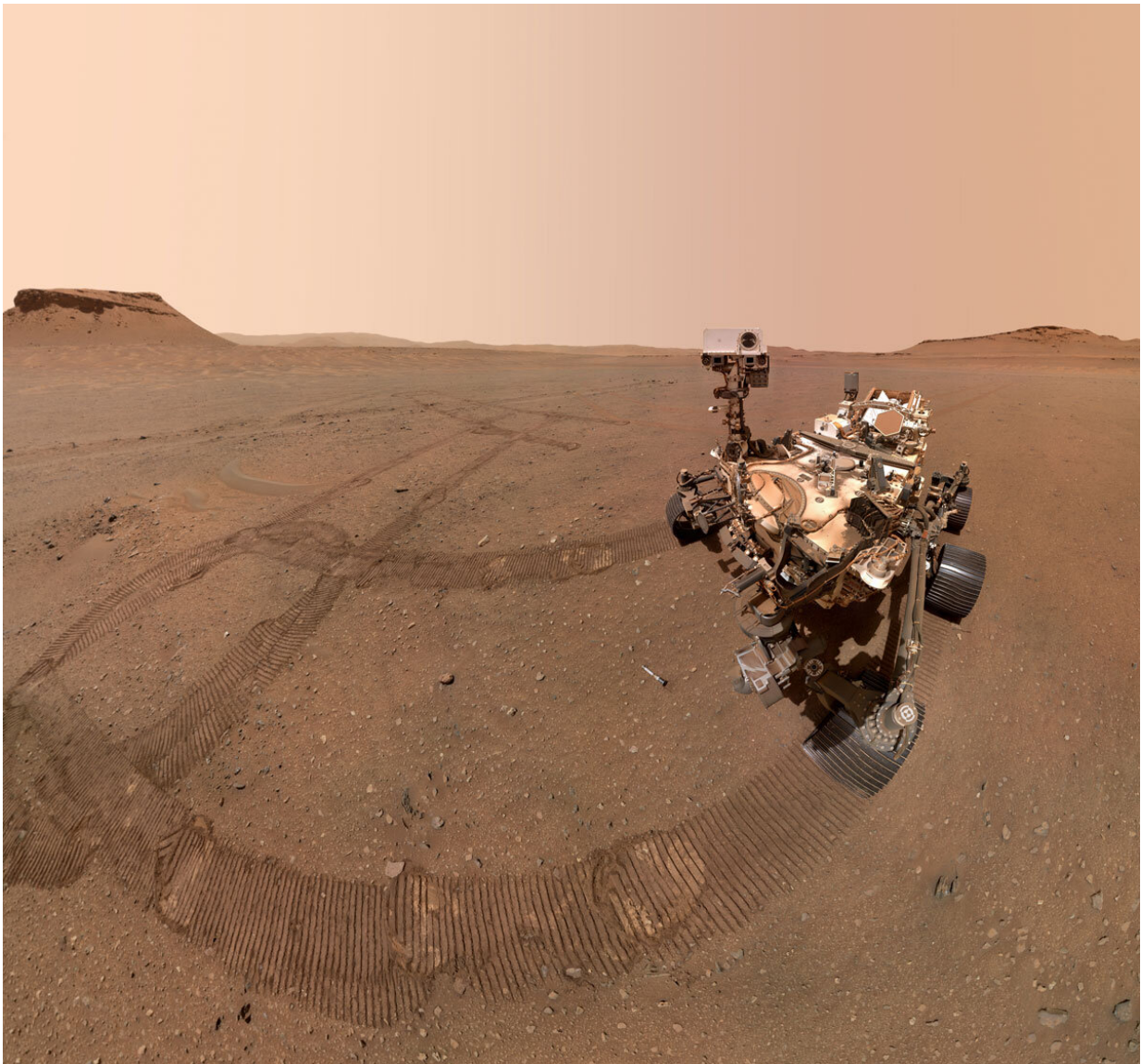


Perseverance takes a selfie to show off some of its samples

January 27 2023, by Nancy Atkinson



The Perseverance Mars rover took a selfie with several of the 10 sample tubes it

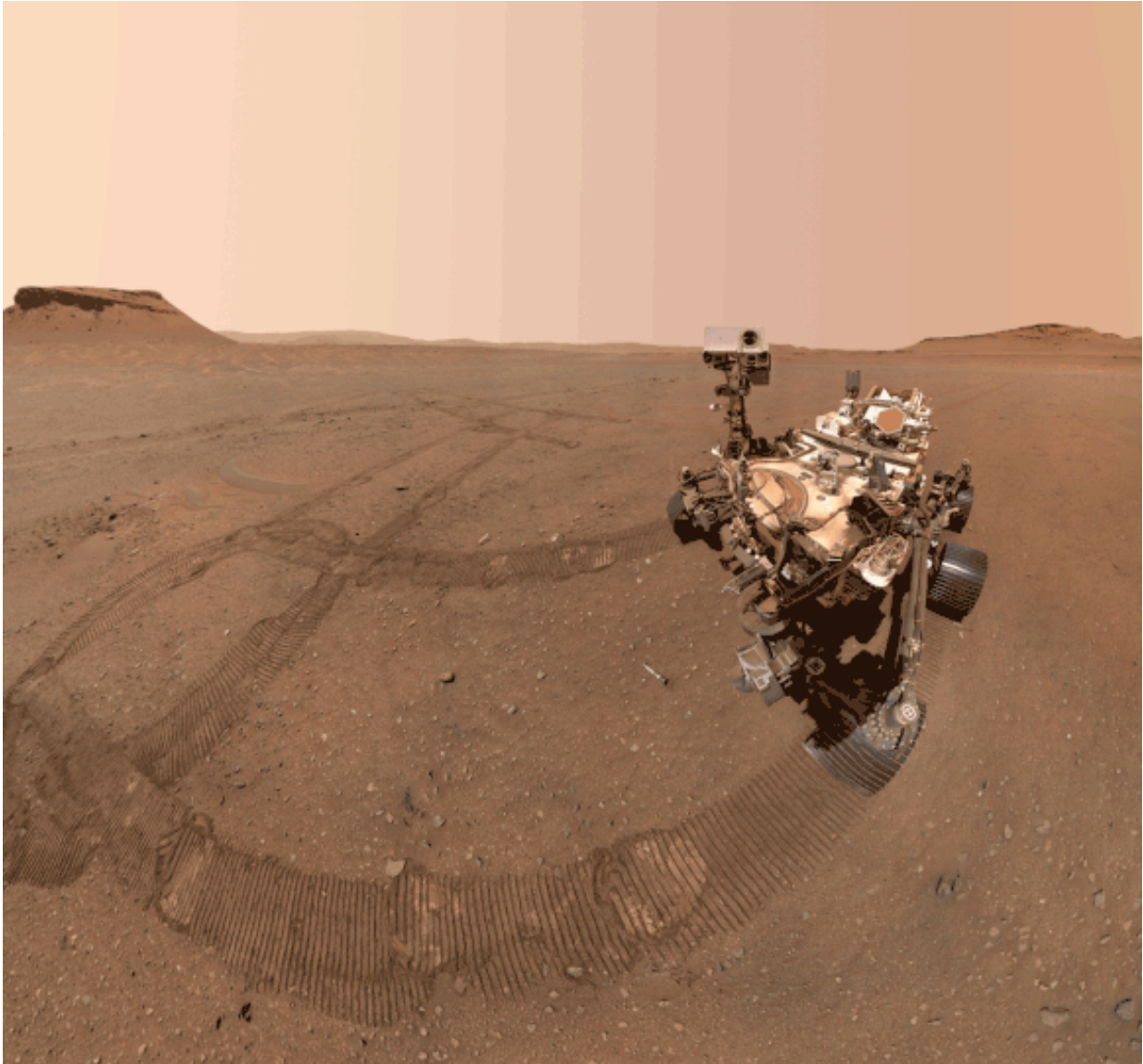
deposited on the Martian surface. Credit: NASA/JPL-Caltech/MSSS

One of the main jobs for the Perseverance Mars rover past few weeks has been collecting carefully selected samples of Mars rock and soil. These samples have been placed and sealed in special sample tubes and left in well-identified places so that a future sample return mission can collect them and bring the Martian samples back to Earth.

Perseverance has now dropped 10 sample tubes and to celebrate, it took a couple of selfies with several of the sample tubes visible in the designated "sample depot" it is creating within an area of Jezero Crater. The area of the depot is nicknamed "Three Forks."

The selfie was taken by the [rover](#) using its WATSON (Wide Angle Topographic Sensor for Operations and eNginEering) camera on the end of the robotic arm on Jan. 20, 2023, the 682nd Martian day, or sol, of the [mission](#).

The selfies are composed of 56 individual WATSON images that were stitched together once they were sent back to Earth. Visible on the ground right next to the rover in this image is the ninth tube that was dropped by Perseverance. Other sample tubes are visible as well.



The Perseverance Mars rover took a selfie with several of the 10 sample tubes it deposited on the Martian surface. Credit: NASA/JPL-Caltech/MSSS

In this animated GIF, the rover looks down at the sample tube and then back at the camera, like a proud parent.

