

A person wearing a full-body white protective suit, including a hood and gloves, is working in a storage room. They are standing between two metal shelving units. The shelves are filled with stacks of white, folded items, possibly linens or medical supplies. To the right, a white lab coat is hanging on a rack. The scene is brightly lit, and the overall atmosphere is clinical and sterile. A digital timestamp is visible in the bottom left corner.

05:12

1
00:00:12,150 --> 00:00:10,390
hello

2
00:00:13,990 --> 00:00:12,160
my name is curtis wilkerson and i am a

3
00:00:15,669 --> 00:00:14,000
quality assurance engineer for the mars

4
00:00:17,670 --> 00:00:15,679
science laboratory rover

5
00:00:20,390 --> 00:00:17,680
and this is the jet propulsion

6
00:00:22,550 --> 00:00:20,400
laboratory spacecraft assembly facility

7
00:00:23,509 --> 00:00:22,560
this is literally where it all comes

8
00:00:25,750 --> 00:00:23,519
together

9
00:00:26,950 --> 00:00:25,760
come on let's go inside when we're

10
00:00:28,390 --> 00:00:26,960
building a spacecraft

11
00:00:30,630 --> 00:00:28,400
all of his parts are brought here to the

12
00:00:32,790 --> 00:00:30,640
clean room for final assembly

13
00:00:34,630 --> 00:00:32,800

so why do we use a clean room because

14

00:00:35,750 --> 00:00:34,640

dust particles and other microscopic

15

00:00:37,350 --> 00:00:35,760

contaminants

16

00:00:38,790 --> 00:00:37,360

can harm our sensitive equipment and

17

00:00:39,910 --> 00:00:38,800

optics so we have to remove those

18

00:00:42,470 --> 00:00:39,920

particles from the air

19

00:00:44,069 --> 00:00:42,480

also tiny airborne life forms called

20

00:00:45,670 --> 00:00:44,079

microbes coexist with us

21

00:00:47,110 --> 00:00:45,680

we have to remove those as well because

22

00:00:48,549 --> 00:00:47,120

we don't want to visit another planet

23

00:00:50,069 --> 00:00:48,559

and think we've discovered life

24

00:00:51,990 --> 00:00:50,079

just to find out we brought it with us

25

00:00:53,830 --> 00:00:52,000

from earth this clean room is configured

26

00:00:56,069 --> 00:00:53,840

as a class 10 000 clean room

27

00:00:57,670 --> 00:00:56,079

that means that within one cubic foot of

28

00:00:59,910 --> 00:00:57,680

air there can be no more than 10

29

00:01:00,950 --> 00:00:59,920

000 particles the size of half of a

30

00:01:05,350 --> 00:01:00,960

micron

31

00:01:07,510 --> 00:01:05,360

than the width of a human hair

32

00:01:09,270 --> 00:01:07,520

now if 10 000 sounds like a lot by

33

00:01:09,750 --> 00:01:09,280

comparison the room that we're standing

34

00:01:11,990 --> 00:01:09,760

in

35

00:01:13,990 --> 00:01:12,000

has nearly 500 000 to a million

36

00:01:16,149 --> 00:01:14,000

particles within one cubic foot

37

00:01:18,230 --> 00:01:16,159

that are larger than half a micron so

38

00:01:19,670 --> 00:01:18,240

where do all these particles come from

39

00:01:21,670 --> 00:01:19,680

well most of them come from us the

40

00:01:24,789 --> 00:01:21,680

people things like

41

00:01:26,950 --> 00:01:24,799

skin flakes our hair cosmetics

42

00:01:28,710 --> 00:01:26,960

even the lint on our clothes when we're

43

00:01:30,310 --> 00:01:28,720

standing still motionless

44

00:01:31,749 --> 00:01:30,320

we shed more than a hundred thousand

45

00:01:33,510 --> 00:01:31,759

particles per minute

46

00:01:35,590 --> 00:01:33,520

we're also worried about tribal electric

47

00:01:37,350 --> 00:01:35,600

charging now that's just a fancy way of

48

00:01:38,230 --> 00:01:37,360

saying static electricity

49

00:01:39,749 --> 00:01:38,240

you know how it feels when you're

50

00:01:41,270 --> 00:01:39,759

walking along a carpet you touch a

51
00:01:43,190 --> 00:01:41,280
doorknob and you get that little shot

52
00:01:44,310 --> 00:01:43,200
well that is more than 2 000 volts of

53
00:01:45,670 --> 00:01:44,320
electricity

54
00:01:47,510 --> 00:01:45,680
that kind of shock can do a lot of

55
00:01:47,990 --> 00:01:47,520
damage to our electronics and sensitive

