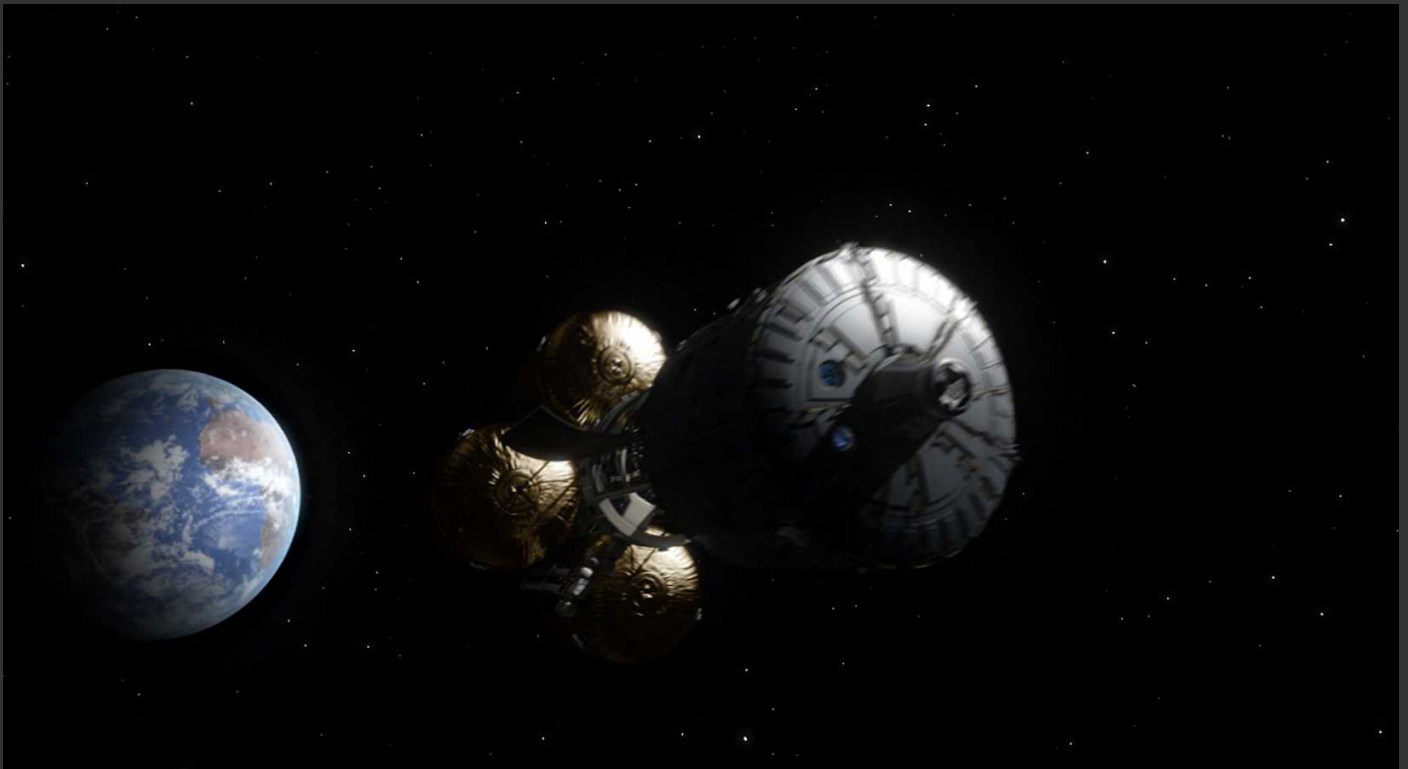


# RACE TO MARS

MISSION CONTROL: WE HAVE LIFTOFF!

DISCOVERY SCIENCE BLASTS OFF ON A RACE TO MARS



Experts suggest that we could see a successful human voyage to Mars in our lifetime, and when it happens, it will be the most ambitious, complex and dangerous expedition ever undertaken. With all the advancements in space travel and exhaustive scientific research being done today at international space agencies and laboratories, perhaps the future is near at hand. Discovery Science's new four-part series RACE TO MARS imagines and simulates the first manned mission to the Red Planet.

RACE TO MARS captures every exhilarating moment and draws viewers into the heart of the mission – from leaving Earth's orbit to the return voyage home.

