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00:00:01,939 --> 00:00:09,429

Hi, I'm Ashwin Vasavada, the deputy project scientist for the Mars Science Laboratory

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00:00:09,429 --> 00:00:11,889

and this is your Curiosity rover update.

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00:00:11,889 --> 00:00:14,249

It's been a momentous week for Curiosity.

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00:00:14,249 --> 00:00:19,100

We've wrapped up our scientific study of Rocknest, which also means that we've completed

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00:00:19,100 --> 00:00:23,410

the checkout and first scientific use of all our instruments on the rover and it truly

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00:00:23,410 --> 00:00:25,230

is working great.

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00:00:25,230 --> 00:00:29,380

We began the Rocknest campaign by searching for a suitable drift of sandy soil using our

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00:00:29,380 --> 00:00:30,760

Mastcam color cameras.

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00:00:30,760 --> 00:00:36,120

We used our ChemCam laser and our APXS chemical sensor to do an initial technical analysis

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00:00:36,120 --> 00:00:40,500

of the soil, determining whether it was similar to soils that we understand from Spirit and

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00:00:40,500 --> 00:00:45,390

Opportunity and therefore safe for scooping and sending to our laboratories.

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00:00:45,390 --> 00:00:49,870
We use MAHLI, our hand lens imager to take close up views of the soil to look at different

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00:00:49,870 --> 00:00:55,190
particle sizes, shapes and colors and how they change with depth.

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00:00:55,190 --> 00:00:59,019
We then scooped up the soil and analyzed it if our X-ray diffraction instrument that can

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00:00:59,019 --> 00:01:03,110
identify minerals in the soil based on their unique crystal structure.

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00:01:03,110 --> 00:01:06,300
But it turned out that a good amount of the material in the soil was not crystalline but

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00:01:06,300 --> 00:01:09,820
that's not a problem for our other laboratory, SAM.

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00:01:09,820 --> 00:01:14,400
SAM heated up the soil in an oven, measured various gases released as the soil components

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00:01:14,400 --> 00:01:19,070
broke down, such as water, carbon dioxide, oxygen and sulfur.

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00:01:19,070 --> 00:01:24,130
Not surprisingly, the results show a composition that is typical of Mars soils studied at other

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00:01:24,130 --> 00:01:30,100
sites with perhaps some very simple carbon containing molecules and perchlorate salts.

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00:01:30,100 --> 00:01:34,030

We haven't yet seen any complex organic molecules but sand isn't the best place

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00:01:34,030 --> 00:01:35,030

to look.

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00:01:35,030 --> 00:01:39,220

Finally, it's worth remembering that the big questions in science whether Copernicus

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00:01:39,220 --> 00:01:43,870

finding that the Earth goes around the sun or Darwin showing that natural selection drives

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00:01:43,870 --> 00:01:49,000

biological evolution, were answered only after many measurements were taken compared against

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00:01:49,000 --> 00:01:53,470

one another and hypotheses were proposed and tested against data.

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00:01:53,470 --> 00:01:56,820

Only then can the big picture emerge and the theory get accepted.

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00:01:56,820 --> 00:02:01,159

It'll be no different for Curiosity in its mission to understand the habitability of

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00:02:01,159 --> 00:02:02,840

ancient Mars at Gale Crater.

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00:02:02,840 --> 00:02:06,230

There won't be any single image or measurement that'll answer everything.

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00:02:06,230 --> 00:02:08,190

We're in it for the long haul.

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00:02:08,190 --> 00:02:13,620

But now we know that we have a fantastic rover,
a great set of tools and a fully functional

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00:02:13,620 --> 00:02:14,660

scientific payload.

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00:02:14,660 --> 00:02:17,730

So let's get on exploring.