OXYGEN COMPRESSOR EVALUATION, REPAIR, AND REFURBISHMENT

SUMMARY

White Sands Test Facility (WSTF) has the capability to evaluate, repair, and refurbish oxygen compressors/intensifiers.

EXPERIENCE

WSTF routinely repairs and refurbishes intensifiers/compressors for use in oxygen systems. These pumps are designed to operate in 100 percent oxygen service at pressures up to 10,000 psi (68.9 MPa).

WSTF performs modifications to GSE oxygen pumps used by NASA to pressurize the secondary oxygen packs. These modifications include:

- Standard single diaphragm removal, replacing with a triple diaphragm stack
- Hydraulic fluid change to a media more compatible with oxygen
- Relief valve modifications
- Other changes to facilitate correct use of the hardware

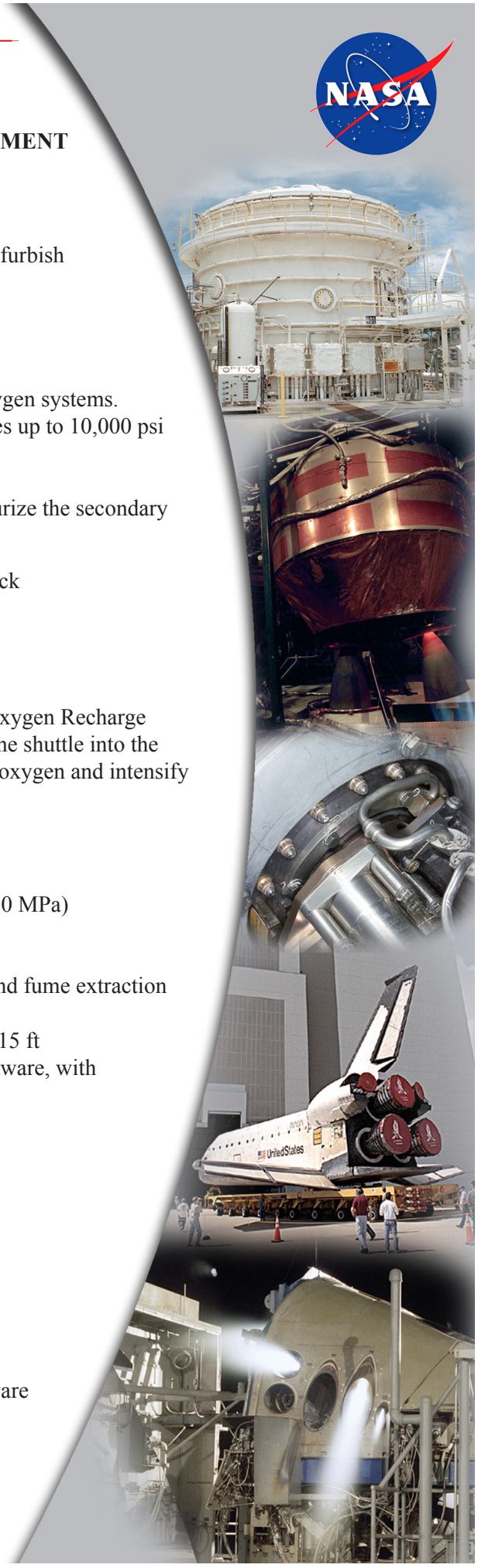
WSTF is the certified depot facility for the International Space Station (ISS) Oxygen Recharge Compressor Assembly (ORCA) which is used to pump residual oxygen from the shuttle into the ISS high-pressure tanks. ORCA was designed to transfer 550 to 1050 psi inlet oxygen and intensify it up to 2800 psi in the ISS tanks.

EQUIPMENT

- Compressor/intensifier work stations capable of testing to 30,000 psig (210 MPa)
- Class 100 laminar flow benches
- Class 100 clean room, 625 ft2
- Class 100 clean room (ESD rated), 24 × 20 × 8 ft with soldering station and fume extraction system
- Class 10,000 clean rooms ranging in sizes from 10 × 8 × 8 ft to 20 × 20 ×15 ft
- Precision cleaning capability to level 50A, capable of handling flight hardware, with pickling and passivation capabilities

FACILITIES

- Gas system supply
- Oxygen up to 10,000 psig
- Nitrogen up to 3000 psig (test system MDP is 30,000 psi)
- Helium up to 3000 psig
- Deionized Water
- 5000-gal tanker rated for 30 psig
- Vacuum capability to 1 × 10-3 torr range
- Bonded storage and logistics areas for controlled storage of critical hardware



MISCELLANEOUS SUPPORT SERVICES

- Chemistry laboratory
- Metallurgical laboratory
- Environmental chamber laboratory
- Large Thermal Vacuum Conditioning Chambers
- Machine shop with wire EDM, 3-asix digital and CNC mills, and manual and CNC lathes
- Calibration laboratory traceable to National Institute of Standards and Technology
- Nondestructive testing, inspection, and analysis including: radiological, dye penetrant, ultrasonic, Acoustic Emissions, Neutron Activation, Holographic interferometer, Infrared Thermographic, Eddy current, microwave image scanners, and visual inspection with 0.020 to 0.340 inch outside diameter boroscopes
- Video and photographic laboratory
- Product quality assurance with Starrett® comparitor and Ziess® CMM
- On-site NASA quality inspectors

CONTACT

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