

ADVANCING
THE FUTURE OF
HUMANITY

CDR Melissa Lewis will lead the Ares III on a long-duration mission to examine Martian gullies and sediment deposits for evidence of subsurface ice.



ARES³

THE COMPLETE MISSION GUIDE / 2035 - 2036



The Ares space program represents the best of our aspirations, and its success will forever stand as an unforgettable reminder about what we can achieve with effort, imagination and teamwork.

Perhaps it's the innate human desire to explore that propels us to venture so far from home, but I've always suspected that it has more to do with our innate desire to know who we are and where we come from that drives our actions.

Ultimately, that curiosity about where we've been is more about knowing where we're headed.

With that same sense of destination in mind, NASA will once again send a team of brave, dedicated explorers to Mars to further explore the past in the hopes of ascertaining our future.

By examining the Martian terrain and its geological history, we hope to learn more about why it wound up a desiccated, inhospitable world lest we find one day find our own planet on the same path.



Theodore Sanders
Director

PICTURED (L TO R FROM TOP):
CDR Melissa Lewis, Alex Vogel, Mark
Watney, Dr. Christopher Beck, Beth
Johanssen, and Rick Martinez.



Mission Overview

Ares III will continue our investigation into the biological, atmospheric and geological history of Mars in an effort to learn what it was that depleted the planet's atmosphere and dried up its oceans.

To that end, our team of scientists will embark upon a 31-day surface mission to examine Martian gullies, pseudocraters and sediment deposits for evidence of subsurface ice. Samples will be put through a range of chemical analyses to look for clues of an ancient, oxygen-rich atmosphere.

The gullies found near the Acidalia Planitia landing site have long been thought to be the result of erosion from steady flows of surface water. This mission will be the first time a team of researchers will be able to directly examine this particular site in the hopes of testing longstanding theories about the region.

Based upon their findings, we may not only learn about the planet's past but its potential for engineering and sustaining life for longer-duration missions and nascent colonies.

MISSION ROADMAP

MARCH 23, 2033

Mission Directive

After Congressional approval, NASA formally announces goals and objectives for the Ares III mission.

MAY 4, 2033

Crew Selection

Based on mission goals, the crew is screened and selected from a large pool of NASA and international astronauts.

SEPTEMBER 1, 2033

Crew Training

Training for an Ares mission can take up to two years and is comprised of an array of scientific and technical exercises.

SEPTEMBER 16, 2033

Presupply Missions

Provisions, artificial habitat and other vital equipment begins shipping to Mars through a series of unmanned supply drops.



June 29, 2035 – Crew Launch

Crew readies for transport via traditional shuttle launch to rendezvous with the main vessel harbored in low orbit.

JULY 6, 2035

Hermes Departure

After performing the final round of safety and procedural tests, the team begins the 124-day journey to Mars.

NOVEMBER 7, 2035

Mars Arrival

Once the journey is complete, the Ares III descends via MDV to the artificial habitat awaiting at the Acidalia Planitia site.

NOVEMBER 8, 2035

Surface Operations

The crew will make a series of departures from the HAB to complete their primary scientific expedition beginning with soil samples.

DECEMBER 5, 2035

Return to Earth

Primary mission tasks complete, the crew preps the HAB for decommission, returns to the Hermes via MAV and sets sail for home.

CDR. MELISSA LEWIS

Commander Melissa Lewis will be the first woman to lead a mission to Mars. She brings a diverse range of experience and achievement to the role of Mission Commander.

Lewis graduated with honors from the US Naval Academy with a degree in oceanography and would go on to serve as an officer in the revamped Submarine Arctic Science Program.

After her time in the Navy, Lewis began working on her PhD at CalTech's Division of Geological and Planetary Sciences. It's there that she connected with the Jet Propulsion Laboratory and was encouraged to join NASA.

Soon after, she found herself completing a series of in-space missions, including several trips to the SpaceX Station.

Recently, CDR Lewis spoke at a global technology conference hosted by UN Women and advocated for better access to STEM programs in developing nations and encouraged a new generation of women leaders across the world.

