



“Space walks” are full of risk, but are necessary for construction and maintenance tasks.

graphics and handles much of the project’s administrative work.

In addition to testing the SVS, MacLean is also working with scientific investigators on several other experiments he will perform on his mission — a materials processing test, measurement of the red glow that surrounds the shuttle in orbit, a test of the degrading effects of the space environment on various materials, and several life science experiments. In a project unrelated to his shuttle flight, he is also working with university scientists on a study of winds and temperatures in the earth’s upper atmosphere.

It’s hoped that MacLean will fly in 1990, but this remains uncertain until the shuttle program resumes. As a result of post-Challenger changes in NASA’s training program for astronauts, MacLean will spend a much longer time than Garneau did training at the Johnson Space Center in Houston — perhaps eight months to a year, contrasted with Garneau’s two months.

The Canadian astronaut who will fly the third mission has not been announced yet, but it will be one of the three with a medical background — Money, Bondar or Thirsk — because the mission experiments will focus on space physiology. Canada also hopes to obtain a slot aboard a proposed 1991 mission carrying a large European-built laboratory called Spacelab.

In the meantime, the astronauts have returned part-time to their research projects or medical practices. Money is continuing to search for ways to predict and counteract motion sickness, a problem that afflicts nearly half the people who fly in space. His study focuses on the relationship between the level of physical fitness and susceptibility to motion sickness.

In addition to doing her own research, Bondar is Canada’s life sciences representative on the International Scientific Advisory Committee on the Utilization of the Space Station, a group concerned with the station’s scientific objectives. She was also a member of a recent Canadian delegation to the U.S.S.R. to explore possibilities for collaborative research with Soviet space scientists. (In a separate visit, Garneau participated in a Soviet space conference and was treated to a rare tour of Star City, the Soviet space centre.)

Bondar hopes to test HMF telemedicine technology in Canada — perhaps in a remote northern nursing station or on an offshore oil rig. Several successful telemedicine projects have already been done in Canada, and this project could be used to train people in the use of this advanced technology.

The Canadian astronauts have also been assisting university and industry researchers in material-processing experiments aboard the KC-135, NASA’s zero gravity plane. “This program is definitely growing because we’re stuck here on the ground and there will be a limited number of opportunities to get into space,” said Garneau.

The astronauts are always in demand for speaking engagements, educational projects and other public duties. Garneau is head of an advisory group for a Toronto high school, recently renamed in his honour, which places a special emphasis on excellence in maths and sciences. Bondar serves on a science and technology advisory committee for the provincial government of Ontario. As the first and only Canadian to fly in space, Garneau is particularly in demand for public speaking, as is Bondar, who is often cast as a modern-day role model for girls. However, the astronauts’ public duties have been reduced recently because of the increasing demands on their time.

Finally, as if all this were not enough, the astronauts have taken up parachute jumping because their work involves frequent flights in high-performance aircraft. “And since they’re building a crew escape system into the shuttle, we really should know how to do this,” said Money. He also noted that Soviet space officials use parachute jumping as stress management training, requiring cosmonauts to make 100 free falls before flying in space.

Garneau agrees that jumping is good stress management training. “You discover something about yourself in the moment you actually jump and fall out of the sky. It teaches you about your ability to work in potentially stressful situations and to react quickly and correctly.”

And as members of just a small group of pioneers being given the chance to fly in space, the astronauts must be prepared for the unknown and unexpected in their exploration of this last frontier.