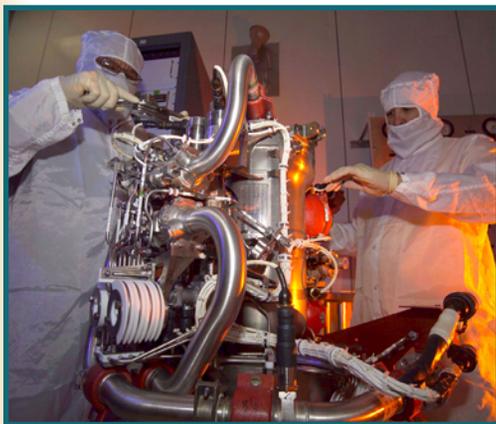


### Portable deionized water & pump circulation system

- Mobile stainless steel 200-gal water tank with transfer & circulation pump for test article or hardware decontamination and cleaning
  - Pump output is ~25-30 gallons per minute at 230 psig
  - Water can be temperature conditioned/heated up to ~120° F
  - Recent use – Decontamination & cleaning Orbital Maneuvering Subsystem Engine Assembly (used in conjunction with portable process water catch/pump transfer system)

### Portable process water catch/pump transfer system

- Mobile stainless steel ~43 gallon catch tank and pump transfer system for test article or hardware decontamination and cleaning
  - Catch tank has 16 ½-in. diameter open flanged top, which will allow for an interface flange to be fabricated that will match/mount hardware requiring decontamination and/or cleaning
  - Built-in water level detectors automatically cycle process water transfer pump “on” at appropriate level (~30 gallons), and “off” at level that would not allow adequate pump head pressure. Process water is then pumped at ~15 gal per min to appropriate propellant process water capture area
  - Additional water level detector will also set off audible alarm if maximum tank water level is exceeded
  - Recent use – Decontamination & cleaning Orbital Maneuvering Subsystem Engine Assembly (used in conjunction with portable deionized water pump circulation system)



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Flight and Special Test Equipment



NASA  
White Sands Test Facility

## Facility Overview

### Flight and Special Test Equipment

employs a team of skilled engineers and technicians with almost 500 years of combined technical expertise in the processing, development and qualification of flight hardware. Program-qualified personnel have hands-on experience in processing ranging from Space Shuttle and International Space Station, to other commercial vendor hardware. The facilities used to conduct the processing are described as follows.

### 2050 ft<sup>2</sup> Bonded Storage Facility

Procedures & systems for the controlled storage of critical hardware

### North High Bay (NHB) Room 151 Class 100 Clean Room

- 20-ft W x 24-ft L x 8-ft H
- Humidity controlled
- 2000 psig GN<sub>2</sub> & 2400 psig GHe pressure supplies
  - GN<sub>2</sub> & GHe test panel with various pressure ranges up to 3200 psig available (using in-room pressure intensifier). Test system overall maximum allowable working pressure rated at 3300 psig
- 3000 psig oxygen system
- Electrostatic discharge certified work area with soldering station & fume extraction system
- Laboratory vacuum system capable of 1x10<sup>-3</sup> torr
- State of the art data acquisition & recording system
- Recent use – Overhaul, repair, assembly, & acceptance testing of the International Space Station (ISS) Oxygen Recharge Compressor Assembly. Used to transfer oxygen from the Space Shuttle (550 to 1050 psi inlet pressure) to ISS high pressure tanks & intensify up to 2800 psi, this hardware was designed & fabricated at WSTF. Clean room processing required that Level 50A oxygen parts internal cleanliness level be maintained.

### Building 200 Room 201 Class 100 Clean Room

- 13-ft W x 20-ft L x 8-ft H
- Humidity controlled
- 2000 psig GN<sub>2</sub> pressure supply available
- Recent use – Overhaul, repair, & assembly of the Space Shuttle Orbital Maneuvering Subsystem/ Reaction Control System (OMS/RCS) Primary Reaction Control System thruster Pilot Operate Valve; and Vernier Reaction Control System thruster Direct Acting Valve.

### NHB Room 152 Class 10,000 Clean Room

- 19-ft W x 31-ft L x 8-ft H
- 2000 psig GN<sub>2</sub> & 2400 psig GHe pressure supplies
  - GN<sub>2</sub> & GHe test panel with various pressure ranges
- Deionized water flush/test system with 400 psig working pressure
- HFE-7100 flow bench and ultrasonic flush bench with 50 to 320 psig working pressure range
- Data acquisition & recording systems
- Recent use – Overhaul, repair, assembly and acceptance testing of the Space Shuttle OMS/RCS Alternating Current Motor Valve, Manual Valve, and Pressure Relief Valve, & ISS Respiratory Support Pack

### NHB Room 163A Class 10,000 Clean Room

- 20-ft W x 20-ft L x 15-ft H
- Humidity controlled
- 2000 psig GN<sub>2</sub> & 2,400 psig GHe pressure supplies
  - GN<sub>2</sub> & GHe test panels with various pressure ranges up to 6700 psig available (using in-room pressure intensifier)
- 4.5-ft W x 4.5-ft L x 7-ft H proof test enclosure with ½-in. thick steel walls. High pressure GN<sub>2</sub> & GHe ports to the enclosure
- Compression and tensile test/measurement device
- Data acquisition & recording system
- Recent use – Overhaul, repair, assembly, & acceptance testing of the Space Shuttle 6000 lb<sub>f</sub> OMS Engine and subassemblies (engine bi-propellant Series Valve & Pneumatic Pack actuation/purge system)

### NHB Room 152B Class 10,000 Clean Room

- 12-ft W x 17-ft L x 8-ft H
- 2000 psig GN<sub>2</sub> & 2400 psig GHe pressure supplies
  - GN<sub>2</sub> & GHe test panels with various pressure ranges
- Data acquisition & recording system
- Recent use – Overhaul, repair, assembly, & acceptance testing of the Space Shuttle OMS/RCS Quad Check Valve

### NHB Rooms 163 & 164 Class 10,000 Clean Rooms

Three soft-wall clean rooms accessed by a joint gowning/anteroom area.

- 9-ft W x 11-ft L x 8-ft H clean room.
  - Open work space
  - Fume extractor system for fuel & oxidizer propellant contaminated hardware
  - Heated GN<sub>2</sub> supply (up to ~130 °F) system for purging/drying operations. System pressures range from 150 to 360 psig
  - Recent use – Decontamination, cleaning, & drying of OMS Engine Assembly using temperature conditioned deionized water and heated GN<sub>2</sub>. Disassembly of Orbital Maneuvering Subsystem Engine & Series Valve Assembly
- Two 10-ft W x 13-ft L x 8-ft H clean rooms
  - Each room has a deionized water flush bench with associated GN<sub>2</sub> and GHe supplies ranging from 17 to 550 psig in pressure
  - Each flush bench is supplied by a deionized water module system with supply tanks ranging from 75 to 250 gallons
  - Recent use – Cleaning/flushing and testing of OMS Primary Reaction Control System & Vernier Reaction Control System thrusters and propellant valves
  - Data acquisition & recording systems

