
Neil Cheatwood
IRVE-3 Principal Investigator

1
00:00:06,890 --> 00:00:12,690
This Week at NASA…

2
00:00:12,690 --> 00:00:19,039
At the Baikonur Cosmodrome in Kazakhstan,
Expedition 32/33 Soyuz Commander Yuri Malenchenko,

3
00:00:19,039 --> 00:00:24,519
NASA Flight Engineer Suni Williams and Flight
Engineer Aki Hoshide of the Japan Aerospace

4
00:00:24,519 --> 00:00:30,169
Exploration Agency participated in a variety
of activities in preparation for their launch

5
00:00:30,169 --> 00:00:32,640
to the International Space Station this Sunday.

6
00:00:32,640 --> 00:00:37,190
The Soyuz spacecraft scheduled to ferry the
crew to the orbiting laboratory is at the

7
00:00:37,190 --> 00:00:40,140
launch pad and poised for the trip.

8
00:00:40,140 --> 00:00:45,399
Meanwhile, onboard the ISS, the other three
members of Expedition 32, Commander Gennady

9
00:00:45,399 --> 00:00:51,899
Padalka, NASA astronaut Joe Acaba and Cosmonaut
Sergei Revin – continue their daily activities

10
00:00:51,899 --> 00:00:57,829
as they await the Soyuz crew and the Japan
Aerospace Exploration Agency’s HTV-3 transfer

11
00:00:57,829 --> 00:01:03,079
vehicle scheduled to arrive there later this

month.

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00:01:03,079 --> 00:01:07,640
When the Curiosity rover sets off from its
landing site near Gale Crater to explore the

13
00:01:07,640 --> 00:01:13,220
Martian surface, the mobile science laboratory
might encounter some sand dunes.

14
00:01:13,220 --> 00:01:18,420
Project engineers at the Jet Propulsion Laboratory
have prepared for that possibility by putting

15
00:01:18,420 --> 00:01:21,000
a test rover through the paces here on Earth.

16
00:01:21,000 --> 00:01:24,490
Through careful targeting, we've been able
to shrink the landing ellipse for Curiosity

17
00:01:24,490 --> 00:01:28,030
and we've been able to move it closer to
where we want to actually land.

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00:01:28,030 --> 00:01:31,790
In case we land in dunes that are like this
on Mars near the landing site, we want to

19
00:01:31,790 --> 00:01:35,850
be sure the real rover is able to navigate
around successfully in those dunes and get

20
00:01:35,850 --> 00:01:39,290
from the point we landed, to the point where
we really want to be.

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00:01:39,290 --> 00:01:42,930
So we come out here today with the Curiosity
Scarecrow rover, which is the same weight

22
00:01:42,930 --> 00:01:47,290
on Earth as the real rover is on Mars, to
practice driving it around in the nearest

23
00:01:47,290 --> 00:01:50,020
thing to those dunes on Mars that we're
going to find here on Earth.

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00:01:50,020 --> 00:01:54,080
This is a similar material and similar slopes
to the dunes that we're going to find on

25
00:01:54,080 --> 00:01:55,369
Mars.

26
00:01:55,369 --> 00:01:59,630
So being able to test this rover in these
dunes gives us a good idea about what the

27
00:01:59,630 --> 00:02:02,579
performance of the real rover is going to
be in the dunes that it might land in on Mars.

28
00:02:02,579 --> 00:02:04,810
"Still making progress!"

29
00:02:04,810 --> 00:02:08,759
The performance on this rover is actually
fairly similar to Spirit and Opportunity.

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00:02:08,759 --> 00:02:09,759
A little bit better.

31
00:02:09,759 --> 00:02:13,431
We can climb in soft sand up to about 15 degrees
or so, which is a little better than what

32
00:02:13,431 --> 00:02:15,070

Spirit and Opportunity will do.

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00:02:15,070 --> 00:02:19,569
We are, in fact, right now, maneuvering it
in an area of 15 degrees of tilt to an area

34
00:02:19,569 --> 00:02:23,950
of 25 degrees of tilt to try to explore where
that break is in its performance.

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00:02:23,950 --> 00:02:29,459
Our top speed is very slow, but our acceleration
to that top speed is pretty much instantaneous.

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00:02:29,459 --> 00:02:33,489
So we go from a dead stop to right about as
fast as we want to go pretty quickly.

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00:02:33,489 --> 00:02:37,510
It's really fun, like to every one and a
while, kind of leave the office environment

38
00:02:37,510 --> 00:02:41,430
behind and come out to an environment like
this and see what the real rovers are going

39
00:02:41,430 --> 00:02:42,680
to be doing on Mars.

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00:02:42,680 --> 00:02:46,340
It kind of connects you to it and reminds
you that the computer models we've been

41
00:02:46,340 --> 00:02:48,060
playing are a far cry from reality.

42
00:02:48,060 --> 00:02:51,650
This is that reality.

