First full set of Webb telescope flight mirrors begin final tests

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The first six of 18 flight mirror segments for the next-generation premier space observatory, NASA's James Webb Space Telescope, are ready to begin final cryogenic tests in the X-ray and Cryogenic Facility at Marshall Space Flight Center in Huntsville, Ala., to verify they meet mirror test program requirements. The flight mirrors about to undergo cryogenic tests are the first full set to have fully completed the mirror manufacturing process.

The mirrors are mounted to a test fixture and will undergo round-the-clock testing that will begin on April 15 and continue for eight weeks. During cryogenic testing, the mirrors are subjected to extreme temperatures dipping to -415 degrees Fahrenheit (-248C) in the 7,600 cubic-foot helium (~215 cubic meter) -cooled vacuum chamber, which permits engineers from Ball Aerospace and Technologies Corp., in Boulder, Colo., to measure in extreme detail how the shape of the mirror changes as it cools -- just as each mirror will change shape over a range of operational temperatures in space. The cryogenic test series helps NASA predict how well the telescope will image infrared sources in those conditions.

Each mirror segment measures approximately 1.5 meters (4.9 ft.) in diameter to form the 6.5-meter diameter (21.3 ft.) hexagonal Webb telescope.

The James Webb Space Telescope is exploring deep space phenomena from distant galaxies to nearby planets and stars. The Webb Telescope

will give scientists clues about the formation of the universe and the evolution of our own solar system, from the first light after the Big Bang to the formation of star systems capable of supporting life on planets like Earth.

Provided by JPL/NASA