

Aircraft And Automobiles Thrive In Hurricane-Force 'Winds' At Lockheed Martin

Lockheed Martin today celebrated 40 years of aircraft testing in its Low Speed Wind Tunnel (LSWT). On this date in 1967, the first aircraft test, a crew egress trial for the C-5A Galaxy, was conducted. As one of a handful of large subsonic wind tunnels in the country, the Marietta wind tunnel has logged 104,800 hours of testing large scale aircraft models, full-scale automobiles, race cars and structures such as satellite dish antennas and oil derrick models at wind speeds topping the forces of a Category 5 hurricane.

"Before an aircraft ever takes to the sky, we put a model of it in the wind tunnel. Literally since the Wright Brothers, no airplane has taken flight without wind tunnel testing because it is still one of the best ways to learn how an aircraft will perform," said Joe Patrick, manager of Model Operation and Test for Lockheed Martin Aeronautics in Marietta. "Wind tunnel testing is also a critical component design of passenger cars, trucks and race cars. In fact, NASCAR regularly sends top-finishing cars here to ensure they meet specifications."

The Marietta wind tunnel is one of only four wind tunnels in the United States that can accommodate large scale aircraft models. Over the past four decades, more than 32 aircraft types have recorded at least 100 test hours, with seven aircraft types recording more than 1,000 test hours. The three F-35 Lightning II Joint Strike Fighter variants - conventional takeoff, short takeoff/vertical landing, and Naval aircraft carrier variant -- have logged 13,037 hours so far. This puts Lightning II wind tunnel test hours ahead of the 6,341 for the Marietta-built C-130 Hercules transport and 2,744 for the F-22 Raptor air dominance fighter, which rank second and third on the total test hour list. The LSWT is also one of only two wind tunnels that test both government and commercial vehicles on a regular basis.

The relatively low speeds produced in the LSWT are especially useful for testing aircraft in the approach to landing and post-takeoff flight regimes. High yaw testing and stores separation tests, such as weapons or external fuel tanks released from an aircraft, are other areas where the wind tunnel has proven especially beneficial in aircraft testing.

The first automotive test came on Oct. 11, 1968, when Chrysler brought a Dodge Racing car in for testing. Since then, the LSWT has run more than 58,150 test hours on all types of wheeled vehicles, including passenger cars, stock cars, dragsters, open wheel race cars and trucks. Ford, General Motors, Nissan, Harley-Davidson and NASCAR have all tested vehicles in the Low Speed Wind Tunnel.

The Low Speed Wind Tunnel is a closed loop system, nearly 370 feet long and more than 75 feet wide. The air is moved through the loop by a 39-foot diameter fan powered by a 4,160 volt, 9,000 horsepower motor, which turns the fan at a maximum of 250 revolutions per minute.

Updated continuously over the years, the Low Speed Wind Tunnel now features a digital data acquisition system; large-screen liquid crystal and plasma displays in the control room that allow more data to be displayed as the tests progress; better cooling to maintain a constant temperature and pressure, which allows for more accurate data collection; and an improved data reduction system.

Headquartered in Bethesda, Md., Lockheed Martin employs about 140,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The corporation reported 2006 sales of \$39.6 billion.

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