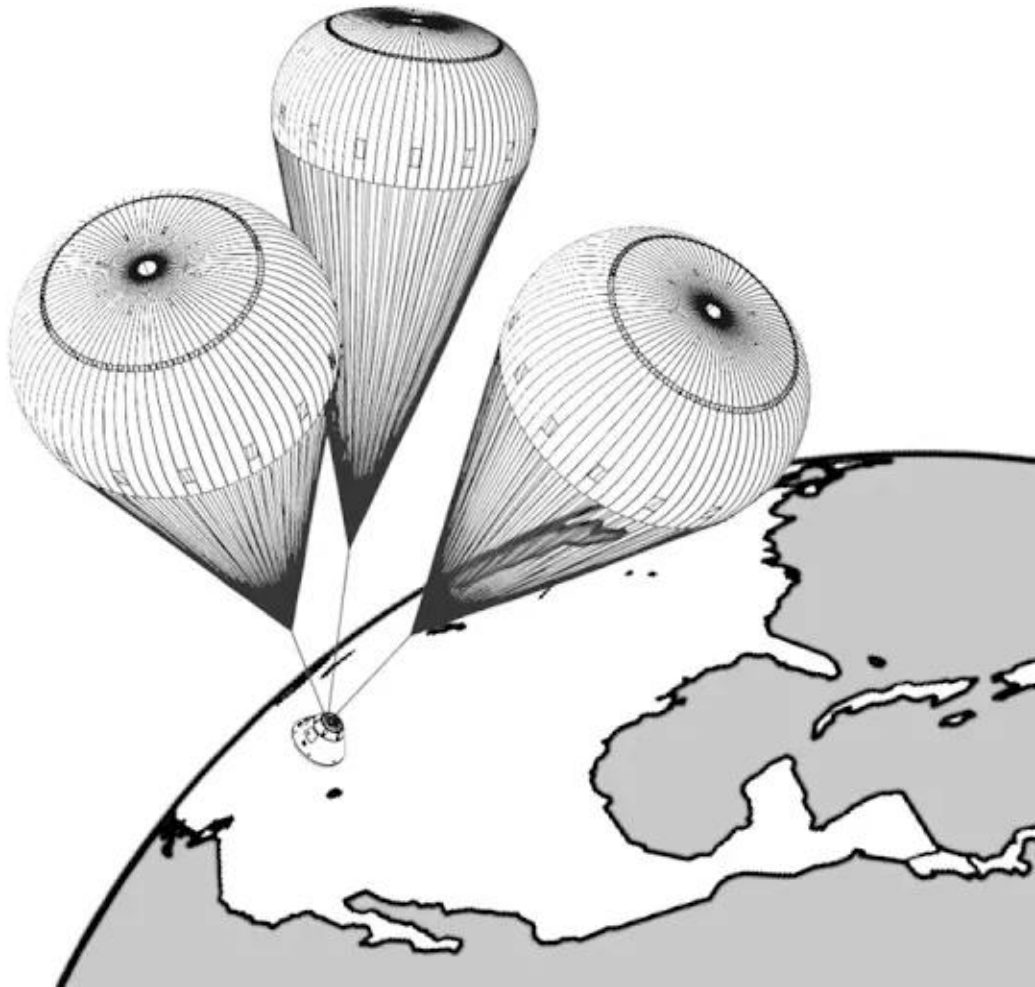

1
00:00:00,000 --> 00:00:03,080
NASA is building the only rocket

2
00:00:03,280 --> 00:00:05,079
capable of safely sending our

3
00:00:05,279 --> 00:00:06,607
most precious cargo, astronauts,

4
00:00:06,807 --> 00:00:08,944
on bold exploration missions to

5
00:00:09,144 --> 00:00:11,136
the Moon and beyond. This is

6
00:00:11,336 --> 00:00:13,064
happening now! As we build the

7
00:00:13,264 --> 00:00:14,576
Space Launch System, or SLS,

8
00:00:14,776 --> 00:00:15,760
every piece has to be

9
00:00:15,960 --> 00:00:17,584
scrutinized and tested to make

10
00:00:17,784 --> 00:00:19,064
sure it works properly, because

11
00:00:19,264 --> 00:00:20,239
the Space Launch System will

12
00:00:20,439 --> 00:00:21,312
send humans farther beyond

13
00:00:21,512 --> 00:00:22,599

Earth than they have ever

14
00:00:22,799 --> 00:00:25,088
traveled. Engineers must ensure

15
00:00:25,288 --> 00:00:26,743
every single part can operate in

16
00:00:26,943 --> 00:00:28,272
the extreme environment of space

17
00:00:28,472 --> 00:00:29,576
and be as safe as possible

18
00:00:29,776 --> 00:00:31,616
because astronauts are on board.

19
00:00:31,816 --> 00:00:34,120
NASA calls this “human rating”

20
00:00:34,320 --> 00:00:36,016
a space vehicle. Let’s take a

21
00:00:36,216 --> 00:00:37,033
closer look.

