

Mars research subjects to emerge after 8 months of isolation

September 15 2017, by Caleb Jones



In this 2017 photo released by the University of Hawaii crew members of Mission V, walk up hill with a cart next to the university's facility Hawaii Space Exploration Analog and Simulation (HI-SEAS) at the Mauna Loa volcano, Big Island, Hawaii. After eight months of living in isolation on a remote Hawaii volcano, six NASA-backed space psychology research subjects will emerge from their Mars-like habitat on Sunday, Sept. 17, 2017. The participants are in a study designed to better understand the psychological impacts of a long-term manned mission to space on astronauts. NASA hopes to send humans to Mars by the 2030s. (University of Hawaii via AP)

After eight months of living in isolation on a remote Hawaii volcano, six

NASA-backed research subjects will emerge from their Mars-like habitat on Sunday and return to civilization.

Their first order of business after subsisting on mostly freeze-dried and canned food: Feast on fresh-picked pineapple, papaya, mango, locally grown vegetables and a fluffy, homemade egg strata cooked by their project's lead scientist.

The crew of four men and two women were quarantined on a vast plain below the summit of the world's largest active volcano in January. All of their communications with the outside world were subjected to a 20-minute delay—the time it takes for signals to get from Mars to Earth.

They are part of a study designed to better understand the psychological effects that a long-term manned mission to space would have on astronauts. The data they gathered will help NASA better pick crews that have certain traits and a better chance of doing well during a two-to-three year Mars expedition.

The space agency hopes to send humans to the red planet by the 2030s.

The Hawaii team wore specially-designed sensors to gauge their moods and proximity to other people in the small, 1,200 square-foot (111-square meter) dome where they have lived.



This 2017 photo released by the University of Hawaii shows crew members walking around the university's Hawaii Space Exploration Analog and Simulation (HI-SEAS) on Mauna Loa volcano, Big Island, Hawaii. After eight months of living in isolation on a remote Hawaii volcano, six NASA-backed space psychology research subjects will emerge from their Mars-like habitat on Sunday, Sept. 17, 2017. The participants are in a study designed to better understand the psychological impacts of a long-term manned mission to space on astronauts. NASA hopes to send humans to Mars by the 2030s. (University of Hawaii via AP)

The devices monitored, among other things, their voice levels and could sense if people were avoiding one another. It could also detect if they were next to each other and arguing.

The crew played games designed to measure their compatibility and stress levels. And when they got overwhelmed by being in such close proximity to teach other, they could use virtual reality devices to escape to tropical beaches or other familiar landscapes.

The project's lead investigator, University of Hawaii professor Kim Binsted, said the crew members also kept written logs about how they were feeling.

"This is our fifth mission, and we have learned a lot over those five missions. We've learned, for one thing, that conflict, even in the best of teams, is going to arise," Binsted said. "So what's really important is to have a crew that, both as individuals and a group, is really resilient, is able to look at that conflict and come back from it."



In this 2017 photo released by the University of Hawaii crew members of Mission V, from left, Joshua Ehrlich, Ansley Barnard and James Bevington work inside the university's facility Hawaii Space Exploration Analog and Simulation (HI-SEAS) at the Mauna Loa volcano, Big Island, Hawaii. After eight months of living in isolation on a remote Hawaii volcano, six NASA-backed space psychology research subjects will emerge from their Mars-like habitat on Sunday, Sept. 17, 2017. The participants are in a study designed to better understand the psychological impacts of a long-term manned mission to space on astronauts. NASA hopes to send humans to Mars by the 2030s. (University of Hawaii via AP)

The project is the fifth in a series of six NASA-funded studies at the University of Hawaii facility called the Hawaii Space Exploration Analog and Simulation, or HI-SEAS. NASA has dedicated about \$2.5 million to the studies at the facility.

"So the previous three missions, the four, eight and 12 month missions, those were primarily looking at crew cohesion and performance," Binsted said. "On this mission and going forward we are looking at crew selection and composition."

Crew members were mostly excited and optimistic when they entered the facility in January, but had some trepidation.

"My biggest fear was that we were going to be that crew that turned out like Biosphere 2, which wasn't a very pretty picture," said mission commander James Bevington in January.



