

# ***THAD COCHRAN (B-1/B-2) TEST STAND***





- The Thad Cochran (B-1/B-2) Test Stand is a dual-position, vertical-firing facility built in the 1960s to test Saturn V rocket stages that carried humans to the Moon during the **APOLLO PROGRAM**. The B-1 side is equipped for single-engine tests. The B-2 side is designed to test rocket stages.
- NASA conducted the **FIRST HOT FIRE TEST** on the B-2 side of the stand, a 15-second firing of the Saturn S-IC-T stage, on March 3, 1967.
- Twelve **S-IC FLIGHT STAGES** were tested on the B-2 side of the stand from April 1967 to October 1970. S-IC-4 through S-IC-12 powered Apollo 9 through Apollo 17 missions to the Moon. S-IC-13 launched Skylab to orbit. S-IC-14 and S-IC-15 never flew to space.
- The space shuttle **MAIN PROPULSION TEST ARTICLE**, consisting of an external tank and three main engines linked together with a simulated shuttle orbiter, was tested on the B-2 side of the stand from April 1978 through January 1981.
- The RS-68-powered **DELTA 4 COMMON BOOSTER CORE** was tested on the B-2 side of the stand from November 1999 to May 2001.
- The B-2 side of the Thad Cochran Test Stand was modified to test the core stage of the new SLS (Space Launch System) rocket, the cornerstone for NASA's **ARTEMIS MISSIONS** to the Moon and beyond. The Artemis I core stage arrived at NASA Stennis in January 2020. Testing of the stage and its integrated systems culminated in March 2021 with the simultaneous firing of four RS-25 engines, just as during the actual Artemis I launch in 2022.
- The Thad Cochran Test Stand is anchored in the ground with 144 feet of steel and concrete. As constructed, the soft core of the B-2 side of the stand was about 290 feet tall. The new steel superstructure added for testing of the **SLS CORE STAGE** extended that height to almost 350 feet, ranking the NASA Stennis stand as one of the tallest structures in the state of Mississippi.
- The main derrick crane atop the Thad Cochran (B-1/B-2) Test Stand was extended 50 feet with an increased load rating of 195 tons in order to lift the SLS core stage, which is larger and heavier than the earlier Saturn V stages. The core stage stands **212 FEET TALL** with a diameter of 27.6 feet.
- The simultaneous firing of the SLS core stage's four RS-25 engines generates **1.6 MILLION POUNDS** of thrust at sea-level, increasing to more than **2 MILLION POUNDS** at altitude during a launch.
- More than 32,500 5/32-inch holes in the flame deflector on the B-2 side of the stand direct more than **240,000 GALLONS OF WATER** a minute to cool engine exhaust during a test. For SLS core stage testing, another **92,000 GALLONS OF WATER** per minute was sprayed through 92 nozzles to provide vibro-acoustic suppression protection for the stage.
- More than **100 WATER NOZZLES** were arrayed across the test stand to provide a curtain of water over the length of the core stage and across the facility to prevent damage in the event of a fire or cryogenic spill.
- The average U.S. home uses about 100,000 gallons of water a year. For the SLS core stage hot fire, the Thad Cochran Test Stand flowed that amount **EVERY 18 SECONDS**.
- The test stand is serviced by the NASA Stennis High Pressure Industrial Water Facility. The original water system has been upgraded due to age and in order to increase the water flow needed for core stage testing. The system now is capable of delivering **335,000 GALLONS PER MINUTE** of water to the test stand via 96-inch pipes. The capacity represents an increase of 25,000 gallons per minute from the original system.
- The Thad Cochran (B-1/B-2) Test Stand originally was rated for a maximum thrust load of 11 million pounds. However, the stand flame deflectors currently are limited to 3 million pounds of thrust.