Appendix A

Washington Post Article on National Transportation Safety Board
Wiring Recommendations
April 8, 1998

Article reports that NTSB urges inspection of wiring on not just Boeing 747s and 737s but also various 727s, 757s and 767s.
Wiring Inspections Urged for Boeing Jets

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Federal aviation investigators probing the explosion of TWA Flight 800 yesterday urged inspections of the wiring in fuel-monitoring systems of hundreds of Boeing 747s and possibly other Boeing jets.

Officials at the National Transportation Safety Board, which is leading the probe of the 1996 crash that killed all 230 people on board, said that investigators still have not determined the cause of the explosion but that evidence developed in the probe indicated that the fuel-monitoring systems may require expensive overhauls in order to improve safety.

The board also suggested that the Federal Aviation Administration extend its investigation of fuel-measuring systems to other planes that have similar systems, including the Boeing 767, 757 and 737 and some 727s.

Safety Board Chairman Jim Hall, in a letter to Federal Aviation Administrator Jane Garvey, noted that the safety board has found damaged wiring on the "fuel quantity indication systems" of the crashed aircraft and three other 747s.

The letter described the conditions as "potentially hazardous" but did not directly link them with the explosion of Flight 800's fuel tank, and sources close to the investigation said the letter was not intended to indicate that the board was any closer to determining the source of the fuel tank's violent explosion. The problems with the 747 fuel systems had been revealed earlier, and had been discussed at hearings on the crash held last year in Baltimore.

The FAA issued a statement saying the agency "agrees with the intent of the recommendations" and listing a series of actions it has taken or is planning on 747 fuel tanks in collaboration with Boeing Co. and the safety board.

The safety board's letter appeared to be intended to keep up the heat on the FAA and Boeing rather than an effort to break new ground. The major exception was the recommendation that planes other than the jumbo 747 be brought into the process.

The fuel quantity indication system, essentially a series of dip sticks, is far more complicated than fuel systems in cars. It consists of hundreds of feet of wire connected to long aluminum probes in the fuel tanks themselves. A low-voltage current -- far too low to cause a spark -- is used to determine fuel levels. Several of the board's specific recommendations are aimed at being certain that electrical surges could not somehow enter the fuel probe system, perhaps from any nearby higher-voltage wire.

Hall's letter said investigators have spotted a number of possible problems in the fuel system that need attention. He said that in addition to damaged wiring in the crashed plane, investigators also had found two inappropriate repairs.
The letter recommended that the FAA:

Make mandatory a Boeing service bulletin on inspections of the fuel-measurement system in older 747s — about 700 planes out of the fleet of more than 1,200.

Require the "earliest possible" replacement of Honeywell electrical terminal blocks used on the older 747 probes, which have sharp edges that have been determined capable of damaging wiring.

Conduct a survey of 747 fuel systems that do not use the Honeywell system to determine if there are similar risks.

Require research to determine if copper sulfide deposits found on the crashed plane's fuel-quantity system pose a hazard.

Require in the 747 — and all other aircraft that may route fuel-quantity wires near other wiring — the physical separation and electrical shielding of the fuel wires "to the maximum extent possible."

Require electrical surge-protection systems to prevent electrical power surges from entering tanks through the fuel probes.

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