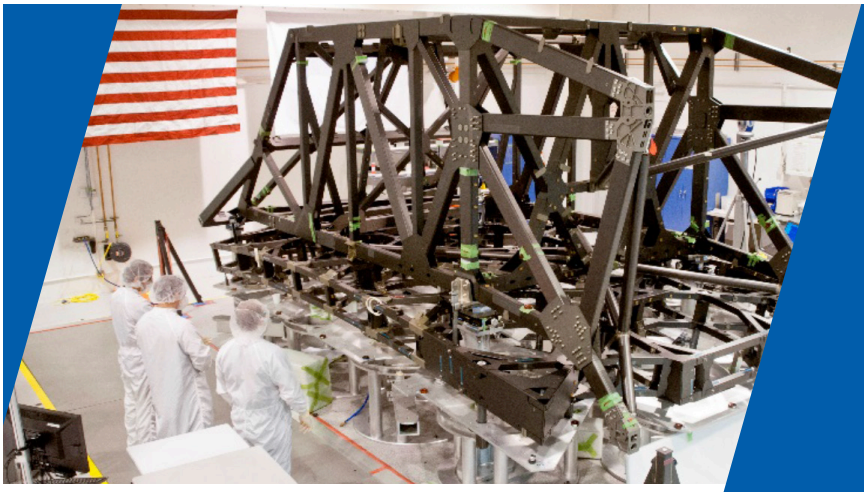


THE VALUE OF PERFORMANCE.

NORTHROP GRUMMAN

Telescopes & Precision Instrument Structures

Northrop Grumman Structures has had responsibility for the design, analysis and fabrication of many of the precision optical structures found on such ground-breaking space-based instruments as the Hubble Space Telescope, Chandra X-ray Telescope, Mars Reconnaissance Orbiter, the Deep Impact Comet Probe, Space Based Surveillance System, and the Landsat Optical Bench among others.

Northrop Grumman's tradition of excellence in precision structures is continuing with major contributions to the James Webb Space Telescope, NASA's next generation instrument to explore the origins of the universe, as well as supporting programs for commercial imaging, DOD and National Space.

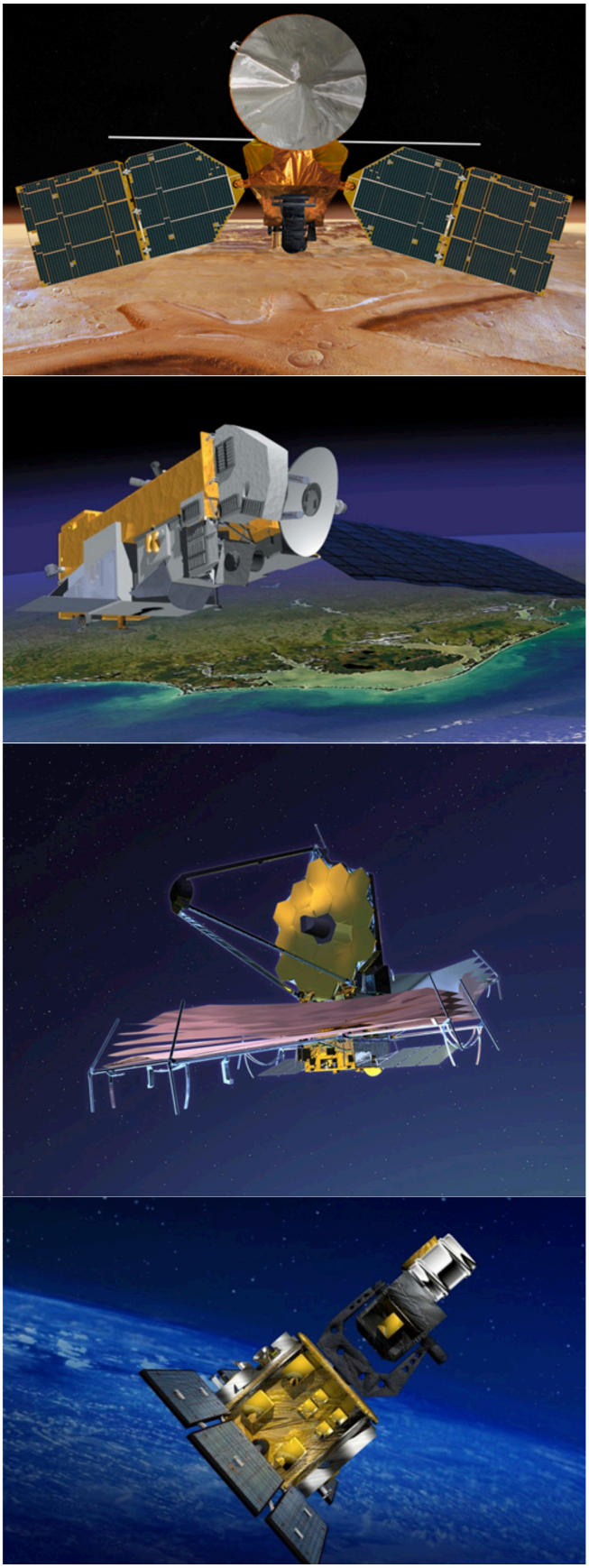
Facts At A Glance

- Design to Specification
- Precision Thermal/Moisture Distortion Analysis and Test Including Parts Per Billion Validation
- Zero Thermal Expansion Materials and Structures
- Near Zero Moisture Distortion Designs
- High Performance Coatings for Thermal, Optical and CTE Tuning
- Passive Damping Design and Testing
- Classified Engineering Capabilities
- Complete Engineering Manufacturing and Test (Static, Dynamic, Thermal Distortion)
- Over 500 Structures Delivered

Northrop Grumman's composite optical-support structures perform with uncompromising precision in temperature environments from room temperature to cryogenic temperatures, providing spacecraft telescopes and imaging systems the stability required for unprecedented imaging, remote sensing, and astronomical observations.

Northrop Grumman's capabilities include design, manufacturing, and testing of the various precision optical structures. We provide a variety of products and services including: composite telescope and metering structures, composite mirrors and radiometers, distortion testing, and optical benches. Northrop Grumman's expertise and commitment has played a leading role in the technological advancement of precision optics structures and related hardware for key commercial and government programs.

These precision optical structures are critical components on the Hubble Space Telescope, Chandra X-ray Observatory, James Webb Space Telescope, Mars Exploration Rovers, and Space Tracking and Surveillance System, part of America's missile-defense architecture. They also housed the imaging equipment aboard NASA's Deep Impact mission, which captured data from the spacecraft as it collided with the comet Tempel 1 and transmitted back to earth for study in real time.



More Information

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