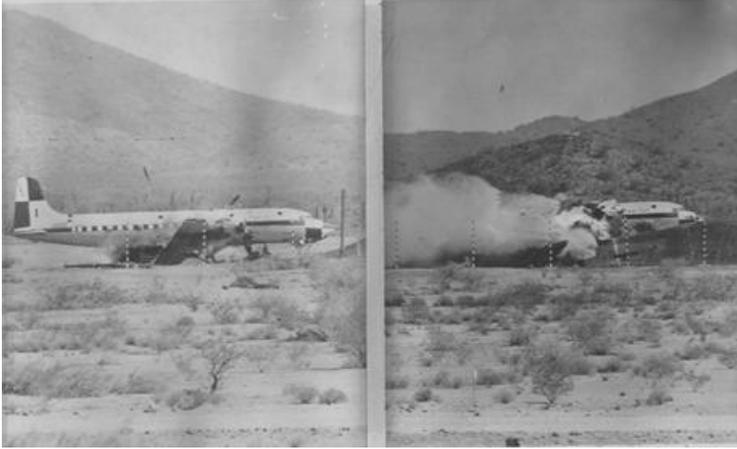


## A Perfect Crash

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Fifty years ago, on April 24, 1964, Federal Aviation Agency and the Flight Safety Foundation researchers deliberately slammed a 4-engine DC-7A against a rocky slope at a high speed to cause “a perfect crash,” as they called it. The crash, which occurred at Deer Valley Airport (situated 20

miles north of Phoenix, Ariz.), began a \$190,000 test program dedicated to finding ways to prevent post-crash fatalities.

Prior to the crash, researchers had placed 16 instrumented crash dummies, plus a doll to represent an infant, on board the plane and installed several thousand pounds of engineering experiments as well as recording equipment, including 20 high-speed cameras and 82 test circuits. The Army, Navy, Air Force, NASA, and private industry also had experimental equipment on the aircraft.

The plane, guided by a 4,000-foot steel rail, moved down the runway at about 140 miles an hour. Its right wing purposely hit and then sheared off two telephone poles. After this, the fuselage unexpectedly bounced off a small mound on the runway and sailed over a 150-foot high hill. Fire erupted from a break in the fuselage. Flaming engine parts and other aircraft components scattered along a path the length of three football fields.



Twelve of the 16 dummies remained seat-belted in their seats as the plane came to rest on its left side. Surprised by the amount of damage to the plane, researchers were even more astonished that most passengers would have survived the crash. Using the data culled from the crash, researchers hoped to help strengthen items such as

aircraft seats and fuel tanks.

Interestingly, when the FAA released footage from the crash to the news media, the Air Transport Association was not happy. Stuart Tipton, the ATA president at that time, complained to then-FAA Administrator Najeeb Halaby that publically providing the film of the test would “scare the daylights” out of people already afraid to fly. FAA argued that the public had been well informed that the footage came from a scientific experiment and not an actual crash. Furthermore, the agency explained, the test showed FAA’s commitment to assuring passenger and crew survival during take-off and landing accidents.

Despite ATA’s concerns, the public seemed to understand the nature of the test and anxiously awaited the next “crash spectacular” planned for early September. On September 3, FAA and Flight Safety Foundation researchers intentionally crashed a Lockheed Constellation at Deer Valley Airport. The purpose of this and the earlier test, according to FAA, was to measure the forces acting on commercial airplanes in a “marginally survivable” crash so planes could be designed for greater safety.



In the second test, engineers remotely sent the Constellation down a 4,000-foot runway where it hit a series of strategically placed barriers at 115 miles per hour. Both wings separated from the aircraft and the fuselage broke in two

places. The only fire occurred at impact when engine oil ignited. The prototype gelled fuel containment system, designed to reduce post-crash fires, worked well. Researchers reported that only 2 of the 21 test dummies and 1 of the 3 dolls on board would have perished in the crash.

These two experiments reflected a growing realization that fatalities in take-off or landing accidents could be reduced if passengers were prevented from colliding with the aircraft's interior structure or furnishings and protected from post-crash fire and smoke. The tests provided valuable data on such matters as fuel spillage; the safety characteristics of rear-, forward-, and side-facing passenger seats; and the efficacy of passenger-restraining devices.