NASA STENNIS
PROPULSION TESTING
Since the 1960s, NASA's Stennis Space Center has grown into the Nation’s Largest Rocket Engine Test Site, featuring facilities collectively valued at more than $2 billion and considered national assets.

NASA Stennis is recognized by the agency as the Center of Excellence for large propulsion system testing.

Test facilities at NASA Stennis include A, B and E complexes, where propulsion tests can be conducted on rocket stages, full-scale engines and engine components.

The A Test Complex at NASA Stennis includes two single-position stands – the Fred Haise and A-2 stands – both built in the 1960s.

The Fred Haise and A-2 stands have been used to conduct full flight-stage and engine component tests, as well as single-engine tests at sea level and simulated altitudes.

The Fred Haise Test Stand is designed for sea-level testing. It is now testing RS-25 rocket engines, which will power the core stage of NASA’s new SLS (Space Launch System).

The A-2 stand at NASA Stennis can test rocket engines at simulated altitudes up to 60,000 feet to provide data on how they will operate as they head to space.

The Test Complex at NASA Stennis also features the A-3 stand, the newest test structure at the NASA site. The stand is designed to allow testing in simulated altitudes up to 100,000 feet.

The B Test Complex at NASA Stennis features a dual-position, vertical-firing stand designated B-1/B-2, built in the 1960s. The B-1 side is designed for single-engine testing. The B-2 side is built to accommodate rocket stage testing.

First stages of the Saturn V rocket were fired at the B-2 side from 1967 to 1970. The stages helped power Apollo Program lunar missions, including the Apollo 11 flight that carried the first humans to the surface of the Moon.

The core stage of NASA’s SLS (Space Launch System) rocket that will send the first woman and the first person of color on Artemis missions to the Moon and power eventual missions to Mars was tested on the B-2 Test Stand during 2020-21. Testing of the stage’s integrated systems culminated with the simultaneous firing of the its four RS-25 engines to produce 1.6 million pounds of combined thrust, just as during an actual launch.

The E Test Complex at NASA Stennis was constructed in the late 1980s and early 1990s. The three-stand complex includes seven separate test cells capable of supplying ultra high-pressure gases and cryogenic fluids, using a variety of rocket propellants.

The E Test Complex offers particularly versatile options for testing engines and engine components, including those for commercial companies, including Blue Origin, Firehawk, Launcher, Relativity Space, Stratolaunch, Ursa Major, and Vast.

NASA Stennis test stands are linked by a seven-and-one-half-mile canal system used for transporting rocket stages and liquid propellants.

Support facilities for NASA Stennis test stands a test control center for each complex; data acquisition facilities; a large high-pressure gas facility to supply pressurized nitrogen, helium, hydrogen and air; an electrical generation facility to help power the test complex in the event of disruptions in the power grid; and a high-pressure industrial water facility that features large diesel pumps and a 66-million gallon reservoir.