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1
00:00:06,890 --> 00:00:11,300
This Week at NASA…

2
00:00:11,300 --> 00:00:17,070
NASA astronaut Chris Cassidy and his Expedition
35/36 crewmates have completed final training

3
00:00:17,070 --> 00:00:20,859
for their upcoming mission to the International
Space Station.

4
00:00:20,859 --> 00:00:25,540
Conducted at the Gagarin Cosmonaut Training
Center in Star City, outside Moscow, this

5
00:00:25,540 --> 00:00:30,599
qualification training all but clears the
way for Cassidy, and Pavel Vinogradov and

6
00:00:30,599 --> 00:00:35,570
Alexander Misurkin of the Russian Federal
Space Agency, to launch to the orbiting laboratory

7
00:00:35,570 --> 00:00:40,690
later this month aboard a Soyuz spacecraft.

8
00:00:40,690 --> 00:00:45,780
The trio also took questions from news media
at Star City in one of several traditional

9
00:00:45,780 --> 00:00:48,129
pre-launch activities.

10
00:00:48,129 --> 00:00:52,789
Also included was a visit to Moscow's Red
Square where the crew and its backups laid

11
00:00:52,789 --> 00:00:57,870
flowers at the Kremlin wall and paid tribute

to iconic Russian space heroes.

12
00:00:57,870 --> 00:01:02,719
Cassidy, Vinogradov, and Misurkin are scheduled
to launch to the International Space Station

13
00:01:02,719 --> 00:01:08,790
from Kazakhstan on March 29, local time.

14
00:01:08,790 --> 00:01:14,960
By that March 29 milestone, the SpaceX Dragon
capsule now berthed at the International Space

15
00:01:14,960 --> 00:01:19,610
Station is scheduled to be back on Earth,
having safely splashed down in the Pacific

16
00:01:19,610 --> 00:01:22,670
Ocean four days earlier, on Mar. 25.

17
00:01:22,670 --> 00:01:26,811
In a satellite interview conducted the morning
of Dragon’s March 1st launch from the Cape

18
00:01:26,811 --> 00:01:32,040
Canaveral Air Force Station, NASA Deputy Administrator
Lori Garver spoke about some of the science

19
00:01:32,040 --> 00:01:36,020
experiments Dragon’s brought up to the world’s
only laboratory in microgravity.

20
00:01:36,020 --> 00:01:43,390
“Experiments on materials research, combustion,
life sciences, as well as making solar sails

21
00:01:43,390 --> 00:01:48,979
and semi-conductor chips more efficiently
are all benefits that we are working on on

22
00:01:48,979 --> 00:01:52,520
this mission.”

23
00:01:52,520 --> 00:01:56,890
Inside the Kennedy Space Center’s iconic
Vehicle Assembly Building, crane operators,

24
00:01:56,890 --> 00:02:01,899
technicians and engineers practiced lifting
and placing a six-ton replica of the Launch

25
00:02:01,899 --> 00:02:06,280
Abort System’s escape rocket atop a mockup
of the Orion capsule.

26
00:02:06,280 --> 00:02:11,190
Although a Space Launch System flight is still
a few years away, practicing stacking procedures

27
00:02:11,190 --> 00:02:15,860
now will help the team perfect the task ahead
of mission-critical operations.

28
00:02:15,860 --> 00:02:21,530
The Launch Abort System has solid-fueled engines
that can lift Orion and its crew away from

29
00:02:21,530 --> 00:02:26,040
the rocket in the unlikely event a booster
fails during initial launch.

30
00:02:26,040 --> 00:02:31,790
A test flight in 2010 saw the LAS produce
a half-million pounds of thrust, about the

31
00:02:31,790 --> 00:02:38,230
same as the Titan II rockets that launched
Gemini spacecraft into orbit.

32

00:02:38,230 --> 00:02:44,300
A newly-released image taken by NASA’s Cassini
spacecraft orbiting Saturn shows a distant

33
00:02:44,300 --> 00:02:47,720
world visible through the planet’s rings.

34
00:02:47,720 --> 00:02:52,470
The bright dot just above and to the right
of the image’s center is none other than

35
00:02:52,470 --> 00:02:55,409
Earth’s twin planet, Venus.

36
00:02:55,409 --> 00:03:00,010
This view looks toward the non-illuminated
side of the rings from about 17 degrees below

37
00:03:00,010 --> 00:03:01,790
the ring plane.

38
00:03:01,790 --> 00:03:10,010
The image was taken in visible light last
November by Cassini’s wide-angle camera.

39
00:03:10,010 --> 00:03:13,810
Scientists from the Ames Research Center,
the Jet Propulsion Laboratory and the Goddard

40
00:03:13,810 --> 00:03:18,580
Space Flight Center returned to the rugged
terrain of California's Death Valley National

41
00:03:18,580 --> 00:03:22,240
Park for NASA’s second annual MarsFest.

