

3rd spacewalk needed to restore cooling system

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In this image taken from video and made available by NASA astronaut Doug Wheelock, foreground begins the first of two spacewalks to replace a broken ammonia pump Saturday Aug. 7, 2010. (AP Photo/NASA)

(AP) -- A pair of space station astronauts had to hammer loose a stuck connector during an urgent spacewalk to restore a crucial cooling system Saturday, then an ammonia leak erupted and hampered the entire repair effort.

Despite making one of the longest spacewalks ever, Douglas Wheelock and Tracy Caldwell Dyson had to give up trying to remove a broken ammonia pump and retreat inside.

Disappointed managers said two more spacewalks now will be needed to

replace the pump and get the International Space Station's cooling system operating normally again. The original plan called for two spacewalks.

Another [spacewalk](#) won't be attempted until Wednesday at the earliest. Engineers huddled following Saturday's eight-hour, three-minute effort - the sixth longest spacewalk ever - to consider their options.

"We will get through this problem," said space station program manager Mike Suffredini. "The challenge is to get through this problem before the next problem hits the other cooling system."

The pump failure knocked out half of the space station's cooling system last weekend, leaving the orbiting lab with only one good cooling loop. Another breakdown could leave the station in a precarious situation.

From the start, NASA described the repair work as some of the most challenging ever attempted at the 220-mile-high complex.

The latest trouble struck halfway through Saturday's spacewalk. Wheelock and Caldwell Dyson could not get one of the four pressurized ammonia hoses to come off the disabled pump.

"Wow. That thing is not budging," Wheelock told Mission Control.

A bit of ammonia coolant leaked out as the spacewalkers struggled with the connections. Wheelock said the escaping ammonia resembled tiny snowflakes.

Lagging well behind by this point, the spacewalkers managed to remove three of the four hoses. Wheelock tried once more to disconnect the balky line, banging the jammed button with a special tool. It worked.

Mission Control erupted in applause. "Awesome," Mission Control radioed.

But the exuberance was dampened by a stream of escaping ammonia.

The astronauts managed to stop the leak when they plugged the troublesome connector back in. There was time for little else as the spacewalk neared the seven-hour mark. They headed back to the air lock, and inspected their suits and equipment for ammonia crystals. None was found, but the pair still had to go through drawn-out decontamination procedures.

Any further repairs will need to be made by astronauts, not ground controllers, Suffredini said. Ultimately, the hose in question needs to come off if the failed pump is to be removed, but additional ammonia leakage is unacceptable.

The pump is supposed to push ammonia coolant through the lines on the right side of the complex and prevent equipment from overheating. To cope with the failure, the six-person crew had to turn off all unnecessary equipment and halt science experiments a week ago.

The cooling line on the left side - unaffected by the trouble - has had to manage everything.

Although space station managers knew an ammonia pump would fail one day, they did not expect it to happen so soon in the 12-year life of the complex. The broken pump had been in operation since 2006.

Wheelock could find nothing wrong with the pump - about the size of a bathtub - and he saw no signs it had been hit by micrometeorites or other debris. Suffredini later noted that the connectors are prone to trouble, and that the leak is not entirely surprising.

Each pump is a boxy 5 1/2 feet by 4 feet by 3 feet and has a mass of 780 pounds. The new pump, an on-board spare, presumably will be installed on the second or third spacewalk.

NASA said the breakdown is serious but has not endangered the crew.

Saturday's spacewalk was the first by Americans, without a shuttle present, since 2008.

The crew includes three Americans and three Russians. Caldwell Dyson has been on board since April, and Wheelock since June.

Online:

[NASA: http://www.nasa.gov/mission-pages/station/main/index.html](http://www.nasa.gov/mission-pages/station/main/index.html)

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