

## The Ruidoso Plane Crash—The Background and the Trial Verdict

**REFERENCE:** Brunk SK. The Ruidoso plane crash—The background and the trial verdict. *J Forensic Sci* 1997;42(3):378–379.

**ABSTRACT:** The circumstances surrounding the December, 1989, Ruidoso, NM plane crash that prompted a number of the investigations in this symposium, and subsequent litigation, is described.

**KEYWORDS:** December 1989 Ruidoso NM plane crash, Fish v. Beech Aircraft, legal issues

Symposium Editor's note: Stephen K. Brunk is an attorney who represented AlliedSignal Inc., and later the Beech Aircraft Corporation, in the lawsuit that generated much of the forensic work described in the following papers. The suit was filed in San Diego in 1989 and lasted into the fall of 1992. Among other responsibilities, he coordinated all issues and evidence concerning the fuel control system on the engines, the gathering of the biological, chemical, and soil evidence, and presented the findings to the court and ultimately to the jury. The members of the expert witness defense team wish to express our gratitude to Stephen Brunk for the opportunity to participate in the case, and especially for his sensitivity to the feelings of the victims' adult children.

### The Background

On Dec. 2, 1989, a Beechcraft Super KingAir F90, equipped with two Pratt and Whitney turboprop engines, was making its way from San Diego to a landing at the Sierra Blanca Regional Airport in Ruidoso, New Mexico. It was flown by a wealthy contractor who was 51 years old with little flight experience—less than 600 h total time and less than 100 h in this airplane. The weather was bad at the destination, with an 800 ft ceiling, visibility less than 1.5 miles, and blowing snow. The Sierra Blanca Regional Airport is located at 6,800 ft (ca. 2,200 m). The instrument approach is a difficult one, and the system in use was a non-directional beacon (NDB), which is a somewhat archaic type of navigational aid.

The aircraft could have diverted to airports less than 30 min away, where the weather was clear or at least better. Apparently the pilot and his wife who accompanied him did not want to be inconvenienced, because they were on their way to their vacation home in Ruidoso, New Mexico. The airplane lost the NDB and was heard flying off course above the clouds. Later it was seen

exiting the clouds heading straight down, full power, to a crash in rugged terrain. It appeared that the pilot had gotten disoriented in the clouds and exited at a low altitude pointing straight at the ground.

After the crash, the wreckage was slowly recovered under the auspices of the National Transportation and Safety Board (NTSB). The engines were shipped to Pratt and Whitney in Canada, where they were disassembled under NTSB supervision. They were then crated in heavy cardboard boxes and several months later, in the spring of 1990, they were trucked back to an outdoor storage yard at the Sierra Blanca Regional Airport where they were dumped in with the rest of the badly mangled wreckage.

Later in 1990, the wreckage of another small airplane which had crashed at the airport (without fatalities) was also thrown into the storage area, so that the remains of two aircraft were in one grave. To further turn this into what eventually became something of an archaeological dig, soil was randomly thrown on top of part of the site. The wreckage remained in the storage yard, together with miscellaneous other debris (that was to later prove unexpectedly significant) throughout the spring and summer of 1990. At that time a group of attorneys from Philadelphia came to the site and found what became known as the B2 elbow. It was carefully retrieved by them, taken back to Philadelphia, and placed in a bank vault. In the several years that followed, it became the pivotal piece of evidence on which the lawsuit brought by the heirs of the dead couple was erected. That lawsuit named as defendants the Beech Aircraft Corporation, which manufactured the airplane; Pratt and Whitney, which supplied the engines; and AlliedSignal Inc., which supplied the fuel control units manufactured by Bendix Avelox, one of its subsidiaries.

Each engine on this airplane is powered by a turboprop engine, a type of jet engine that turns a propeller. Fuel to each engine is controlled by a fuel control unit (FCU) that operates pneumatically, in other words on air flow, that is taken off a section of the engine compressor and fed to the FCU. The FCU, based on a number of variables, then meters the amount of fuel going to the engine. The B2 elbow was in the pneumatic circuit running to the FCU, metering fuel to one of the engines. There was a mass inside this elbow, and it was the contention of the plaintiffs' attorneys that the engine, on approach, had ingested some kind of contamination that had passed into the line running to the fuel control. There it got stuck in the line, causing a reduction in power in one of the engines, such that the aircraft was uncontrollable. The challenge, then, was to identify what this obstruction was and how it got there.

There were strong indications that it did not get into the line while the airplane was in flight. In order for any airborne contamination to get into the pneumatic circuit, it would first have to pass through several stages of compressor blades, operating at 10s of

<sup>1</sup>Law Offices of Stephen K. Brunk, 550 West "C" Street, San Diego, CA. Received 29 May 1996; and in revised form 20 Aug. 1996; accepted 10 Sept. 1996.

thousands of rpms and at very high temperatures. Preliminary inspection of the mass suggested it was some kind of vegetation that would have been incinerated by the heat in this line. The average temperature in the air line coming off the engine's compressor stages is about 500°F (260°C). It was also noted that the mass was not lodged in a corner or bend in the B2 elbow, where one would have expected it as air coursed through the fitting. The air flow is approximately 300 psi, which is ten times the pressure carried in fully inflated automobile tires. Rather, it was situated in a straight section into the fitting. Finally, similar deposits were found in portions of the FCU system that carried fuel rather than air.

Contrary to the presumption of innocence in criminal trials, in civil trials like this one, in which a plaintiff advances a theory, it frequently is not enough for a defendant just to counter the theory. Many times it is also necessary to give the jury a plausible alternative explanation for what they are seeing and what they are being told. Flow tests at the Garrett Fluid Systems Division in Tempe, Arizona in January, 1992 were part of a major production over the course of a year to agree on a protocol to remove and divide the mass between plaintiffs and defendants. Literally tens of thousands of dollars were spent designing and assembling a device by which the B2 elbow could be hooked up to air sources and the mass blown out at pressures much less than those operating

in the line. That would show that the mass could not have been in the elbow as the engine operated. After months of preparation, the mass was subjected to the pressure, and it did not budge. The circumstantial evidence was strong that the B2 mass was not ingested in flight, but clearly it was going to be necessary to gather additional information. A team of scientists was assembled and charged with the task of establishing the nature of the mass and providing an explanation for its presence in the line. This was a rare occasion in which no limits were placed on funding. The group then embarked on a world of SEMs, FTIRs, EDAXs, and a superb example of interactive forensic work.

### **The Verdict**

So overwhelming was the evidence that the plaintiffs eventually abandoned the B2 elbow mass theory and concentrated on what they said was evidence of contamination on certain metering lever pads within the FCU and certain mineral deposits which were allegedly unique to soils found in the vicinity of an airport in Montana where the airplane had operated several weeks before the accident. The focus for the defendants' soils expert and the analytical chemist turned from supporting the bee, plant, pollen team to establishing their own defense to this last minute effort. After eight days of deliberation, the jury returned. The verdict was 10-2 for the defendants.