Testimony of William J. Scheuren, PhD, Consulting Systems Research Engineer, to the Committee on Science and Technology, U.S. House of Representatives, June 12, 2007

Hearing on: The duPont Aerospace DP-2 Aircraft

SUMMARY

I am a former Officer of Marines, Naval Aviator, and Experimental Test Pilot. I retired from the Corps in 1982 and have since worked in various aerospace engineering capacities including eight years as a Program Manager for the Defense Advanced Research Projects Agency (DARPA). One of the numerous projects I managed at DARPA during the 1990's was the DP-2. The DARPA research efforts on the DP-2 were conducted under appropriations earmarked by the Congress specifically for DuPont Aerospace and the earmarked appropriations were not requested in the Department of Defense budget requests.

DETAILED TESTIMONY

I was first exposed to the DP-2 in the 1990 timeframe when I was invited by DARPA to participate in a technical assessment of the DP-2 concept for a special operations forces VSTOL transport aircraft. At that time I was an employee of a small engineering firm and not a civil servant. The assessment team consisted of approximately 6 technologists with backgrounds in military aircraft design, flying qualities, performance, reliability, and safety – the evaluation areas assigned to the assessment team by DARPA. The team came to consensus that the DP-2 concept was fatally flawed in all of the stated evaluation areas with the possible exception of performance where we did not have enough details to make a confident assessment. Of particular concern were probable vertical/short takeoff and landing (V/STOL) flying qualities and the jet exhaust downwash velocities with attendant erosion/debris production when attempting to operate from unprepared surfaces. Put more bluntly, we concluded that the DP-2 was very unlikely to be able to do the special operations forces mission it was purportedly designed to do.

In 1993 I was invited to join the DARPA staff where the focus of my initial program management efforts was the Common Affordable Lightweight Fighter – now the Joint Strike Fighter. At this time, and throughout the next three or four years we continued to receive unrequested appropriations for the DP-2.

My superiors at DARPA assigned me the DP-2 project and asked me to try to find a way to make the DP-2 design, or parts of it, useful to the military services. The DP-2 was supposed to be able to perform a clandestine special operations forces mission infiltration/exfiltration mission. duPont took examples of SOF needs like transport range, mid-mission hover, and survivability, and combined them in a concept that he thought was a solution. The SOF representatives and we in the R&D community didn't agree with him.

In 1996 duPont teamed with Lockheed to jointly address the SOF mission needs. duPont's role was to design and build a prototype cascade thrust vectoring system. The team, which also included Pratt & Whitney, built a full scale test article which was tested at the P&W West Palm Beach facility with some success. DuPont's vectoring system turned the gas turbine engine thrust with acceptable efficiency. Unfortunately, duPont's composite material curing process did not result in adequate temperature survivability and the structure lacked adequate strength. As a result, P&W had to take heroic engineering efforts to cool the vectoring nozzle and during a high power test the nozzle disintegrated thus ending the test – and ultimately the duPont/Lockheed/P&W DARPA-sponsored efforts.

The following year, or sometime during the latter 1990's the Office of Naval Research became interested in the DP-2 and asked DARPA to transfer the project to them. DARPA agreed and I am told DP-2 R&D efforts continue.

With enough time, money, and application of state-of-the-art aerospace technology we can make almost anything fly. The real issues are whether or not the ultimate product is worth the investment and whether on not the Nation is willing to devote the resources to achieve the capability.