

Mr. KREINDLER: It looks to me as though the case is building for structural or mechanical failure leading to explosion.

MURPHY: (Voiceover) Mechanical? Is it even possible that a plane that has been so safe for so long can simply blow itself apart in mid-air? Many seasoned travelers regard the Boeing 747 as almost unsinkable.

(Airplanes)

Mr. KREINDLER: I think if I had to bet at this particular moment as to what happened here, I would say structural failure.

MURPHY: Kreindler's chief investigator, Frank Gardner, agrees. He has 35 years experience as a former federal aviation safety inspector. And when he saw the charred right wing of the jet come back, he thought accident.

(Gardner; wreckage of TWA Flight 800)

Mr. FRANK GARDNER: From the evidence of the wing root, it looks like the explosion is in the center of the plane, which is where the fuel tank is. So the center fuel tank could have blown up.

MURPHY: (Voiceover) All the evidence is pointing to an explosion at the point where the right wing meets the fuselage. And if you peel back the skin, you'll find that's where a 13,000-gallon fuel tank sits. The heavily scorched fuselage and fragments of tank from that right-center section are being reassembled in a Long Island hangar for a closer examination. Reportedly, some experts think that parts of the tank look too good for it to have been the source of the primary explosion. But Frank Gardner's in the camp of those who believe a disaster involving the center fuel tank explains everything.

(Model plane; drawing of airplane; wreckage of TWA Flight 800; wreckage of TWA Flight 800 in hangar; Gardner)

Mr. GARDNER: It could blow up from a leaky booster pump. It could blow up from a structural failure, causing the tank to leak itself.

MURPHY: But it's easier for lawyers to win big damages for their clients by proving that the airline or the manufacturer is at fault, so we wanted to hear the mechanical failure theory from someone else, someone who buys and sells used 747s for a living, someone who kicks the tires and looks under the hood, someone who knows the 747 inside and out.

(Voiceover) We found Jim Helms, an aeronautical engineer from San Antonio. He's not convinced yet one way or the other about a bomb or mechanical failure, but we asked how he could even explain an accident if it wasn't a bomb.

(Helms)

MURPHY: Is it possible on the 747-100 to have a catastrophic event, but have it not triggered by a bomb or missile?

Mr. JIM HELMS: Yes.

MURPHY: (Voiceover) While we're in the air, we may be blissfully unaware of problems, big and small, creeping up in flight. But every plane has a history, and airline crews and mechanics are required by law to report glitches when they find them, incidents like 'During cruise, smoke and electrical sparks appeared from overhead luggage bins,' 'Galley overheated and emitted smoke,' 'crack in left wing.' And those aren't just any samples. Those incidents are from the actual case history of the 747 that exploded. DATELINE pulled the FAA mechanical records on the aircraft called service difficulty reports going back for the last six years and found 42 mechanical write-ups. Then we asked Jim Helms to interpret them for us.

(Passengers on airplane; cockpit; airplanes; report; Helms)

Mr. HELMS: The majority of them were relatively minor.

MURPHY: (Voiceover) He's not saying it happened, but Helms says ~~little things~~, an inconsequential spark here, a fuel leak there, could meet with disastrous unprecedented results, even in a plane with a superb reputation. We know the central fuel tank was almost empty except for about 50 gallons of fuel sloshing around. Could it have leaked explosive vapors? Service reports from two other vintage 747s—not the TWA plane—tell us that passengers and crews have reported in the past smelling fuel vapors. If fuel vapors in the tank of Flight 800 caught fire, it could be a massive explosion. But what could have ignited the fire?

(Plane; wreckage of TWA Flight 800; drawing of plane; service reports; graphic of words "fumes detected near row 20"; airplane)

Mr. HELMS: I would not overlook the main landing gear.

MURPHY: So if the main landing gear is pulled up into the belly of the plane, they're ascending out of JFK, it's very near the central fuel tank. Hypothesis, speculation—could an exploding tire rupture that center fuel tank?

Mr. HELMS: Yes.

MURPHY: (Voiceover) Helms looked at the records of the plane and found several possible sources of ignition.

(Helms)

Mr. HELMS: There were three or four reports of food-warming carts where the crew reported smoke and fire inside the cart, and they had to p—pull the power off it.