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## Made in Canada 'eyes' set to explore Mars

### Digital pictures are key to mission

**Andy Riga**

CanWest News Service

Friday, June 06, 2003

MONTREAL -- NASA will launch the first of two Mars Exploration Rovers from Cape Canaveral, Florida, on Sunday, but it'll be early January before Robert Groulx will see the fruit of his labour.

That's when the rovers (the second goes up on June 25) are to start snapping pictures of Mars using digital cameras built using image sensors that Mr. Groulx helped manufacture at Dalsa Corp. in Bromont, Que. If all goes well, the rovers will reach Mars in January, then start beaming images to Earth.

The aim is to learn about the planet's climate and water, and see how suitable past conditions would have been for life.

"The cameras are key to the mission -- they're the eyes that will see what we're going there for," said Mr. Groulx, the engineer who managed the production of the devices for the rover.

"We have built the eyes."

Although 20 of 33 previous missions to Mars failed, the planet still has a hold on scientists.



**CREDIT: Tyrel Featherston, CanWest News Service**

**Robert Groulx holds a Charge Coupled Device at Dalsa Corp. near Montreal. The microchip will be used in the cameras that will photograph Mars and help the exploration rover navigate the terrain.**



**CREDIT: NASA**

**The first of the twin exploration rovers -- each with nine cameras -- will reach Mars in early January.**

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On Monday, the European Space Agency launched its Mars Express mission, with its Beagle 2 lander expected to land in December, looking for traces of life.

NASA is spending \$800 million U.S. on its mission, sending identical rovers to land on different regions of Mars. Each is outfitted with nine cameras.

Three are for scientific study. One is a high-resolution microscopic camera that will help scientists determine how rocks and soils were formed.



The other two are part of a panoramic camera that NASA says is the most sophisticated colour imaging system ever sent to the surface of another planet. The pancams will be used to photograph the surface and sky.

The six other cameras will help the 180-kilogram rovers navigate the surface of the planet and avoid hazards as they travel up to 40 metres a day over the course of their 90-day missions.

Dalsa, a Waterloo, Ont.-based company whose semiconductors and digital cameras are usually used on Earth in scientific, industrial and medical applications, has been working with NASA on the project since 1997.

That's when NASA's Jet Propulsion Laboratory approached Dalsa's Bromont division about developing special "charge coupled device" image sensors for space missions.

Unlike film cameras, which focus light on pieces of film, digital cameras use microchips to record light electronically. CCDs on the chips convert light into electrical signals.

NASA designed the Mars rover CCDs in collaboration with Dalsa, one of a handful of companies with a semiconductor foundry that can manufacture such specialized devices.

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