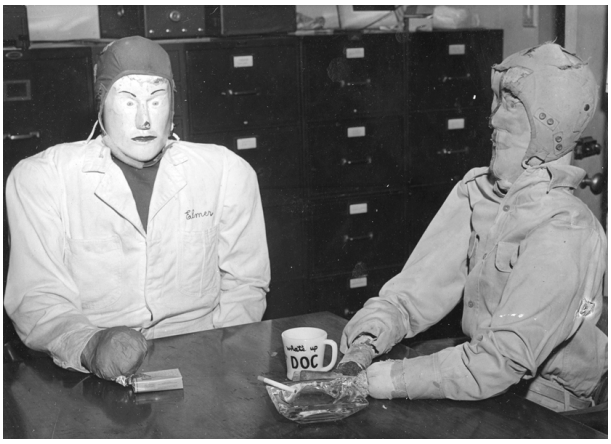
Oscar and Elmer: Suffering for the Sake of Aviation Safety

Long before NHTSA's crash dummies, Larry and Vince, became media darlings in the 1980s, federal agencies had been using anthropomorphic test devices, or dummies, to improve safety on America's roads and in its airspace. Over the decades, test subjects have ranged from human cadavers, to live, volunteer test subjects, animals, and instrumented dummies.

The Civil Aeronautics Administration (FAA's predecessor organization) first developed and used a dummy in 1949 to test danger areas around different sized aircraft windows and to develop new, safe window design concepts. Oscar, the CAA's first test dummy, developed by the Civil Aviation Medical Research Laboratory's John J. Swearingen, MD, and his staff, "survived" over 500 blast tests during his short life. The 120-pound Oscar, the first dummy to have articulated joints, some muscle resistance, and realistic body and segment weight and centers of gravity, had to be rebuilt every time he went hurtling through a window.

Although Oscar succeeded in helping the CAA develop new cabin safety measures, agency researchers needed a heavier and more sophisticated dummy for other tests. Elmer, born in 1951, had his 200 pound body covered in flesh with the spring rate characteristics of a human. He had had a compressible rib cage and adjustable muscle tension in the spine. Deemed "Elmer, Rubber Man" by the press, Elmer was constructed from wood, steel, and rubber.

Elmer spent his first five years on travel for the CAA, although he did not receive per diem. The most sophisticated anthropomorphic test device then in existence, Elmer went into service with both the aviation and automobile industries. The CAA first assigned Elmer to Beech Aircraft Corporation to test the company's new aircraft safety harness. He subsequently lived through a number of ejection seat tests and sled test rides at Muroc and Edwards Air Force Bases.



Oscar, happy for a reprieve, no doubt enjoyed seeing Elmer put through his paces in seat ejection studies, shoulder harness testing, and other not so glamorous tasks. Oscar, however, did not stay on the sidelines long. He and his younger brother Elmer found themselves in great demand throughout industry and government alike, even working in the auto industry as crash test dummies (long before Vince and Larry). Their willingness to volunteer for death defying experiments with no complaints endeared them to many researchers. In 1953 Oscar and Elmer faced their greatest challenge yet when they were called on by the Atomic Energy Commission to participate in the Nevada atomic tests. They sat in cars when the blast went off, and received flash burns and fractures for their trouble.

They also both served as models for the development of even more sophisticated test dummies. In fact, Elmer's construction plans were widely distributed and is considered the "father" of most test dummies in use today.

True stars in their own rights, Oscar and Elmer were featured in a number of Civil Aeronautics Medical Research Laboratory reports, such as the spell-binding "Design and Construction of a Crash Dummy for Testing Shoulder Harness and Safety Belts" and "Studies of Air Loads on Man," Vince and Larry had nothing on Elmer. Long before they were born, Elmer adorned a Conoco Oil Company ad in the March 1, 1952, issue of the *Saturday Evening Post*.

After a lifetime of adventure working to improve aircraft safety, Oscar was retired in 1963, being placed on duty at the CAA's laboratory, as John Swearingen explained, "as night guard until called on in the future." However, as of 1963 Elmer was continuing to work, being blown from high flying aircraft at Tinker Field. His fate remains a mystery, since he has not been seen since then. Their legacy lives on today as their progeny work to make aircraft and aviation even safer.

You can pay your respects to Oscar in his display case located on the Civil Aerospace Medical Institute's basement lobby.