



1
00:00:06,890 --> 00:00:13,130
This Week at NASA...

2
00:00:13,130 --> 00:00:17,820
The three newest residents of the International Space Station were greeted by their Expedition

3
00:00:17,820 --> 00:00:23,660
31 crewmates after their Soyuz capsule docked safely with the orbiting laboratory following

4
00:00:23,660 --> 00:00:26,130
its two day-plus journey from Kazakhstan.

5
00:00:26,130 --> 00:00:31,890
Soyuz commander Gennady Padalka, NASA flight engineer Joe Acaba, and Russian flight engineer

6
00:00:31,890 --> 00:00:36,520
Sergei Revin are slated to spend the next five months on the station.

7
00:00:36,520 --> 00:00:43,629
Expedition 31 will conclude, and 32 will begin, when Oleg Kononenko, Andre Kuipers, and Don

8
00:00:43,629 --> 00:00:51,559
Pettit return to Earth on July first after spending more than six months aboard the ISS.

9
00:00:51,559 --> 00:00:55,519
The launch of the first commercial venture to the International Space Station is a big

10
00:00:55,519 --> 00:01:02,199
milestone for NASA and Space Exploration Technologies Corporation, or SpaceX, the company whose

11
00:01:02,199 --> 00:01:07,610

Falcon 9 rocket and Dragon spacecraft sit
poised at Florida's Cape Canaveral Air Force

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00:01:07,610 --> 00:01:11,050

Station to carry out the demonstration flight
to the ISS.

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00:01:11,050 --> 00:01:13,110

"This is a test flight.

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00:01:13,110 --> 00:01:17,500

What's important from a SpaceX perspective
on a test flight is to make sure we learn

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00:01:17,500 --> 00:01:19,020

something.

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00:01:19,020 --> 00:01:24,380

Hopefully we learn a lot and hopefully we
make a lot of progress, but really what we're

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00:01:24,380 --> 00:01:29,950

here to do is to demonstrate the spacecraft,
ring it out to the maximum extent possible

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00:01:29,950 --> 00:01:32,329

and then obviously the ultimate goal is to
berth."

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00:01:32,329 --> 00:01:37,300

The demonstration flight calls for an extensive
set of tests requiring the Dragon spacecraft

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00:01:37,300 --> 00:01:42,149

to show that it can move precisely in orbit
and approach the space station carefully.

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00:01:42,149 --> 00:01:46,450

Only after these tests are successful will
the spacecraft be allowed to approach the

22
00:01:46,450 --> 00:01:51,549
orbiting laboratory close enough to be grappled
and berthed by the station's robotic arm.

23
00:01:51,549 --> 00:01:56,930
“The energy levels involved, the precision
that’s required to get the thousands of

24
00:01:56,930 --> 00:02:03,930
parts to all work perfectly together to achieve
orbit and berthing with the space station

25
00:02:03,930 --> 00:02:05,640
is extremely complex.”

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00:02:05,640 --> 00:02:10,930
When the Space Exploration Technologies or
SpaceX Dragon spacecraft returns to Earth

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00:02:10,930 --> 00:02:15,740
after its mission to the International Space
Station, it will depend on a heat shield material

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00:02:15,740 --> 00:02:19,540
called PICA-X to protect it during re-entry.

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00:02:19,540 --> 00:02:21,569
\h
The heat shield material, called Phenolic

30
00:02:21,569 --> 00:02:26,270
Impregnated Carbon Ablator, was developed
in partnership with NASA Ames Research Center.

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00:02:26,270 --> 00:02:28,360
\h
“So we were looking for an advanced material

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00:02:28,360 --> 00:02:34,840

that was lighter weight, could withstand more extreme environments and would be, essentially,

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00:02:34,840 --> 00:02:38,170

safer and more rugged for planetary missions.”

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00:02:38,170 --> 00:02:41,410

\h

PICA-X samples were tested at NASA Ames using

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00:02:41,410 --> 00:02:48,010

special facilities to simulate planetary re-entry temperatures and high speed atmospheric flows.

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00:02:48,010 --> 00:02:53,010

During these tests, the surface temperature of the heat shield material reached approximately

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00:02:53,010 --> 00:02:59,380

3,450 degrees Fahrenheit – almost twice as hot as molten lava.

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00:02:59,380 --> 00:03:02,231

\h

PICA-X has proved its effectiveness on the

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00:03:02,231 --> 00:03:07,989

heat shield that protected the Stardust capsule during its return to Earth in January of 2006.

