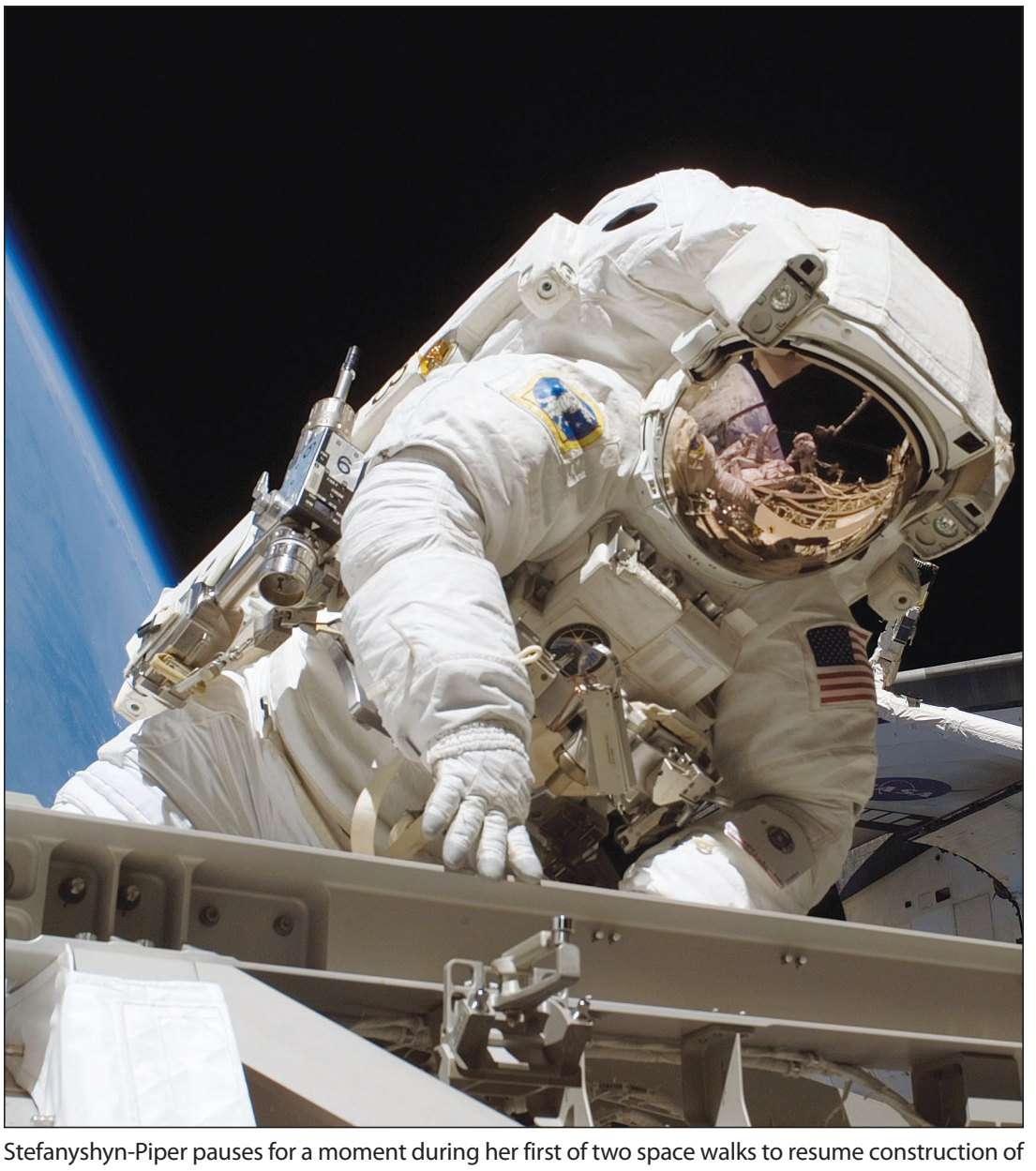
Mission specialist Heidemarie Stefanyshyn-Piper is pictured at mid-deck on the space shuttle Atlantis before doffing her launch suit.



Stefanyshyn-Piper pauses for a moment during her first of two space walks to resume construction of the International Space Station. *Photos courtesy of NASA.*

By the light of the Earth

Derham grad joins elite club of women who've walked in space

by Nancy Atkinson

St. Paul native Heidemarie Stefanyshyn-Piper glided safely to Earth last month aboard the shuttle Atlantis following 12 days in space. Her mission, STS-115, succeeded in restarting assembly of the International Space Station.

