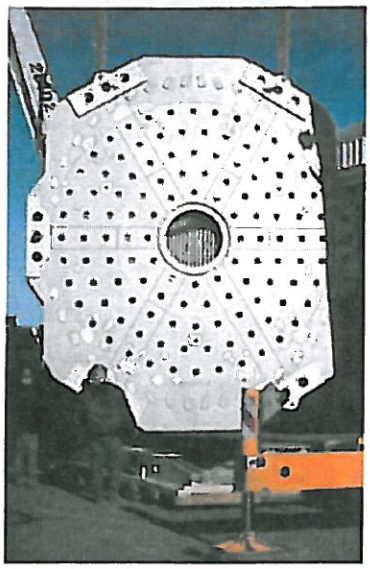
More than flipping a pancake

y STEELE WOTKYNS Special to the Daily Sun azdailysun.com | Posted: Tuesday, January 12, 2010 5:00 am |



Jake Bacon The 16,000-pound steel cell that will support the Discovery Channel Telescope rimary mirror hangs vertically over the tarmac of a taxi-way at Pulliam Airport Monday morning. Two cranes were used o flip the cell over. (Jake Bacon/Arizona Daily Sun)

A key piece of the Lowell Observatory's Discovery Channel telescope was "flipped" over Monday, so project staff could ontinue their work preparing it to hold the telescope's $6 million primary mirror.

Support teams used two cranes to lift the 16,000-pound, engineered steel structure and to turn over the mount. Then, a oughly 7,000-pound steel structure simulating the telescope's primary mirror was also "flipped" and delicately set down n jacks on top of the mirror's cell.

The cell is a crucial piece of the telescope's mount assembly because it will hold the primary mirror for the telescope. Manufactured by Galbiati in northern Italy, the cell was delivered in early November to General Dynamics Satcom Technologies' (GDST) in Mexia, Texas. GDST performed acceptance testing of the cell with other parts of the mount, and h n shipped it to Flagstaff. Packed in a big box, the mirror cell arrived at Pulliam Airport Dec. 23, where it was placed in . hangar. Another big box containing the dummy mirror was also stored in the hangar until Monday's test.

Now, Discovery Channel telescope engineers will begin assembling the full mirror support system.

Prior to Monday's operation, Discovery Channel Telescope Project Engineer Bill DeGroff and several others worked on he mirror cell in preparation for its flip. Electrical pads were installed and cables routed on the bottom of the cell. The nterface of the supports for the primary mirror also had to be prepared.

Now, Lowell Observatory staff will install tangent definers -- three devices to precisely locate the mirror in the cell -- and hen they will install 36 lateral supports for the mirror.

We can start installing axial supports, and we can do that in parallel with other work," said DeGroff.

The supports, which number 120, are electro-mechanical actuators to make minuscule corrections in the telescope's nirror's shape for the best image quality.

Once Monday's "flipping" was completed, the entire assembly was moved back into a hangar until later this spring.

They put the mirror cell where we needed it and set it back down," said Byron Smith, Discovery Channel Telescope roject manager. "Now it's sinking in. It will go on the telescope in March and we'll replace the simulator, or dummy nirror, with the real glass this fall."

The $44 million research telescope will be housed near Happy Jack.

Assisting in Monday's operation were several Flagstaff- and Arizona-based companies who have worked on the project. They include: Precision Heavy Haul; M3 Architects; the University of Arizona College of Optical Sciences; Laron, Inc.; Mosher Communications; BEC Southwest; Connect Tech; and others.

teele Wotkyns is the public relations manager for Lowell Observatory.