1.14 Fire

There was no fire.

1.15 Survival Aspects

The accident was partially survivable. The 10 occupants killed in the crash were located between the flight engineer's station in the cockpit and row 5 in the passenger cabin. All of the passengers who were killed had been located on the right side of the cabin. That section of the aircraft was destroyed during the accident sequence.

The most seriously injured passengers were seated in the right forward portion of the cabin near an area of the fuselage which appeared to have been penetrated by a large tree. These persons were seated near those passengers who were injured fatally. Some seriously injured passengers were seated in the rear cabin near the trailing- edge of the wings. The fuselage in this area had been penetrated and the floor and seats had been disrupted.

Some passengers sustained serious injuries during the evacuation. Two passengers sustained fractures and others sustained lacerations and abrasions when they either fell from exits or as they climbed through debris outside the aircraft in order to reach the ground. As a result of the accident, 22 persons were admitted to hospitals with serious injuries ranging from multiple fractures of extremities and fractures of cervical vertebrae, to observations for possible injuries.

The plane crashed in the jurisdiction of Multnomah County Rural Fire Protection District No. 10. Three fire departments sent personnel and equipment to the scene: The Port of Portland (Airport) Fire Department; Multnomah RFPD No. 10, and the City of Portland Fire Bureau. A total of 39 fire units and 108 on-duty fire personnel responded to the scene. Numerous off-duty fire personnel from all fire departments also responded to the scene. Because there was no fire, the basic fire service functions were search and rescue, extrication, triage, emergency medical care, precautionary foaming of some aircraft parts and surrounding area, laying standby firefighting water supply lines, transporting or assisting ambulatory victims to a nearby church, setting up area lighting, providing some interagency radio communications, and setting up the on-scene command post.

Although there were many occupied houses and apartment complexes in the immediate vicinity of the accident, there were no ground casualties and no postcrash fire. Injured persons were transported to nearby hospitals by helicopter and ambulance.

The aircraft was equipped with 10 floor level exits, each provided with automatically inflatable emergency escape slides. In addition to slides at the boarding doors (1L and 5L) and at the two galley service

doors (2R and 5R), slides were located at the six "jet escape" floor level exits (1R, 2L, 3L, 3R, 4L, 4R). The "jet escape" doors were hinged at the bottom and were designed to swing down and outward when opened. Movement of the door actuated the automatic inflation of the escape slide.

The slide from exit 1L was found wrapped around a tree at the left wing. The slides from exits 3L and 3R were found packed and uninflated. These exits were reportedly blocked by debris outside the aircraft. The slide at exit 1R reportedly inflated inside the cabin and extended across the aisle and lodged against seat 8C. . The door was prevented from opening fully because of cockpit and forward cabin debris outside the aircraft. The slide at exit 2R also reportedly inflated inside the cabin and blocked the cabin aisle. The exit door was displaced inward when the plane hit a tree.

The slide at exit 4R reportedly inflated inside the cabin when the door was opened by a passenger. The slide inflated upward and partially blocked the exit opening. Because of debris outside the fuselage, the exit door was prevented from opening fully. The passenger who opened the door reported that about 10 persons used this exit before the slide was pushed out the exit and onto debris. The remaining escape slides reportedly deployed outside the aircraft and inflated but were punctured or torn by debris during the evacuation.

The escape slides were removed from the accident site and were examined on January 3, and on January 9, 1979. No discrepancies were found in the installation, maintenance, manufacture, or design of the escape slides.

The evacuation was completed in about 2 min. Except for seats at rows 20 through 22 which were torn loose from the floor attachments, there was only minor disruption of the cabin furnishings aft of row 6. The emergency lights provided adequate illumination during the evacuation.

1.16 Tests and Research

1.16.1 Retract Cylinder Assembly

The Safety Board examined the piston rod and the mating end from the right main landing gear retract cylinder assembly at its metallurgical laboratory in Washington, D.C. The examination showed that the primary cause of the separation of the rod end from the piston rod was severe corrosion caused by moisture on to the mating threads of both components. As a result of the corrosion, the joint was weakened to such an extent that only a comparatively low tensile load was required to pull the rod end out of the piston rod. The pattern of mechanical damage indicated that all of the rod threads had been engaged and that the rod end had been pulled straight out of the piston rod without any significant rotation.