42
00:03:22,240 --> 00:03:27,920
The event -- held in a vast area of wind-swept
sand dunes and other Mars-like terrain, gave

43
00:03:27,920 --> 00:03:33,720
park visitors a chance to see how NASA studies
exotic environments similar to those on the

44
00:03:33,720 --> 00:03:34,860
Red Planet.

45
00:03:34,860 --> 00:03:40,640
Sample items and materials used on the Mars
Curiosity rover were displayed, and JPL scientists

46
00:03:40,640 --> 00:03:45,920
demonstrated how the rover's CheMin X-ray
diffraction instrument, developed at Ames,

47
00:03:45,920 --> 00:03:52,319
is currently analyzing drilling samples on
the Martian surface.

48
00:03:52,319 --> 00:03:57,260
NASA researchers from the Langley, Glenn and
Dryden Flight research centers are teaming

49
00:03:57,260 --> 00:04:03,840
up to study the effects of alternate biofuel
on engine performance, emissions and aircraft-generated

50
00:04:03,840 --> 00:04:04,840
contrails.

51
00:04:04,840 --> 00:04:11,159
Cruising at altitudes up to 40-thousand feet,
the agency’s DC-8 flying laboratory is followed

52
00:04:11,159 --> 00:04:16,720
at varying distances by an instrumented NASA
HU-25 Falcon aircraft.

53
00:04:16,720 --> 00:04:21,750

“Our instruments sweep will measure the
‘nox’ components – carbon monoxide,

54
00:04:21,750 --> 00:04:27,760
carbon dioxide plus a lot of different aspects
of the particles that come out of the aircraft.”

55
00:04:27,760 --> 00:04:34,200
The project, called ACCESS, for Alternative
Fuel Effects on Contrails and Cruise Emissions,

56
00:04:34,200 --> 00:04:39,980
will provide important data for NASA’s continuing
effort to make air travel not only safer,

57
00:04:39,980 --> 00:04:43,750
but cleaner.

58
00:04:43,750 --> 00:04:46,660
Many of us have never heard a sonic boom.

59
00:04:46,660 --> 00:04:52,640
It is a noise created by shock waves from
a supersonic jet as it travels through the

60
00:04:52,640 --> 00:04:54,910
air faster than the speed of sound.

61
00:04:54,910 --> 00:05:01,280
“If you were listening to the Concorde which
stopped flying in 2003 you would definitely

62
00:05:01,280 --> 00:05:06,360
know that it had passed overhead and you might
wonder if a car had backfired just outside.”

63
00:05:06,360 --> 00:05:10,960
How much noise is too much noise … that's
one question NASA researchers like Jonathan

64
00:05:10,960 --> 00:05:16,520
Rathsam are trying to answer as NASA and industry
work to develop a supersonic passenger jet

65
00:05:16,520 --> 00:05:19,860
that is quiet enough to fly over land.

66
00:05:19,860 --> 00:05:24,580
To quantify objectionable noise levels NASA
invites test subjects –regular people from

67
00:05:24,580 --> 00:05:29,460
the community - to listen to sounds similar
to aircraft sonic booms.

68
00:05:29,460 --> 00:05:33,630
The subjects sit in what looks like a living
room at the Langley Research Center.

69
00:05:33,630 --> 00:05:34,630
It is called the Interior Effects Room.

70
00:05:34,630 --> 00:05:40,270
We do a lot of tests for not only supersonic,
but subsonic etc. where we have people come

71
00:05:40,270 --> 00:05:44,810
in, listen to sounds and tell us how annoying
they think the sounds are and this will then

72
00:05:44,810 --> 00:05:47,180
impact future designs of aircraft.

73
00:05:47,180 --> 00:05:52,880
Two of the outside walls of the room contain
subwoofers and mid-range speakers … 52 of

74
00:05:52,880 --> 00:05:53,880
each.

75
00:05:53,880 --> 00:05:56,340
They create synthesized booms.

76
00:05:56,340 --> 00:06:01,760
Seven satellite speakers and a subwoofer inside
the room mimic the rattle sounds.

77
00:06:01,760 --> 00:06:08,240
“The subjects are asked to place an x on
a scale according to their annoyance.

78
00:06:08,240 --> 00:06:12,680
The very low end of the scale says not at
all annoyed and the high end of the scale

79
00:06:12,680 --> 00:06:14,310
says extremely annoyed.”

80
00:06:14,310 --> 00:06:18,700
The goal of the research is to come up with
acceptable sonic boom noise standards that

81
00:06:18,700 --> 00:06:24,540
regulators and designers can use to develop
supersonic jets that could fly anywhere – not

82
00:06:24,540 --> 00:06:31,090
just over water like previous supersonic airliners.