SELECTION

NASA Group 25 - 2026

HOMETOWN

Missoula, MN

JOB SPECIALTIES

Commander, Geologist



MJR. RICK MARTINEZ

Rick Martinez joins the Ares III mission to Mars as pilot after eleven decorated years of service in the United States Air Force.

Originally trained as a fighter pilot, Major Martinez eventually worked his way to the USAF Test Pilot School at Edwards Air Force Base where he made his mark as a top-notch pilot and continued to earn the respect and admiration of peers and commanders throughout his career.

By age fifteen, the Major knew that his ultimate goal was NASA. His first step towards making that dream come true was earning a bachelor of science in aeronautical engineering at the United States Air Force Academy. While at the academy, he also established himself as an amateur boxer and won a gold medal while leading the Falcons to a national championship.

As he gets ready to embark on the mission of a lifetime, Martinez has the full support of his family and wishes that everyone will one day have the chance to visit space.

SELECTION

NASA Group 26 - 2029

HOMETOWN

Brooklyn, NY

JOB SPECIALTIES

Pilot, MDV/MAV Specialist



MARK WATNEY

Botanist Mark Watney spent eleven months working at NASA's Goddard Space Flight Center before being selected for the Ares III Mission.

A Chicago native, Watney attended the University of Chicago for his undergrad before moving on to Northwestern University where he earned a PhD in Plant Biology and Conservation with an emphasis in hydroponology and environmental engineering. While a graduate student, he had his first experience with NASA by becoming a research fellow with the Graduate Student Researchers Program (GSRP). His work focused on hydrologic flow paths and sustainable water resources management within the Earth's Critical Zone.

Mark then spent two years in the Peace Corps engineering sustainable agriculture and water irrigation systems for developing nations.

Upon returning, he applied to the NASA Astronaut Candidate Program and was selected for his outstanding academic accomplishments, dedication and service to community, and an exemplary record of professional achievement.

SELECTION

NASA Group 27 - 2032

HOMETOWN

Chicago, IL

JOB SPECIALTIES

Botany, Mechanical Engineering



DR. CHRISTOPHER BECK

Dr. Chris Beck, flight surgeon for Ares III, graduated cum laude from the Yale School of Medicine. He was also a recipient of the Norma Bailey Berniker Prize, awarded to graduating students that best exemplify the disciplines and precepts of the Hippocratic Oath.

As a Captain in the United States Air Force Reserves, Dr. Beck completed extensive training in aerospace medicine. His record of accomplishment includes the Air Force Commendation Medal and the Meritorious Service Medal.

Since joining NASA, Chris Beck has made two trips to the SpaceX Station and completed five spacewalks (EVAs). He also furthered his training with a master's degree in biomedical sciences and has published numerous journal pieces in collaboration with the National Space Biomedical Research Institute. His research has focused on musculoskeletal alterations and the effects of deep space travel.

For the upcoming mission to Mars, he will serve as the crew's EVA specialist and biologist in addition to his flight surgeon duties.

SELECTION

NASA Group 26 - 2029

HOMETOWN

Hartford, CT

JOB SPECIALTIES

Flight Surgeon, EVA Specialist



ALEX VOGEL

Alex Vogel joins the Ares III crew through a partnership between NASA and the European Space Agency. A noted scientist and experienced astronaut, Vogel will serve as the navigator on the Hermes. He will become the first German to go to Mars.

He holds master's degrees in both chemistry and astrophysics from The University of Bonn as well as a doctorate in chemistry from the University of Tübingen.

For his doctorate, Vogel spent six months in Antarctica performing research in conjunction with the Alfred Wegener Institute for Polar and Marine Research in Bremerhaven, Germany. The study examined ancient ice samples and measured chemical traces of greenhouse gases in ice cores.

While in the field, he passed the time by volunteering to help with efforts to measure cosmic microwave background and has published dozens of papers in international journals.

A family man, Vogel hopes that one day his daughter can follow in his footsteps.

SELECTION

2030 ESA Group

HOMETOWN

Künzelsau, GER

JOB SPECIALTIES

Chemistry, Nav Systems, Astrophysics



BETH JOHANSEN

Beth Johanssen displayed a prodigious aptitude for technology at an early age. Graduating high school at just sixteen, she'd go on to win NASA's largest hackathon when she was seventeen before moving on to MIT for dual undergraduate degrees in math and computer science.

