



1
00:00:07,049 --> 00:00:09,780
This Week at NASA...

2
00:00:09,780 --> 00:00:16,699
Two Open Houses at Headquarters in Washington
kicked off NASA's participation in the city's

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00:00:16,699 --> 00:00:18,550
Presidential Inaugural activities.

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00:00:18,550 --> 00:00:24,259
Public visitors to the James Webb Auditorium
could hear from Administrator Charles Bolden,

5
00:00:24,259 --> 00:00:29,169
Deputy Administrator Lori Garver and other
agency officials about NASA's current and

6
00:00:29,169 --> 00:00:31,769
future plans, programs and missions.

7
00:00:31,769 --> 00:00:36,550
"I especially hope that all the young people
who are here go back home with a heightened

8
00:00:36,550 --> 00:00:42,399
passion and a greater understanding of the
importance of science, technology, engineering

9
00:00:42,399 --> 00:00:43,449
and math.

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00:00:43,449 --> 00:00:48,399
The STEM disciplines are not only essential
to the growth of NASA; they are your gateway

11
00:00:48,399 --> 00:00:53,160
to the jobs of the future and the keys to
American competitiveness in the 21st.

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00:00:53,160 --> 00:00:54,160

Century.”

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00:00:54,160 --> 00:00:56,190

“NASA is on a bold course.

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00:00:56,190 --> 00:00:59,350

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

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00:00:59,350 --> 00:01:04,890

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

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00:01:04,890 --> 00:01:06,260

on our way to Mars.

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00:01:06,260 --> 00:01:08,100

These are exciting times.”

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00:01:08,100 --> 00:01:13,020

NASA astronauts and exhibits at Saturday’s National Day of Service event on the National

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00:01:13,020 --> 00:01:17,900

Mall highlighted the President’s priorities for the agency, including the International

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00:01:17,900 --> 00:01:23,800

Space Station, Commercial Space activities, technology development programs and new plans

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00:01:23,800 --> 00:01:26,240

for research on Mars.

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00:01:26,240 --> 00:01:32,250

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

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00:01:32,250 --> 00:01:37,280
vehicles: the Orion Multi-Purpose Crew Vehicle
that will take astronauts beyond low Earth

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00:01:37,280 --> 00:01:42,920
orbit, and the Mars Curiosity Rover which
is exploring the surface of the Red Planet

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00:01:42,920 --> 00:01:46,260
for signs of past or present life.

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00:01:46,260 --> 00:01:51,720
Orion and Curiosity are examples of NASA's
effort to help give the nation the technological

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00:01:51,720 --> 00:01:54,890
boost the President called for in his inaugural
speech.

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00:01:54,890 --> 00:02:00,820
"We cannot cede to other nations the technology
that will power new jobs and new industries;

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00:02:00,820 --> 00:02:02,620
we must claim its promise.

30
00:02:02,620 --> 00:02:09,660
That's how we will maintain our economic
vitality and our national treasure.

31
00:02:09,660 --> 00:02:15,070
Our forests and waterways, our crop lands
and snow-capped peaks.

32
00:02:15,070 --> 00:02:20,860
That is how we will preserve our planet."

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00:02:20,860 --> 00:02:27,340

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

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00:02:27,340 --> 00:02:30,250

a new addition to the International Space Station.

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00:02:30,250 --> 00:02:36,030

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

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00:02:36,030 --> 00:02:38,380

could be used by future space explorers.

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00:02:38,380 --> 00:02:43,690

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

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00:02:43,690 --> 00:02:47,590

performance compared to traditional aluminum modules.”

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00:02:47,590 --> 00:02:52,819

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

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00:02:52,819 --> 00:02:59,620

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

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00:02:59,620 --> 00:03:01,260

with expandable systems.”

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00:03:01,260 --> 00:03:06,430

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

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00:03:06,430 --> 00:03:12,040

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

44

00:03:12,040 --> 00:03:15,360

innovation.

