



Program Responsibilities

- Manage NASA's rocket propulsion test assets, activities, and resources
- Maintain management oversight of propulsion test services
- Identify and integrate agency propulsion test requirements
- Represent NASA in collaboration with other U.S. government agencies
- Advance test technologies to improve efficiencies

The RPTMB is the principal implementing body of the Rocket Propulsion Test Program. The RPT Program Manager serves as the Chairman of the Board. The Board serves as the NASA decision making body for rocket propulsion testing and reviews, approves, and provides direction on the following:

- Rocket propulsion test assignments
- Capital investment recommendations for rocket propulsion test facilities and equipment
- Facility modifications or refurbishments affecting the Agency's rocket propulsion test capability
- Annual budget requirements establishment and approval
- Official documentation pertaining to multi-site test activities
- Key decisions relating to NASA chemical rocket propulsion testing

The **National Rocket Propulsion Test Group (NRPTG)** was formed in 1998 by an agreement between the National Aeronautics and Space Administration (NASA) and the Department of Defense (DoD). As of June 2021, the NRPTG functions as a standing group in the Range Commanders Council (RCC) and continues to shape the government's rocket propulsion test capability to efficiently meet national test needs through intra- and inter-agency cooperation. NRPTG remains committed to exchanging technical and operational information as well as to improving effectiveness, responsiveness, and efficiencies in major rocket propulsion test technologies, capabilities and facilities, providing a wide range of test capabilities.

Commercial Sector Interaction

The RPT Program Office supports NASA's strategic goal to encourage the pursuit of appropriate partnerships with the emerging commercial space sector. The RPT Program employs a collaborative approach to ensure RPT activities are conducted in a manner that minimizes cost, ensures safety, provides credible schedules, achieves all technical objectives, and leverages lessons learned. RPT reduces cost through the safe and efficient utilization of RPT facilities in support of NASA programs, commercial partners, and the Department of Defense (DoD).

The RPTMB is to serve as a key to providing responsive test services for ongoing operational and developmental NASA and commercial programs and to optimize the use of chemical rocket propulsion test facilities. Potential customers can utilize the RPTMB to receive cost estimates and proposals for rocket propulsion test-related activities.

www.nasa.gov
<https://www.nasa.gov/directorates/heo/rpt/index.html>

EXPLORE

Rocket Testing Rocket Propulsion Test Program

NASA Capability Portfolio Management

The Rocket Propulsion Test (RPT) Program is a capability portfolio management program as outlined in NASA Policy Directive 8600. The RPT Program provides chemical rocket propulsion test services and is located within the Space Operations Mission Directorate (SOMD).

All activities affecting rocket propulsion testing will be processed through the Rocket Propulsion Test Management Board (RPTMB) for review, validation and approval. These activities include, but are not limited to:

- **Rocket propulsion test assignments**
- **Capital-asset improvements for test facility maintenance, modernizations and refurbishments**
- **Integration for multi-site test activities**
- **Identification and protection of core rocket testing capabilities**
- **Advancement and development of test technologies**

Program Overview

- Establish and provide integration for NASA and its customers to obtain safe, efficient and cost-effective chemical rocket propulsion test services
- Fund and maintain a core capability of skilled test and engineering crews and test stand facilities
- Consolidate and streamline NASA's chemical rocket test infrastructure
- Establish and maintain world-class test facilities
- Collaborate with other government agencies and the commercial sector to maximize the utilization of the Nation's propulsion assets

NASA's Rocket Propulsion Test Program

The **Rocket Propulsion Test (RPT) Program Office**, a HQ Level II office, provides the program management structure necessary to optimize utilization of NASA's chemical rocket propulsion test assets while ensuring an Agency core capability for chemical rocket propulsion testing is maintained. The Program Office resides at the John C. Stennis Space Center.