Johanssen started a private software company prior to starting graduate school at Stanford University. Drawn to Silicon Valley, she was intent on becoming a software engineer and CEO. However, during this time she would come into contact with SpaceX executive Brett Parker at a conference on advanced systems theory. Impressed by her work, Parker recruited Johanssen to help develop the software that would later become an integral part of the Hermes operating system. Her work on the project inspired her decision to switch paths and join NASA.

Fueled by her desire to make the trek to Mars, she was able to leverage her experience with the Hermes and secure a spot on the Ares III as its System Operator and Reactor Technician. Her knowledge and skill set make her an invaluable addition to the mission.

SELECTION

NASA Group 27 - 2032

HOMETOWN

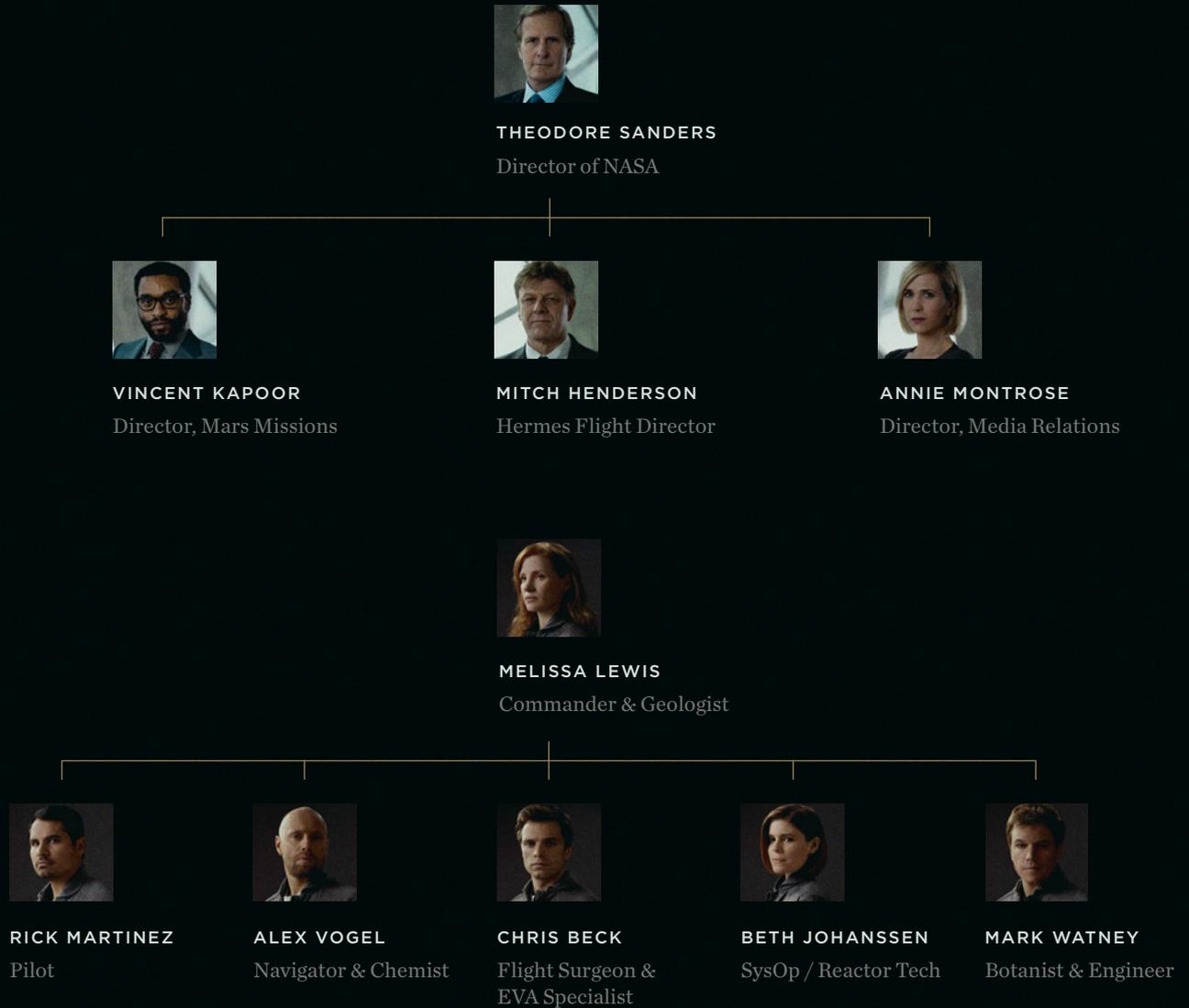
San Jose, CA

JOB SPECIALTIES

SysOp, Reactor Tech



Ares III Organizational Chart



The Hab

While on Mars, the Ares III crew will be living in an artificial habitat, or Hab for short. Designed for 31-days of use, the Hab will be filled with an array of supplies sent to the planet on fourteen unmanned supply missions. The unit itself is constructed of durable industrial canvas capable of sheltering its inhabitants from electromagnetic waves to minimize risks from solar radiation exposure.

Boasting 92 m² of floor space, three lab tables, and two airlocks, this unit is the most advanced habitat servicing NASA today. Its state-of-the-art life support systems are monitored by an automated smart system that actively regulates temperature, oxygen, and water.

In addition to features such as the Oxygenator and Water Reclaimer, there are emergency backups for critical systems such as LED lighting and spare oxygen tanks as well as secondary and tertiary communication systems.

