



Milton astronaut Chris Hadfield, front row, second from right, has been invited by NASA as a back-up crew member for an underwater mission in October when surgical techniques and technologies will be put to the test. He's pictured here with members of the crew (from left), Canadian surgeon Dr. Mehran Anvari, NASA astronaut and mission commander Lee Morin, NASA astronauts Ronald J. Garan and Nicole Stott and Dr. Tim Broderick of the University of Cincinnati. The crew will spend 18 days in a research station that's similar to a space station located about 20 metres below the ocean surface off the Florida Keys.

# Hadfield part of crew for underwater mission

By **MELANIE HENNESSEY**  
*The Champion*

Local astronaut Chris Hadfield could soon be trading in his space suit for scuba gear.

The Milton native has been invited to be part of the back-up crew for an 18-day underwater NEEMO 9 (NASA Extreme Environment Mission Operations) mission on remote medical care, where experiments will be conducted using the latest surgical technologies and techniques.

"I thought it would be quite interesting," Mr. Hadfield said of the mission. "It's a great place to test things we might want to try in a space station."

He explained the mission will take place from October 3 to 20 in a bubble-like research station submerged off the Florida Keys, which he said has a very similar environment to a space station.

He said the crew will be performing simulated surgery, all the while being guided by surgeons in Hamilton via a video link.

A robot controlled by a surgeon in Hamilton will also be going on the excursion to take part in the experiments.

"We're using this training as a way to push technology to the very edge," said Mr. Hadfield. "To do (surgery) remotely under different condi-

tions adds a whole level of complexity."

The underwater crew will include NASA astronaut and NEEMO 9 mission commander Lee Morin, Dr. Tim Broderick of the University of Cincinnati and NASA astronauts Ronald J. Garan and Nicole Stott.

Canadian surgeon Dr. Mehran Anvari will serve as chief scientific officer, guiding the crew who will be isolated in a 13 foot by 46 foot living space about 65 feet beneath the ocean.

Dr. Anvari noted the NEEMO 7 mission successfully demonstrated it was possible to get a non-physician astronaut to perform a variety of diagnostic and surgical tasks in an extreme environment.

"We learned a lot of valuable lessons, some of which have led to the development of programs for two northern Canadian communities and one third-world country," he said.

He noted the crew also encountered challenges, such as the time delay created by telecommunicating over long distances.

"This can be difficult enough when it's a one or two-second delay, but to the moon, that delay stretches out to four seconds. We need to find out if we can operate under those circumstances," he said. "One of the primary questions for NEEMO

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**CHRIS HADFIELD**

9 is to find out if and how we can overcome the barrier of time delay during these telerobotic surgical interventions."

Dr. Anvari pointed out the work done on the mission will have a major impact on current research and the development of new technologies, including new robotic and surgical platforms which can be used on earth and in space.

In addition to Dr. Anvari, Dr. Julian Dobranowski and Dr. Anthony Adili from St. Joseph's Healthcare in Hamilton will work with the NEEMO 9 crew to examine the ability of

non-medical personnel to produce digital radiographs in extreme environments and treat a bone fracture and joint injury through telecommunications.

"We want to be able to deliver the highest quality diagnostic care to remote areas of the world as well as in space," said Dr. Dobranowski.

"Experimentation with digital radiography in these types of extreme environments is an important step in this process."

While Mr. Hadfield may not be called into service for the mission, he said he's taking training so he'll be ready. He noted in the past, back-up crews have been utilized.

There've been eight NEEMO missions to date. NEEMO 9 is a joint project involving the McMaster University Centre for Minimal Access Surgery at St. Joseph's Healthcare, NASA, the Canadian Space Agency, the US Army Telemedicine and Advanced Technology Research Center and the National Space Biomedical Research Institute.

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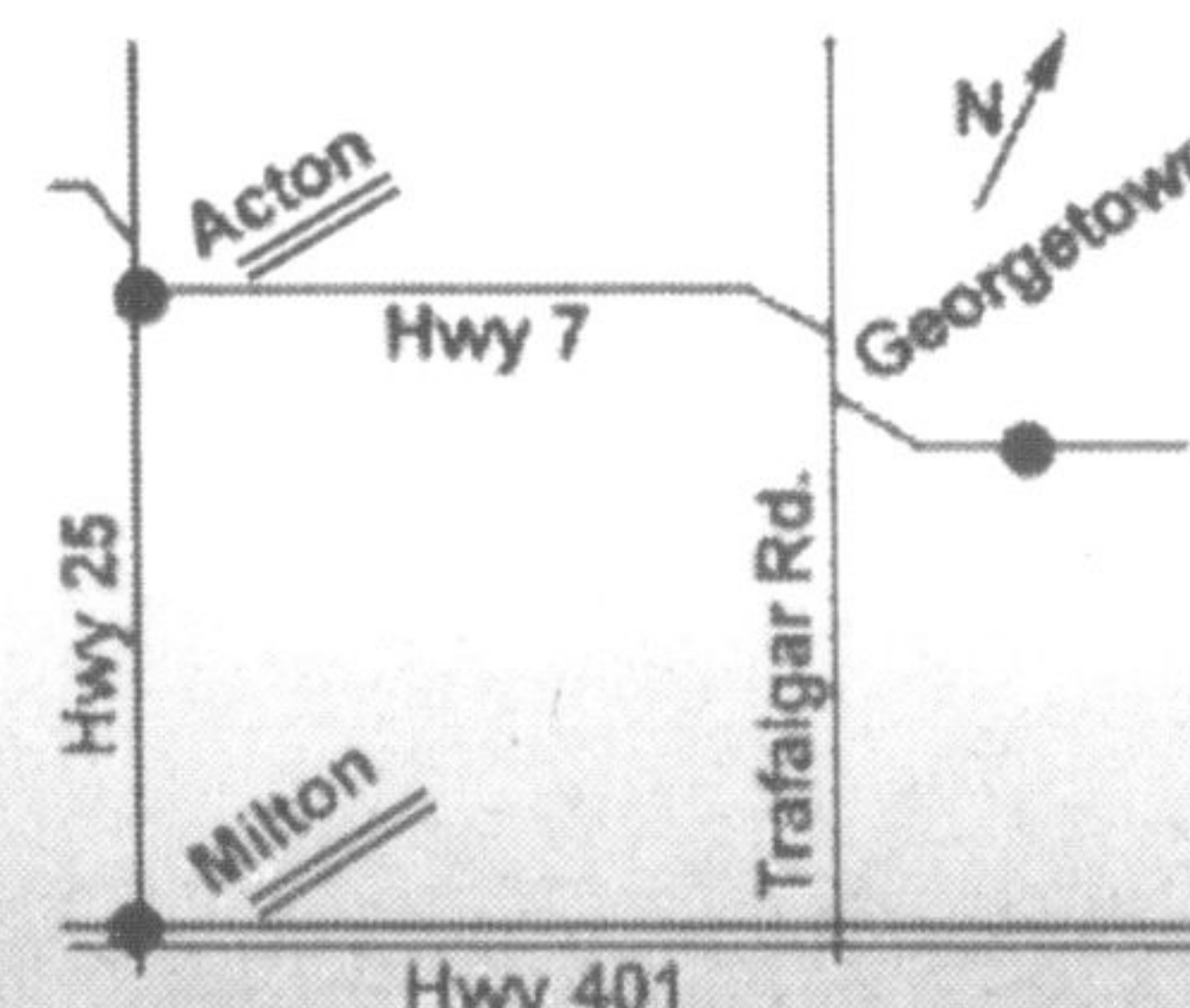


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