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00:03:07,989 --> 00:03:14,269

It'll be used by the Mars Science Laboratory to land its rover, Curiosity, on the Red Planet.

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00:03:14,269 --> 00:03:20,030

And, of course, when the first commercial cargo resupply mission to the ISS returns

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00:03:20,030 --> 00:03:31,810

a payload safely back to Earth, PICA-X will have played a major role in Dragon's success.

43
00:03:31,810 --> 00:03:37,980
Evaluation of a key component of the J-2X engine continues at the Stennis Space Center.

44
00:03:37,980 --> 00:03:43,959
NASA recently conducted a long duration test of the J-2X powerpack, a system of components

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00:03:43,959 --> 00:03:49,409
on the top portion of the J-2X engine that helps the engine produce thrust.

46
00:03:49,409 --> 00:03:55,700
The 340-second test was designed to operate the powerpack turbo-pumps over a range of

47
00:03:55,700 --> 00:04:00,310
speeds by varying the gas generator valve positions.

48
00:04:00,310 --> 00:04:05,390
Continued testing of the J-2X, which will help propel NASA's new Space Launch System,

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00:04:05,390 --> 00:04:07,390
are scheduled through the summer.

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00:04:07,390 --> 00:04:12,700
The SLS is the new heavy-lift launch vehicle that will expand human presence beyond low-Earth

51
00:04:12,700 --> 00:04:18,630
orbit and, with the Orion crew capsule, enable new missions of exploration across the solar

52
00:04:18,630 --> 00:04:21,150
system.

53

00:04:21,150 --> 00:04:26,200

“... all of whom have achieved distinction beyond measure.”

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00:04:26,200 --> 00:04:32,980

The state of Alabama celebrated its space exploration heritage, designating May 3rd

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00:04:32,980 --> 00:04:35,070

as NASA Day in Alabama.

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00:04:35,070 --> 00:04:39,101

The State Legislature commended the Marshall Space Flight Center for its role in space

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00:04:39,101 --> 00:04:44,640

exploration, as an engine of economic development and the anchor of the aerospace industry in

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00:04:44,640 --> 00:04:45,640

North Alabama.

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00:04:45,640 --> 00:04:48,790

“I salute Marshall and NASA.

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00:04:48,790 --> 00:04:55,000

When we look at the economic impact that they have on our state, it is unprecedented, and

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00:04:55,000 --> 00:04:58,450

they are right up there with us as Alabamians.”

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00:04:58,450 --> 00:05:03,410

Marshall has an estimated 2.9 billion dollar economic impact on the region.

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00:05:03,410 --> 00:05:09,220

Its nearly 6000 government and contractor

personnel, 90-percent of whom are college-educated,

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00:05:09,220 --> 00:05:12,020

make NASA the third largest employer in Huntsville.

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00:05:12,020 --> 00:05:17,470

“For more than half a century, we have embodied the values of determination, achievement and

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00:05:17,470 --> 00:05:20,480

thirst for knowledge that made this nation great.

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00:05:20,480 --> 00:05:23,820

We are still a symbol of this nation’s greatness and promise.”

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00:05:23,820 --> 00:05:29,510

Marshall, the center that developed the Saturn V moon rocket in the 1960s, is now working

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00:05:29,510 --> 00:05:35,330

on the Space Launch System, a long-range rocket designed to take us beyond Earth orbit.

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00:05:35,330 --> 00:05:36,720

NASA astronaut T.J.

71

00:05:36,720 --> 00:05:41,870

Creamer, who lived and worked on the International Space Station, spoke to groups of local students

72

00:05:41,870 --> 00:05:43,380

visiting the state capital.

73

00:05:43,380 --> 00:05:47,901

“We want to be able to extend the humanity, go farther and learn more about earth, learn

74

00:05:47,901 --> 00:05:52,160
more about the sciences to be able to make
tomorrow better.”

75
00:05:52,160 --> 00:05:54,620
“NASA is a national treasure.

76
00:05:54,620 --> 00:05:56,060
It truly is a national treasure.

77
00:05:56,060 --> 00:06:00,710
We’re just so proud to share in that and
what we’re able to develop in North Alabama

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00:06:00,710 --> 00:06:03,540
with the great state of Alabama.”

