



SpacetoGround

1
00:00:05,650 --> 00:00:02,770
foreign

2
00:00:08,930 --> 00:00:05,660
[Music]

3
00:00:11,390 --> 00:00:08,940
I'm Dan Hewitt it was a Sprint to the

4
00:00:14,690 --> 00:00:11,400
finish this week as the Expedition 69

5
00:00:16,849 --> 00:00:14,700
crew prepares to unleash a dragon before

6
00:00:19,970 --> 00:00:16,859
that can happen the crew will pack just

7
00:00:22,250 --> 00:00:19,980
shy of 4 200 pounds of cargo and science

8
00:00:25,070 --> 00:00:22,260
inside the capsule to return to Earth

9
00:00:27,410 --> 00:00:25,080
Dragon continues to be the main pipeline

10
00:00:29,990 --> 00:00:27,420
for us to return large amounts of stuff

11
00:00:32,210 --> 00:00:30,000
from station to Earth from completed

12
00:00:35,209 --> 00:00:32,220
science experiments ready for analysis

13
00:00:38,450 --> 00:00:35,219

to Hardware like big nitrogen and oxygen

14

00:00:40,430 --> 00:00:38,460

tanks that will refill and fly again and

15

00:00:42,650 --> 00:00:40,440

it isn't just like throwing your luggage

16

00:00:44,990 --> 00:00:42,660

into your car each of the crew will

17

00:00:47,150 --> 00:00:45,000

spend hours this week carefully laying

18

00:00:49,790 --> 00:00:47,160

out and accounting for every item

19

00:00:52,250 --> 00:00:49,800

returning they also take photos of the

20

00:00:54,590 --> 00:00:52,260

packed configuration for analysis done

21

00:00:56,569 --> 00:00:54,600

by teams on the ground calculating the

22

00:00:59,150 --> 00:00:56,579

weight distribution and center of

23

00:01:01,130 --> 00:00:59,160

gravity of dragon a critical piece of

24

00:01:03,830 --> 00:01:01,140

making sure everything gets home safe

25

00:01:05,750 --> 00:01:03,840

and critical for return though is the

26

00:01:08,570 --> 00:01:05,760

science with experiments running the

27

00:01:10,670 --> 00:01:08,580

full gamut making the trip home studies

28

00:01:13,190 --> 00:01:10,680

looking at everything from Crystal and

29

00:01:14,929 --> 00:01:13,200

plant growth to fire safety and muscle

30

00:01:16,969 --> 00:01:14,939

and heart health will be taking the

31

00:01:19,310 --> 00:01:16,979

plunge through Earth's atmosphere packed

32

00:01:21,289 --> 00:01:19,320

away inside Dragon we'll have dwarf

33

00:01:23,450 --> 00:01:21,299

tomatoes grown in our very own space

34

00:01:26,210 --> 00:01:23,460

Garden helping us learn how to grow

35

00:01:28,910 --> 00:01:26,220

nutritious food for Deep Space Explorers

36

00:01:31,249 --> 00:01:28,920

of the future crystals testing a new way

37

00:01:33,950 --> 00:01:31,259

to develop more efficient solar cells

38

00:01:36,890 --> 00:01:33,960

and semiconductors stuff the astronauts

39

00:01:39,170 --> 00:01:36,900

literally lit on fire in a very safe and

40

00:01:41,810 --> 00:01:39,180

controlled facility to better understand

41

00:01:43,910 --> 00:01:41,820

how different materials react in the

42

00:01:46,550 --> 00:01:43,920

space flight environment and blood

43

00:01:48,710 --> 00:01:46,560

samples used in one study to analyze

44

00:01:51,050 --> 00:01:48,720

muscle changes in astronauts which can

45

00:01:52,910 --> 00:01:51,060

help us better protect future Crews and

46

00:01:55,429 --> 00:01:52,920

help those struggling with muscle loss

47

00:01:57,530 --> 00:01:55,439

on Earth and another study looking at

48

00:01:59,450 --> 00:01:57,540

how we can treat arteries in your heart

49

00:02:01,670 --> 00:01:59,460

when they stiffen something that can

50

00:02:04,130 --> 00:02:01,680

happen to astronauts living in space for

51
00:02:06,469 --> 00:02:04,140
months at a time or to everyone here on

52
00:02:08,570 --> 00:02:06,479
Earth just as they grow older

53
00:02:11,150 --> 00:02:08,580
and because it's still the best part of

54
00:02:14,270 --> 00:02:11,160
my job let's knock out a few rapid fire

55
00:02:16,190 --> 00:02:14,280
ask NASA questions Charles asked when

56
00:02:18,650 --> 00:02:16,200
astronauts swallow food in space how

57
00:02:20,990 --> 00:02:18,660
does it get into the stomach does it not

58
00:02:23,990 --> 00:02:21,000
stop in the throat or somewhere

59
00:02:26,630 --> 00:02:24,000
answer your body doesn't use gravity to

60
00:02:29,030 --> 00:02:26,640
move food and water it uses muscles so

61
00:02:31,610 --> 00:02:29,040
everything works in microgravity try

62
00:02:32,869 --> 00:02:31,620
drinking water standing on your head it

63
00:02:34,729 --> 00:02:32,879

still works

64

00:02:37,430 --> 00:02:34,739

Frederickson asks how do they get the

65

00:02:42,050 --> 00:02:37,440

cargo out of the trunk of dragon answer

66

00:02:45,229 --> 00:02:42,060

big robotic arm aka the Canada arm 2.