The entire Hab is powered via solar panels arranged in a small energy farm outside the unit. Additionally, to minimize human impact on the planet, all waste and excrement is removed through a vacuum-dried waste removal system that is later collected and studied by NASA scientists to examine the effect of long-duration surface operations.



The Hermes

NASA's Hermes interplanetary spacecraft is a once in a generation achievement that marks the beginning of a new scientific era.

Featuring dozens of technological advancements, the Hermes is the direct result of a decades-long collaboration between NASA, ROSCOSMOS, ESA, JAXA, ISRO, and the global private sector.

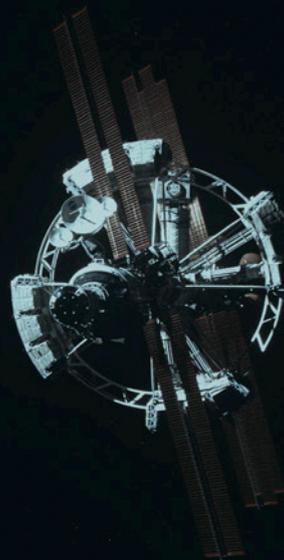
The Hermes was assembled in low Earth orbit with the new SpaceX Station serving as an assembly platform. Individual parts were transported to the station piece by piece. The process was tedious, but the results established a new era of space travel.

Crews take a transport shuttle to and from the ship. From there, the ship's revolutionary propulsion system utilizes ion engines to churn out argon and propel the ship forward in a perfect controlled cruise. While aboard, the ship's rotating gravity drum generates enough artificial gravity to allow

the astronauts ease of mobility while protecting them from the effects long-term weightlessness. It also features state of the art plastic shielding to insulate the ship from cosmic radiation. The ship features a powerful reactor that will power all functioning. It also offers an array of life support systems, such as its oxygenator and water reclamation processors.

Despite these innovations, the Hermes has a relatively short lifespan. It is currently commissioned for five missions to and from Mars, and the rigors of travel are expected to render the ship unsafe for additional interplanetary travel.

However, after the completion of Ares V, the Hermes is currently planned to be retooled and recommissioned as a new International Space Station open to astronauts from the world's established and emerging space programs.