In this 2017 image taken from drone video provided by the University of Hawaii, a crew member of the Hawaii Space Exploration Analog and Simulation (HI-SEAS) Mission 5 team stands outside the facility on Mauna Loa volcano, Big Island, Hawaii. After eight months of isolation in the simulated space dome atop the remote Hawaii volcano, six NASA-backed space psychology research subjects will emerge from their Mars-like habitat on Sunday, Sept. 17, 2017, and return to civilization. The crew of four men and two women were cut off from the rest of the world in January for a study that will look at the psychological impacts associated with long-term space travel and living on Mars. (University of Hawaii via AP)

Biosphere 2 was a 1990s experimental greenhouse-like habitat in Arizona that turned into a debacle. It housed different ecosystems and a crew of four men and four women in an effort to understand what would be needed for humans to live on other planets. The participants were supposed to grow their own food and recycle their air inside the sealed glass space.

But the experiment soon spiraled out of control, with the carbon dioxide level rising dangerously and plants and animals dying. The crew members grew hungry and squabbled so badly during the two years they spent cooped up that by the time they emerged, some of them were not speaking to each other. Unlike the Biosphere 2, HI-SEAS is an opaque structure, not a see-through one, and it is not airtight.

The HI-SEAS crew was not confined to the dome but they were required to wear spacesuits and whenever they went outside the dome for geological expeditions, mapping studies or other tasks.

Other Mars simulation projects exist around the world, but Hawaii researchers say one of the chief advantages of their project is the area's rugged, Mars-like landscape, on a rocky, red plain below the summit of

Mauna Loa, the world's largest active volcano.



In this 2017 photo released by the University of Hawaii crew members of Mission V, walk across lava next to the university's facility Hawaii Space Exploration Analog and Simulation (HI-SEAS) at the Mauna Loa volcano, Big Island, Hawaii. After eight months of living in isolation on a remote Hawaii volcano, six NASA-backed space psychology research subjects will emerge from their Mars-like habitat on Sunday, Sept. 17, 2017. The participants are in a study designed to better understand the psychological impacts of a long-term manned mission to space on astronauts. NASA hopes to send humans to Mars by the 2030s. (University of Hawaii via AP)

The crew's vinyl-covered shelter is about the size of a small two-bedroom home, has small sleeping quarters for each member plus a kitchen, laboratory and bathroom. The group shares one shower and has two composting toilets.

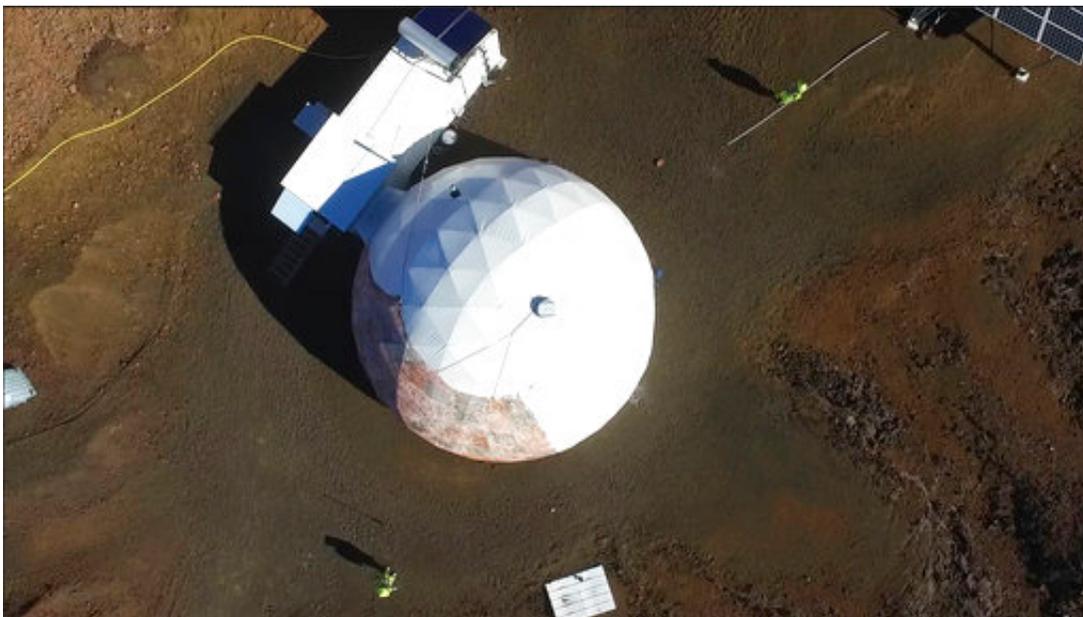
To maintain the crew's sense of isolation, bundles of food and supplies

were dropped off at a distance from the dome, and the team members sent out a robot to retrieve them.

The team's information technology specialist, Laura Lark, thinks a trip to Mars is a reasonable goal for NASA.

"Long term space travel is absolutely possible," she said in a video message from within the dome. "There are certainly technical challenges to be overcome. There are certainly human factors to be figured out."