83
00:06:31,090 --> 00:06:36,090
Aquarius -- NASA’s first satellite instrument
built to measure the concentration of salt

84
00:06:36,090 --> 00:06:41,050
at the ocean’s surface now has just over
a year of data under its belt.

85
00:06:41,050 --> 00:06:47,410

Data collected from December 2011 to December 2012 show a variety of salinity patterns -- from

86
00:06:47,410 --> 00:06:52,750
a very salty patch in the middle of the Atlantic Ocean to pools of less salty water in the

87
00:06:52,750 --> 00:06:53,750
Pacific.

88
00:06:53,750 --> 00:06:59,470
By measuring ocean salinity from space, Aquarius is providing new insights into how freshwater

89
00:06:59,470 --> 00:07:04,770
moves between the ocean and atmosphere, and how that influences ocean circulation, weather

90
00:07:04,770 --> 00:07:08,710
and climate around the world.

91
00:07:08,710 --> 00:07:13,860
Launched in June 2011, Aquarius is managed by the Goddard Space Flight Center in collaboration

92
00:07:13,860 --> 00:07:18,590
with the Space Agency of Argentina.

93
00:07:18,590 --> 00:07:24,020
Counselors from Hampton Roads-area middle schools attended an engineering workshop co-hosted

94
00:07:24,020 --> 00:07:26,310
by Langley Research Center.

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00:07:26,310 --> 00:07:31,530
The group received tips and information from Langley STEM professionals about math courses,

96

00:07:31,530 --> 00:07:35,680
internship programs and other opportunities
they could share with students interested

97
00:07:35,680 --> 00:07:37,240
in pursuing STEM careers.

98
00:07:37,240 --> 00:07:42,180
“I’m very excited to be here because I
feel like NASA can be the catalyst to communicate

99
00:07:42,180 --> 00:07:49,250
to our educators what it is they need to know
to help encourage students to go into these

100
00:07:49,250 --> 00:08:00,910
STEM careers.”

101
00:08:00,910 --> 00:08:05,420
I am Erisa Hines and I am a Mobility Systems
Engineer here at the Jet Propulsion Laboratory.

102
00:08:05,420 --> 00:08:09,430
I had an opportunity to come onto the Mars
Science Laboratory mission about two years

103
00:08:09,430 --> 00:08:13,620
before we launched and I came on as part of
the Cruise Operations Team so I was testing

104
00:08:13,620 --> 00:08:18,650
the attitude control system as a System Engineer
and there was an opportunity to come work

105
00:08:18,650 --> 00:08:20,150
on the surface side of the mission.

106
00:08:20,150 --> 00:08:24,960
I get to work with the rover and watch it
drive around the Mars Yard and help understand

107
00:08:24,960 --> 00:08:26,300
and develop some of that new capability.

108
00:08:26,300 --> 00:08:29,660
It’s pretty exciting to know that’s going
to be used on Mars to further science.

109
00:08:29,660 --> 00:08:33,320
There’s a little bit of development going
on so certain capabilities the rover doesn’t

110
00:08:33,320 --> 00:08:37,760
have yet on the surface we use this rover
Maggie to test any of those new capabilities

111
00:08:37,760 --> 00:08:38,760
in the software.

112
00:08:38,760 --> 00:08:42,511
I think because of my personality and because
of how I was supported by the women in my

113
00:08:42,511 --> 00:08:48,190
life growing up I’ve never really felt any
real challenges when it came to the idea of

114
00:08:48,190 --> 00:08:51,960
there being fewer women in certain fields
or in the filed I choose to pursue.

115
00:08:51,960 --> 00:09:01,510
And I certainly see a change in that happening
as I see more women coming into the science

116
00:09:01,510 --> 00:09:04,030
and technology fields.

117
00:09:04,030 --> 00:09:06,560

“4-3-2-1 liftoff …”

118
00:09:06,560 --> 00:09:12,690
On March 11, 2008 Space Shuttle Endeavour rose skyward from Kennedy Space Center on

119
00:09:12,690 --> 00:09:21,340
STS-123 – an assembly flight to the International Space Station.

120
00:09:21,340 --> 00:09:26,240
Delivered to the station was Kibo, the Japanese Experiment Module, and the Canadian Special

121
00:09:26,240 --> 00:09:30,430
Purpose Dexterous Manipulator, or Dextre robotics system.

122
00:09:30,430 --> 00:09:36,120
The mission also facilitated a change of station crewmembers -- delivering NASA astronaut Garrett

123
00:09:36,120 --> 00:09:42,140
Reisman and returning to Earth with European Space Agency astronaut Léopold Eyharts.

124
00:09:42,140 --> 00:09:44,320
And that’s This Week @NASA.

125
00:09:44,320 --> 00:09:48,990
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