1
00:00:07,140 --> 00:00:11,469
This Week at NASA…

2
00:00:11,469 --> 00:00:16,190
Onboard the International Space Station NASA's
Kevin Ford continues to settle into his role

3
00:00:16,190 --> 00:00:18,990
as Commander of the orbiting laboratory.

4
00:00:18,990 --> 00:00:24,240
Ford and Expedition 34 crewmates Oleg Novitskiy
and Evgeny Tarelkin of the Russian Federal

5
00:00:24,240 --> 00:00:29,130
Space Agency are continuing work with the
multitude of research being conducted on the

6
00:00:29,130 --> 00:00:35,260
station – including investigations on human
research, biological and physical sciences,

7
00:00:35,260 --> 00:00:51,530
technology development and Earth observation.

8
00:00:51,530 --> 00:00:55,320
And in the spirit of the Season, a message
of Thanks from the Commander who spent the

9
00:00:55,320 --> 00:00:59,930
Thanksgiving Holiday enjoying a traditional
meal with his crewmates.

10
00:00:59,930 --> 00:01:06,200
The arrival on December 21 of the other three
members of Expedition 34, Russian cosmonaut

11
00:01:06,200 --> 00:01:12,520
Roman Romanenko, NASA's Tom Marshburn and

Chris Hadfield of the Canadian Space Agency

12
00:01:12,520 --> 00:01:19,960
will restore a six-person presence on the
ISS.

13
00:01:19,960 --> 00:01:24,880
NASA Astronaut Joe Acaba, who recently returned
from a four month stay on the International

14
00:01:24,880 --> 00:01:30,570
Space Station stopped by the Payload Operations
Center at Marshall Space Flight Center.

15
00:01:30,570 --> 00:01:35,960
The Expedition 31/32 flight engineer worked
with the POC team on a daily basis while onboard

16
00:01:35,960 --> 00:01:40,799
the ISS and wanted them to know how valuable
their work is to the station’s mission.

17
00:01:40,799 --> 00:01:45,619
“The reason we’re on the Space Station
is to do science and these guys make sure

18
00:01:45,619 --> 00:01:46,619
it happens.

19
00:01:46,619 --> 00:01:49,549
So I wanted to come back here and thank them
first hand and I’m really happy to be here

20
00:01:49,549 --> 00:01:52,290
this is a cool place and a lot of neat things
happen here.”

21
00:01:52,290 --> 00:01:56,170
Acaba is scheduled to share highlights of
his mission during upcoming trips to other

22
00:01:56,170 --> 00:02:02,810
NASA Centers as well – including a NASA Social at Headquarters from 9-11:30am Eastern

23
00:02:02,810 --> 00:02:04,450
on December 4.

24
00:02:04,450 --> 00:02:11,840
To register go to http://www.nasa.gov/social.

25
00:02:11,840 --> 00:02:16,510
Former astronaut Ellen Ochoa has been chosen to lead NASA's Johnson Space Center into

26
00:02:16,510 --> 00:02:21,480
the next era of exploration, following current Center Director Mike Coats' announcement

27
00:02:21,480 --> 00:02:26,650
that, after guiding Johnson through a dynamic transition, he has decided to retire at the

28
00:02:26,650 --> 00:02:27,650
end of the year.

29
00:02:27,650 --> 00:02:32,099
"So for the last seven years I've been privileged to be part of an amazing team here

30
00:02:32,099 --> 00:02:34,260
at the Johnson Space Center.

31
00:02:34,260 --> 00:02:38,129
All of you make our nation's human space flight program possible.

32
00:02:38,129 --> 00:02:42,989
You flew out the space shuttle program safely

and successfully.

33
00:02:42,989 --> 00:02:47,140
You built the International Space Station
and operated around the clock."

34
00:02:47,140 --> 00:02:52,540
Coats' seven years as Johnson Space Center
director cap a 44-year career that includes

35
00:02:52,540 --> 00:02:56,349
three space shuttle missions, two of which
he commanded.

