping distance from touchdown point in the FDR. The different braking configurations are as follows:

Autobrake 1 (Deceleration rate = -4.0 ft/sec^2)
Autobrake 2 (Deceleration rate = -5.10 ft/sec^2)
Autobrake Max (Deceleration rate = -13.0 ft/sec^2)
Maximum Manual Braking

The intended flap detent for landing was Flaps 40. However, the airspeed was greater than the Flaps 40 placard speed and the flap load relief system did not allow extension beyond detent 30. The touchdown and initial ground roll occurred at Flaps 30. During the roll out, as airplane speed was reduced below the load relief speed, the flaps automatically extended to detent 40 and remained there for the duration of the ground roll. Therefore, stopping distances are shown for both Flaps 30 and Flaps 40 landing configurations.

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737-300/CFM56-3B
Landing Distance

PAGE

Enclosure

Southwest Airlines 737-300/CFM56-3B
Burbank, California Landing Overrun

- Elevation = 775 ft
- OAT = 9°C
- Landing Weight = 113,700 lbs
- Tail Wind of 5.96 Kt
- Stopping Distance from Touchdown Point
- Thrust Reverser Credit
- Runway Slope = -0.53%
- Actual Transition Time from FDR