



# Stennis @ 50

50 facts spanning 50 years



NASA's John C. Stennis Space Center marks the 50th anniversary of the establishment of the center on Oct. 25, 2011. Following are 50 facts that offer a glimpse of the historic site, which has powered the nation's space dreams and travels for five decades and counting.

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## Historical facts

- NASA publicly announced plans to open a rocket engine test facility in Hancock County in south Mississippi on Oct. 25, 1961.
- Construction of Stennis facilities necessitated the relocation of 660 families to other areas.
- Tree-cutting for construction of rocket engine test facilities at Stennis Space Center began May 17, 1963.
- At the height of construction of Stennis facilities in the 1960s, some 6,100 employees were onsite with 30 prime and 250 subcontractor companies.

- During the early years of the nation's space program, famed rocket scientist Dr. Wernher von Braun affirmed the importance of Stennis test facilities by stating, "I don't know yet what method we will use to get to the moon, but I do know that we have to go through Mississippi to get there!"
- In 2010, more than half of all Stennis employees (53 percent) held a bachelor's degree or greater.
- The StenniSphere visitor center and museum features informative and interactive exhibits, including a moon rock and other space program artifacts.

- NASA first called its engine test facility Mississippi Test Operations, then National Space Technology Laboratories. On May 20, 1988, President Ronald Reagan signed an executive order naming the site in honor of U.S. Sen. John C. Stennis of Mississippi.



**May 10, 1966 – Operators at what then was known as Mississippi Test Operations conduct their second test firing of an S-II Saturn rocket stage on the B Test Stand.**

- Each year, the StenniSphere visitor center and museum hosts more than 36,000 visitors on tours.
- In 2009, Stennis unveiled an "all hazards network" system (HazNet) that provides comprehensive informa-

tion in emergency and disaster situations. Developed through the facility's Innovative Partnerships Program, the system was adopted for all NASA centers, as well as by several area communities.

## Stennis Space Center

- Stennis features seven-and-a-half miles of canal waterways, which include a lock-and-dam system that allows transport of large rocket stages and cryogenic barges from the Gulf of Mexico to onsite locations via the Pearl River.
- All Stennis facilities are located within a 13,800-acre "fee" area owned by the federal government.
- The Stennis fee area is surrounded by a 125,000-acre noise buffer zone designated a national asset.
- In April 2008, the American Institute of Aeronautics and Astronautics named Stennis a historic aerospace site.
- Stennis has been affected by numerous tropical storms, including three major hurricanes – Hurricane Betsy during construction in 1965, Hurricane Camille in 1969 and Hurricane Katrina in 2005.
- In 2010, the direct global economic impact of Stennis was \$875 million. The direct economic impact within a 50-mile radius of the facility was \$616 million.

## Propulsion testing

- Stennis is America's largest rocket engine test facility.
- Stennis rocket engine test facilities are valued at more than \$2 billion.
- NASA's Rocket Propulsion Test Program Office located at Stennis is responsible for managing test facilities across the agency.
- The three major test stands at Stennis are the single-position, vertical-firing A-1 and A-2 tests stands, and the dual-position, vertical-firing B-1/B-2 Test Stand.
- The versatile three-stand E Test Complex at Stennis includes seven separate cells capable of various test activities.
- Stennis is among the world's largest consumers of liquid hydrogen – one of the main fuels used in rocket propulsion testing.
- On Aug. 8, 1998, all four test positions at Stennis were occupied for the first time in the center's history.

## ***Apollo Program***

- The first- and second-stage Saturn V rocket stages for NASA's Apollo Program were tested at Stennis, including those that propelled humans to the moon on seven lunar missions from 1969 to 1972.
- Stennis engineers conducted the first-ever rocket engine test at the facility on April 23, 1966, a 15-second firing of a Saturn V second stage prototype (S-II-C).
- During the Apollo Program years, Stennis engineers conducted 43 test firings. The accumulated experience of the test team members amounted to 2,475 man-years of rocket engine test expertise.
- The Stennis team tested 27 Saturn V rocket stages in the Apollo years. All that were launched performed their missions without a single failure.

