

Giant telescope dwarfs rivals: Coquitlam-engineered behemoth will probe the outer universe with 30-metre mirror

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PORT COQUITLAM - A Port Coquitlam company that is helping lead an international effort to build the world's largest optical telescope plans to announce details about the precedent-setting project before the Vancouver Board of Trade on Wednesday. Officials with the engineering firm **AMEC** said Sunday the new telescope will be three times as large as the world's largest existing model, and will provide astronomers with images of the universe that are significantly clearer than anything they can see today.

"What a telescope like this will do is bring greater clarity to what we already see and understand," David Halliday, vice-president and director of special projects of **AMEC**, told The Vancouver Sun. He said that through existing telescopes, astronomers can already see "almost back to beginning of time. . . .

"We can see 15 billion light years back. We're on the threshold of the edge of the observable universe," he said. Halliday said many of those images are blurry, however, and the newly planned Thirty-Metre Telescope, or TMT, would help provide a much clearer image. To do that, the primary mirror in the TMT will have to be 30 metres in diameter -- three times larger than the 10-metre Keck telescope on the summit of Hawaii's dormant Mauna Kea volcano -- and the entire structure is expected to weigh close to 4,000 tonnes.

"We're now moving from 10 metres up to 30 metres and that's a quantum leap," Halliday said. "That's a real challenge as far as design technology is concerned," he said, explaining the 30-metre mirror will be made up of 780 individual pieces of glass that all will need to move together with absolute precision. "We're trying to move the position of these little pieces relative to each other to within four nanometres, which is 25,000 times less than the thickness of a human hair," he said.

The company, which is collaborating with several partners from around the world on the project, is about a year and a half from a final model, Halliday said. If all goes well, the \$700-million project will start construction in 2008, and will be completed by 2015.

One of **AMEC**'s other notable projects includes the BLAST telescope, which was launched into the stratosphere by NASA this past summer on a stadium-sized balloon. Following its flight over the Arctic, the BLAST telescope fell 40 kilometres (25 miles) back down to Earth, fully intact.

If completed, the new TMT will be used to study things such as black holes, dark matter, and dark energy.
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