67

00:02:48,229 --> 00:02:45,239

Edmund asked if the station is 260 miles

68

00:02:50,990 --> 00:02:48,239

up why does the trip on Dragon take 24

69

00:02:53,030 --> 00:02:51,000

hours straight line that's only 22 miles

70

00:02:55,369 --> 00:02:53,040

an hour on a rocket

71

00:02:58,070 --> 00:02:55,379

answer because you aren't driving to

72

00:02:59,990 --> 00:02:58,080

something sitting stationary 260 miles

73

00:03:03,530 --> 00:03:00,000

above you you're going to something

74

00:03:06,589 --> 00:03:03,540

flying past you at 17 000 miles an hour

75

00:03:08,990 --> 00:03:06,599

that also happens to be 260 miles of

76
00:03:11,330 --> 00:03:09,000
imagine you had a nine minute drive to

77
00:03:13,850 --> 00:03:11,340
get home but in that nine minutes your

78
00:03:17,030 --> 00:03:13,860
home moved 2500 miles farther away

79
00:03:19,490 --> 00:03:17,040
that's orbital mechanics and lastly

80
00:03:22,130 --> 00:03:19,500
Darth beat his ass is coffee consumed in

81
00:03:24,050 --> 00:03:22,140
space if so does it taste different and

82
00:03:25,729 --> 00:03:24,060
what kinds are there and the answer is

83
00:03:27,589 --> 00:03:25,739
yes there's actually a pretty wide

84
00:03:29,869 --> 00:03:27,599
selection most of the time though it

85
00:03:32,030 --> 00:03:29,879
comes in a pouch like other drinks on

86
00:03:34,009 --> 00:03:32,040
station you just add hot water and drink

87
00:03:35,930 --> 00:03:34,019
just last week though an astronaut was

88
00:03:37,790 --> 00:03:35,940

telling me about how drinking out of a

89

00:03:40,130 --> 00:03:37,800

pouch made them worry that they didn't

90

00:03:42,229 --> 00:03:40,140

like coffee anymore because you lose the

91

00:03:44,630 --> 00:03:42,239

aroma when it's sealed behind a straw

92

00:03:46,970 --> 00:03:44,640

but thanks to some ingenious engineering

93

00:03:49,430 --> 00:03:46,980

from NASA astronaut Don Pettit there is

94

00:03:51,170 --> 00:03:49,440

a special space cup that brings the

95

00:03:53,030 --> 00:03:51,180

sensory experience of coffee to

96

00:03:55,250 --> 00:03:53,040

microgravity without the mess of

97

00:04:00,410 --> 00:03:55,260

floating orbs of java

98

00:04:03,530 --> 00:04:02,270

welcome to space to ground your weekly

99

00:04:06,649 --> 00:04:03,540

look at what's happening on board the

100

00:04:08,990 --> 00:04:06,659

ISS I'm Dan Hewitt and that'll do it for

101
00:04:10,670 --> 00:04:09,000
us this week on Space to ground this is

102
00:04:12,410 --> 00:04:10,680
going to be my last one ever so I just

103
00:04:14,030 --> 00:04:12,420
want to close by saying thank you to

104
00:04:16,189 --> 00:04:14,040
everybody who's watched over the years

105
00:04:17,750 --> 00:04:16,199
thank you to all my fellow hosts thanks

106
00:04:19,610 --> 00:04:17,760
for giving me an excuse to grow my

107
00:04:21,289 --> 00:04:19,620
sweater collection uh and thank you to

108
00:04:23,990 --> 00:04:21,299
everybody that's made this show possible

109
00:04:26,090 --> 00:04:24,000
from Josh and Seth and Beth to everybody

110
00:04:28,670 --> 00:04:26,100
behind the camera Charles but most of

111
00:04:30,710 --> 00:04:28,680
all thank you to Dex for making this and

112
00:04:33,170 --> 00:04:30,720
so many other moments of my NASA career

113
00:04:37,390 --> 00:04:33,180

the best versions of themselves we'll

114

00:04:42,770 --> 00:04:40,370

that's a spaceship behind

115

00:04:45,129 --> 00:04:42,780

this thing was in space like

116

00:04:47,160 --> 00:04:45,139

like 20 minutes ago

117

00:04:51,350 --> 00:04:47,170

I'm gonna touch it