

- 11. The impact conditions were classified as survivable with all fatalities resulting from the post-impact fire.
- 12. Some flight attendants were incapacitated as a result of body restraint system, and galley equipment security deficiencies. Their incapacitation precluded their effective assistance in passenger evacuation.

(b) Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the failure of the aircraft to attain the necessary airspeed to effect lift-off during the attempted takeoff. The lack of acceleration, undetected by the crew until after the aircraft reached V_1 speed, was the result of a high frictional drag which was caused by a failure of all main landing gear wheels to rotate. Although it was determined that a braking pressure sufficient to lock all of the wheels was imparted to the brake system, the source of this pressure could not be determined. Possible sources of the unwanted braking pressure were either a hydraulic/brake system malfunction or an inadvertently engaged parking brake.

3. RECOMMENDATIONS

As a result of this investigation the Safety Board recommended that the Federal Aviation Administration take the following actions.

- (a) Determine and implement takeoff procedures that will provide the flightcrew with time or distance reference to appraise the aircraft's acceleration to the V_1 speed. (See Appendix D.)
- (b) Initiate action to incorporate in its airworthiness requirements, a provision for fuel system fire safety devices which will be effective in the prevention and control of both in-flight and post-crash fuel system fires and explosions. (See Appendix E.)

The Board further recommends that:

A-72-60 / The Federal Aviation Administration, in cooperation with the aircraft manufacturers and the National Aeronautics and Space Administration, utilize the results of already extensive research and accident investigation data to develop and implement major

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with
of
improvements in the design of transport aircraft interiors. Of particular concern are improvements in the crashworthiness of galley equipment, stewardess seats and restraining devices, and the flammability cabin interior materials.

BY THE NATIONAL TRANSPORTATION SAFETY BOARD:

/s/ JOHN H. REED
Chairman

/s/ OSCAR M. LAUREL
Member

/s/ FRANCIS H. MCADAMS
Member

/s/ LOUIS M. THAYER
Member

/s/ ISABEL A. BURGESS
Member

March 29, 1972