36
00:02:56,349 --> 00:03:02,030
He came to NASA in 1978 as part of the first
astronaut class specifically selected to fly

37
00:03:02,030 --> 00:03:03,030
the space shuttle.

38
00:03:03,030 --> 00:03:09,490
Ochoa flew the first of her four missions
– STS-56 – in 1993, making her the first

39
00:03:09,490 --> 00:03:11,780
Hispanic woman to go to space.

40
00:03:11,780 --> 00:03:17,280
Since STS-110, her final mission in 2002,
she has held several management positions

41
00:03:17,280 --> 00:03:22,210
at Johnson, including director of flight crew
operations and Deputy Center Director.

42
00:03:22,210 --> 00:03:26,690
"I know how talented the people are here
at this agency and so to be able to be the

43
00:03:26,690 --> 00:03:34,379
one to represent you within NASA and everywhere
outside is an amazing feeling.”

44
00:03:34,379 --> 00:03:42,069
Ochoa becomes JSC's first Hispanic Director.

45
00:03:42,069 --> 00:03:46,910
Engineers at the Marshall Space Flight Center
finished a circumferential weld of the "pathfinder"

46
00:03:46,910 --> 00:03:52,171
version of an adapter that will eventually
connect the Orion spacecraft to NASA’s Space

47
00:03:52,171 --> 00:03:58,780
Launch System, but will first be used on Exploration
Flight Test-1 in 2014, when it will connect

48
00:03:58,780 --> 00:04:01,490
Orion to a Delta IV heavy-lift rocket.

49
00:04:01,490 --> 00:04:07,500
A ‘pathfinder’ designation is used to
describe a sample build of a design, to develop

50
00:04:07,500 --> 00:04:12,269
the processes and techniques that will eventually
be used to build flight hardware.

51
00:04:12,269 --> 00:04:17,800
The SLS will launch the Orion spacecraft and
other payloads beyond low Earth orbit, providing

52
00:04:17,800 --> 00:04:23,750
an entirely new capability for human exploration.

53
00:04:23,750 --> 00:04:29,300
The SLS Program has wrapped up testing of

its buffet model in the Langley Research Center’s

54
00:04:29,300 --> 00:04:31,730
Transonic Dynamics Tunnel.

55
00:04:31,730 --> 00:04:37,080
The model, tested at low supersonic speeds,
reached Mach 1.2.

56
00:04:37,080 --> 00:04:42,830
The generated data will help scientists refine
the vehicle’s design before the full-size

57
00:04:42,830 --> 00:04:44,530
rocket is built.

58
00:04:44,530 --> 00:04:50,980
The first mission of the SLS, America’s
next heavy-lift rocket, is scheduled for 2017.

59
00:04:50,980 --> 00:04:56,540
Exploration Mission-1 will carry an un-crewed
Orion spacecraft in a demonstration flight

60
00:04:56,540 --> 00:05:00,000
around the moon.

61
00:05:00,000 --> 00:05:04,890
Popular Science Magazine has named NASA's
PhoneSat project as a winner in the Aerospace

62
00:05:04,890 --> 00:05:09,040
category of its 2012 Best of What's New Awards.

63
00:05:09,040 --> 00:05:14,720
The awards, now in their 25th year, highlight
innovations that once seemed impossible, yet

64
00:05:14,720 --> 00:05:17,330

today really exist.

65
00:05:17,330 --> 00:05:21,800
Based at NASA Ames Research Center, the goal
of the PhoneSat project is to lower the cost

66
00:05:21,800 --> 00:05:26,750
of building a space satellite to the point
that almost anyone can do so.

67
00:05:26,750 --> 00:05:31,000
About the size of a coffee mug and weighing
less than 3 pounds, the total cost of the

68
00:05:31,000 --> 00:05:34,540
components for each PhoneSat satellite is
about only $3500.

69
00:05:34,540 --> 00:05:39,040
“The PhoneSat project is looking at new
and unique ways of building small satellites.

70
00:05:39,040 --> 00:05:44,130
For instance, the team used commercial, off-the-shelf
components which includes a consumer smartphone

71
00:05:44,130 --> 00:05:48,230
to host the software as the computing power
for the spacecraft.”

