ASTRONAUT BOB THIRSK



Canadian Space Agency, 2008, Image Gallery: Bob Thirsk. Retrieved March 2,2008, from http://www.space.gc.ca/asc/app/gallery/results2.asp?session=&image_id=Thrisk-1001

Figure E-1 Astronaut Robert (Bob) Thirsk

Unofficial convenience copy of A-CR-CCP-803/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-803-PF-001/A-CR-CCP-803-PF-001.pdf.
Verify against the official publication.

ASTRONAUT BOB THIRSK

In June and July 1996, Thirsk flew as a payload specialist aboard space shuttle mission STS-78, the Life and Microgravity Spacelab (LMS) mission. During this 17-day flight aboard Columbia, he and his six crewmates performed 43 international experiments devoted to life science and materials science.

In 2008, Thirsk was assigned to a long-duration flight as a member of Expedition 19 on the ISS, with duties that include robotic operations and conducting scientific experiments on behalf of Canadian and international researchers.

MISSIONS:

STS-78

Mission: LMS.

Space Shuttle: Columbia.

Launched: June 20, 1996, 10:49:00 a.m. EDT.

Landed: July 7, 1996, 8:36:45 a.m. EDT.

Mission Duration: 17 days.

Orbit Altitude: 150 nautical miles.

Mission Highlights

Five space agencies (NASA, European Space Agency, French Space Agency, Canadian Space Agency, and Italian Space Agency) and research scientists from 10 countries worked together on primary payload experiments of LMS. More than 40 experiments flown were grouped into two areas:

- life sciences, which included human physiology and space biology; and
- microgravity science, which included basic fluid physics investigations, advanced semiconductor and metal alloy materials processing and medical research in protein crystal growth.

Regarding STS-78, NASA observed:

Canadian Space Agency astronaut Bob Thirsk was uniquely qualified for this mission. A bio-medical engineer and a medical doctor, his knowledge and expertise reached into many areas, notably in the physiological adaptations that occur in weightlessness as well as in microgravity experimentation relating to materials processing and fluid physics.

Since 1983, when he was selected to become an astronaut, Bob Thirsk has accumulated 16 years of operational experience. He first trained as back-up Payload Specialist to Marc Garneau for Mission 41-G in October 1984. He was an investigator for three experiments that flew on previous Spacelab missions and was an alternate Payload Specialist on the IML-1 Mission.

One of the most common physiological changes astronauts must live with in a weightless environment is the redistribution of body fluids which can cause discomfort or problems in space or upon returning to earth. Thirsk was leader of an international team investigating this shift of body fluids in weightlessness and its effects on the body's venous system. He has designed an experimental antigravity suit, a pressure suit he believes will help astronauts readapt to life back on earth.

During STS-78, Bob Thirsk participated in a number of experiments in life and microgravity sciences. Like the other six astronauts, he was both subject and researcher for several life sciences investigations. He had a major role in Canada's Torso Rotation Experiment (TRE), designed by McGill University and sponsored by the Canadian Space Agency. TRE related eye/head/body movements to the symptoms of motion sickness that many astronauts experience. Thirsk was also involved in four muscle physiology experiments. Studies

Unofficial convenience copy of A-CR-CCP-803/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-803-PF-001/A-CR-CCP-803-PF-001.pdf.
Verify against the official publication.

on previous missions have revealed a loss of muscle mass, biochemical changes in the muscle that oppose gravity and changes in the performance of certain muscle groups that bear weight and support the skeleton.

Dr. Thirsk had a strong interest in the lung function experiment whose goal was to explain the large differences in the ventilation and the perfusion (blood flow) to the top and bottom of the lung.

Bob Thirsk also participated in one microgravity science experiment, the Protein Crystallization Facility Experiment. The astronauts crystallized large proteins (such as DNA, RNA or viruses) that were analysed back on earth. The goal was to better understand the interactions within and between proteins and, eventually, to design better drugs to inhibit or improve certain effects.