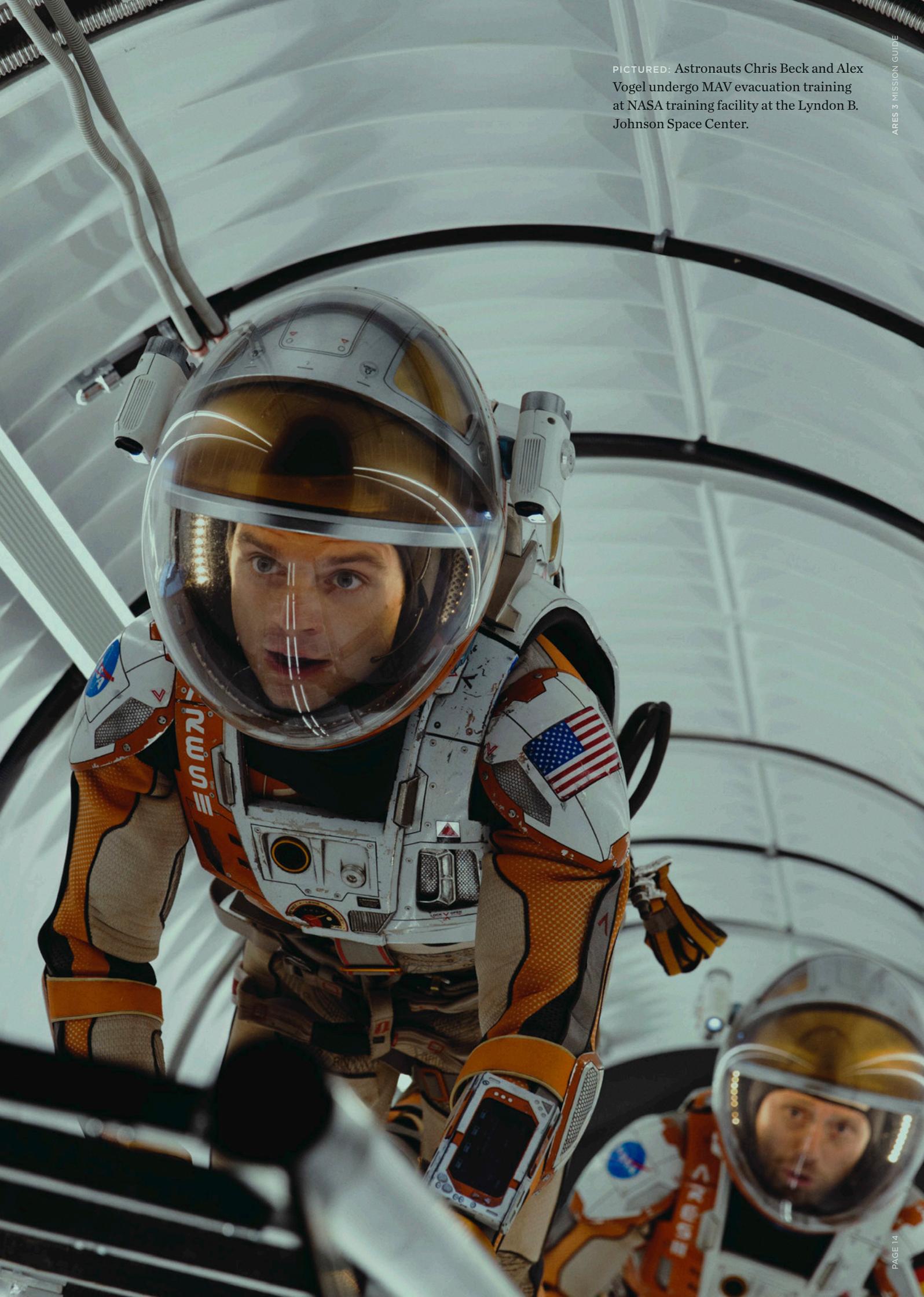


The Rover

These tank-sized rovers are capable of maintaining an individual atmosphere complete with CO² filters and airlock. The vehicle itself is capable of analyzing atmospheric conditions and is built to withstand even the strongest Martian storms. It's powered with a 9000Wh battery and has a top speed of 25 kph.



PICTURED: Astronauts Chris Beck and Alex Vogel undergo MAV evacuation training at NASA training facility at the Lyndon B. Johnson Space Center.



PICTURED: Botanist Mark Watney and the Ares III crew spent two weeks isolated in the Nevada desert as a field simulation and survival training exercise.



