

LIVING ABC

GREG CHAMITOFF CALLS THE INTERNATIONAL



(Above) The International Space Station (Far right) Greg Chamitoff concentrates on a game of chess aboard the International Space Station. He plays remotely against the crew at Mission Control on the Earth's surface.

LOVE THE SKY

L SPACE STATION HOME

BY SCOTT ROARK

FLOATING IN A VOID, 250 miles above the vivid blue expanse of our world, **Greg Chamitoff (EE '84)** starts his day like many other people on Earth. He wakes up, perhaps drinks a little coffee, and gets ready for work.

As you read these words, Chamitoff and fellow cosmonauts Sergei Volkov and Oleg Kononenko are living in the International Space Station, circling the world every 90 minutes, quietly soaring over every major continent, every ocean and countless major cities. They could be passing above you right now.

Chamitoff is scheduled to return to Earth in November, having lived and worked on the station since early June. But before coming home, Chamitoff and his Russian colleagues are performing groundbreaking research on the effects of long-term weightlessness to the human body, laying the foundation for future exploration missions to the moon and Mars.

Focus areas include cardiac activity, blood circulation, respiration and sleep patterns. Additional experiments examine how prolonged space travel affects the growth and development of plants, along with the cultivation of certain bacteria in zero gravity conditions.

To sustain space travelers during long journeys, Chamitoff and his colleagues are also working with equipment such as oxygen generators and machines that recycle air humidity. Another machine, scheduled for future delivery to the station, creates drinking water by recycling urine.

If that sounds unappealing, Chamitoff pointed out that a mission to Mars would take about three years round-trip. Self-sufficiency is critical. "The work on this station is just the beginning," he said.

Also critical for space-travelers is physical exercise since muscles deteriorate in weightless environments due to lack of gravity. Chamitoff exercises two hours a day, a routine that includes a special treadmill equipped with an adjustable harness to hold him down and simulate gravity. It also provides a spectacular view out of a lower space station window.

"I was on the treadmill one day, looking down on an entire hurricane off the coast of Texas," recalls Chamitoff.



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(L-R) Cosmonaut Oleg Kononenko, Greg Chamitoff (sporting a Cal Poly t-shirt) and cosmonaut Sergei Volkov talk to Cal Poly Magazine from the International Space Station on Aug. 7.

“It was surreal.”

Cheerfully describing weightlessness as “Disneyland every day,” Chamitoff said there was a definite adaptation period when he first arrived on the station and was awed by the size of the facility.

The International Space Station is comprised of six state-of-the-art laboratories, stretching the width of a football field and nearly that same distance in length. Nearly an acre of solar panels provide electrical power.

Sixteen countries have contributed resources to the station, including Russia, the United States and Japan. Chamitoff works primarily in the U.S. segment. One airlock away, Volkov and Kononenko do the same in the Russian segment. Despite being in different areas, all three often work, eat and even enjoy down time together.

“We do have movie nights,” said Chamitoff chuckling. “We saw ‘Indiana Jones’ the other day.”

In addition, the father of two children talks to his family as often as he can via a video phone. “That really has been the most challenging part of this experience, being away from home and family.”

As an undergraduate student at Cal Poly, Chamitoff taught lab courses in circuit design and worked summer internships at Atari Computers and IBM. From there, he went on to earn master’s degrees from the California Institute of Technology and University of Houston Clear Lake, and a Ph.D. in aeronautics and astronautics from the Massachusetts Institute of Technology.

While at MIT, Chamitoff worked on the Hubble Space Telescope, flight control upgrades for the Space Shuttle autopilot, and the altitude control system for the International Space Station.

The Montreal native was selected to become an astronaut in 1998 and qualified for his flight assignment as mission specialist in 2000. In July 2002, Chamitoff spent time in a different kind of weightless environment, serving as a crew-member for nine days on the Aquarius undersea research habitat in the Florida keys.

Once assigned as a space station crew member, Chamitoff’s in-depth training on space station systems took him all over the world, spending time in Russia, Japan and Canada. He was selected for this mission from the current astronaut corps of 100 individuals, based on mission objectives and needed skills.

Hovering weightlessly in the station’s U.S. laboratory, wearing a Cal Poly T-shirt, Chamitoff said the principles he puts into practice every day on the space station came from his alma mater. He fondly recalls Cal Poly Mathematics Professor James Mueller.

“Cal Poly’s approach to theory and application made all the difference for me,” he said. “It provided the foundation for everything I do up here. I can’t wait to come back on campus, see old mentors and friends, and even do a run up Poly Canyon. I look forward to that day.” □

Editors note: You can submit inquiries to Chamitoff and get answers directly from space on NASA’s Web site. To submit a question, visit: <http://www.nasa.gov/ask>.