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National Transportation Safety Board

Washington, D.C. 20584

February 27, 1996

Mr. Edward B. Block

Dear Mr. Block:

Thank you for notifying the National Transportation Safety Board about your concerns regarding the use of electrical wiring manufactured by the Raychem Corporation. As a result of your letter and briefing paper, Safety Board staff performed a study to determine if the hazards that you associate with the use of Raychem wiring on military aircraft are present on commercial aircraft. This letter will present the results of that study.

Safety Board staff reviewed the Board's accident data base from 1983-1995. The data base listed 27 accidents involving electrical wiring malfunctions on airplanes operated by commercial airlines. The majority of the malfunctions involved improper maintenance that led to excessive wear, chafing, and short circuits. None of these accidents resulted in a finding that a manufacturing flaw existed in the electrical wiring. In addition, none of the reports identified Raychem as the manufacturer of the affected wiring.

The Board's staff also reviewed the Safety Board's safety recommendations for the past 30 years. During that time, the Safety Board issued seven safety recommendations regarding electrical wiring. The recommendations addressed circuit protection, installation hazards, and electrical shorts due to improperly installed modifications. None of these recommendations addressed manufacturing defects in electrical wiring, and none mentioned the Raychem Corporation.

The Safety Board also obtained a listing from the Federal Aviation Administration's Service Difficulty Report data base. This listing included 908 entries that described electrical wiring discrepancies involving air carrier aircraft in the past 10 years. The majority of the entries involved the smell of smoke or burning wire due to overheated motors, galley furnishings, or fans. In many cases, maintenance technicians found and repaired the area of contact and chafing that caused wiring failures. None of these entries indicated that manufacturing defects were found, and none of the entries identified the affected wiring as being manufactured by the Raychem Corporation.

The Safety Board raised your concerns regarding Raychem wiring in separate letters to the Boeing Commercial Airplane Group and the Douglas Aircraft Company on March 17, 1995. In its response letter, dated July 18, 1995, Boeing stated that Poly-X, Raychem 55, and Silan wires have all been qualified and used with good success in

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Boeing airplanes. Boeing reported that it is not aware of any suspected failure of these wires that may have adversely effected the safety of flight of a Boeing commercial airplane. Also, Boeing indicated that it is not aware of deterioration problems of these wires in the presence of contaminants such as hydraulic fluid, water, or deicing fluid. The Douglas response letter dated July 20, 1995, stated that it is not aware of adverse characteristics related to age deterioration or contamination of Poly-X, Raychem 55A, or Stilan wires. Douglas also reported that it is not aware of any suspected failures of these wires that may have adversely effected flight safety.

In conclusion, our study did not reveal any evidence that the electrical wiring manufactured by the Raychem Corporation poses a safety risk in commercial aviation. The staff of the Safety Board plans no further action on this subject. We appreciate your effort in bringing this matter to our attention and thank you for your interest in aviation safety.

Sincerely,

Greg Phillips
National Resource Specialist
Airworthiness Engineering
Aviation Engineering Division

Enclosures - Copies of Letters from:
Boeing Commercial Airplane Group
Douglas Aircraft Company