Mountaintop blasting to mine the sky with the giant magellan telescope

March 23 2012

Astronomers have begun to blast 3 million cubic feet of rock from a mountaintop in the Chilean Andes to make room for what will be the world's largest telescope when completed near the end of the decade. The telescope will be located at the Carnegie Institution's Las Campanas Observatory—one of the world's premier astronomical sites, known for its pristine conditions and clear, dark skies. Over the next few months, more than 70 controlled blasts will break up the rock while leaving a solid bedrock foundation for the telescope and its precision scientific instruments.

The Giant Magellan Telescope (GMT) will have unprecedented capabilities, allowing it to peer back to the dawn of time, witnessing the birth of the first stars, galaxies and black holes, while also exploring planetary systems similar to our own around nearby stars in the Milky Way. The GMT will help astronomers probe the nature of dark matter and dark energy, mysterious forms of matter and energy that allow galaxies to form while the expansion of the universe accelerates.

At a ceremony on the mountaintop March 23, Dr. Wendy Freedman, director of the Carnegie Observatories and chair of the Giant Magellan Telescope Organization (GMTO) said, "Today marks a historic step toward constructing an astronomical telescope larger than any in existence today. Years of testing have shown that Las Campanas is one of the premier observatory sites in the world and the Carnegie Institution is proud to host the GMT."

The Giant Magellan Telescope is being built by a consortium of U.S., South Korean and Australian institutions with funding from both private and public sources. To date 40% of the telescope's ultimate $700M price tag has been committed and active fundraising is underway to secure the remaining funds.

Carnegie president Richard A. Meserve remarked, "The Carnegie Institution has been a world leader in telescope design and construction for over a century, building the largest and most advanced telescopes in the world. We continue this tradition with the GMT and look forward to the exciting scientific bounty it will yield."

In January of this year the partners cast the second of GMT's seven 28-foot diameter primary mirror segments at the University of Arizona's Steward Observatory Mirror Laboratory. The seven primary mirrors, each weighing 20 tons, are the heart of the giant telescope, providing nearly 4,000 square feet of light-gathering area.

Optical scientists at the Mirror Lab are putting the finishing touches on the first mirror segment, whose surface now matches its optical prescription to better than one millionth of an inch. Dr. Patrick McCarthy, the GMT project director, said "2012 is a banner year for the GMT project as we complete the design process, develop the primary mirrors, and begin work on the site in Chile."

Provided by Carnegie Institution