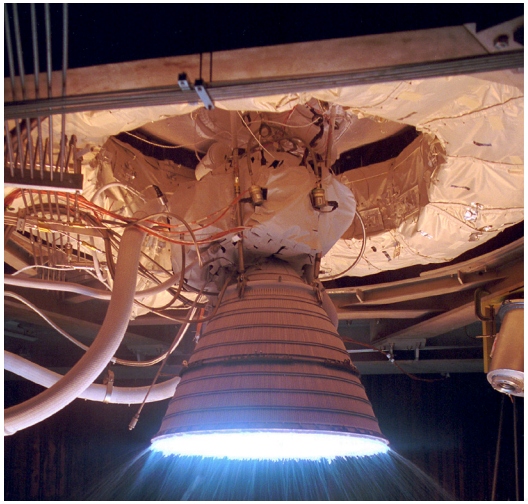
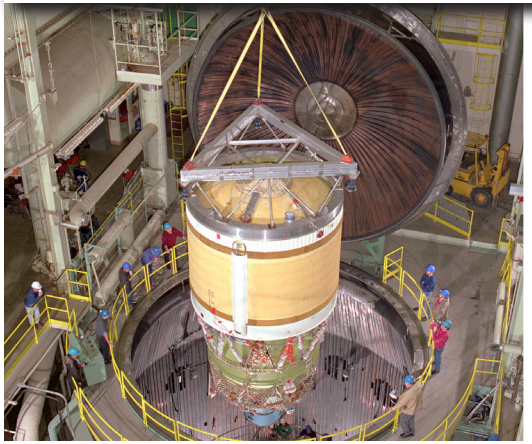
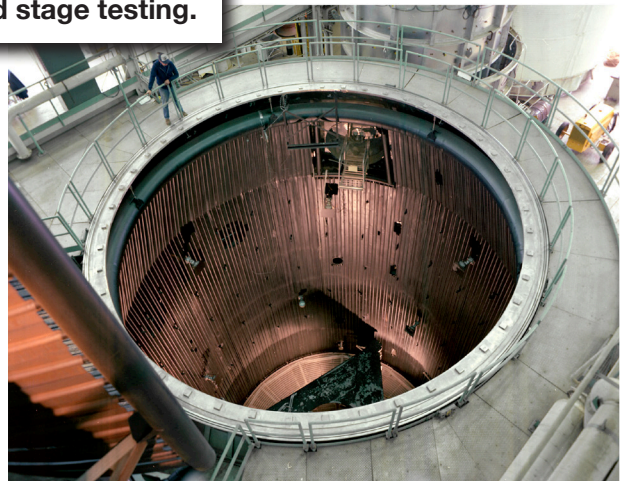
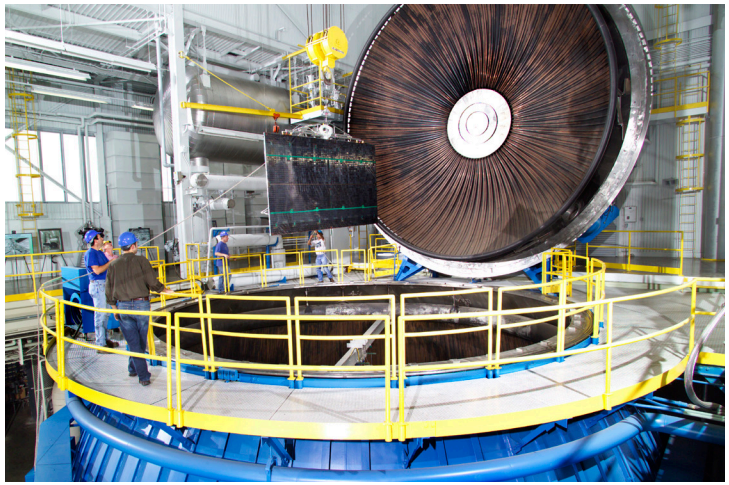


The largest hydrogen-compatible thermal vacuum test facility in the United States.

The world's largest space simulations facility capable of full-scale rocket engine and stage testing.







NASA Plum Brook Station Spacecraft Propulsion Research Facility (B–2)

B–2 Facility Capability Summary

Hydrogen/Oxygen Rocket

Test Capability With Vacuum Start

- 30K lbf thrust engine for 400 sec test duration
- 100K lbf thrust engine for 270 sec test duration
- 300K lbf thrust engine for 15 sec test duration

Space Simulation

B–2's test chamber is capable of reproducing space environment temperatures and vacuum.

