

**U.S. House of Representatives  
Committee on Science & Technology  
Subcommittee on Investigations & Oversight**

**HEARING CHARTER**

***The duPont Aerospace DP-2 Aircraft***

Tuesday, June 12, 2007  
9:30 a.m. – 12:00 p.m.  
2318 Rayburn House Office Building

**Overview / Purpose**

The Subcommittee on Investigations & Oversight will meet on Tuesday, June 12, 2007, to examine the history, technical viability, critical assessments, testing mishaps and management of the DP-2 Vertical/Short Takeoff and Landing (V/STOL) aircraft being developed by the duPont Aerospace Company. The DP-2 program, funded exclusively through congressional earmarks since 1988, has received more than \$63 million. Yet, multiple technical reviews of the DP-2 concept have repeatedly rejected it on its technical merits since 1986 and serious concerns continue to arise about the ability of duPont Aerospace to effectively and safely manage the program. Three DP-2 prototype aircraft have been developed and the DP-2 has suffered from four mishaps in the past four years. The Subcommittee on Space & Aeronautics held a hearing on this project in May 2001.

The purpose of this hearing is to review the technical virtues of the DP-2, concerns about the safety of the aircraft, duPont Aerospace's management of the program and the company's adherence to safety protocols and procedures. This is particularly important given the fact that Tony duPont, President of the duPont Aerospace Company, envisions the development of a commercial version of the DP-2 aircraft. Finally, the Subcommittee will examine what sort of return on investment the U.S. government has received for its two decades of support and more than \$63 million investment in this program to date.

During his testimony to the House Committee on Science in May 2001, duPont said the commercial airline industry including Boeing, Lockheed and Grumman did not invest in his concept of the DP-2 aircraft because they were skeptical of his ability to actually achieve success. Six years later, it appears the DP-2 program has accomplished very little. Yet, duPont continues to receive a steady stream of congressional funding. The key question is why Congress should continue to invest in this program today?

## Background

Tony duPont conceived of his V/STOL aircraft as a business jet in the early 1970s and called it the DP-1. In 1972, he first proposed his larger airplane, called the DP-2, to the Defense Department. Both aircraft designs relied on the concept of vectored thrust – which would permit the aircraft to direct the thrust from its engines both downward projecting the aircraft upward and permitting it to hover, as well as backward propelling the aircraft forward while in flight. As envisioned by duPont, the DP-2 – once operational – would be capable of ferrying up to 48 fully equipped troops into combat zones, landing on remote oil drilling platforms or rooftops in crowded urban areas. Commercial versions of the aircraft would transport between 50 and 200 passengers to inaccessible resort destinations or directly to the greens of prestigious golf courses.

The U.S. Navy received an unsolicited proposal from Tony duPont for the DP-2 in 1986. But the Navy found a litany of technical problems with the aircraft and recommended that the “DuPont DP-2 concept be dropped.” In 1990, the Defense Advanced Research Projects Agency (DARPA) conducted a second technical assessment of the DP-2 and concluded: “It is DARPA’S assessment that the design cannot be adapted from its commercial aircraft application to the military requirement. . . . Additionally, concern over the practicality of the basic DP-2 aircraft was expressed by the technical experts consulted by DARPA,” the report declared. In 1999, the Naval Air Systems Command (NAVAIR) conducted a technical oversight trip to the duPont Aerospace facility in San Diego. The oversight team, which included one dozen aerospace experts, discovered a disturbing series of problems in how the DP-2 aircraft was being manufactured. The team’s reports detailed problems in the fabrication and assembly of the aircraft, quality control processes and procedures, materials development and safety procedures, among other things. The oversight team found, for instance, that no ejection seats had been planned or installed for the DP-2, even though it was being developed as a military aircraft. The review concluded that “The integrity of the [aircraft] to conduct safe hover or forward flight operations is questionable.” In the end, the team said the aircraft’s technical faults would “produce an extremely unsafe vehicle, not worthy of flight.”

Despite those reviews and subsequent problems on the program earmarks for the DP-2 have not ceased. Congress first earmarked funds for duPont Aerospace to begin development of the DP-2 program in 1988 through DARPA. But technical concerns about the aircraft’s viability and safety performance were so great that DARPA refused to expend \$30 million on the project that Congress had appropriated for it. The agency went so far as to have its General Counsel author three separate legal opinions in the early and mid-1990s stipulating why DARPA should not fund the project. The earmarked funds first began to flow to duPont Aerospace in 1993, according to the Defense Department. In 1997, the Office of Naval Research (ONR) took over management of the program, where it remains today. In FY2002 and FY2003, \$7.5 million in grants were earmarked for the DP-2 program through NASA as well. In April 2003, a NASA analysis of the DP-2 concept found “that the DP-2 effort is not worthy of continued funding.” Still, since then NASA has played a critical technical oversight role, working with ONR and acting as Chair of the ONR DP-2 Airworthiness Review Panel.

Over the past four years, two separate DP-2 prototypes have suffered from four mishaps, and some government officials have questioned the competence and capabilities of duPont Aerospace. In November 2003, during a controlled hover test at Gillespie Field in San Diego, the public airport where the company maintains the DP-2, the aircraft had a “hard landing” and suffered significant damage. The aircraft has only been allowed to attempt to hover while it is tied down via tethers to a metal helicopter stand. During this test, Tony DuPont removed the nose tether of the aircraft, which was a violation of the approved testing procedures. The crash resulted in \$88,000 in material damage and required an estimated 1,150 man-hours to repair, according to duPont’s own estimate.

