NEWS NOTE

B61-12 LEP – Full-Scale Wind Tunnel Test

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Authors — Vicki Ragsdale, Steve Beresh, Jonathan Murray

Successful Full-Scale Wind Tunnel Test Executed

The B61-12 System Engineering Group (2150) successfully completed the full-scale wind tunnel test (test ID SST61NE-CT-WTT) at Arnold Engineering Development Center (AEDC). The test was performed in partnership with the Aerosciences Department (1515), the Mechanical Design Group (2996), Air Force Life Cycle Management Center (AFLCMC), and Boeing, St. Charles.

The purpose of the full-scale wind tunnel test was to characterize counter torque (CT) across the B61-12 operating envelope. Counter torque is the result of the interaction between the spin rocket motor (SRM) plumes and fins, which reduces the torque that is observed from the SRMs alone. Secondary objectives included investigating the effects of fin deflection and nozzle erosion on CT and identifying the source of the transonic chaos that was observed in the legacy wind tunnel test.

To accomplish this, the test unit was a full-scale mock unit representing the B61-12 outer mold line. The model is capable of varying the SRM motor nozzle conditions and fin cants. Test build-up began on 31 January 2014. All tests were performed in the 16T transonic wind tunnel at AEDC. The wind tunnel test was conducted over a range of environments. Additionally, secondary high-pressure air input was provided to simulate the B61 spin motors.

B61-12 Wind Tunnel Model in AEDC 16T Wind Tunnel

The test was completed on 20 February 2014, and was a success as all the objectives were met. Early review of the results suggests that enough data were collected to confidently characterize CT across the B61-12 operating envelope. Additionally, the improved understanding of the transonic chaos will allow a reduction of the uncertainty present in the aero model since the legacy test. Detailed data analysis will continue to update the aero model by April 2014.

Contacts

Vicki Ragsdale, Technical Basis Lead, vragsda@sandia.gov (505) 844-4170
Steve Beresh, Test Engineer, sjberes@sandia.gov, (505) 844-4618
Jonathan Murray, Lead Analyst, jmurray@sandia.gov (505) 844-0551