Frayed wiring found on 737s

US FAA emergency order grounds jets

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The US Federal Aviation Administration grounded 179 older Boeing 737 jets Sunday, issuing an emergency order after frayed wiring and electrical sparking were discovered in fuel-pump wires which pass through the fuel tanks of the widely used passenger jets.

The flight safety order was the most far-reaching issued by the FAA in the 20 years since the deregulation of the airline industry. It was the first time since 1979 that the FAA ordered planes taken out of service immediately, regardless of the impact on airline schedules. The last such order was issued after an engine fell off a McDonnell-Douglas DC-10 during takeoff from O'Hare Airport in Chicago, causing a crash in which 275 people died, the worst ever US air disaster.

This weekend's order does not follow immediately after a crash, but it is a byproduct of the crash of TWA Flight 800 two years ago, believed caused by a spark which ignited the center fuel tank of a Boeing 747 jet. The source of the spark is still uncertain, but all older 747 models have been inspected since then for frayed wiring in the fuel tank area, and a similar effort has begun with 737s.

Newer 747s, 767s and 777s and all European Airbus jets have redesigned fuel supply systems which avoid having wires passing through the fuel tanks. But in the older jets, the wires pass directly through the fuel tanks, inside copper conduits. While the wires are wrapped with a Teflon insulating cover, they sit unsupported inside the conduit. As the engines vibrate during thousands of hours of flight-time, the wires literally bounce up and down, rubbing their insulation against the inside wall of the conduit.

During a recent routine inspection of a Continental Airlines 737 jet, mechanics found three spots where the wire inside the conduit had been rubbed bare of insulation, allowing the electricity to arc through the air from point to point instead of passing along the wire. The sparks from the electric arcing had burned two tiny holes in the conduit, allowing fuel from the tank to leak into the conduit. All the conditions for a disastrous explosion-fuel, air and a spark-were thus present.

Even this set of circumstances did not produce an immediate reaction from the FAA, which is notorious for treating the airlines with kid gloves. The agency issued an order May 7 requiring inspection of older 737s over the following week, without any requirement that planes be taken out of service. Only after mechanics inspecting a United Airlines 737 found another instance of sparking and bare wires, and some fraying or chafing of wires was found in nearly every one of the first 13 jets inspected overall, did the FAA issue its order to ground all the older jets until inspections were completed.

Even then the FAA limited the order, requiring inspection of only one of the two major conduits which take wires through the fuel tanks, the one which is closer to the engines and therefore more affected by vibrations. This limitation helped the airlines complete their inspections in record time, averaging five hours per plane rather than the 15 hours which the FAA had estimated.

A total of 179 older 737 jets operating in the US were affected by order, with the biggest impact on Southwest (35 jets), United (18) and Continental (18). Most of the others are on small startup airlines and charter services. Another 118 newer 737s will have similar inspections over the next several weeks, without a general grounding, along with newer 747s.

The 737 is the most commonly used jet in the world, with 1,088 in service in the United States and 2,716 worldwide. There are 193 older 737 jets operating outside the United States, the bulk of them in Europe, including 65 at Lufthansa, 35 at British Airways and 15 at Sabena. European authorities are expected to order inspections like those required by the FAA, but no grounding has been announced.

Many airlines in the less developed countries operate exclusively with older model 737s, usually purchased

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second-hand from American or European airlines, and they have fewer resources to carry out maintenance and inspections.

According to an update posted on the FAA's web site May 11, 42 of the first 47 jets inspected showed some fraying or chafing of the fuel-pump wiring, while 9 had more than 50 percent fraying, and two had wires actually exposed. Until this round of inspections, the FAA had assumed that fuel-pump wiring would last the life of the airplane, and no regular inspection was required.

The latest crisis, and the FAA's half-hearted response, provide a further demonstration that it is impossible to reconcile a stringent concern for safety and an air-travel system based on privately owned, profit-driven airlines, competing for passengers and market share. There is an inherent conflict between the airlines' desire to cut costs and maximize profits, and the requirements of safety.

This situation is exacerbated in the United States, where the policy of deregulation, adopted 20 years ago, has freed the airlines of most government controls and left enforcement of safety to the voluntary efforts of the airline corporations. Although the National Transportation Safety Board, which investigates airline crashes, frequently recommends improvements in aircraft design and maintenance procedures as a result of its work, many of these proposals are blocked by the FAA under pressure of the airlines and Boeing, the main US aircraft manufacturer.

The only way to guarantee that safety concerns will be given top priority is to place the airline and aircraft manufacturing industries under public ownership and run them as a service to the traveling public, rather than a source of private profit.

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