

Next-generation Thirty Meter Telescope begins construction in Hawaii

July 29 2014

Following the approval of a sublease on July 25 by the Hawaii Board of Land and Natural Resources, the Thirty Meter Telescope (TMT) announces the beginning of the construction phase on Hawaii Island and around the world throughout the TMT international partnership. Contingent on that decision, the TMT International Observatory (TIO) Board of Directors, the project's new governing body, recently approved the initial phase of construction, with activities near the summit of Mauna Kea scheduled to start later this year.

Kahu Ku Mauna and the Mauna Kea Management Board reviewed, and the University of Hawaii Board of Regents recently approved, the proposed TMT sublease. The final approval from the Board of Land and Natural Resources—the last step in the sublease process—allows TMT to begin on-site construction on Mauna Kea, home to many of the world's premier observatories.

"It has been an amazing journey for TMT, from idea to shovel-ready project," said Henry Yang, TIO Board Chair and Chancellor of the University of California Santa Barbara. "We are grateful to the Gordon and Betty Moore Foundation, the Hawaiian government, its citizens, and our project partners in bringing this important astronomical science effort to fruition. It is also my rewarding experience to work with so many community friends, University of Hawaii colleagues, and officials on both the Big Island and Oahu in this journey."

The Rise of a New Observatory – Activities Around the World

The TMT project was initiated a decade ago by the Association of Canadian Universities for Research in Astronomy (ACURA), the California Institute of Technology (Caltech), and the University of California as the TMT Observatory Corporation. Now, as the TMT International Observatory (TIO)—founded as a nonprofit limited liability company on May 6, 2014—the project has the official green light to begin constructing a powerful next-generation telescope.

The TIO founding members are Caltech, the National Astronomical Observatories of the Chinese Academy of Sciences, the National Institutes of Natural Sciences in Japan, and the University of California. India, an associate, is expected to become a full member later this year. Canada is also an associate and aiming to join as a full member in 2015.

Initial construction activities in Hawaii will include grading the site in preparation for future building work, enabling a site dedication ceremony in October. TMT is committed to work within a plan for responsible development on Mauna Kea created by the Office of Mauna Kea Management.

"TMT has worked for many years to design an unprecedented telescope, but also to work with the community to incorporate respect for Mauna Kea in our stewardship," said Gary Sanders, Project Manager for TMT. "It is an honor and a privilege to now begin building our next-generation observatory in so special a place."

Other work has already been proceeding off-site and will continue now apace.

"Design of the fully articulated main science steering mirror system in the telescope, as well as development of the lasers, laser guide star systems and other high-tech components, is proceeding in China," said Yan Jun, Director General of the National Astronomical Observatories of China.

"Japan has seen to the production of over 60 mirror blanks made out of special zero-expansion glass that does not alter its shape with temperature changes. The blanks will be highly polished for use in the telescope's 30-meter diameter primary mirror. The final design of the [telescope](#) structure itself is nearing completion," said Masanori Iye, TMT International Observatory Board Vice Chair and TMT Japan Representative for the National Astronomical Observatory of Japan.

In Canada, the TMT adaptive optics facility is in final design. Ernie Seaquist, Executive Director of the ACURA, added, "The TMT enclosure design is complete and the enclosure is now ready for construction by a Canadian industrial firm."

"Prototyping of TMT's primary mirror assemblies and the building of mirror actuators, edge sensors, and support systems is ongoing in India," noted Eswar Reddy, Program Director of the India TMT Coordination Centre.

Three "first-light" instruments are also under development with major contributions from all of the TMT partners.

The Path to Construction

The announcement of an imminent start to on-site work, where all of these initial developments will come together, is welcome news to scientists worldwide.

"The start of construction means that TMT is becoming real, and that's exciting news for astronomers," said Catherine Pilachowski, an astronomer at Indiana University in Bloomington, Ind., and an observer representing the United States astronomical community at TMT board meetings. "The science TMT will do is breathtaking, and will engage all astronomers in the adventure of new frontiers."

The advancement of TMT to this stage of imminent on-site construction has been made possible by the support of the Gordon and Betty Moore Foundation. The foundation has spent \$141 million to date to fund the design, development, and construction phases of TMT.

"I'd like to extend my deepest gratitude to the Gordon and Betty Moore Foundation and all of our partners and supporters," said Edward Stone, the Morrisroe Professor of Physics at Caltech and the new Executive Director of TIO. "We are looking forward to starting construction this year and moving ahead."

A Boost for Hawaii

The start of TMT on-site construction will directly benefit the local Hawaiian community. TMT will now make its first annual contribution to The Hawaii Island New Knowledge (THINK) Fund, a program that promotes science, technology, engineering, and math education across grades K-12, secondary, and post-secondary education. Over the life of the TMT lease on Mauna Kea, TMT will give \$1 million per year to the THINK Fund.

In the construction sector, TMT will create about 300 full-time construction jobs. TMT has committed to the hiring of union workers for these positions. Looking further ahead, during operations, TMT will have a staff of about 120-140, which will be drawn as much as possible from Hawaii Island's available labor pool. A workforce pipeline program

in the meantime will also educate and train island residents for jobs with TMT, as well as other observatories and high-tech industries.

"The start of construction of TMT is great news for Hawaii Island residents," said Sandra Dawson, TMT's Manager of Hawaii Community Affairs. "We are proud to be a good citizen of the community as we all work toward building a revolutionary astronomical instrument."

Provided by Thirty Meter Telescope

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