In the year 2030, the race to be the first to reach the Red Planet is on – and China is leading the way. China has stunned the world by leapfrogging over America's long-term plans and has landed a series of advanced rovers and robotic Landers in their quest to make the most important discovery in history – extraterrestrial life. Once again, America and its partners, including Canada, are thrust into a winner-take-all space race – but this time the stakes are even higher than the race to the Moon nearly seven decades earlier.

## Episode 1:

As the Terra Nova begins its 583-day trip to Mars, the mission led by American Commander Rick Erwin (Michael Riley) is plagued by electrical power system malfunctions. Canadian flight engineer (Pascale Bussi eres) is forced to jettison one of the Canadarms. Tension mounts between the Russian co-pilot (Frank Schorpion) and the French flight engineer (Lothaire Bluteau). A Chinese craft with a robotics crew lands on Mars. Mission Control advises that Terra Nova's electrical system is compromised and suggests aborting the mission.



discovery  
science

# RACE TO MARS

MISSION CONTROL: WE HAVE LIFTOFF!

DISCOVERY SCIENCE BLASTS OFF ON A RACE TO MARS

Antoine makes a disturbing suggestion. Because of the competition with the Chinese, the mission launch date was moved up. He believes that pre-launch testing has been compromised and that the crew will not be able to count on anyone or anything except each other.

Mission Control makes contact. The Chinese mission, with a robotics crew, has landed on Mars and successfully deployed its solar powered drill. But the international crew is still expected to win: to be the first to find water, the first to find life. Later, there is much worse news: Mission Control has discovered deliberate fraud on the part of the suppliers of the electrical boards. There is no way to guarantee a successful Mars landing. It is suggested that the mission be aborted. The crew is devastated.

## Episode 2:

The crew ignores Mission Control's advice and lands safely on Mars but Japanese astronaut Hiromi (Kevan Ohtsji) is injured. The Chinese mission finds water but it is too salty to support life. The Terra Nova's equipment is wearing out faster than anticipated.

Terra Nova successfully docks with Gagarin and the team climbs into their space suits. As a tribute to his great-grandparents, Mikhail carries a skull cap. Lucia has a photo of her dog. Rick holds his father's pilot's wings. As a group saluting all the nations of the world, the crew steps onto Mars. But there is a blow from Mission Control: the Chinese have discovered water. Samples are being tested.

A huge dust storm with an electrostatic discharge fries the drill's electronics. And the Chinese results come in: the sample is saltier than the Dead Sea. It is highly unlikely that this water could have supported life. United behind their commander, the crew makes a simple request of the world's leaders – allow us to use the Chinese drill to complete our mission.

## Episode 3:

Public support on Earth of true international cooperation has been universal. Rick and Jackie set off to cannibalise the Chinese drill. While the Chinese water samples are too salty to support life, the international crew hope that, because it is drilling in a different location, its results will be more positive. Ascent for return to the Gagarin is only 10 days away and the crew is fatigued and concerned about time slipping by. Now almost totally recovered, Hiromi pressures Rick for an opportunity to take a shift outside. Against the flight surgeon's advice, Hiromi suits up. While he, Rick, Jackie and Antoine circle the drill, they hit water. But the drill is unstable and spurting slush all over the astronauts; it blows apart, striking and killing Hiromi.

The remaining five crew members have little time to mourn their loss as they must prepare for ascent from Mars. The Terra Nova is now homeward bound but the craft is full of mould and dust. Although the crew scrubs the craft clean, the astronauts get sicker every day. All systems tests are normal. What can be affecting all of the crew and why are they not responding to treatment?

Finally, the flight surgeon suggests that their only hope is to break the seal on one of the Mars samples and test for alien contamination. Rick refuses this request.



# RACE TO MARS

MISSION CONTROL: WE HAVE LIFTOFF!

DISCOVERY SCIENCE BLASTS OFF ON A RACE TO MARS

discovery  
science

It's a moral quandary: do they accept possible death from this undiagnosed disease or face a possible lifetime of quarantine on Earth if they are contagious?

