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ASTRONOMY

Establishing a base on the moon is fraught with risk

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On July 20, 1969, man first set foot on the moon. So why haven't we established a moon base?

Perhaps because it is too dangerous. Even simple moon dust presents a formidable challenge.

Recently, NASA announced plans to establish a moon base by 2020. Space exploration is bound to present many dangers, some that we can prepare for and others that will surprise us.



When the pilgrims came to America, they prepared as best they could for the New World, but few survived the first winter. Will astronauts going to the moon suffer a similar fate from unexpected dangers?

One of the biggest problems is that there is no quick return to Earth. The International Space Station can be evacuated in a matter of hours, but a trip home from the moon would take several days.

Consider other hazards.

On the moon, there is no air. The same is true for the space station, so presumably NASA knows how to deal with this.

On the moon there is lunar dust, also called regolith, microscopic grains with sharp edges.

The sharp-edged lunar dust can pierce spacesuits and ruin vacuum seals, letting air escape. In 10 hours on the moon, astronaut Pete Conrad's spacesuit was at the leak safety limit because of the abrasive dust.

Research is being done at NASA Glenn to find ways to combat dust at a future moon base.

On the Apollo 16 mission to the moon, the vacuum cleaner designed to pick up the dust broke after a few days. Preparation is a good thing, but the real test is whether engineering solutions will work on the moon.

Other problems are X-ray bursts from solar flares, malfunctions of electricity from solar panels, recycling of water, removal of carbon dioxide from the air and so on.

Exploration is a dangerous business. What will we gain by establishing a moon base? Considering the cost of each trip to the moon, that's the billion-dollar question.

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