

Sequence of Destruction for TWA Flight 800

Friction, not fiction.

John Barry Smith

11 Jan 98

Hot humid air in forward cargo compartment was subjected to cold conditioned air after takeoff from hot summer evening near New York on July 17, 1996. Condensation was precipitated out and formed on cold metal fuselage skin. Poly-X wire bundle which held cargo door motor on power was chafed by the friction of continuous vibration against clamp or many door openings and closings on it. Sheath around bundle was worn through to insulation and then worn through to bare wire. Condensed water met the bare wire and shorted against fuselage metal charring wires and powering on door motor which attempted to turn all ten cam sectors to unlocked position. At 13700 feet MSL and 300 KCAS, the eight lower cam sectors were prevented from unlocking because of strengthened locking sectors. However, the two midspan latches have no locking sectors at all. The slack in bellcranks, torque tubes, and high time worn cam latches allowed the aft midspan latch to rotate just past center allowing the 3.5 PSI internal pressure to rupture outward the forward cargo door at the aft midspan latch.

The nine foot by nine foot squarish door burst open at midspan latch sending the latch and door material spinning away in the setting sun which reflected upon the shiny metal as it spun away erratically and appeared as red-orange streak to ground observers moving all which ways. The aft door frame was clean of attachment to door and bulged outward. Fuselage skin was torn vertically. The door fractured and shattered. The bottom eight latches held tight to the bottom eight latch pins on bottom sill while bottom external skin of door blew away. The top piece of red topped cargo door opened out and up smashing into the white fuselage skin above it leaving the red paint of the door on the white paint between passenger windows above. The red paint of the trim was rubbed away showing the white paint underneath. The top piece of the door took the hinge with it and fuselage skin as it is tore away. The loose red painted trim piece and top of door flew directly aft and impacted the right horizontal stabilizer leaving a red paint transfer mark on it. The hinge still appears to be working normally likely having overtravel impression marks on the opposite hinge when door overextended to slam on fuselage above. The top piece of the door shows inward damage when it hit fuselage above.

The explosive decompression of the thirty eight thousand pounds of internal force on the door

blew out a large hole about twenty feet wide and forty feet high on the right side of the nose forward of the wing. Parts of the cargo hold structure were the first parts to leave the aircraft. The now uncompressed air molecules rushed out of the huge hole equalizing high pressure inside to low pressure outside while making a very loud noise. Fuselage skin was peeled outward at various places on the right side of the nose. The sudden rushing air was recorded on the Cockpit Voice Recorder as a sudden loud sound. The explosive decompression of the forward cargo hold severely disrupted the nearby main equipment compartment which housed power cables and abruptly shut off power to the Flight Data Recorder.

At least nine passenger's bodies were never found, only bone fragments. The number three engine also ingested metal in baggage and started on fire from inefficient burning of fuel. The number three engine with pylon started to vibrate and a stator blade from the engine was spit out and impacted directly behind it in the right horizontal stabilizer.

The floor beams above the cargo hold were bent downward, fractured and broken from the sudden decompression. The main structural members of door and frame were gone and compromised. The flight attitude of the aircraft was askew to the left from reaction of explosive decompression to the right. Air rushed into the hole and weakened other skin and frame peeling skin outward. The 300 knots of air pressed upon the weakened nose and crumpled it into the large hole. The nose tore off and landed in a dense debris heap apart from the rest of the plane.

The port side forward of the wing was smooth and unshattered while the starboard side forward of the wing was shattered, torn, and frayed at ruptured cargo door area and severely disturbed over twenty feet by forty foot explosive decompression zone. Outward petal shaped fuselage skin appeared at aft midspan latch from rupture. Aft midspan latch was blown away. Outward peeled skin appeared from blowout. Fuselage skin remained smooth next to blown out skin.

The rest of the plane without the nose suddenly decelerated from 300 knots and caused whiplash injuries to passengers. Passengers inside fuselage had baro-trauma to eardrums which ruptured trying to equalize middle ear pressure. The plane maneuvered with huge gaping wound in front increasing drag. The wind force disintegrated the fuselage and wings. Fuel poured out of ruptured tanks as wreckage fell. The broken fuselage, the ruptured wings, the fuel cloud, the center tank, and the spinning, on fire engine number three met at 7500 feet and exploded into a bright loud fireball putting singe marks on the fuselage skin while leaving earlier departed nose burn and singe mark free. The center tank exploded as well as other nearby fuel tanks. Forward passengers were not burned because they were in the earlier separated nose. The debris fell and spread out from 7500 feet to sea level in windblown southeast directly, leaving a wide debris field.

Ground observers heard the fireball explosion of the center tank and other fuel and looked up. They saw fire and smoke and falling debris.