## Episode 4:

Although they are unable to detect a pathogen, the crew's health continues to decline. Rick is concerned that they may either be a biohazard, a threat to Earth or too ill to be able to land. The crew is divided: Lucia and Antoine question Rick's refusal to open any of the Martian samples while Mikhail and Jackie stand behind their commander. About to face a proton storm, the spacecraft is put in safe mode. But, after the storm has passed, Antoine cannot fire up any of the systems. There is no power. Mikhail collapses and while Lucia is fighting to save him, there is a power surge, followed by an electrical fire. Antoine and Rick extinguish the flames but realize that the smoke alarm did not go off.

Mission Control has detected the system flaw: after every board failure, the master clock resets to its default pre-launch position. All readings are correct for only that time and date. It is not Mars but faulty technology which is killing the astronauts. They are suffering from carbon monoxide poisoning.

Wearing oxygen masks, the crew recovers. But, to ensure Terra Nova's safe re-entry into Earth's atmosphere, they must find and fix the problem. The engines must be working perfectly. Twelve days to go. Jackie pinpoints the challenge. Early in the mission, the electrical supply module was cracked by the swinging Canadarm. Five hours to go before ignition of re-entry burn. Carefully monitored for their radiation levels, Rick and Antoine exit the craft to repair and replace the faulty electrical boards. Just as he is completing the final check, Antoine catches and rips his glove on the mechanism. Rick pulls his now unconscious crew member to safety. The burn goes without a hitch. After 583 days, the mission is complete.

## Terra Nova Crew:

Commander Rick Erwin – United States  
Flight engineer Jackie Decelles – Canada  
Co-pilot Mikhail Cerenkov – Russia  
Flight engineer Antoine Hebert – France  
Flight surgeon Lucia Alarcon – United States  
Astronaut Hiromi Okuda – Japan

Michael Riley  
Pascale Bussières  
Frank Schorpion  
Lothaire Bluteau  
Claudia Ferri  
Kevan Ohtsji

## History of Mars Exploration:

National Aeronautics and Space Administration

Mariner 4 - USA Mars Flyby - 260 kg - (28 November 1964 – 20 December 1967)

Mariner 4 arrived at Mars on 14 July 1965 and passed within 9,845 kilometres of the planet's surface after an eight-month journey. This mission provided the first close-up images of the red planet. It returned 22 close-up photos showing a cratered surface. The thin atmosphere was confirmed to be composed of carbon dioxide in the range of 5-10 mbar. A small intrinsic magnetic field was detected. Mariner 4 is now in a solar orbit.



discovery  
science

# RACE TO MARS

MISSION CONTROL: WE HAVE LIFTOFF!

DISCOVERY SCIENCE BLASTS OFF ON A RACE TO MARS

Mariner 7 - USA Mars Flyby - 412 kg - (27 March 1969)

Mariner 7 arrived at Mars on 5 August 1969, and passed within 3,551 kilometers of the planet's South Pole region. Mariner 6 and 7 took measurements of the surface and atmospheric temperature, surface molecular composition, and pressure of the atmosphere. In addition, over 200 pictures were taken. Mariner 7 is now in a solar orbit.

Mariner 9 - USA Mars Orbiter - 974 kg - (30 May 1971 – 1972)

Mariner 9 arrived at Mars on 3 November 1971 and was placed into orbit on 24 November. This was the first US spacecraft to enter an orbit around a planet other than Earth. At the time of its arrival a huge dust storm was in progress on the planet. Many of the scientific experiments were delayed until the storm had subsided. The first high-resolution images of the moons Phobos and Deimos were taken. River and channel like features were discovered. Mariner 9 is still in Martian orbit.

Mars 5 - USSR Mars Orbiter - 4,650 kg - (25 July 1973)

Mars 5 entered into orbit around Mars on 12 February 1974. It acquired imaging data for the Mars 6 and 7 missions.