22
00:00:37,233 --> 00:00:39,600
MUSIC

23
00:00:39,800 --> 00:00:40,951
Human rating is a thorough

24
00:00:41,151 --> 00:00:42,655
process that consists of many

25
00:00:42,855 --> 00:00:43,888
variables being taken into

26
00:00:44,088 --> 00:00:45,824
account to safely design, build

27
00:00:46,024 --> 00:00:47,392
and launch a crewed spacecraft

28
00:00:47,592 --> 00:00:49,760
and return that spacecraft, and

29
00:00:49,960 --> 00:00:51,496
its crew safely to the earth.\h

30
00:00:51,696 --> 00:00:53,984
A key component is the

31
00:00:54,184 --> 00:00:55,815
rocket’s 212-foot-tall core

32
00:00:56,015 --> 00:00:58,151
stage. The core stage is the

33
00:00:58,351 --> 00:00:59,473
largest piece of the world’s

34
00:00:59,673 --> 00:01:00,640
most powerful rocket.

35
00:01:00,840 --> 00:01:02,192
But before it’s assembled with

36
00:01:02,392 --> 00:01:03,272
the other parts of the rocket,

37
00:01:03,472 --> 00:01:04,560
the Core Stage’s five sections

38
00:01:04,760 --> 00:01:06,128

are outfitted with thousands of

39
00:01:06,328 --> 00:01:08,376
sensors, cabling, fuel lines,

40
00:01:08,576 --> 00:01:10,608
fasteners and many, many more

41
00:01:10,808 --> 00:01:13,417
parts. The Space Launch System

42
00:01:13,617 --> 00:01:15,400
Engine Section is home to four

43
00:01:15,600 --> 00:01:17,816
RS-25 engines and miles of

44
00:01:18,016 --> 00:01:20,344
cables, avionics, thrust

45
00:01:20,544 --> 00:01:21,752
structures, fuel lines,

46
00:01:21,952 --> 00:01:23,024
and sensors. Engineers

47
00:01:23,224 --> 00:01:24,059
stress-tested the Engine

48
00:01:24,259 --> 00:01:25,608
Section’s main structure

49
00:01:25,808 --> 00:01:26,904
subjecting it to massive forces

50
00:01:27,104 --> 00:01:28,529
to prove it met the strict

51
00:01:28,729 --> 00:01:29,945
requirements for flying humans

52
00:01:30,145 --> 00:01:31,889
to deep space. The Core Stage

53
00:01:32,089 --> 00:01:33,087
contains two separate fuel

54
00:01:33,287 --> 00:01:34,512
sources: The Liquid Hydrogen

55
00:01:34,712 --> 00:01:36,008
Tank, and the Liquid Oxygen Tank

56
00:01:36,208 --> 00:01:37,688
which fuel the rocket engines

57
00:01:37,888 --> 00:01:39,224
for flight. While the flight

58
00:01:39,424 --> 00:01:40,496
ready tanks are being outfitted,

59
00:01:40,696 --> 00:01:41,968
twin test articles are being

60
00:01:42,168 --> 00:01:43,432
prepared to prove their strength

61
00:01:43,632 --> 00:01:44,824
against the incredible forces

62
00:01:45,024 --> 00:01:46,297
encountered during lift-off and

63
00:01:46,497 --> 00:01:48,352

flight. The rigid Intertank that

64
00:01:48,552 --> 00:01:49,471
connects these two fuel tanks

65
00:01:49,671 --> 00:01:50,847
experiences the most extreme

66
00:01:51,047 --> 00:01:52,608
forces.So, it is not welded

67
00:01:52,808 --> 00:01:54,135
together like the rest of

68
00:01:54,335 --> 00:01:56,000
the core stage but is built for

69
00:01:56,200 --> 00:01:57,400
increased strength with more

70
00:01:57,600 --> 00:01:58,952
than 14,000 bolts and fasteners

71
00:01:59,152 --> 00:02:01,072
holding it together. It too must

72
00:02:01,272 --> 00:02:04,079
be tested. The avionics, cameras

73
00:02:04,279 --> 00:02:05,318
and the rocket’s three flight

74
00:02:05,518 --> 00:02:06,847
computers are being housed in

75
00:02:07,047 --> 00:02:08,694
the Forward Skirt section of the

76
00:02:08,894 --> 00:02:10,342
Core Stage. Each piece is shaken,

77
00:02:10,542 --> 00:02:11,630
exposed to extreme temperatures

78
00:02:11,830 --> 00:02:13,286
and thoroughly tested to

79
00:02:13,486 --> 00:02:14,870
guarantee it can withstand the

80
00:02:15,070 --> 00:02:16,958
rigors of flight. Today we are

81
00:02:17,158 --> 00:02:18,406
outfitting major parts of the

82
00:02:18,606 --> 00:02:20,695
world’s only rocket designed and

83
00:02:20,895 --> 00:02:22,742
built to fly humans to the moon

84
00:02:22,942 --> 00:02:25,511
and beyond. Soon, we put it all

85
00:02:25,711 --> 00:02:27,502
together. But that is the next