43

00:02:51,650 --> 00:02:57,200
NASA’s Cassini spacecraft has spotted a
concentration of high-altitude haze and a

44
00:02:57,200 --> 00:03:02,810
vortex swirling in the atmosphere high above
the south pole of the Saturn moon Titan, hinting

45
00:03:02,810 --> 00:03:06,769
that a change of seasons may be coming on
Saturn’s largest moon.

46
00:03:06,769 --> 00:03:11,400
Cassini researchers say the structure inside
the vortex is reminiscent of the open cellular

47
00:03:11,400 --> 00:03:16,590
convection often seen over Earth's oceans
… but they are at a very high altitude on

48
00:03:16,590 --> 00:03:22,160
Titan – which may be a response of Titan's
stratosphere to seasonal cooling as southern

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00:03:22,160 --> 00:03:23,690
winter approaches.

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00:03:23,690 --> 00:03:29,129
The vortex was imaged during a June 27 flyby.

51
00:03:29,129 --> 00:03:34,049
Deputy Administrator Lori Garver joined Glenn
Research Center Director Ray Lugo, Congressional

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00:03:34,049 --> 00:03:39,720
leaders and White House representatives at
Ohio’s Cuyahoga Community College near Cleveland

53
00:03:39,720 --> 00:03:44,800
for a workshop on building the National Network

for Manufacturing Innovation.

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00:03:44,800 --> 00:03:50,131
Garver emphasized how important the nation's
manufacturing capabilities are for NASA, space

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00:03:50,131 --> 00:03:54,959
exploration and keeping America's new technology
economy competitive.

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00:03:54,959 --> 00:03:59,909
"Advanced manufacturing capabilities are
essential to turning research discoveries,

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00:03:59,909 --> 00:04:03,989
inventions and new ideas into better or novel
products.

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00:04:03,989 --> 00:04:07,579
Our nation's ability to innovate is unmatched."

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00:04:07,579 --> 00:04:12,819
Garver also pointed out the important role
played by Glenn in creating technologies for

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00:04:12,819 --> 00:04:16,680
NASA that also benefit American manufacturers.

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00:04:16,680 --> 00:04:22,090
NASA is supporting President Obama's call
for new Institutes for Advanced Manufacturing

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00:04:22,090 --> 00:04:27,200
and will participate in a pilot institute
later this year.

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00:04:27,200 --> 00:04:32,510
When rovers land on Mars – they travel all
the way to the Red Planet protected by a rigid

64
00:04:32,510 --> 00:04:34,580
aeroshell or heat shield.

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00:04:34,580 --> 00:04:39,380
The size of that structure limits just how
much scientists and engineers can fit inside.

66
00:04:39,380 --> 00:04:43,800
“If you look at all the origami that’s
involved in packing a rover like we’re sending

67
00:04:43,800 --> 00:04:49,200
to Mars right now into that confined space
and having it deploy in the right sequence

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00:04:49,200 --> 00:04:53,450
during that timeline you’ve only got a certain
amount of time to do it – it’s very complicated.”

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00:04:53,450 --> 00:04:58,030
So Neil Cheatwood and his colleagues at NASA’s
Langley Research Center in Hampton, Virginia

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00:04:58,030 --> 00:05:02,680
have come up with a different idea … an
inflatable heat shield.

71
00:05:02,680 --> 00:05:08,110
The first flight demonstration of the concept
is the Inflatable Reentry Vehicle Experiment

72
00:05:08,110 --> 00:05:09,670
or IRVE.

73
00:05:09,670 --> 00:05:18,870
The launch of IRVE-3 is currently scheduled
for mid-July.

74
00:05:18,870 --> 00:05:24,230

“We will launch IRVE-3 on a sounding rocket
out of Wallops Island.

75
00:05:24,230 --> 00:05:30,660
It will go up into space, inflate into reentry
shape and perform its reentry experiment and

76
00:05:30,660 --> 00:05:32,890
radio the data back home.

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00:05:32,890 --> 00:05:37,040
When the experiment is over IRVE-3 will land
out in the Atlantic.”

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00:05:37,040 --> 00:05:41,900
IRVE-3 has been tested and re-tested on the
ground to make sure it can withstand the heat

79
00:05:41,900 --> 00:05:45,340
and force of atmospheric reentry.

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00:05:45,340 --> 00:05:50,220
The first line of defense against those conditions–
the thermal blanket - is made up of layers

81
00:05:50,220 --> 00:05:52,330
of commercially available materials.

82
00:05:52,330 --> 00:05:57,120
“This combination includes Nextel, which
is an aircraft engine insulator.

83
00:05:57,120 --> 00:06:05,680
We use pyrogel which is a pipe insulation
material and then we use Kapton coated Kevlar.

84
00:06:05,680 --> 00:06:09,410
Kevlar is the same stuff police use in bullet
proof vests.”

85
00:06:09,410 --> 00:06:12,460
IRVE has already had one successful test.