Viking 1 - USA Mars Orbiter/Lander - 3,399 kg - (20 August 1975 – 7 August 1980)

Viking 2 - USA Mars Orbiter/Lander - 3,399 kg - (9 September 1975 – 25 July 1978)

Viking 1 and 2 were designed after the Mariner spacecraft. They consisted of an orbiter and lander. The orbiter weighed 900kg and the lander 600 kg. Viking 1 was launched from the Kennedy Space Center, on 20 August 1975, the trip to Mars and went into orbit about the planet on 19 June 1976. The lander touched down on 20 July 1976 on the western slopes of Chryse Planitia (Golden Plains). Viking 2 was launched for Mars on 9 November 1975, and landed on 3 September 1976. Both landers had experiments to search for Martian micro-organisms. The results of these experiments are still being debated. The landers provided detailed colour panoramic views of the Martian terrain. They also monitored the Martian weather. The orbiters mapped the planet's surface, acquiring over 52,000 images. The Viking project's primary mission ended on 15 November 1976, 11 days before Mars' superior conjunction (its passage behind the Sun), although the Viking spacecraft continued to operate for six years after first reaching Mars. The Viking 1 orbiter was deactivated on 7 August 1980, when it ran out of altitude-control propellant. Viking 1 lander was accidentally shut down on 13 November 1982, and communication was never regained. Its last transmission reached Earth on 11 November 1982. Controllers at NASA's Jet Propulsion Laboratory tried unsuccessfully for another six-and-a-half months to regain contact with the lander, but finally closed down the overall mission on 21 May 1983.

Mars Global Surveyor - USA Mars Orbiter (7 November 1996)

Initiated due to the loss of the Mars Observer spacecraft, the Mars Global Surveyor (MGS) mission launched on 7 November 1996. MGS has been in a Martian orbit, successfully mapping the surface since March 1998.

Mars 96 - Russia Orbiter & Lander - (November 16, 1996)

Mars '96 consisted of an orbiter, two landers, and two soil penetrators that were to reach the planet in September 1997. The rocket carrying Mars 96 lifted off successfully, but as it entered orbit the rocket's fourth stage ignited prematurely and sent the probe into a wild tumble.



# RACE TO MARS

MISSION CONTROL: WE HAVE LIFTOFF!

DISCOVERY SCIENCE BLASTS OFF ON A RACE TO MARS

discovery  
science

It crashed into the ocean somewhere between the Chilean coast and Easter Island. The spacecraft sank, carrying with it 270 grams of plutonium-238.

Mars Pathfinder - USA Lander & Surface Rover - (December 1996)

The Mars Pathfinder delivered a stationary lander and a surface rover to the Red Planet on 4 July 1997. The six-wheel rover, named Sojourner, explored the area near the lander. The mission's primary objective was to demonstrate the feasibility of low-cost landings on the Martian surface. This was the second mission in NASA's low-cost Discovery series. After great scientific success and public interest, the mission formally ended on 4 November 1997, when NASA ended daily communications with the Pathfinder lander and Sojourner rover.

Mars Climate Orbiter - USA Orbiter - (11 December 1998) (Mars Surveyor '98 Orbiter)

This orbiter was the companion spacecraft to the Mars Surveyor '98 Lander, but the mission failed.

Mars Polar Lander - USA Lander - (3 January 1999) (Mars Surveyor '98 Lander)

The Polar Lander was scheduled to land on Mars on 3 December 1999. Ground crews were unable to contact the spacecraft, and it was declared a loss. NASA concluded that spurious signals during the lander leg deployment caused the spacecraft to think it had landed, resulting in premature shutdown of the spacecraft's engines and destruction of the lander on impact.

2001 Mars Odyssey - USA Mars Orbiter and Lander/Rover - (7 April 2001) (Mars Surveyor 2001 Orbiter)

This Mars orbiter reached the planet on 24 October 2001. This satellite will conduct mineral research and serve as a communications relay for future Mars missions. It is expected to serve in this capacity for the next five years.

Mars Express - European Space Agency Mars Orbiter and Lander - (June 2003)

The Mars Express Orbiter and the Beagle 2 lander were launched together on June 2, 2003. The Beagle 2 was released from the Mars Express Orbiter on 19 December 2003. The Mars Express arrived successfully on 25 December 2003. The Beagle 2 was also scheduled to land on 25 December 2003; however, ground controllers have been unable to communicate with the probe.

Mars Exploration Rover (MER) Mission - USA Mars Rovers - (June- July 2003)

These Mars rovers were launched in 2003. "Spirit", also known as MER-A, was launched on 10 June 2003 and successfully arrived on Mars on 3 January, 2004. "Opportunity", also known as MER-B, was launched on 7 July 2003 and successfully arrived on Mars on 24 January 2004.