The Columbia orbiter itself played a key part in tests to support raising the Hubble Space Telescope (HST) to a higher orbit during HST's second servicing mission. Columbia's vernier Reaction Control System jets were gently pulsed to boost the orbiter's altitude without jarring payloads. Raising the orbiter Columbia very gently, provided experience used to inform orbiter *Discovery's* later mission STS-82 how to raise HST's orbit without impacting its solar arrays. During STS-82 in February 1997, orbiter *Discovery* did indeed fire its manoeuvring jets several times to successfully boost HST to an orbit eight nautical miles higher.

PLACE AND DATE OF BIRTH

Born August 17, 1953, in New Westminster, B.C.

EDUCATION

Robert Thirsk's education includes:

- Primary and secondary schools in B.C., Alta., and Man.,
- BSc degree in Mechanical Engineering from the University of Calgary,
- MSc in Mechanical Engineering from the Massachusetts Institute of Technology (MIT),
- Doctorate of Medicine from McGill University, and
- Master of Business Administration from the MIT Sloan School of Management.

PROFESSIONAL EXPERIENCE

Robert Thirsk was in the family medicine residency program at the Queen Elizabeth Hospital in Montréal when he was selected in December 1983 for the Canadian Astronaut Program. He began astronaut training in February 1984 and served as backup payload specialist to Marc Garneau for the October 1984 space shuttle mission STS-41G.

Thirsk has been involved in various CSA projects including parabolic flight campaigns and mission planning. He served as crew commander for two space mission simulations: the seven-day CAPSULS mission in 1994, at Defence Research and Development Canada in Toronto, and the 11-day NEEMO 7 undersea mission in 2004 at the National Undersea Research Center in Key Largo, Florida. He also led an international research team investigating the effect of weightlessness on the heart and blood vessels.

In 1998, Thirsk was assigned by the CSA to NASA's Johnson Space Center in Houston to pursue mission specialist training. This training program involves advanced instruction on both shuttle and space station systems, extravehicular activity (EVA), robotic operations, and the Russian language. Within the NASA Astronaut Office, Thirsk serves as a capsule communicator (CapCom) for the International ISS program. CapComs participate in actual and simulated space missions as a communication link between the ground team at Mission Control and the astronauts in orbit. CapComs speak directly with the space station crew and assist with technical planning for the mission and last minute troubleshooting.

In 2004, Thirsk trained at the Yuri Gagarin Cosmonaut Training Centre near Moscow and became certified as a Flight Engineer for the Soyuz spacecraft. He served as backup Flight Engineer to European Space Agency (ESA) astronaut Roberto Vittori for the Soyuz 10S taxi mission to the ISS in April 2005. During the 10-day

Unofficial convenience copy of A-CR-CCP-803/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-803-PF-001/A-CR-CCP-803-PF-001.pdf.
Verify against the official publication.

mission, Thirsk worked as Crew Interface Coordinator (European CapCom) at the Columbus Control Centre in Germany. Thirsk then returned to the Johnson Space Center in Houston to begin ISS Expedition crew training.

Further to Thirsk's CapCom training and experience for NASA missions, in 2007 he underwent Eurocom (European capsule communicator) training in Germany to support the European Space Agency's (ESA) Columbus Control Centre (COL-CC). The COL-CC provides command and control for the Columbus laboratory which was carried into orbit on February 7, 2008, by STS-122.

SPECIAL HONOURS

Bob Thirsk's special honours include:

- recipient of the Association of Professional Engineers, Geologists and Geophysicists of Alberta Gold Medal,
- recipient of the University of Calgary Distinguished Alumni Award,
- recipient of the Gold Medal of the Professional Engineers of Ontario, and
- honorary membership in the College of Physicians and Surgeons of British Columbia.

AFFILIATIONS

Bob Thirsk's affiliations include:

- Professional Engineers of Ontario,
- Canadian College of Family Physicians,
- Canadian Aeronautics and Space Institute,
- Aerospace Medical Association,
- Colleges of Physicians and Surgeons of Ontario and of British Columbia, and
- Canadian Foundation for the International Space University.

Unofficial convenience copy of A-CR-CCP-803/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-803-PF-001/A-CR-CCP-803-PF-001.pdf.
Verify against the official publication.