72
00:05:48,230 --> 00:05:52,320
Smartphones today have more than 100 times
the computing power of the average satellite,

73
00:05:52,320 --> 00:05:57,410
with fast processors, high-resolution cameras,
GPS receivers and several radios and sensors

74
00:05:57,410 --> 00:05:59,240
built in.

75
00:05:59,240 --> 00:06:05,790
NASA's prototype smartphone satellite, known
as PhoneSat 1.0, is built around the HTC Nexus

76
00:06:05,790 --> 00:06:06,790
One.

77
00:06:06,790 --> 00:06:11,920
The team also built a more advanced version
called PhoneSat 2.0 that has improved software,

78
00:06:11,920 --> 00:06:14,930
more sensors and is powered by Samsung's Nexus
S.

79
00:06:14,930 --> 00:06:20,630
“With a whole array of these satellites,
which is really cheap, you can now do a swarm

80
00:06:20,630 --> 00:06:25,020
of satellites that can take measurement points
all over and you can get really accurate models

81
00:06:25,020 --> 00:06:28,700
of the atmosphere and of other scientific
data.”

82
00:06:28,700 --> 00:06:33,010
Both satellites are scheduled to be sent into
space later this year aboard a rocket launched

83
00:06:33,010 --> 00:06:38,010
from NASA's Wallops Flight Facility at Wallops
Island, Virginia.

84
00:06:38,010 --> 00:06:46,340
Each satellite will broadcast a signal every
30 seconds on the amateur UHF band at 437.425MHz.

85
00:06:46,340 --> 00:06:55,580
Anyone around the world can listen for this
signal and upload what they hear to http://www.phonesat.org.

86
00:06:55,580 --> 00:07:00,250
Goddard Space Flight Center took delivery
of the second shipment of Beryllium mirrors

87
00:07:00,250 --> 00:07:02,810
for the James Webb Space Telescope.

88
00:07:02,810 --> 00:07:07,960
This shipment, from Ball Aerospace in Boulder,
Colorado, includes the sole secondary mirror

89
00:07:07,960 --> 00:07:12,870
and the third of the 18 primary mirrors that
will be integrated into the telescope.

90
00:07:12,870 --> 00:07:16,340
Goddard took delivery of the first two mirrors
in September.

91
00:07:16,340 --> 00:07:21,780
The large infrared telescope will be the most
powerful space observatory ever built allowing

92
00:07:21,780 --> 00:07:25,390
it to peer back in time to the first galaxies
ever formed.

93
00:07:25,390 --> 00:07:29,560
It is scheduled to launch in 2018.

94
00:07:29,560 --> 00:07:36,280
NASA's Mars Curiosity rover has completed
its first same-day “touch-and-go” inspection,

95
00:07:36,280 --> 00:07:42,190

using the Alpha Particle X-Ray Spectrometer
on its arm to touch a rock named “Rocknest

96
00:07:42,190 --> 00:07:46,130
3” and collect data about the chemical elements
in that rock.

97
00:07:46,130 --> 00:07:51,490
The rover then stowed its arm and drove 83
feet eastward toward a target called "Point

98
00:07:51,490 --> 00:07:57,050
Lake" – a spot from which Curiosity's Mast
Camera can be used to examine possible routes

99
00:07:57,050 --> 00:08:02,100
and targets to the east -- including rocks
for the first use of the rover's hammering

100
00:08:02,100 --> 00:08:03,110
drill.

101
00:08:03,110 --> 00:08:08,020
That instrument is designed to collect samples
of powder from rock interiors.

102
00:08:08,020 --> 00:08:16,280
My name is Raquel Redhouse.

103
00:08:16,280 --> 00:08:17,830
I work at Glenn Research Center.

104
00:08:17,830 --> 00:08:21,810
I’m an aerospace engineer, and I work on
the Orion vehicle.