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00:03:15,360 --> 00:03:20,730

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

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00:03:20,730 --> 00:03:26,010

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

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00:03:26,010 --> 00:03:27,010

2017.

48

00:03:27,010 --> 00:03:31,170

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

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00:03:31,170 --> 00:03:34,330

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

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00:03:34,330 --> 00:03:37,080

Can we really integrate these two vehicles together?

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00:03:37,080 --> 00:03:38,880

Where do you define the interfaces?

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00:03:38,880 --> 00:03:40,020

How do you make this happen?

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00:03:40,020 --> 00:03:44,569

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

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00:03:44,569 --> 00:03:46,550

out all of those technical interfaces."

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00:03:46,550 --> 00:03:51,630
The service module will sit directly behind Orion and provide the capsule's power, thermal

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00:03:51,630 --> 00:03:53,890
control and propulsion.

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00:03:53,890 --> 00:03:59,050
The agreement expands on the agencies' successful partnership on the International Space Station

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00:03:59,050 --> 00:04:04,819
and other activities, and ensures international collaboration on future missions as humans

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00:04:04,819 --> 00:04:07,950
explore new frontiers in the solar system.

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00:04:07,950 --> 00:04:14,010
Hello, I am Justin Maki and I am the engineering camera lead for the Mars Science Laboratory

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00:04:14,010 --> 00:04:19,430
mission and a member of the MSL Science Camera Team and this is your Curiosity Rover Report.

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00:04:19,430 --> 00:04:24,280
The rover has been investigating the YellowKnife bay area as part of an effort to pick the

63
00:04:24,280 --> 00:04:29,199
exact location of our first drill activity on Mars.

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00:04:29,199 --> 00:04:33,330
The images being returned by Curiosity show a diverse collection of interesting features,

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00:04:33,330 --> 00:04:39,900

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

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00:04:39,900 --> 00:04:43,990

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

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00:04:43,990 --> 00:04:46,340

we look in Yellowknife bay.

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00:04:46,340 --> 00:04:51,530

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

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00:04:51,530 --> 00:04:54,539

likely in the form of bassanite or gypsum.

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00:04:54,539 --> 00:04:58,969

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

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00:04:58,969 --> 00:05:01,800

cracks and fractured rocks.

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00:05:01,800 --> 00:05:05,620

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

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00:05:05,620 --> 00:05:08,960

conduct its first drilling activity.

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00:05:08,960 --> 00:05:13,099

This site is located only a few meters away from the rover's current location, and lies

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00:05:13,099 --> 00:05:15,580

in a flat area, suitable for drilling.

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00:05:15,580 --> 00:05:19,249

The team hopes to drill directly into one of the veins and place the powder into the

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00:05:19,249 --> 00:05:21,789

SAM and ChemMin analytical instruments.

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00:05:21,789 --> 00:05:25,240

These instruments will give us detailed information about the composition of the material.

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00:05:25,240 --> 00:05:28,220

We'll be driving over there in the next few days.

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00:05:28,220 --> 00:05:31,330

On our way over to the drill site, we're planning on using the rover's wheels to

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00:05:31,330 --> 00:05:35,939

crush some of these nearby veins and examine the freshly broken material.

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00:05:35,939 --> 00:05:41,060

This image from Sol 135 shows an example of how the rover can break open soft rocks with

83

00:05:41,060 --> 00:05:44,740

its wheels, revealing the freshly exposed material.

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00:05:44,740 --> 00:05:49,370

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

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00:05:49,370 --> 00:05:54,169

Check back for more reports.

86

00:05:54,169 --> 00:05:57,750

Operations for NASA's Robotic Refueling

Mission are underway on the International

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00:05:57,750 --> 00:05:59,250

Space Station.

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00:05:59,250 --> 00:06:04,930

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

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00:06:04,930 --> 00:06:09,740

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

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00:06:09,740 --> 00:06:12,080

not designed to be serviced.