## ***Space Shuttle Program***

- Stennis engineers conducted the first full-duration test of a space shuttle main engine on June 24, 1975.
- All of the main engines used on more than 130 space shuttle flights were tested at Stennis.
- In April 1978, Stennis conducted the first test of the space shuttle main propulsion test article with three main engines configured as they are on a space shuttle orbiter during flight. All three main engines were fired simultaneously on the B-2 Test Stand to prove the space shuttle propulsion system flight-worthy. Many consider the space shuttle's propulsion system testing as Stennis' finest hour.



**July 29, 2009 – Stennis Space Center operators conduct the final planned space shuttle main engine test on engine No. 0525 at the facility's A-2 Test Stand.**

- Every modification and configuration of space shuttle main engines were tested and proven flight-worthy at Stennis before being used on a mission.

- Space shuttle main engines at Stennis were test fired for about eight-and-one-half minutes (520 seconds), the amount of time the engines must fire during an actual flight to enable the shuttle to reach orbit.
- On Aug. 20, 1990, for the first time ever, space shuttle main engines were tested on all three large test stands in a single day.
- The one millionth second of space shuttle main engine test firing was recorded at Stennis on Jan. 24, 2004, during a test conducted on the A-2 Test Stand.
- Stennis conducted the last scheduled test of a space shuttle main engine on July 29, 2009.

## ***Current and future testing***

- In 1998, Stennis partnered with Pratt & Whitney Rocketdyne to test RS-68 engines used for Delta IV rocket launches. It marked the first long-term commitment to allow Stennis rocket engine test facilities to be used for commercial purposes. Pratt & Whitney Rocketdyne continues to test RS-68 engines on the site's B-1/B-2 Test Stand.
- In 2007, Stennis broke ground for construction of

the A-3 Test Stand, the first large test facility to be built onsite since the 1960s.

- When activated in 2013, the new A-3 Test Stand at Stennis will be the only test stand in the country with the combined capabilities to

conduct long-duration tests on full-scale engines at simulated altitudes up to 100,000 feet, and to gimbal, or rotate, the engines during the test as they would operate during flight.

- In 2010, Stennis Space Center partnered with Orbital Sciences Corporation to test Aerojet AJ26 rocket engines that will power commercial cargo flights to the International Space Station.

## Mission support

- The Stennis Applied Science & Technology Project Office manages the NASA's Gulf of Mexico Initiative, created in 2007 to enhance the region's ability to recover from the devastating hurricanes of 2005 and to address coastal management issues. Since 2009, the initiative has provided \$14 million to support 300 scientists conducting 35 research projects in the region.
- The Applied Science & Technology Project Office is conducting 15 research projects in the Gulf of Mexico region. The projects monitor sensitive ecosystems like coastal marshes and barrier islands, or environmental parameters such as water quality.
- In 2010, the Stennis Education Office created its first teaching curricula, focused on teaching differences between mass vs. weight and on Newton's Laws of Motion. It now is electronically available to teachers around the world.
- The NASA Education Office operates an Educator Resource Center that offers materials and training to school teachers throughout the Louisiana-Mississippi region. Some 800 teachers a year attend onsite and offsite workshops sponsored by the center.
- The NASA Shared Services Center opened at Stennis in August 2008. The facility was created by NASA to consolidate procurement, human resources, information technology and finance activities from across the agency in one central location.



**The A-3 Test Stand under construction at Stennis Space Center will allow operators to test next-generation rocket engines at simulated altitudes up to 100,000 feet.**

## Federal city

- Stennis is a federal city, home to about 30 federal, state, academic and private organizations and several technology-based companies. The companies and agencies share the cost of owning and operating the south Mississippi facility, making it more cost-effective for each entity to accomplish its independent mission.

- Since 1998, the U.S. Navy has conducted training for the Special Boat Team TWENTY-TWO special operations riverine force on waterways at Stennis.

- Since 1987, the Mississippi Technology Transfer Center has been located at Stennis, working to help businesses increase productivity, improve existing products and services, develop new products, find needed materials and realize greater competi-

tiveness.

- Stennis is home to the largest concentration of oceanographers in the world.
- Five area colleges operate a center of higher learning at Stennis – Mississippi State University, Pearl River Community College, the University of New Orleans, the University of Southern Mississippi and the University of Mississippi.
- Mississippi State University's Northern Gulf Institute and the University of Southern Mississippi's Department of Marine Science both are located at Stennis.



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