



# Space Soldiers

Story by Beth Reece   Photos courtesy NASA

**N**INE-year-old Douglas Wheelock watched in awe as the first man landed on the moon. “Every boy in America wanted to be an astronaut, but I was just a regular kid living in a small town. I never believed it was something I could attain,” he remembers.

Today, LTC Douglas Wheelock awaits his first trip into space. He is one of six Army astronauts assigned to the U.S. Army Space and Missile Command’s NASA Detachment at the Johnson Space Center in Houston, Texas.

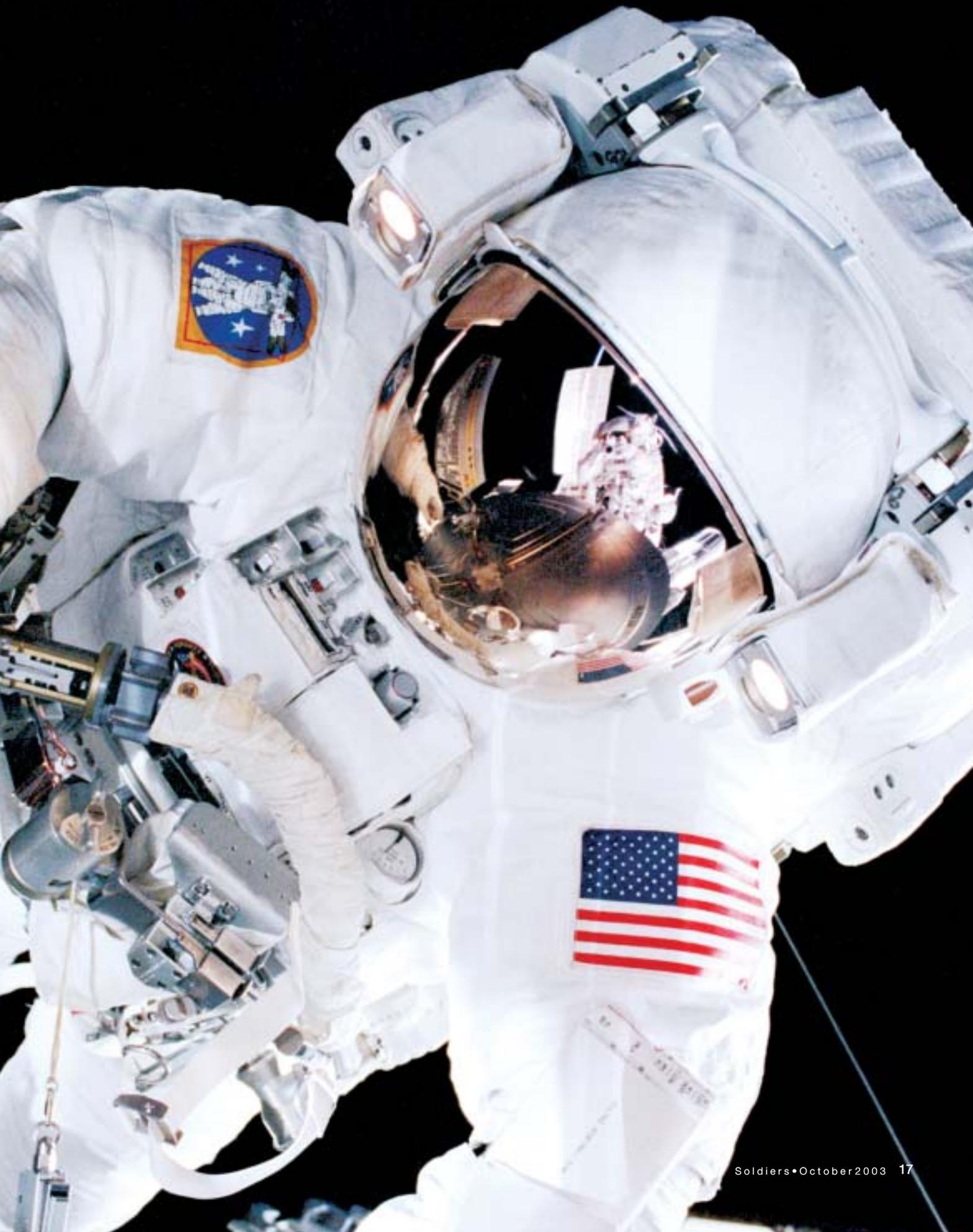
Sending soldiers to outer space may seem an unusual mission for an army that does most of its business on the ground, but space is the Army’s “high ground.” Discoveries made there help soldiers move and communicate on earth, Wheelock said.



◀ Army astronaut COL Patrick G. Forrester prepares for an emergency egress training session at the Neutral Buoyancy Laboratory.

▶ Forrester took a space walk while working on the International Space Station during mission STS-105.







Army astronaut LTC Timothy J. Creamer hands a shuttle patch to an audience participant during a visit to Mark Twain Elementary School in Colorado Springs, Colo.

LTC Jeffrey Williams is the first Army officer scheduled to command the space station.