The 1980 Derham Hall graduate conducted two of the three space walks on the mission, which successfully attached a 17.5-ton, bus-sized section to the station's truss structure and unfolded a second set of 240-foot solar panels. Only six other women have participated in U.S. space walks.

Following the mission, space shuttle program manager Wayne Hale said he could not have been prouder of the six-member crew. "This was one of the most complex space missions ever and it was an outstanding effort," he said. "We're back in the (space station) assembly business."

Stefanyshyn-Piper, who was a Navy diver before being selected as an astronaut in 1996, had trained for the mission for more than four years. STS-115 was three months from launch when the space shuttle Columbia exploded in 2003. Work on the space station was postponed while NASA focused on improving shuttle safety.

At a news conference following the mission, commander Brent Jett praised Stefanyshyn-Piper. "Heidi is a natural, with a calming presence," he said. "She's a very clever person and came up with a lot of ideas that you don't usually get from a first-time flier."

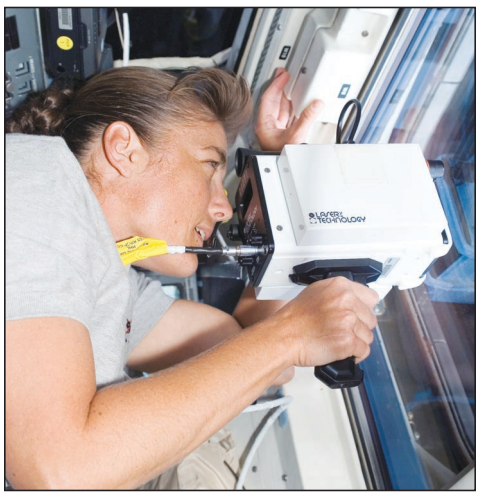
Stefanyshyn-Piper's favorite part of the mission was when she stepped into space. "The space walks were just amazing," she said in a phone interview from Johnson Space Center in Houston. "When you're out there and you think about where you are, when you look down and see the Earth moving below, you think, 'Wow, this is amazing that we're able to send people to space.'"

For her first space walk, Stefanyshyn-Piper emerged from the hatch of the space station in the dark. On her second walk, she stepped out in daylight and was awed by the sight of the space station against the backdrop of the Earth.

Stefanyshyn-Piper said moving around in space was much easier than in water, where astronauts train for space walks. "The flipside is that it's almost too easy," she said. "You start moving from the slightest perturbation, so you always have to be aware of where you are and what you're doing so you don't start moving in a way that you don't want to."

In the microgravitational environment of space, astronauts must learn to work in new ways. They cannot set down a tool or piece of equipment because it will float away. The space walkers on STS-115 had to use a cordless drill to remove and replace bolts. If they failed to anchor themselves correctly, their bodies would turn instead of the bolt.

Stefanyshyn-Piper said her hardest task involved unfolding pieces of the truss section that had been stowed to fit in the shuttle's payload bay. "I had to pull on it pretty strenuously to get it to move, and my partner had to come over and help me," she said.



Stefanyshyn-Piper aims a laser range finder through one of the windows on the Atlantis as it approaches the space station.

Following the mission, Stefanyshyn-Piper gave her colleagues a scare when she collapsed at a welcome home ceremony in Houston. She is feeling fine now, and said that lightheadedness is a common side effect for astronauts on their return to Earth.

"It's just that nobody's done it in on stage in front of cameras before," she said.

"Even though we do what's called 'fluid loading' (consuming water and salt tablets) right before we land, that only replaces about half of what you've lost while you're in space," she said, "so coming back you're dehydrated. Then I had the excitement of being back, and it was very hot and humid."

Another scare following the mission was a hole that was discovered in one of the shuttle Atlantis' payload bay doors. The impact with an unknown object left a hole about one-tenth of an inch in diameter. It did not endanger the spacecraft or crew, and did not affect the mission operations. Stefanyshyn-Piper said tests are still being conducted to determine what hit the shuttle during its 4.9-million-mile ride.

"It's an example of what can happen when we're in orbit," she said. "All the inspections are a necessary part of what we do up there."

Now that Stefanyshyn-Piper and her crewmates are home, the stage has been set for the continued assembly of the space station. The next shuttle mission, scheduled for launch in mid-December, will deliver an additional truss segment and will include extensive work on the space station's electrical and cooling systems.

Stefanyshyn-Piper said she is not sure what duties she will be assigned to next or when she will have the chance to fly in space again. "We're now finishing up our debriefings and writing reports on what we did," she said.

The other thing astronauts typically do after a flight is to return to their hometowns to share the wonders of space travel. "That's planned in the near future," Stefanyshyn-Piper said. "Right now we're working on the details of when I'll be coming back to St. Paul."