The RPT Program Goals:

- Establish and maintain a level of excellence in propulsion testing necessary to meet NASA's current and projected needs
- Accomplish efficient and effective usage of NASA's rocket propulsion test infrastructure and other resources to optimize customer service and to meet national test requirements
- Maximize the return on investments through facility modernization, technology development, and sound maintenance strategies
- Control program risk to acceptable levels
- Maintain current mutually beneficial testing relationships in support of NASA programs, commercial partners, the Department of Defense, academia and international partners as well as develop new alliances as opportunities arise
- Strategically maintain a core capability of personnel and facilities to meet agency goals and objectives

ROCKET PROPULSION TEST CENTERS

John C. Stennis Space Center (SSC)

SSC tests and flight-certifies engines and engine systems of various sizes from less than 1k lbf to 7,000k lbf. SSC has the capability to provide test operations services for the development of propulsion systems, engines, subsystems, components, and subscale testing. SSC also provides component cleaning and laboratory services such as calibration through the on-site Lab Services contract.

Current Inventory: 8 Facilities, 12 Positions
 Max Thrust Levels: 1klbf to 7,000klbf (4.4 kN – 31,000 kN)
 Altitude: Ambient to 65 kft (19.8 km)
 Propellants: LOX, LH₂, RP, H₂O₂, CH₄

John H. Glenn Research Center at Lewis Field (GRC-LF) and Armstrong Test Facility (GRC-ATF)

GRC-LF provides test support for propulsion system and component research, advanced propulsion concepts, as well as auxiliary propulsion research and technology demonstration.

GRC-ATF, a field station of GRC-LF, primarily conducts space simulation thermal vacuum testing of integrated vehicles and hardware including hot-fire testing of propulsion systems at simulated altitude conditions.

Current Inventory: (GRC-LF): 2 Facilities
 Max Thrust Levels: 2 klbf (8.9kN)
 Altitude: Ambient to 100 kft (30 km)
 Propellants: LOX, LCH₂, GOX, GH₂, Green Propellants
 (GRC-ATF): 1 Facility
 Max Thrust Levels: 400 klbf (1,800 kN)
 Altitude: Ambient to 100 kft (30 km), Hot-Fire Testing Up to 900Kft (274 km), Space Environment Simulation (Thermal Vacuum)
 Propellants: LOX, LH₂, RP, CH₄

NASA Engineering and Safety Center (NESC)

NESC is represented on the RPTMB as a non-voting member and serves as the interface to a broad range of technical expertise across the agency and private enterprise to assist with resolution of complex technical issues.

To Contact the RPT Program Office: rpt@nasa.gov

George C. Marshall Space Flight Center (MSFC)

MSFC primarily conducts engineering research, development, modification and maintenance of space transportation and associated propulsion systems. MSFC offers an array of test services and facilities for propulsion system, component, and subsystem tests to support development efforts through customized test programs.

Michoud Assembly Facility Component Processing Facility repairs, cleans, and tests components (e.g., valves, piping, tubing) used in gas, water, propellant, hydraulic, and oxidizer systems. Pressure test capability of 15,000 psig pneumatic and 45,000 psig hydrostatic.

Current Inventory: 4 Facilities, 10 Positions
 Max Thrust Levels: 2 klbf to 900 klbf (8.9 kN to 4,000 kN)
 Altitude: Ambient
 Propellants: LOX, LH₂, RP, CH₄, Ethanol, Solids, H₂O₂, Hybrid

White Sands Test Facility (WSTF) Test Facility for the Lyndon B. Johnson Space Center

WSTF primarily tests rocket propulsion systems and performs development and certification testing of space propulsion systems at both ambient and simulated altitude conditions for crewed and uncrewed spacecraft. WSTF specializes in remote hazardous testing and also provides laboratory research and evaluation of materials, components, and systems.

Current Inventory: 8 Facilities
 Max Thrust Levels: 0 klbf to 25 klbf (111kN) at Simulated Altitude 0 to 180 klbf (800 kN) at Ambient
 Altitude: Ambient to 120 kft (36.6 km)
 Propellants: LOX, LH₂, N₂O₄, RP, CH₄, Ethanol, Hydrazines

Wallops Flight Facility (WFF)

Managed by Goddard Space Flight Center

WFF, as an associate member of the RPTMB, operates primarily as a rocket launch site to support science and exploration missions for NASA, other Federal agencies and commercial companies. As NASA's only Space Launch Range, they also provide mobile telemetry, tracking, and Range safety services.

John F. Kennedy Space Center (KSC)

KSC, as an associate member of the RPTMB, provides propulsion related technology development, testing and evaluation and also provides aerospace fluid acquisition and management support to all NASA locations.

To visit the RPT Web site: <https://www.nasa.gov/tes/heo/rpt/index.html>