Satellite technology, for example, was used to project troops to the battle in Operation Iraqi Freedom.

### History in the Making

Army astronauts share a role with 15 other nations in constructing the International Space Station, the largest space experiment ever. By 2004 soldier-astronauts will have helped build and maintain 460 tons of structures, modules, equipment and supplies in orbit.

The ISS is mankind's next step to the solar system, said COL Patrick Forrester, commander of the NASA detachment and the Army's senior astronaut. Like a field site where soldiers prepare for battle, it lets astronauts study the affects of life in space before venturing back to the moon or heading for Mars.

"Before we go out to explore the solar system, we need to learn how to operate in space, adapt the human body to space flight and overcome the hazards of going to space for huge periods of time," Forrester said.

The ISS is expected to stretch 17 stories tall and house six research labs by its completion in 2008.

COL Nancy Currie was part of the STS-88 *Endeavour* crew that turned on the lights at the ISS in December 1998. During the 12-day mission she operated the shuttle's 50-foot robotic arm to mate the station's first two segments — one American-made, one Russian-made.

"My most vivid memory of that flight was having the commander pick up the microphone and say, 'Houston, this is the International Space Station' for the very first time. I had to pinch myself," she said. "It was a dream come true."

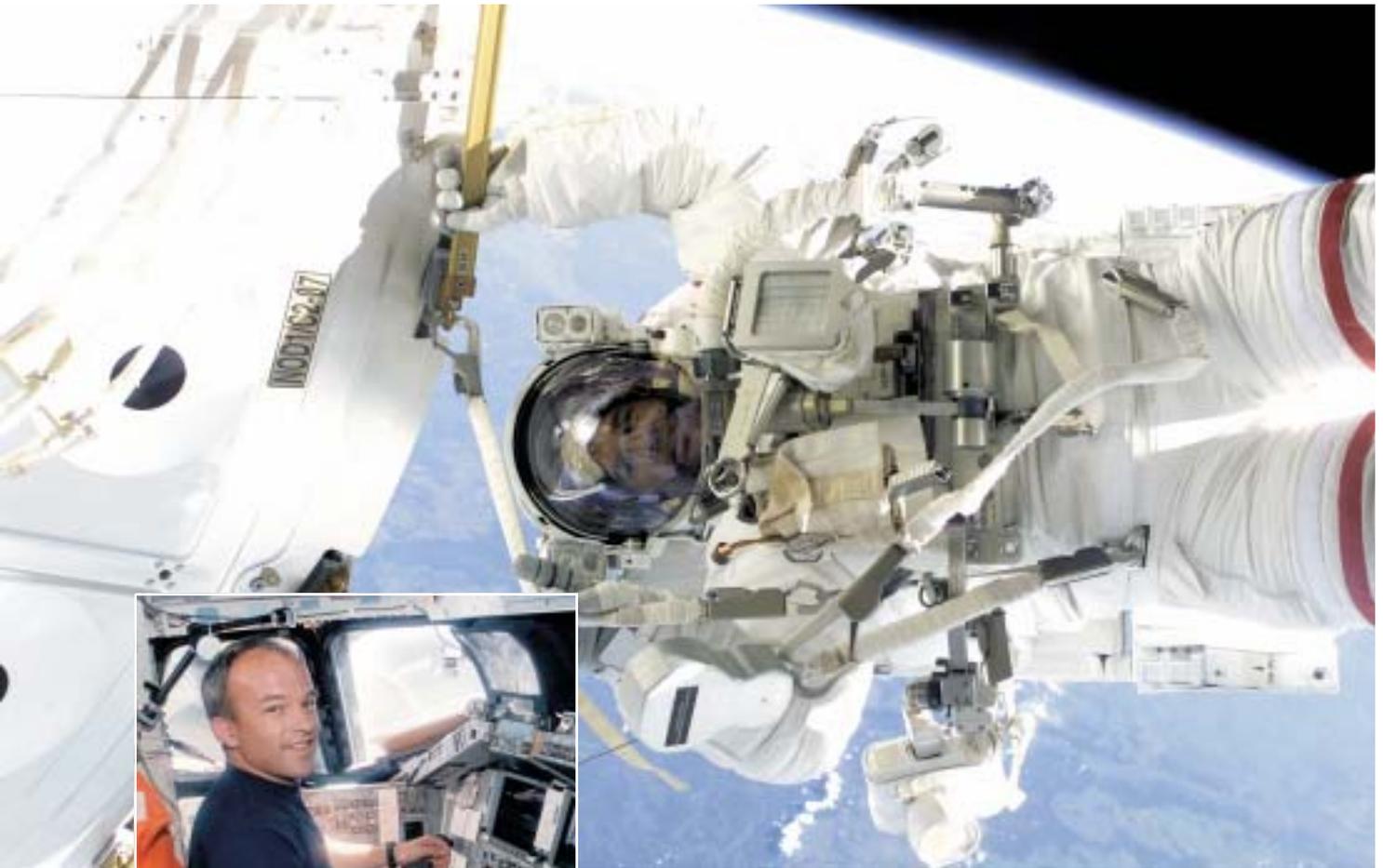
COL Jeffrey Williams, who flew on *Atlantis*, is the first Army officer scheduled to command the ISS. Currently training on the Russian segment of the ISS at the Gagarin Cosmonaut Training Center in Moscow, Williams predicts his flight will take place in three years and his stay at the ISS will last six months.