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00:06:12,080 --> 00:06:16,759

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

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00:06:16,759 --> 00:06:22,089

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

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00:06:22,089 --> 00:06:26,020

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

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00:06:26,020 --> 00:06:30,741

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

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00:06:30,741 --> 00:06:32,059

and design.

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00:06:32,059 --> 00:06:36,080

The refueling simulation is scheduled to run through January 24.

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00:06:36,080 --> 00:06:41,839

Other RRM tests are scheduled into next year.

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00:06:41,839 --> 00:06:46,840

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

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00:06:46,840 --> 00:06:50,680

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

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00:06:50,680 --> 00:06:55,129

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

101

00:06:55,129 --> 00:07:01,740

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

102

00:07:01,740 --> 00:07:07,589

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

103

00:07:07,589 --> 00:07:12,870

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

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00:07:12,870 --> 00:07:16,830

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

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00:07:16,830 --> 00:07:18,259

We welcome that.

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00:07:18,259 --> 00:07:22,729

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

107

00:07:22,729 --> 00:07:24,300

the ground, that's very satisfying."

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00:07:24,300 --> 00:07:29,550

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

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00:07:29,550 --> 00:07:31,779

Soyuz spacecraft on March 27.

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00:07:31,779 --> 00:07:37,539

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

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00:07:37,539 --> 00:07:42,669

Chris Hadfield and Roscosmos cosmonaut Roman Romanenko.

112

00:07:42,669 --> 00:07:47,869

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

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00:07:47,869 --> 00:07:53,389

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

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00:07:53,389 --> 00:07:56,139

means a trip to California in early 2013.

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00:07:56,139 --> 00:08:01,960

They are part of a team, called DISCOVER-AQ, that will study air quality by flying over

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00:08:01,960 --> 00:08:08,020

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

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00:08:08,020 --> 00:08:13,319

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

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00:08:13,319 --> 00:08:17,050

valley all day long looking downward with remote sensors.

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00:08:17,050 --> 00:08:22,199

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

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00:08:22,199 --> 00:08:23,629

various ground sites.

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00:08:23,629 --> 00:08:27,810

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

122

00:08:27,810 --> 00:08:30,789

the air quality monitoring stations are located.”

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00:08:30,789 --> 00:08:34,839

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

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00:08:34,839 --> 00:08:38,960

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

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00:08:38,960 --> 00:08:40,969

of the atmosphere from space.

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00:08:40,969 --> 00:08:44,070

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

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00:08:44,070 --> 00:08:48,480

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

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00:08:48,480 --> 00:08:52,300

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

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00:08:52,300 --> 00:08:56,970

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

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00:08:56,970 --> 00:09:01,680

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

131

00:09:01,680 --> 00:09:06,620

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

132

00:09:06,620 --> 00:09:09,889

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

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00:09:09,889 --> 00:09:14,480

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

134

00:09:14,480 --> 00:09:20,670

that scientists can make better forecasts.

135

00:09:20,670 --> 00:09:25,889

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

136

00:09:25,889 --> 00:09:31,199

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

137

00:09:31,199 --> 00:09:33,079

to astrophysical research.

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00:09:33,079 --> 00:09:38,250

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

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00:09:38,250 --> 00:09:44,190

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

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00:09:44,190 --> 00:09:49,140

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

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00:09:49,140 --> 00:09:50,680

to Borucki this spring.

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00:09:50,680 --> 00:10:06,600

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

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00:10:06,600 --> 00:10:13,329

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

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00:10:13,329 --> 00:10:17,490

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

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00:10:17,490 --> 00:10:21,879

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

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00:10:21,879 --> 00:10:24,730

as well as NASA astronaut Andy Thomas.

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00:10:24,730 --> 00:10:29,790

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

148

00:10:29,790 --> 00:10:34,320

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

149

00:10:34,320 --> 00:10:36,440

And that's This Week @NASA.

150

00:10:36,440 --> 00:10:41,009

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