The aircraft suffered a second failure in November 2004 when its “nozzle box” composite structure failed due to engineering deficiencies, according to a NASA review. Most disturbing was the fact that the DP-2 test pilot was in the cockpit at the time, which again violated safety protocols that had been established for the test. Fortunately, the pilot, whose helmet struck the ceiling of the cockpit as the cabin floor cracked and the aircraft filled with hot exhaust and composite dust, was unharmed. He escaped through the right cabin window because the main cabin door had been jammed shut. The aircraft suffered a second nozzle box failure in April 2006 that was attributed to structural design issues. Last August, it suffered from its fourth accident in four years when a computer glitch on the navigation computer software of the aircraft caused the aircraft to hover too high and then slammed back down on the test stand damaging the wing. The DP-2 aircraft is expected to begin a new round of hover tests later this month.

In addition to the serious safety issues that have been called into question regarding the management of the DP-2 program, the Subcommittee has learned that questions regarding duPont’s financial management of the program have also emerged. According to a 2004 Department of Defense audit of the company, duPont Aerospace attempted to misallocate at least some of the Congressional funding it has received. The audit found that duPont billed the government nearly \$7,000 in unallowable costs, including \$1,700 for polo-shirts with duPont’s logo imprinted on them, nearly \$2,000 for an annual company picnic and more than \$3,000 for a family vacation on a cruise ship. The questioned costs were below the \$10,000 “threshold” limit set by Federal Acquisition Regulations so duPont received a penalty waiver and removed the costs from the claimed costs they submitted to the U.S. government.

## **Witnesses**

The Subcommittee hearing will be composed of three panels that will explore the past, present and current state of the DP-2 aircraft concept. **Panel 1** will include individuals involved in critical reviews of the DP-2 in 1986, 1990 and 1999. It also includes the former duPont Aerospace Manufacturing Engineering Manager who worked at the firm in the early 1990s and again from 2002 to 2005. Tony duPont will be the exclusive witness for **Panel II** and will testify via videoconference from San Diego. He will be asked to respond to criticism of both the technical merits of the DP-2 concept, safety concerns with the aircraft and his management of the program. **Panel III** will include the

key individuals currently involved with the government's management and oversight of the DP-2 program. They will address recent safety issues with the program, including the cause of four accidents with the aircraft in the past four years, technical hurdles with the performance of the DP-2 and overall management of the program by duPont Aerospace.

**Panel I:**

**Mr. John Eney**, former Head, Aircraft Conceptual Design Group, Naval Air Development Center (NADC) and Naval Air Systems Command (NAVAIR). Mr. Eney first reviewed the DP-2 concept in 1986 and later led a team of senior Navy aerospace engineers on a site visit to the duPont Aerospace facilities in San Diego in 1999 while the first DP-2 prototype was partially completed.

**Dr. William Scheuren**, was on a DARPA review team that provided a critical evaluation of the technical merits of the DP-2 concept in 1990. He later became the DARPA DP-2 Program Manager in the mid-1990s and is former Commanding Officer of the first Marine Corps Harrier Squadron. Dr. Scheuren holds a PhD in Applied Research and has been a test pilot on fighter aircraft, multi-engine transports, helicopters, seaplanes and V/STOL aircraft, including the X-22, a predecessor to the V-22 Osprey tilt-rotor aircraft.

**Mr. Mark Deadrick**, former Manufacturing Engineering Manager, duPont Aerospace Company. Mr. Deadrick first began working for duPont Aerospace as a college intern in 1988. He was employed as a full time Mechanical/Aerospace Engineer at duPont from 1992 to 1994 and as Manufacturing Engineering Manager from 2002 to 2005, when he was in charge of the composite fabrication and assembly of the DP-2 aircraft.

**Panel II:**

**Mr. Anthony duPont**, President, duPont Aerospace Company. Mr. duPont's proposed aerospace plane and engine design concept was selected as the government's baseline design for the National Aerospace Plane (NASP) program in 1983. He holds eight patents and is a former co-pilot for Pan American World Airways. Mr. duPont founded the duPont Aerospace Company in 1969 to pursue the development of VSTOL aircraft using vectored thrust. He first proposed the DP-2 aircraft design concept in 1972.

**Panel III:**

**Mr. John F. Kinzer**, Deputy Director of the Air Warfare and Naval Weapons Division at the Office of Naval Research and the DP-2 Program Manager. He is a former graduate of the U.S. Navy Fighter Weapons School (Topgun) and retired as a Navy Captain in 1999. He has flown over 35 different types of aircraft and has been involved in oversight of the DP-2 program for the past eight years.

**Mr. G. Warren Hall**, Chairman of ONR's DP-2 Airworthiness Review Panel and Assistant Director for Aviation and Chief Test Pilot at NASA Ames Research Center. Mr. Hall completed twenty-eight years of Military Service retiring as the Commander of

a California Air National Guard Rescue Group, with the rank of Colonel. He has authored seventy-three technical reports and has flown over 65 different aircraft.

**Lt. Col. Michael Tremper (USAFR)**, Defense Contract Management Agency, Government Flight Representative to duPont Aerospace Company. Lt. Col. Tremper is a pilot for Delta Airlines and has been the Government Flight Representative to duPont Aerospace since 1999 providing operational oversight of the DP-2 program.

**Ms. Marie Greening**, Director, Aeronautical Systems Division, Defense Contract Management Agency, will accompany Lt. Col. Tremper to the hearing.