



Curiosity Rover Report

1
00:00:07,009 --> 00:00:11,470
This Week at NASA...

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00:00:11,470 --> 00:00:16,500
Two Open Houses at Headquarters in Washington
kicked off NASA's participation in the city's

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00:00:16,500 --> 00:00:18,449
Presidential Inaugural activities.

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00:00:18,449 --> 00:00:23,130
Public visitors to the James Webb Auditorium
could hear from Administrator Charles Bolden,

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00:00:23,130 --> 00:00:27,700
Deputy Administrator Lori Garver and other
agency officials about NASA's current and

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00:00:27,700 --> 00:00:30,250
future plans, programs and missions.

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00:00:30,250 --> 00:00:35,160
"I especially hope that all the young people
who are here go back home with a heightened

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00:00:35,160 --> 00:00:41,000
passion and a greater understanding of the
importance of science, technology, engineering

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00:00:41,000 --> 00:00:42,050
and math.

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00:00:42,050 --> 00:00:46,800
The STEM disciplines are not only essential
to the growth of NASA; they are your gateway

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00:00:46,800 --> 00:00:51,839
to the jobs of the future and the keys to
American competitiveness in the 21st.

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00:00:51,839 --> 00:00:52,839

Century.”

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00:00:52,839 --> 00:00:54,789

“NASA is on a bold course.

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00:00:54,789 --> 00:00:57,949

We have all been challenged to reach farther than ever before.

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00:00:57,949 --> 00:01:03,489

The President has challenged us to go next to an asteroid for the first time and then

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00:01:03,489 --> 00:01:04,860

on our way to Mars.

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00:01:04,860 --> 00:01:06,580

These are exciting times.”

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00:01:06,580 --> 00:01:11,060

NASA Exhibits at Saturday’s National Day of Service event on the Washington Mall highlight

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00:01:11,060 --> 00:01:16,020

the President’s priorities for the agency, including the International Space Station,

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00:01:16,020 --> 00:01:22,800

Commercial Space activities, technology development programs and new plans for research on Mars.

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00:01:22,800 --> 00:01:28,510

And Monday’s Inaugural Parade features full-scale models of two of the agency’s highest-profile

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00:01:28,510 --> 00:01:33,200

vehicles: the Orion Multi-Purpose Crew Vehicle

that will take astronauts beyond low Earth

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00:01:33,200 --> 00:01:38,330

orbit, and the Mars Curiosity Rover that's exploring the surface of the Red Planet for

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00:01:38,330 --> 00:01:43,340

signs of past or present life.

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00:01:43,340 --> 00:01:49,820

NASA has awarded a \$17.8 million contract to Las Vegas-based Bigelow Aerospace to provide

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00:01:49,820 --> 00:01:52,740

a new addition to the International Space Station.

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00:01:52,740 --> 00:01:58,520

The Bigelow Expandable Activity Module, or BEAM, will demonstrate how this type of habitat

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00:01:58,520 --> 00:02:00,860

could be used by future space explorers.

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00:02:00,860 --> 00:02:06,170

"It will provide insight into radiation transmission properties and thermal and structural

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00:02:06,170 --> 00:02:10,080

performance compared to traditional aluminum modules."

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00:02:10,080 --> 00:02:15,299

"We look at this as a stepping stone with expandable technologies.

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00:02:15,299 --> 00:02:22,099

We are hoping and looking forward to the possibility of doing other things for NASA, with NASA

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00:02:22,099 --> 00:02:23,659

with expandable systems.”

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00:02:23,659 --> 00:02:28,909

The expandable habitat represents cutting-edge technology that will enable humans to thrive

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00:02:28,909 --> 00:02:34,530

in space safely and affordably and heralds important progress in U.S. commercial space

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00:02:34,530 --> 00:02:37,840

innovation.

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00:02:37,840 --> 00:02:43,209

NASA and the European Space Agency have reached an agreement on plans for ESA to provide a

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00:02:43,209 --> 00:02:48,780

service module for the Orion spacecraft's Exploration Mission-1 flight scheduled for

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00:02:48,780 --> 00:02:49,780

2017.

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00:02:49,780 --> 00:02:53,650

“To make a commitment this big there needs to be a lot of engineering done behind the

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00:02:53,650 --> 00:02:56,799

scenes to make sure this is really the right thing to go do.

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00:02:56,799 --> 00:02:59,550

Can we really integrate these two vehicles together?

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00:02:59,550 --> 00:03:01,349

Where do you define the interfaces?

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00:03:01,349 --> 00:03:03,019

How do you make this happen?

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00:03:03,019 --> 00:03:07,049

And the teams have done just a tremendous job over the past several months of figuring

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00:03:07,049 --> 00:03:09,029

out all of those technical interfaces.”

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00:03:09,029 --> 00:03:14,109

The service module will sit directly behind Orion and provide the capsule's power, thermal

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00:03:14,109 --> 00:03:16,359

control and propulsion.