Explosive decompression at the forward cargo hold led to suspicion of bomb in cargo compartment but bomb later ruled out. Debris ejected to the right from explosive decompression led to suspicion of missile exploding on left side of nose. Streak of shiny metal object spinning away reflecting evening sun to ground observers led to suspicion of missile exhaust but later ruled out.

Fire/explosion of center tank into fireball led to suspicion of center tank explosion as initial event. There were difficulties in determining ignition source, fuel volatility, unheard fuel explosion sound on CVR, unilateral fuselage damage, singe marks, and other evidence needed to corroborate center tank explosion as initial explosion.

Fuselage rupture at aft midspan latch of forward cargo door inflight is initially rejected because bottom eight latches are found latched around locking pins while two midspan latches are unexamined and status unreported.

[Contents](#)

[Boeing 747-131](#)

[Trans World Airlines Flight 800](#)

[Debriefing](#)

[Boeing 747-237B](#)

[Air India Flight 182](#)

[Debriefing](#)

[Boeing 747-121A](#)

[Pan Am Flight 103](#)

[Debriefing](#)

[Boeing 747-122](#)

[United Airlines Flight 811](#)

[Debriefing](#)

[The Type Airplane](#)

[The Damage Starts](#)

[The Radar Blips](#)

[The Sudden Loud Sounds](#)

[The Abrupt Power Cuts](#)

[The Fodded Engines](#)

[The Inflight Damage](#)

[The Missing Bodies](#)

[The Torn Off Noses](#)

[The Wreckage Plots](#)

[More Similarities](#)

[The Red Herring: Bomb!](#)

[Inadvertent Opening of the Forward Cargo Door in Flight](#)

[Forward Cargo Door Section](#)

[Introduction](#)

[Introduction Photograph](#)

[Introduction Page](#)

[Big picture](#)

[More pictures.](#)

[\(larger picture with DC-10 door also\)](#)

[Boeing 747.html](#)

[747historycontents.html](#)

[747-121dimensions.html](#)

[747cargo door and nose](#)

[747specsheel.html](#)

[747seating.html](#)

[747crashes.html](#)

[cargodoorfaraway.html](#)

[pressurization1.html](#)

[pressurization9.html](#)

[aerodynamics.html](#)

[crashchart0.html](#)

[crashchart1.html](#)

[Airworthiness Directive 79-17-02.html](#)

[Airworthiness Directive 88-12-04](#)

[Airworthiness Directive 90-09-06](#)

[800summary](#)

[variousdooraccidents.html](#)

[forwardcargodoorpict.html](#)

[Boeing 747 nose picts right side cargo door](#)

[cargodoorfaraway.html](#)

[Bibliography:](#)

[DC-10page146.html](#)

[DC-10page147.html](#)
[DC-10photorippeddoor.html](#)
[DC-10page148.html](#)
[DC-10page151.html](#)
[DC-10photowreckage.html](#)
[DC-10cargodoorcrashp15.html](#)
[DC-10crashcontents.html](#)
[AI182essentials.html](#)
[182summary.html](#)
[AirIndiareportcontents.html](#)
[125sum.html](#)
[PA103essentials.html](#)
[103radarblip1.html](#)
[103cvrtext1.html](#)
[103scancvr1.html](#)
[103scandraw0.html](#)
[103blipsani.html](#)
[103drawrightleftani.html](#)
[103reportcontents.html](#)
[UAL811essentials.html](#)
[811bigholephotobetter.html](#)
[811page92conclusions3cause.html](#)
[811PS.html](#)
[811picture](#)
More pictures of UAL 811 cargo door hole
[811reportcontentpage.html](#)
[811skiesdoorcontents.html](#)
[811page65uncommandeddoor.html](#)
[811page67uncommdooranly1.html](#)
[811page68uncommdooranly2.html](#) [800streakexplained.html](#)
[800radarbirdoor.html](#)
[800cargodoor.html](#)
[ntsbcommentlatches.html](#)
[800avweekintrigue.html](#)
[TWA800essentials.html](#)
[800newsreports.html](#)
[800newsreports1.html](#)
[800newsreport2.html](#)

[800newsreport3.html](#)
[800crashsitemap.html](#)
[800wxradar.html](#)
[800partsphoto](#)
[800engine3.html](#)
[800publicappeal.html](#) .
[800doorversusfire.html](#)
[TBA.html](#)
[crashsimilarvariables.html](#)
[TWA800PA103UA811.html](#)
[747jetroutes.html](#)
[747contrails.html](#)
[ejection.html](#)
[314summary.html](#)
[314accidentreport.html](#)

[**barry@corazon.com**](mailto:barry@corazon.com)