79
00:06:03,540 --> 00:06:12,030
Thrill seekers had a blast learning about
space during Education Day at King’s Dominion.

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00:06:12,030 --> 00:06:15,870
Students and teachers applied the math and
science they’ve used this school year to

81
00:06:15,870 --> 00:06:19,280
fun, problem-solving activities at the theme
park.

82
00:06:19,280 --> 00:06:23,800
The Langley Research Center had interactive
exhibits where park-goers could learn how

83
00:06:23,800 --> 00:06:29,910
astronauts live and work in space, win prizes
by answering NASA technology-related questions

84
00:06:29,910 --> 00:06:33,720
and playing the NASA “Spin the Wheel”
game.

85
00:06:33,720 --> 00:06:39,990
They also explored how riding a roller coaster produces G forces just as a spacecraft does

86
00:06:39,990 --> 00:06:42,150
when it launches into space.

87
00:06:42,150 --> 00:06:46,630
There were also exhibits highlighting NASA Aeronautics missions and displays from the

88
00:06:46,630 --> 00:06:48,280
Science Museum of Virginia.

89
00:06:48,280 --> 00:06:53,920
“Solar array let’s see some energy in there, sounder let’s make some noise.

90
00:06:53,920 --> 00:06:55,650
What are we feeling?

91
00:06:55,650 --> 00:06:58,250
We gotta get something going now.”

92
00:06:58,250 --> 00:07:02,580
NEARLY 100 STUDENTS CONVERGED ON WALLOPS FLIGHT FACILITY RECENTLY FOR THE ANNUAL INSPIRE THE

93
00:07:02,580 --> 00:07:03,840
NEXT GENERATION DAY.

94
00:07:03,840 --> 00:07:08,650
“What we’re doing here today is actually inspire the next generation where we have

95
00:07:08,650 --> 00:07:13,560
parents that work here at Wallops bringing their students in to try out a few things

96

00:07:13,560 --> 00:07:14,980

that we actually do here.”

97

00:07:14,980 --> 00:07:21,210

“We’re a polar orbit, sun synchronous with the sun so that our solar array is always

98

00:07:21,210 --> 00:07:22,760

pointing towards the sun”

99

00:07:22,760 --> 00:07:27,820

”Once we finish designing our rockets, we’re going to prep them for flight”

100

00:07:27,820 --> 00:07:31,650

\h

“It’s fun, I get to go with my mom and

101

00:07:31,650 --> 00:07:34,930

build kites and build solar powered cars.”

102

00:07:34,930 --> 00:07:37,610

“It’s really really fun, I’ve had a good time.

103

00:07:37,610 --> 00:07:42,830

I’m hoping to be a civil engineer when I get older so it’s really fun.”

104

00:07:42,830 --> 00:07:45,060

\h

THE YOUNG EXPLORERS LEARNED ABOUT SCIENCE,

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00:07:45,060 --> 00:07:49,550

TECHNOLOGY, ENGINEERING AND MATH, OR “STEM” CAREERS THEY COULD PURSUE WITH NASA, THE NAVY,

106

00:07:49,550 --> 00:08:00,260

THE COAST GUARD, NOAA, FISH AND WILDLIFE AND
THE MARINE SCIENCE CONSORTIUM.

107

00:08:00,260 --> 00:08:08,580

"I'M JANEJIT GENSLER.

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00:08:08,580 --> 00:08:12,440

I WORK IN THE INTERNATIONAL SPACE STATION
PROGRAM OFFICE OF EXTERNAL INTEGRATION AT

109

00:08:12,440 --> 00:08:15,250

THE NASA JOHNSON SPACE CENTER.

110

00:08:15,250 --> 00:08:22,350

I WAS BORN IN BANGKOK, THAILAND AND I IMMIGRATED
TO THE US WHEN I WAS ABOUT 2 OR 3 YEARS OLD,

111

00:08:22,350 --> 00:08:30,440

MOVED TO DALLAS, TEXAS, AND I BASICALLY GREW
UP THERE AND WENT TO SCHOOL AT THE UNIVERSITY

112

00:08:30,440 --> 00:08:31,470

OF TEXAS, AUSTIN.

113

00:08:31,470 --> 00:08:35,430

I GOT MY CHEMICAL ENGINEERING BACHELOR'S DEGREE
FROM UT.

114

00:08:35,430 --> 00:08:38,390

THE INTERNATIONAL SPACE STATION IS A WONDERFUL
PROGRAM.