105
00:08:21,810 --> 00:08:27,580
The work that I do is important within NASA
because it directly supports the missions

106
00:08:27,580 --> 00:08:33,110
and goals, but outside of NASA it helps all
of humanity.

107
00:08:33,110 --> 00:08:40,300
It develops technology, new products; it inspires
students to look into STEM fields.

108
00:08:40,300 --> 00:08:42,640
The list just goes on and on.

109
00:08:42,640 --> 00:08:44,700
It's a lot of fun.

110
00:08:44,700 --> 00:08:52,310
First, I just love that I'm helping to be
a part of space history and, then the other,

111
00:08:52,310 --> 00:08:57,570
on a daily basis I'm working with technical
experts so I'm also learning something each

112
00:08:57,570 --> 00:08:58,800
and every day.

113
00:08:58,800 --> 00:09:01,950
I am most inspired by my son.

114
00:09:01,950 --> 00:09:07,680
Once he was born, I wanted to be able to be
a role model to him—to show him that you

115
00:09:07,680 --> 00:09:10,230
know you don't give up on what you had already
started.

116
00:09:10,230 --> 00:09:14,560
So he really helped me to get back into school
and finish my degree.

117
00:09:14,560 --> 00:09:20,950
The advice I would give to someone who would
want to go into systems engineering would

118
00:09:20,950 --> 00:09:33,360
be to not only ace your college courses, but
on top of that, I would strongly suggest taking

119
00:09:33,360 --> 00:09:38,930
some personal development courses, and taking
some teamwork and collaboration because it

120
00:09:38,930 --> 00:09:43,700
really helps in this because you interface
with a lot of people.

121
00:09:43,700 --> 00:09:49,670
I'm inspiring—I hope to be inspiring the
youth of today, not only the Native Americans,

122
00:09:49,670 --> 00:09:55,180
but all kids that I come in contact—at the
ACES programs, in the outreach events, and

123
00:09:55,180 --> 00:09:56,710
the national organizations.

124
00:09:56,710 --> 00:10:03,470
If I can do it, they can too.

125
00:10:03,470 --> 00:10:15,960
One year ago on November 26th, 2011, NASA's
Mars Science Laboratory Curiosity rover launched

126
00:10:15,960 --> 00:10:21,720
aboard a United Launch Alliance Atlas V rocket
from Cape Canaveral Air Force Station, in

127

00:10:21,720 --> 00:10:22,770
Florida.

128
00:10:22,770 --> 00:10:31,220
MSL reached the Red Planet in early August
of this year at a site known as Gale Crater

129
00:10:31,220 --> 00:10:34,130
to begin its two-year prime mission.

130
00:10:34,130 --> 00:10:39,471
The rover's ten instruments are investigating
whether that area of Mars could ever have

131
00:10:39,471 --> 00:10:42,520
sustained microbial life.

132
00:10:42,520 --> 00:10:49,880
Ten years ago on November 23, 2002, space
shuttle Endeavour launched from Kennedy Space

133
00:10:49,880 --> 00:10:59,280
Center on the STS-113 mission to the International
Space Station.

134
00:10:59,280 --> 00:11:04,400
Onboard were Commander Jim Weatherbee, Pilot
Paul Lockhart, Mission Specialists Michael

135
00:11:04,400 --> 00:11:09,990
Lopez-Alegria and John Herrington – the
first Native American astronaut in space and

136
00:11:09,990 --> 00:11:16,510
the Expedition 6 crew – Commander Ken Bowersox
and Flight Engineers Nikolai Budarin and Don

137
00:11:16,510 --> 00:11:17,810
Pettit.

138
00:11:17,810 --> 00:11:22,710
The station’s P1 truss was installed and
activated during the 14-day mission.

139
00:11:22,710 --> 00:11:28,410
In addition to supplies and equipment, Endeavour
returned to Earth with Valery Korzun, Peggy

140
00:11:28,410 --> 00:11:33,720
Whitson and Sergei Treshchov – the crew
of Expedition 5.

141
00:11:33,720 --> 00:11:35,900
And that’s This Week @NASA.

142
00:11:35,900 --> 00:11:41,050
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