### Everyday Business

Most Army astronauts can count on one hand their number of trips to space. Their job is a mix of public appearances, training on new equipment, and specialization training on high-tech systems they would use aboard the ISS and space shuttle. They spend 18 months learning systems before bearing technical roles that range from computer engineering to robotics.

The challenge is not in learning single systems, the Army astronauts said, but understanding how systems work together and how a failure in one system may affect another. And because the amount of equipment that can be carried aboard the shuttle is limited, astronauts must know how to repair rather than replace many of the parts.

Astronauts awaiting flight assignment work up to their



Astronaut Jeffrey N. Williams occupies the commander's station on STS-101 (left) and uses a handrail on the ISS during a space walk (above).

future roles by supporting crews that are training for scheduled missions. LTC Timothy Creamer supported a 2001 space shuttle mission, helping coordinate schedules and plan training.

"Probably the most intense period was leading up to the launch. Even though we were working 24 hours a day, it seemed liked 36," Creamer said.

Wheelock currently works in the Mission Control Center as a spacecraft communicator, making him the sole link between crews in orbit and ground support.

"It's a wonderful place to learn. It prepares you for space flight because you grow to understand the day-to-day opera-



Army astronaut LTC Timothy L. Kopra enjoys nearly 30 seconds of weightlessness on board a NASA KC-125A aircraft as part of astronaut training.



COL Nancy J. Currie, STS-109 mission specialist, occupies the pilot's position on the shuttle Columbia (*left*) and uses the remote manipulator arm (*above*).

tions, especially for the space station, where we're always trouble shooting on systems, subsystems and science experiments," Wheelock said.

### A Walk in Space

Astronauts scheduled for space flight get advanced, mission-specific training. For every hour of extravehicular activity — or space walking — they spend 10 rehearsing underwater in an ISS mockup.

Astronauts are dropped into the training pool wearing space suits, then loaded with weights and floats for buoyancy. They practice making repairs, maintaining equipment and adding new structures to the station.

"Space walk is the ultimate," said Forrester. "Like looking out of your house, you can only see so much from the window. When you go out on a space walk, all of a sudden there are no constraints and you can see the entire

curvature of Earth."

### Humans vs. Robots

Williams dreams the next generation will explore Mars. "There's something in our nature that seeks to discover beyond what we know and to explore what's over the horizon," he said.

But some scientists predict that robots, not humans, will explore the far reaches of space. Currie, who is an engineering director with advanced robotics systems, said that while the United States might become the world's expert in human-robotic interaction, she believes we're 50 years from sending only robots to space.

"I could program a robot to reach out autonomously and grab a water bottle, but the robot wouldn't know that you like water or that's what you wanted to drink," she said.

Such judgment is a quantum leap away, she said. So is

spontaneity.

"I've been surprised more than once by things that didn't go according to our plan," Currie added. "NASA is very good at reacting to that, and I think it's probably one of the things we do best. But I believe one of the reasons we're good at it is because we're human beings interacting with one another."

For every application Currie applies to robots, she considers the potential benefits for soldiers on the battlefield.

"You wouldn't send a robot out to do surgery," she said, "but could you send it into a chemical area to retrieve wounded soldiers? Absolutely."



## Ride of a Lifetime

No amusement ride compares to a ride in space, Currie said.

"The first two minutes is just shake, rattle and roll. There's no doubt in your mind that you're sitting on a rocket. Then it's just a smooth and gradual acceleration to maximum velocity," she said in her description of takeoff.

She's been told that as soon as the shuttle hits zero gravity a permanent smile crosses her face. Most astronauts experience nausea and headaches in space, but Currie doesn't experience side effects until returning to Earth.

Forrester, who is assigned to travel aboard STS-117 around 2004, emphasizes an irony of space flight.

"We spend our whole lives as astronauts trying to get to space," he said. "But once we're in space, we spend all our free time looking back at Earth."



▲ The ISS was photographed by one of the astronauts aboard *Discovery* on Aug. 20, 2001.

▶ The space shuttle *Discovery* lifts off on mission STS-105, carrying Army astronaut Patrick Forrester.



## Thanks to the Army

Without the Army, their hopes of exploring space would still be dreams, the astronauts said. They feel indebted, and use every public appearance to boast about the opportunities the Army presents.

Space was off limits to women when Currie's interest in aeronautics piqued. So she became an Army pilot and waited for the day NASA would begin accepting female astronauts.

Currently the Army's most experienced astronaut, Currie has been to space four times. During the first trip she was a single parent of a 6-year-old daughter left behind with friends and a letter explaining why she'd taken the risks of space flight, just in case.

"I just cannot believe that I've had these opportunities," she said. "I do not believe I'd be here without the Army." 📧