56
00:01:49,590 --> 00:01:48,000
equipment

57
00:01:51,190 --> 00:01:49,600
so to prevent static electricity and

58
00:01:52,389 --> 00:01:51,200
contamination we wear a special clean

59
00:01:54,469 --> 00:01:52,399
room garment you may have noticed

60
00:02:41,350 --> 00:01:54,479
we call it a bunny suit come on let's

61
00:02:45,110 --> 00:02:43,190
inside the clean room the air is kept

62
00:02:47,110 --> 00:02:45,120
clean by a special ventilation system

63
00:02:48,710 --> 00:02:47,120

on this side of the room air is blown in

64

00:02:49,990 --> 00:02:48,720

while existing air is sucked out on the

65

00:02:51,830 --> 00:02:50,000

north side of the room it's then

66

00:02:53,910 --> 00:02:51,840

recirculated through hepa filters

67

00:02:55,030 --> 00:02:53,920

and carbon filters before being blown

68

00:02:56,470 --> 00:02:55,040

back into the clean room

69

00:02:58,390 --> 00:02:56,480

we also move our heavy equipment with

70

00:03:01,350 --> 00:02:58,400

large cranes the crane above us

71

00:03:02,869 --> 00:03:01,360

has a capacity of 15 tons inside the

72

00:03:03,990 --> 00:03:02,879

clean room we're building the mars

73

00:03:05,990 --> 00:03:04,000

science laboratory

74

00:03:07,830 --> 00:03:06,000

the next rover going to mars we have

75

00:03:09,910 --> 00:03:07,840

four large components in here today

76
00:03:11,670 --> 00:03:09,920
behind me is the back shell during our

77
00:03:12,710 --> 00:03:11,680
10-month cruise this will be the home of

78
00:03:14,070 --> 00:03:12,720
our rover

79
00:03:16,070 --> 00:03:14,080
it's covered in a white thermal

80
00:03:18,470 --> 00:03:16,080
protection system right now to protect

81
00:03:20,390 --> 00:03:18,480
it during entry into the planet

82
00:03:21,589 --> 00:03:20,400
here we have the descent stage some call

83
00:03:23,750 --> 00:03:21,599
it the sky crane

84
00:03:25,270 --> 00:03:23,760
after we detach from the parachute this

85
00:03:25,750 --> 00:03:25,280
has the responsibility of lowering the

86
00:03:27,430 --> 00:03:25,760
rover

87
00:03:29,830 --> 00:03:27,440
with the help of eight retro rockets

88
00:03:30,949 --> 00:03:29,840

seen in red to a soft landing on the

89

00:03:33,509 --> 00:03:30,959

surface of mars

90

00:03:34,949 --> 00:03:33,519

at nearly 16 feet in diameter our cruise

91

00:03:37,350 --> 00:03:34,959

stage gets us from earth

92

00:03:38,470 --> 00:03:37,360

to mars with solar panels on the top we

93

00:03:40,229 --> 00:03:38,480

have power

94

00:03:41,830 --> 00:03:40,239

antennas pointing towards earth we have

95

00:03:43,509 --> 00:03:41,840

communication and with the little

96

00:03:45,270 --> 00:03:43,519

rockets in the corner in red

97

00:03:47,990 --> 00:03:45,280

we can make small trajectory maneuvers

98

00:03:49,430 --> 00:03:48,000

during our cruise

99

00:03:52,470 --> 00:03:49,440

and here's the reason we're going to

100

00:03:54,470 --> 00:03:52,480

mars the mars science laboratory rover

101
00:03:55,830 --> 00:03:54,480
the largest rover this planet has ever

102
00:03:57,750 --> 00:03:55,840
sent to mars

103
00:03:59,429 --> 00:03:57,760
it's mid-october and right now we're

104
00:04:01,190 --> 00:03:59,439
doing a lot of electrical testing

105
00:04:02,630 --> 00:04:01,200
but the closer we get to our launch date

106
00:04:04,470 --> 00:04:02,640
we'll start adding our wheels

107
00:04:06,309 --> 00:04:04,480
and our mass with the cameras and then

108
00:04:07,110 --> 00:04:06,319
the robotic arm that'll really start to

109
00:04:08,390 --> 00:04:07,120
take form

110
00:04:10,710 --> 00:04:08,400
once we're finished with all our

111
00:04:12,789 --> 00:04:10,720
assembly and test we'll pack it up

112
00:04:14,309 --> 00:04:12,799
and ship it to cape canaveral florida at

113
00:04:16,550 --> 00:04:14,319

kennedy space center

114

00:04:18,229 --> 00:04:16,560

we'll go through even more tasks before

115

00:04:20,390 --> 00:04:18,239

we stack it on a rocket

116

00:04:22,629 --> 00:04:20,400

and launch it to mars i gotta get back