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JAMES WEBB SPACE TELESCOPE AT A GLANCE

Science Goals

The James Webb Space Telescope will examine light from the first stars that formed after the Big Bang, the formation of solar systems capable of supporting life on planets like Earth and the evolution of our own solar system. Webb will be the premier space observatory for astronomers worldwide, extending the tantalizing discoveries of the Hubble Space Telescope, the Spitzer Space Telescope, and the largest ground-based telescopes.

JWST Partners

NASA
European Space Agency (ESA)
Canadian Space Agency
International Science Community

Telescope design and development

Northrop Grumman Aerospace Systems

Optical Telescope Element Teammates

- Ball Aerospace, Boulder, Colo.: provides the telescope's optical design and mirrors, and the wavefront sensing and control design and algorithms
- ITT, Rochester, NY: integrates and tests the optical telescope
- Alliant Techsystems (ATK), Magna, Utah: provides the telescope's composite structures

Science Operations

Space Telescope Science Institute (STScI)

Science Instruments & Providers

- Integrated Science Instrument Module (ISIM)
NASA/Goddard Space Flight Center
- Near-Infrared Camera
University of Arizona
- Near-Infrared Spectrograph
European Space Agency
- Mid-Infrared Camera

NASA/ESA

-Fine Guidance Sensor
Canadian Space Agency

Procuring Customer

NASA Goddard Space Flight Center

Orbit

L2 Lagrange point

Current Component Status

- All the flight mirrors for the telescope have been finished. The last primary mirror segment was polished by L-3 Tinsley in June, 2011. The second set of six flight mirrors will complete cryotest at Marshall Space Flight Center in September 2011. The third and last set of six flight mirrors will finish their cryotest by the end of the year.
- The sunshield enters a new test phase September 2011, when shape-testing on full-size test membranes in a fully simulated flight configuration will begin by teammate NeXolve. Test engineers will use a high precision laser radar tool to measure each layer every few inches at room temperature and pressure, creating a 3-D map or picture of the surface. The map will be compared to computer models to see if the material behaved as the model predicted.
- The flight sunshield alignment table has been completed and hole-punching will begin on all five test membranes in early 2012, interspersed with fit checks on a full-size telescope mock-up. Flight sunshield alignment is expected to begin in mid-2013.
- Bonding on the center section of the flight backplane, which supports the primary mirror segments, is 60 percent complete. The pathfinder backplane, a practice model, has been completed by ATK and delivered to Northrop Grumman in April, 2011.

Launch Vehicle

One of the European Space Agency's contributions to the Webb program is an Ariane 5 launch vehicle.

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