

Video: Hubble's Tinkertoy solution

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Dave Skillman (left) and John Decker (right) work on building a Tinkertoy model of the Hubble Space Telescope's high-gain antenna on April 29, 1990. Credit: NASA

In April 1990, workers at NASA's Kennedy Space Center in Cape Canaveral, Florida, were packing up a very special shipment to be

delivered via Space Shuttle to low-Earth orbit - the Hubble Space Telescope. One helpful engineer noticed there was a cable loop that seemed to be too close to the dish of one of the two high-gain antennas, the telescope's primary means of communication. Thinking it might impair the antenna's deployment, he twisted the cable a few inches out of the way, unknowingly altering the operational configuration.

Space Shuttle mission STS-31 launched a few weeks later with the Hubble Space Telescope on Tuesday, April 24, 1990.

As the Space Shuttle astronauts assisted with Hubble's deployment, the engineers on the ground at NASA's Goddard Space Flight Center in Greenbelt, Maryland had to quickly learn through trial-and-error how this brand new observatory interacted with its space environment, diagnosing and fixing problems as they came up.

Toward the end of the week of deployment, one problem with the high-gain antenna stumped the team and brought Hubble operations to a halt as engineers worked to figure it out. Mysteriously, the antenna was showing signs of high force as it tried to move, as if it were pressing up against something. The team at Goddard didn't have any readily available models - digital or physical - which made it difficult to even tell the position of the antenna.

With the eyes of the world watching, the team needed to diagnose and solve the problem - fast. To find out what Goddard's engineers did, watch the third Hubble Memorable Moments video: Tinkertoy Solution.

Provided by NASA

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