115

00:08:38,390 --> 00:08:43,710

A LOT OF PEOPLE IN THE GENERAL PUBLIC DON'T
KNOW THAT WE EVEN HAVE AN INTERNATIONAL SPACE

116

00:08:43,710 --> 00:08:49,010

STATION, SO FROM THAT STANDPOINT, OUR OFFICE
DOES A LOT OF EXTERNAL COMMUNICATIONS AND

117

00:08:49,010 --> 00:08:50,010

WE GET OUT THERE.

118

00:08:50,010 --> 00:08:54,270

WE DO A LOT OF PUBLIC OUTREACH MAKING SURE THAT THE PUBLIC IS AWARE OF ALL THE BENEFITS

119

00:08:54,270 --> 00:08:58,880

THAT ISS, YOU KNOW, HAS PROVIDED AND IS ABLE TO OFFER.

120

00:08:58,880 --> 00:09:02,800

WE WANT TO MAKE SURE THAT EVERYBODY KNOWS THAT IT'S A MANNED STATION.

121

00:09:02,800 --> 00:09:04,880

WE'VE BEEN MANNED FOR OVER 10 YEARS.

122

00:09:04,880 --> 00:09:10,140

WE'RE UP THERE SEVEN DAYS A WEEK, 24 HOURS A DAY, 365 DAYS A YEAR AND WE'VE PROVIDED

123

00:09:10,140 --> 00:09:16,000

GREAT BENEFITS TO HUMANKIND AND WE'RE STILL DOING THAT WITH ALL THE UTILIZATION THAT WE'RE

124

00:09:16,000 --> 00:09:17,560

CURRENTLY RAMPING UP.

125

00:09:17,560 --> 00:09:22,770

WE'VE COMPLETED ASSEMBLY AND WE'RE WORKING ON ALL THE RESEARCH THAT'S GOING TO HELP US

126

00:09:22,770 --> 00:09:25,190

GO AND EXPLORE BEYOND LOWER EARTH ORBIT.

127

00:09:25,190 --> 00:09:29,440

ONE OF THE MOST FUN THINGS I'VE DONE OUT HERE AT NASA IS I WAS ABLE TO GO AND WATCH A SOYUZ

128

00:09:29,440 --> 00:09:31,380

LAUNCH OUT IN KAZAKHSTAN.

129

00:09:31,380 --> 00:09:32,380

I LOVE TO TRAVEL.

130

00:09:32,380 --> 00:09:37,360

ESPECIALLY AS A FAMILY LOVE TO TRAVEL OUTSIDE
THE COUNTRY, BUT THIS WAS THE FIRST TIME I'VE

131

00:09:37,360 --> 00:09:43,149

TRAVELED THAT FAR AWAY I GUESS TO AN EXOTIC
LOCATION OTHER THAN THAILAND WHERE I'M FROM.

132

00:09:43,149 --> 00:09:47,860

JUST BEING THERE AND BEING A PART OF HUMAN
SPACE FLIGHT WAS AMAZING.

133

00:09:47,860 --> 00:09:50,390

"And liftoff of a Soyuz rocket."

134

00:09:50,390 --> 00:10:03,110

Fifty years ago, on May 24, 1962, Mercury
astronaut Scott Carpenter launched from Cape

135

00:10:03,110 --> 00:10:06,690

Canaveral aboard the Aurora 7 spacecraft.

136

00:10:06,690 --> 00:10:11,320

The flight was the second manned orbital mission
of the Mercury program, following John Glenn's

137

00:10:11,320 --> 00:10:13,650

Friendship 7 flight three months earlier.

138

00:10:13,650 --> 00:10:17,520

Like Glenn, Carpenter circled the Earth three
times.

139

00:10:17,520 --> 00:10:22,510

The focus of the five-hour mission was on science and included the first study of liquids

140

00:10:22,510 --> 00:10:25,060

in weightlessness and Earth photography.

141

00:10:25,060 --> 00:10:31,090

A targeting mishap during reentry took the spacecraft about 250-miles off course.

142

00:10:31,090 --> 00:10:36,840

However, Carpenter and Aurora 7 were safely recovered after splashdown in the Atlantic

143

00:10:36,840 --> 00:10:38,360

Ocean.

144

00:10:38,360 --> 00:10:40,490

And that's This Week @ NASA!

145

00:10:40,490 --> 00:10:45,700

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