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## **Report:** **Webb telescope schedule faces risks**

**Work on the James Webb** Space Telescope is on schedule and on budget, NASA reports, but the Government Accountability Office said there is little margin for error in the program as it nears its scheduled 2018 launch.

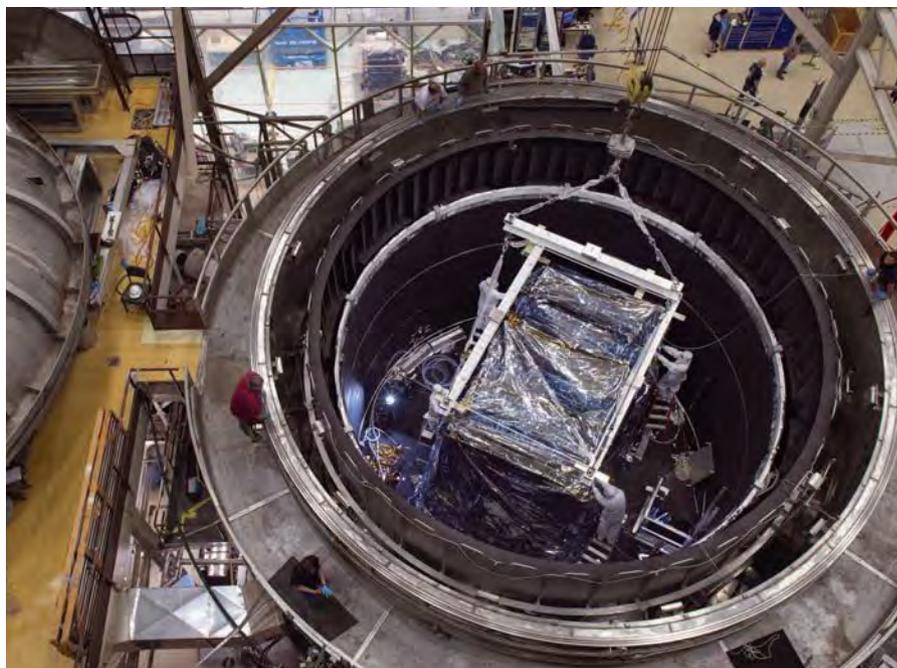
In 2014, delays caused reductions in the schedule reserves for elements and major subsystems of the telescope, GAO said in a December report. A schedule reserve is the extra time built in to a schedule to allow for unanticipated technical problems.

A “critical path” for a program is determined by the element or subsystem with the least amount of schedule reserve, GAO said. For the Webb project, the current critical path is 11 months, down from 14 months in 2013.

“Any delay to an activity that is on the critical path will reduce schedule reserve for the whole project, and could ultimately impact the overall project schedule,” GAO said.

Although an 11-month reserve exceeds the standards of NASA’s Goddard Space Flight Center, which is managing the program, GAO said maintaining an adequate time reserve is important because the telescope is “one of NASA’s most complex and expensive projects, at an anticipated cost of \$8.8 billion.”

In 2011 Goddard factored in additional schedule reserve for the Webb program and has no plans to adjust it, NASA spokeswoman Felicia Chou said in an email. For most projects three years from launch, the recommended reserve is seven months, she said. Because the Webb project requires lengthy cryogenic tests, “in 2011 we re-baselined the project to carry additional schedule margin,” she said. “That plan would have us carrying about 9.5 months of margin at this stage in development. Currently, we are carrying 11 months of funded schedule margin and thus, have even more than the 2011 re-baseline plan.”



The James Webb Space Telescope’s science instrument module undergoes cryogenic vacuum testing at NASA’s Goddard Space Flight Center in Maryland in 2014.

NASA

Named for a former NASA administrator who oversaw the Apollo moon program, Webb is intended to search for Earth-like planets and increase knowledge of how the universe was formed. Equipped with a 6.5-meter-diameter primary mirror and orbiting 1 million miles from Earth, it is designed to be 100 times more sensitive than the Hubble Space Telescope, which has occupied low-Earth orbit since 1990.

2015 highlights for the project, NASA said, include beginning assembly of the optical telescope element, which will serve as the observatory’s eyes, and conducting vibration tests of the four-instrument science module, which will detect light from distant galaxies. The telescope assembly and vibration tests take place at NASA’s Goddard Space Flight Center in Maryland.

The telescope will comprise 18 hexagonal mirrors made of beryllium metal coated with gold to capture faint

infrared light. Goddard has been preparing for the assembly process with a prototype telescope.

The vibration tests of the science instrument module will simulate the rigors of launch. The module has already undergone cryogenic vacuum tests to ensure it can withstand the frigid temperatures of deep space.

Other major activities for Webb this year include continued construction of the spacecraft bus and the tennis-court-sized sunshield at prime contractor Northrop Grumman’s facilities in California, and tweaking equipment that will be used to test the mated telescope and science instrument module at NASA’s Johnson Space Center in Houston.

Webb is scheduled to lift off in October 2018 aboard an Ariane 5 rocket from the European Spaceport in French Guiana.

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