86
00:06:12,460 --> 00:06:15,810
Assuming the demonstration flight of IRVE-3
also goes well – engineers hope to expand

87
00:06:15,810 --> 00:06:23,550
the concept literally - and test a larger
inflatable in the future.

88
00:06:23,550 --> 00:06:28,870
On July 12, the Smithsonian and the Embassy
of France marked the 50th anniversary of the

89
00:06:28,870 --> 00:06:33,970
first transatlantic images transmitted by
Telstar I, the world's first commercial

90
00:06:33,970 --> 00:06:38,740
telecommunications satellite, with a live
telecast between the National Air & Space

91
00:06:38,740 --> 00:06:43,210
Museum in Washington, and the Cité des Télécoms
in Pleumeur-Bodou.

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00:06:43,210 --> 00:06:49,020
"What a tremendous engineering achievement
it was and how it really began a new era that

93
00:06:49,020 --> 00:06:53,970
we now just assume is going to continue into
the future, really but it had to begin with

94
00:06:53,970 --> 00:06:59,310
a very small step"
Telstar I was launched by NASA.

95

00:06:59,310 --> 00:07:04,330
The first Telstar transmission 50 years ago
marked the advent of the exchange of global

96
00:07:04,330 --> 00:07:08,320
information and the commercial use of Space.

97
00:07:08,320 --> 00:07:12,870
“Who can tell me where the International
Space Station is?

98
00:07:12,870 --> 00:07:13,870
Yes.”

99
00:07:13,870 --> 00:07:18,100
NASA Deputy Administrator Lori Garver spoke
to a group of young female students who were

100
00:07:18,100 --> 00:07:23,850
visiting NASA headquarters as part of the
Summer Institute in Science, Technology and

101
00:07:23,850 --> 00:07:25,710
Research, or SISTER program.

102
00:07:25,710 --> 00:07:28,080
“I love making a difference.

103
00:07:28,080 --> 00:07:34,270
I feel like we were put here to leave the
world better than we found it and I think

104
00:07:34,270 --> 00:07:37,910
it’s pretty rare that you get to be in a
job where you feel you do that every day.”

105
00:07:37,910 --> 00:07:42,910
Sponsored by Goddard Space Flight Center,
the five day program is designed to introduce

106
00:07:42,910 --> 00:07:48,720
middle school girls to industry professionals
like Garver in hopes of increasing their awareness

107
00:07:48,720 --> 00:07:57,060
of the opportunities available in non-traditional
career fields such as science, math and engineering.

108
00:07:57,060 --> 00:08:02,370
July 15 marks the 37th anniversary of the
first international partnership in space -- the

109
00:08:02,370 --> 00:08:05,060
Apollo-Soyuz Test Project.

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00:08:05,060 --> 00:08:11,650
On that date in 1975, an Apollo spacecraft
carrying astronauts Tom Stafford, Vance Brand

111
00:08:11,650 --> 00:08:16,500
and Deke Slayton launched from the Kennedy
Space Center and, two days later, docked with

112
00:08:16,500 --> 00:08:23,430
a Soviet Soyuz spacecraft and its crew of
two – Alexey Leonov and Valery Kubasov.

113
00:08:23,430 --> 00:08:28,220
Designed to test the compatibility of rendezvous
and docking systems and the possibility of

114
00:08:28,220 --> 00:08:33,260
an international space rescue, the nine-day
Apollo-Soyuz mission brought together the

115
00:08:33,260 --> 00:08:38,719
two former Cold War, spaceflight rivals to
work and perform as a team.

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00:08:38,719 --> 00:08:47,310
The successful Apollo-Soyuz Test Project paved
the way for future international partnerships.

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00:08:47,310 --> 00:08:52,950
And one year ago on July 15, 2011 Pacific
Time -- after nearly four years of travel

118
00:08:52,950 --> 00:08:58,410
through the solar system, NASA's Dawn spacecraft
was pulled into the orbit of Vesta by the

119
00:08:58,410 --> 00:09:00,550
giant asteroid's gravity.

120
00:09:00,550 --> 00:09:05,110
Dawn became the first spacecraft to orbit
a main belt asteroid located in the region

121
00:09:05,110 --> 00:09:10,640
between Mars and Jupiter, about 117 million
miles from Earth.

122
00:09:10,640 --> 00:09:15,390
Images and data collected by the spacecraft
of Vesta and the dwarf planet Ceres, Dawn's

123
00:09:15,390 --> 00:09:21,090
next stop, will help scientists characterize
the early solar system and the processes that

124
00:09:21,090 --> 00:09:23,030
dominated its formation.

125
00:09:23,030 --> 00:09:28,510
Dawn is expected to leave Vesta's orbit
late next month and arrive at Ceres in February

126
00:09:28,510 --> 00:09:31,280
2015.

127
00:09:31,280 --> 00:09:33,530
And that’s This Week @NASA!

128
00:09:33,530 --> 00:09:38,360
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