The university is already starting to make plans for Mission 6, the final study funded by the U.S. space agency.



In this 2017 image taken from drone video provided by the University of Hawaii, crew members of the Hawaii Space Exploration Analog and Simulation (HI-SEAS) Mission 5 team stand outside the facility on Mauna Loa volcano, Big Island, Hawaii. After eight months of isolation in the simulated space dome atop the remote Hawaii volcano, six NASA-backed space psychology research subjects will emerge from their Mars-like habitat on Sunday, Sept. 17, 2017, and return to civilization. The crew of four men and two women were cut off from

the rest of the world in January for a study that will look at the psychological impacts associated with long-term space travel and living on Mars. (University of Hawaii via AP)



In this Wednesday, Sept. 13, 2017 photo, University of Hawaii professor Kim Binsted stands in her office in Honolulu. Binsted is the lead researcher for the Hawaii Space Exploration Analog and Simulation, or HI-SEAS, facility on the Big Island's Mauna Loa volcano. A group of six space psychology research subjects who have been living in the facility for the past eight months, isolated from the rest of the rest of the world to simulate life on Mars, will be leaving their habitat on Sunday, Sept. 17, 2017. The project is the fifth in a series of NASA-funded studies at the University of Hawaii facility. (AP Photo/Caleb Jones)



In this 2017 photo released by the University of Hawaii Mission Specialist, Information Technology and Outreach of Mission V, Laura Lark, shows bread inside the university's facility Hawaii Space Exploration Analog and Simulation (HI-SEAS) at the Mauna Loa volcano, Big Island, Hawaii. After eight months of living in isolation on a remote Hawaii volcano, six NASA-backed space psychology research subjects will emerge from their Mars-like habitat on Sunday, Sept. 17, 2017. The participants are in a study designed to better understand the psychological impacts of a long-term manned mission to space on astronauts. (University of Hawaii via AP)



In this 2017, aerial drone photo released by the University of Hawaii crew members of Mission V, Brian Ramos and Laura Lark walk around the university's facility Hawaii Space Exploration Analog and Simulation (HI-SEAS) at the Mauna Loa volcano, Big Island, Hawaii. After eight months of living in isolation on a remote Hawaii volcano, six NASA-backed space psychology research subjects will emerge from their Mars-like habitat on Sunday, Sept. 17, 2017. The participants are in a study designed to better understand the psychological impacts of a long-term manned mission to space on astronauts. NASA hopes to send humans to Mars by the 2030s. (University of Hawaii via AP)



In this June 9, 2015, photo released by the University of Hawaii Science Officer, Samuel Payler, right, a doctoral candidate at the UK Centre for Astrobiology, University of Edinburgh is seen weightlessness during a "Zero-G" Airbus A300 parabolic flight, a project of ESA's Education Program. Payler is the Science Officer of the university's facility Hawaii Space Exploration Analog and Simulation (HI-SEAS) at the Mauna Loa volcano, Big Island, Hawaii. After eight months of living in isolation on a remote Hawaii volcano, six NASA-backed space psychology research subjects will emerge from their Mars-like habitat on Sunday, Sept. 17, 2017. NASA hopes to send humans to Mars by the 2030s. (University of Hawaii via AP)



In this 2017 photo released by the University of Hawaii crew member, Joshua Ehrlich, of Mission V, works on a veggie inside the university's facility Hawaii Space Exploration Analog and Simulation (HI-SEAS) at the Mauna Loa volcano, Big Island, Hawaii. After eight months of living in isolation on a remote Hawaii volcano, six NASA-backed research subjects will emerge from their Mars-like habitat on Sunday, Sept. 17, 2017. The crew was studied by researchers to better understand the psychological impacts a long-term manned mission to space would have on astronauts. NASA hopes to send humans to Mars by the 2030s. (University of Hawaii via AP)



This Jan. 19, 2017, photo released by the University of Hawaii shows the university's Hawaii Space Exploration Analog and Simulation (HI-SEAS) crew members, from left, Joshua Ehrlich, Mission Specialist, Biology, Laura Lark, Mission Specialist, Information Technology and Outreach, Samuel Payler, Science Officer, Brian Ramos, Health and Performance Officer, James Bevington, Commander, and Ansley Barnard, Engineering Officer outside the HI-SEAS facility at the Mauna Loa volcano, Big Island, Hawaii. After eight months of living in isolation on a remote Hawaii volcano, six NASA-backed space psychology research subjects will emerge from their Mars-like habitat on Sunday, Sept. 17, 2017. The participants are in a study designed to better understand the psychological impacts of a long-term manned mission to space on astronauts. (University of Hawaii via AP)

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