NASA says the depot marks a crucial milestone in the Mars Sample

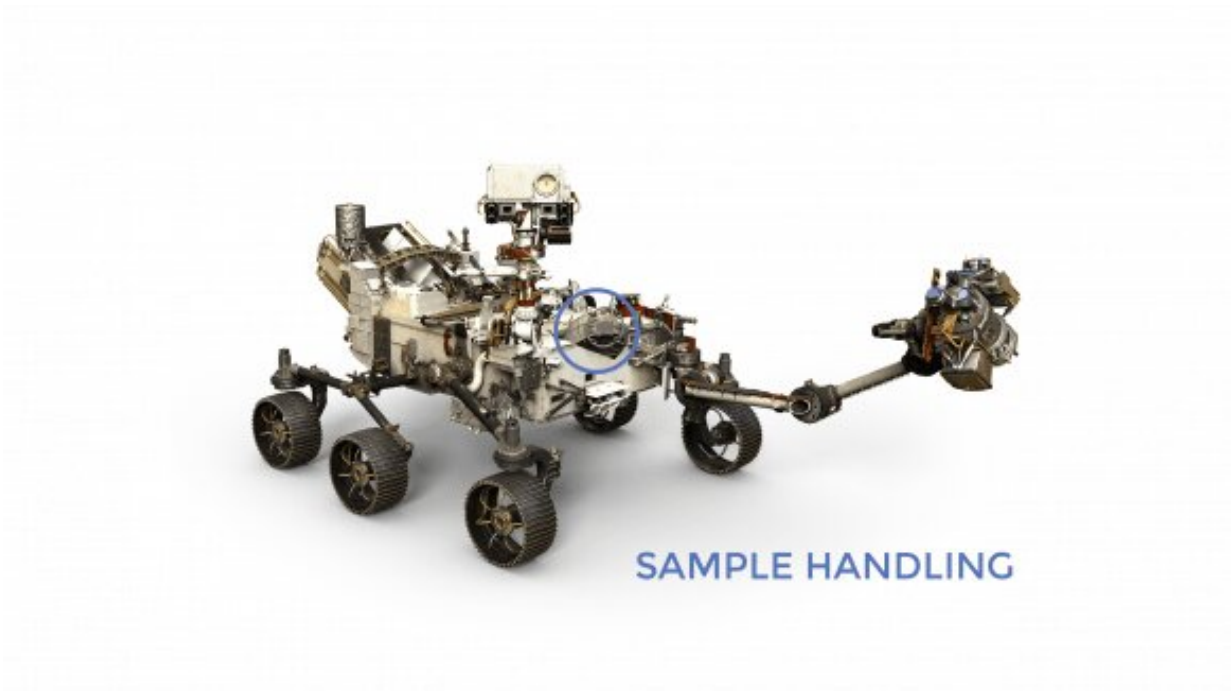
Return campaign, which is being jointly established by NASA and ESA, and plans and details of the mission are currently in development.

Perseverance is the [first mission](#) to demonstrate this ability on Mars, and it could potentially pave the way for future missions that could collect the samples and return them to Earth for intensive laboratory analysis. This first depot will serve as a backup if Perseverance can't deliver its samples to a future robotic lander.

The depot location has been well-documented by both local landmarks and precise coordinates from orbital measurements so that a future mission could land nearby and travel to collect the sample tubes.

The sampling equipment is quite impressive, and the belly of the rover houses all the equipment and supplies needed to collect samples. It contains a rotating drill carousel, which is a wheel that contains different kinds of drill bits. Next to that are the tubes—there was 43 sample tubes total at the beginning of the mission.

While the rover's big arm reaches out and drills rock, the rover belly also contains a small robotic arm that works as a "lab assistant" to the big arm. The small arm picks up and moves new sample tubes to the drill, and transfers filled sample containers into a space where they are sealed and stored.



The Perseverance rover's sample handling equipment is located in the blue circle on this image. Credit: NASA/JPL-Caltech/MSSS

After a sample is collected, the sample tube is transferred back to the rover's belly. There, it is handed off to the small interior robotic arm and moved to inspection and sealing stations. Once the tube is hermetically sealed, nothing can enter or leave it. The tubes are stored in the rover belly until the team decides on the time and place to drop the samples off on the surface.

This sample return ability is part of the objectives for Perseverance's mission, which includes astrobiology and searching for signs of ancient microbial life. The rover will characterize the planet's geology and past climate, hopefully paving the way for human exploration of the Red Planet.

Provided by Universe Today

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