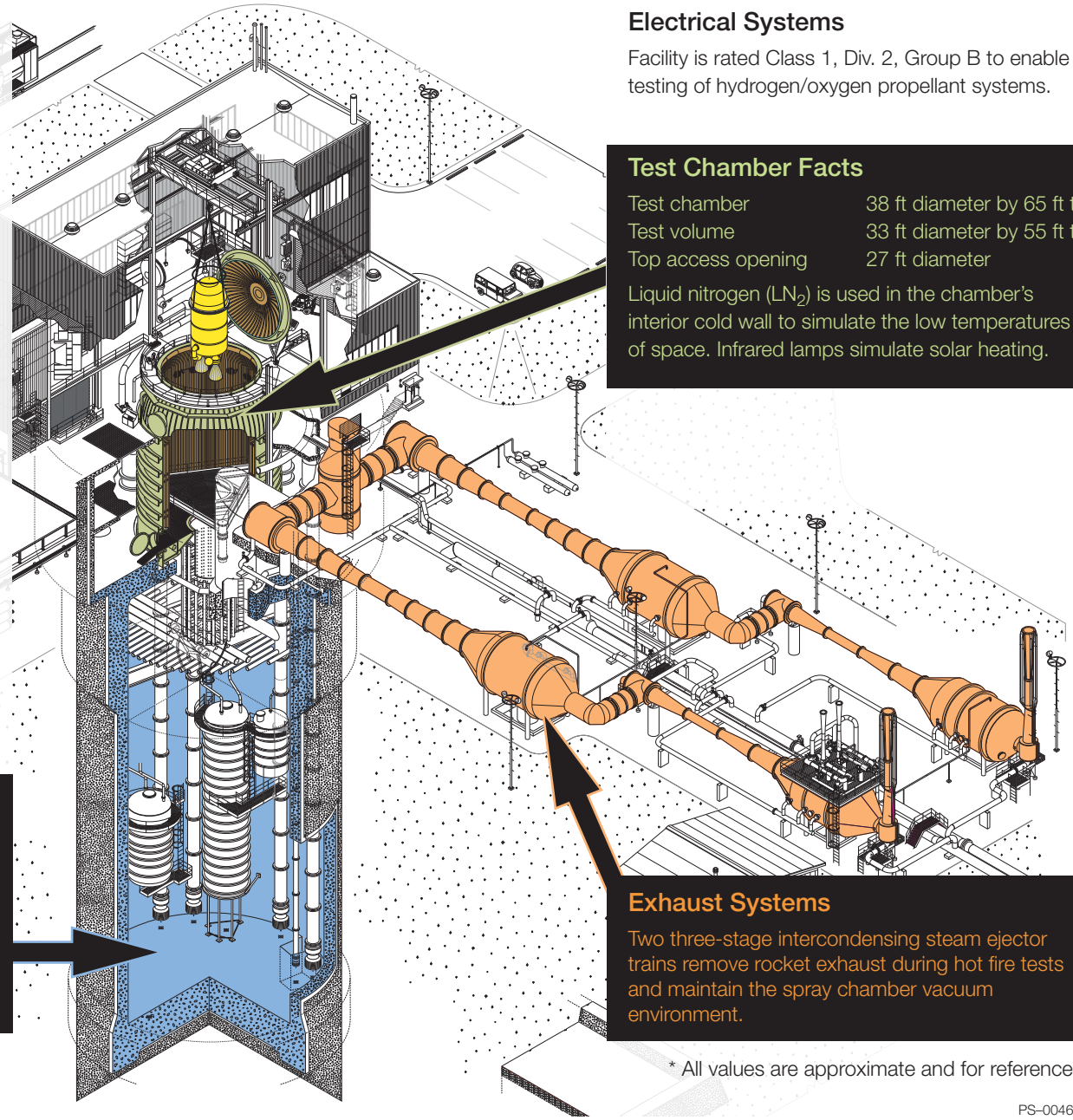
Vacuum pressure	5×10^{-7} torr
LN_2 chamber temperature	–320 °F
Infrared radiation intensity	130 W/ft^2

Control and Data Systems

- Test operations are controlled by a fully redundant computerized control system via a remote control room located 2400 ft from the test site.
- A state-of-the-art data acquisition system records all parameters associated with the test. Features include 600 channels at direct current to 1 kHz per channel and a high-speed system capability up to 115 kHz per channel.

Spray Chamber

- 67 ft diameter by 120 ft deep underground chamber holds 1.7 million gallons of chilled water.
- Four 2000-hp water pumps recirculate 224,000 gal of chilled water per minute to condense engine exhaust.
- Three propellant dump tanks are available for enhanced safety.



Electrical Systems

Facility is rated Class 1, Div. 2, Group B to enable testing of hydrogen/oxygen propellant systems.

Test Chamber Facts

Test chamber	38 ft diameter by 65 ft tall
Test volume	33 ft diameter by 55 ft tall
Top access opening	27 ft diameter

Liquid nitrogen (LN_2) is used in the chamber's interior cold wall to simulate the low temperatures of space. Infrared lamps simulate solar heating.

Exhaust Systems

Two three-stage intercondensing steam ejector trains remove rocket exhaust during hot fire tests and maintain the spray chamber vacuum environment.

* All values are approximate and for reference only.

PS–00466–0511

NASA Plum Brook Station Sandusky Ohio

LG–2011–03–022–GRC