

Water pools in US astronaut's helmet after spacewalk

February 25 2015

An American astronaut found water pooling inside his helmet after he finished a six-plus hour spacewalk on Wednesday, raising new concerns about the safety of NASA's spacesuits.

Terry Virts was not harmed during the incident, which the US space agency described as "minor" compared to the near-drowning of an Italian astronaut when a similar problem occurred in 2013.

But mission managers will be poring over the data at a meeting on Friday to decide whether another spacewalk can go ahead as planned on Sunday, a NASA spokesman said.

Even before this series of three spacewalks began on Saturday, NASA voiced concern about a recurring problem with the American spacesuits in a part of the temperature control system known as the fan pump separator.

Virts did not notice any water during the spacewalk, as he toiled for hours to lubricate the latching mechanisms on a robotic arm and helped his colleague Barry Wilmore get the space station's exterior ready for the arrival of commercial spaceships carrying astronauts in the coming years.

Their spacewalk lasted six hours and 43 minutes.

It was only after Virts was done, and had re-entered the Quest airlock,

that he began to feel dampness on the back of his head and saw water pooling near the front of his headpiece.

The water inside Virts' helmet was "kind of pooling on the front side of his helmet above the eye level," European Space Agency astronaut Samantha Cristoforetti told mission control in Houston.

The water was "about three inches in diameter," she said, noting that the amount of water had increased in the moments since he first noticed it.

NASA television showed live images of Virts smiling inside his helmet and blowing on the water to make it ripple, before eventually removing the headpiece with Cristoforetti's help.

Virts then told mission control that the water had not come from his drink bag, which is rigged up inside the helmet in case astronauts get thirsty, and that it had a chemical taste.

A total of 11 milliliters of the fluid was collected with a syringe for analysis.

Recurring problem

NASA commentator Rob Navias said the problem was "not nearly as severe" as the near-drowning of Italian astronaut Luca Parmitano, who had to be rushed back inside the space station in 2013 after water began leaking in his helmet.

But the US space agency said last week engineers were concerned about water and condensation building up and causing a breakdown in a part of the suit's temperature control system.

NASA discovered the problem in December when a fan pump separator

did into speed up as expected on one suit. A similar issue was discovered in a second spacesuit in January.

Wilmore was shipped a new suit and Virts was wearing a suit with a replacement fan pump separator that had shown some signs of corrosion.

The US space agency discussed the issue with reporters before the spacewalks began, and delayed the outings by one day in order to complete an internal investigation.

Kenneth Todd, International Space Station Operations and Integration manager said on February 18 that engineers believe small amounts of water are building up in the bearings inside the fan pump separator each time the suit is powered up and powered down, leading to corrosion over time.

However, he said the astronauts were not in danger and that they were wearing suits that "have operated every time we turned them on."

Spacewalks

The final spacewalk of this series is set to begin Sunday morning at 7:10 am (1210 GMT), but mission managers will not give the go or no-go until after their meeting on Friday.

The goal is to set up additional docking ports—which are essentially parking spots for space taxis—at the ISS for the arrival of more crew-carrying spacecraft.

Boeing plans to send its first astronaut to space aboard the CST-100 spaceship in late 2017, followed by SpaceX soon after.

The retirement of the 30-year space shuttle program in 2011 left the

United States without a spaceship that could send astronauts to low-Earth orbit.

In the meantime, the world's astronauts are riding aboard Russian Soyuz capsules at a price of \$70 million per seat.

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