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00:03:16,359 --> 00:03:21,560

The agreement expands on the agencies' successful partnership on the International Space Station

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00:03:21,560 --> 00:03:27,299

and other activities, and ensures international collaboration on future missions as humans

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00:03:27,299 --> 00:03:30,419

explore new frontiers in the solar system.

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00:03:30,419 --> 00:03:36,489

Hello, I am Justin Maki and I am the engineering camera lead for the Mars Science Laboratory

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00:03:36,489 --> 00:03:41,889

mission and a member of the MSL Science Camera Team and this is your Curiosity Rover Report.

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00:03:41,889 --> 00:03:46,760

The rover has been investigating the YellowKnife

bay area as part of an effort to pick the

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00:03:46,760 --> 00:03:51,680

exact location of our first drill activity
on Mars.

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00:03:51,680 --> 00:03:55,809

The images being returned by Curiosity show
a diverse collection of interesting features,

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00:03:55,809 --> 00:04:02,370

including sedimentary rocks, pebbles, cracks,
nodules, and veins.

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00:04:02,370 --> 00:04:06,469

The vein features are seen as a bright white
material, and we see them just about everywhere

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00:04:06,469 --> 00:04:08,819

we look in Yellowknife bay.

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00:04:08,819 --> 00:04:14,010

The Chemcam instrument has found that these
veins contain elevated levels of calcium sulfate,

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00:04:14,010 --> 00:04:17,019

likely in the form of bassanite or gypsum.

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00:04:17,019 --> 00:04:21,449

Gypsum veins are also seen here on Earth and
associated with water percolating through

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00:04:21,449 --> 00:04:24,280

cracks and fractured rocks.

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00:04:24,280 --> 00:04:28,100

The exciting news from all of this analysis
is the candidate site where Curiosity will

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00:04:28,100 --> 00:04:31,440
conduct its first drilling activity.

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00:04:31,440 --> 00:04:35,570
This site is located only a few meters away
from the rover's current location, and lies

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00:04:35,570 --> 00:04:38,060
in a flat area, suitable for drilling.

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00:04:38,060 --> 00:04:41,730
The team hopes to drill directly into one
of the veins and place the powder into the

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00:04:41,730 --> 00:04:44,260
SAM and ChemMin analytical instruments.

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00:04:44,260 --> 00:04:47,720
These instruments will give us detailed information
about the composition of the material.

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00:04:47,720 --> 00:04:50,700
We'll be driving over there in the next
few days.

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00:04:50,700 --> 00:04:53,810
On our way over to the drill site, we're
planning on using the rover's wheels to

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00:04:53,810 --> 00:04:58,410
crush some of these nearby veins and examine
the freshly broken material.

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00:04:58,410 --> 00:05:03,520
This image from Sol 135 shows an example of
how the rover can break open soft rocks with

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00:05:03,520 --> 00:05:07,200
its wheels, revealing the freshly exposed
material.

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00:05:07,200 --> 00:05:11,840

I'm Justin Maki, and this has been your
Curiosity Rover Report.

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00:05:11,840 --> 00:05:16,650

Check back for more reports.

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00:05:16,650 --> 00:05:20,230

Operations for NASA's Robotic Refueling
Mission are underway on the International

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00:05:20,230 --> 00:05:21,730

Space Station.

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00:05:21,730 --> 00:05:27,410

Managed by Goddard Space Flight Center, RRM
aims to successfully demonstrate the tools,

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00:05:27,410 --> 00:05:32,220

technologies and techniques needed to robotically
refuel satellites in space, especially those

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00:05:32,220 --> 00:05:34,560

not designed to be serviced.

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00:05:34,560 --> 00:05:39,240

Using DEXTRE, a two-armed Canadian robot on
the station, ground controllers at the Johnson

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00:05:39,240 --> 00:05:44,560

Space Center will simulate a refueling with
a washing machine-size practice box outfitted

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00:05:44,560 --> 00:05:48,480

with tools and connections similar to those
found on a satellite.

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00:05:48,480 --> 00:05:53,221

A successful simulated fuel transfer could mark a revolution in spacecraft operation

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00:05:53,221 --> 00:05:54,540

and design.

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00:05:54,540 --> 00:05:58,560

The refueling simulation is scheduled to run through January 24.

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00:05:58,560 --> 00:06:04,310

Other RRM tests are scheduled into next year.

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00:06:04,310 --> 00:06:09,300

The International Space Station's upcoming Expedition 35 and 36 missions were previewed

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00:06:09,300 --> 00:06:13,050

in a series of news briefings at the Johnson Space Center.

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00:06:13,050 --> 00:06:17,610

Highlighted were scheduled visits to the station by several spacecraft, including the SpaceX

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00:06:17,610 --> 00:06:24,210

Dragon cargo capsule and the demo and supply flights of Orbital Sciences' Cygnus spacecraft.

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00:06:24,210 --> 00:06:30,060

The media also heard from NASA's Chris Cassidy, and Pavel Vinogradov and Alexander Misurkin

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00:06:30,060 --> 00:06:35,230

of the Russian Federal Space Agency – three of the six crew members slated for the missions.

