



Northrop Grumman Demonstrates Starshade's Ability to Identify Celestial Objects with Successful Tests at McMath-Pierce Solar Telescope in Arizona

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REDONDO BEACH, Calif., Sept. 1, 2015 /PRNewswire/ -- Northrop Grumman (NYSE: NOC) engineers and astronomers demonstrated the ability of a petal-shaped starshade to clearly see celestial objects during two, weeklong series of engineering tests on Kitt Peak at the McMath-Pierce Solar Telescope. This was the first time a starshade was tested against actual astronomical objects.



Photos accompanying this release are available at: <http://media.globenewswire.com/noc/mediagallery.html?pkgid=35751>

The team experimented with three different starshade designs, a circular shape and two petal-shaped designs. The petal-shaped designs demonstrated superior performance, allowing the team to clearly view objects surrounding Jupiter, Saturn, Venus, and the stars Sirius and Vega.

"The physics of the circular shape have been known for years," said Steve Warwick, systems engineer, test lead, Northrop Grumman Aerospace Systems. "We were amazed at just how effectively the petal-shaped starshade design canceled the light coming from very bright planets and bright stars. These tests added considerably to our engineering knowledge and opened the possibility that the McMath starshade demonstration can collect scientifically important data that might not be attainable any other way."

The starshade is a free-flying occulter intended to fly thousands of kilometers in front of a space telescope and block out the light of a nearby star, enabling astronomers to directly see planets surrounding the stars. The technology is specifically intended to detect Earth-like planets.

The 2.1 meter heliostat mirror at McMath-Pierce is conducive for starshade research as it provides distance between the starshade and the imaging telescope while tracking stars and planets to the accuracies required for long exposure times. McMath-Pierce is operated by the Association of Universities for Research in Astronomy, Inc., under a cooperative agreement with the National Science Foundation.

"Starshade is one of the many innovative and exciting projects we are developing to advance human discoveries in space," said Gabe Watson, vice president, sensing systems Northrop Grumman Aerospace Systems. "The opportunity associated with using a starshade to detect Earth-like planets around other stars motivates us to pursue this technology. And we're seeing solid results."

Northrop Grumman has been working on the starshade, associated engineering and enabling technologies since 2004. The company performed tests in the Nevada desert in 2014 and 2015 using an LED as the star source – but the tests at McMath represent the first substantial times the starshade was tested against celestial bodies.

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