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00:06:35,230 --> 00:06:39,370

"It's shaping up to be a very dynamic and a very busy Expedition.

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00:06:39,370 --> 00:06:40,740

We welcome that.

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00:06:40,740 --> 00:06:45,210

When you can deliver for people that work hard to produce all of those activities on

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00:06:45,210 --> 00:06:46,770

the ground, that's very satisfying."

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00:06:46,770 --> 00:06:51,340

Cassidy, Vinogradov and Misurkin are set to launch to the orbiting laboratory aboard a

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00:06:51,340 --> 00:06:54,420

Soyuz spacecraft on March 27.

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00:06:54,420 --> 00:07:00,020

Upon arrival, they'll join NASA astronaut Tom Marshburn, Canadian Space Agency astronaut

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00:07:00,020 --> 00:07:05,140

Chris Hadfield and Roscosmos cosmonaut Roman Romanenko.

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00:07:05,140 --> 00:07:10,350

"When you are trying to understand a problem you go where the problem is most obvious."

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00:07:10,350 --> 00:07:15,870

For NASA atmospheric scientists like Jim Crawford and two NASA airplanes from Virginia that

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00:07:15,870 --> 00:07:18,620

means a trip to California in early 2013.

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00:07:18,620 --> 00:07:24,440

They are part of a team, called DISCOVER-AQ,

that will study air quality by flying over

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00:07:24,440 --> 00:07:30,500

the San Joaquin Valley, a location the Environmental Protection Agency says is known for pollution.

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00:07:30,500 --> 00:07:35,800

“We begin with an aircraft like the B200, which flies at high altitude over the central

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00:07:35,800 --> 00:07:39,530

valley all day long looking downward with remote sensors.

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00:07:39,530 --> 00:07:44,680

We have a second plane, which flies through the valley profiling moving up and down over

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00:07:44,680 --> 00:07:46,110

various ground sites.

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00:07:46,110 --> 00:07:50,280

The final component though is at the surface, because ultimately it is at ground level where

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00:07:50,280 --> 00:07:53,270

the air quality monitoring stations are located.”

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00:07:53,270 --> 00:07:57,320

What the science team, its instruments and its government and university partners are

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00:07:57,320 --> 00:08:01,440

trying to do is prepare for when the U.S. can monitor air pollution in the lowest part

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00:08:01,440 --> 00:08:03,450

of the atmosphere from space.

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00:08:03,450 --> 00:08:06,550

"We don't have a satellite right now that can do that.

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00:08:06,550 --> 00:08:10,960

We do though have on the books a geostationary satellite in the future called TEMPO that

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00:08:10,960 --> 00:08:14,780

will be able to look at North America throughout the day to look at air quality.

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00:08:14,780 --> 00:08:19,381

We're taking observations that will prepare us to both make better observations from a

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00:08:19,381 --> 00:08:24,160

geostationary orbit as well as you have to recognize a satellite does not work in isolation.

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00:08:24,160 --> 00:08:29,100

It still needs information from the ground for validation and interpretation.

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00:08:29,100 --> 00:08:32,370

That information will come from the five-year DISCOVER-AQ mission.

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00:08:32,370 --> 00:08:36,959

It will be used to help the satellite paint a more consistent picture of air quality so

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00:08:36,959 --> 00:08:43,150

that scientists can make better forecasts.

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00:08:43,150 --> 00:08:48,370

William Borucki, science principal investigator for NASA's Kepler mission at the Ames Research

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00:08:48,370 --> 00:08:53,570

Center, is the recipient of the 2013 Henry Draper Medal for outstanding contribution

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00:08:53,570 --> 00:08:55,560

to astrophysical research.

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00:08:55,560 --> 00:09:00,730

Borucki is honored for his pioneering work with Kepler, the first NASA mission capable

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00:09:00,730 --> 00:09:06,670

of finding other planetary systems whose Earth-size planets could have water on their surface.

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00:09:06,670 --> 00:09:11,620

Awarded every four years by the National Academy of Sciences, the Draper Medal will be presented

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00:09:11,620 --> 00:09:13,160

to Borucki this spring.

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00:09:13,160 --> 00:09:29,080

Last June, Borucki celebrated 50 years of service at NASA.

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00:09:29,080 --> 00:09:35,810

Fifteen years ago on January 22, 1998, space shuttle Endeavour rose skyward from the Kennedy

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00:09:35,810 --> 00:09:39,960

Space Center to meet up with the Russian Space Station Mir.

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00:09:39,960 --> 00:09:44,360

Endeavour and her crew delivered more than eight thousand pounds of equipment and supplies

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00:09:44,360 --> 00:09:47,200

as well as NASA astronaut Andy Thomas.

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00:09:47,200 --> 00:09:52,260

He replaced Dave Wolf, who'd spent 119 days aboard the complex.

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00:09:52,260 --> 00:09:56,800

Thomas became the last U.S. astronaut to serve on Mir.

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00:09:56,800 --> 00:09:58,920

And that's This Week @NASA.

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00:09:58,920 --> 00:10:03,490

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