



1
00:00:00,000 --> 00:00:02,167
NASA's new deep space exploration

2
00:00:02,367 --> 00:00:03,967
system has begun its journey

3
00:00:04,167 --> 00:00:05,825
right here on Earth, in all 50

4
00:00:06,025 --> 00:00:07,169
states and several European

5
00:00:07,369 --> 00:00:09,920
countries. The pieces of the

6
00:00:10,120 --> 00:00:11,593
Space Launch System rocket that

7
00:00:11,793 --> 00:00:12,720
will send Orion farther than

8
00:00:12,920 --> 00:00:14,072
humans have ever been before

9
00:00:14,272 --> 00:00:15,400
during Exploration Mission One

10
00:00:15,600 --> 00:00:17,704
are nearing completion. All

11
00:00:17,904 --> 00:00:19,064
these parts will ultimately be

12
00:00:19,264 --> 00:00:20,472
brought together at Kennedy Space

13
00:00:20,672 --> 00:00:21,647

Center with Orion, which is

14

00:00:21,847 --> 00:00:22,879

currently being prepared for the

15

00:00:23,079 --> 00:00:24,095

mission. They'll make one enormous

16

00:00:24,295 --> 00:00:25,679

rocket powerful enough to take

17

00:00:25,879 --> 00:00:27,072

astronauts and cargo to the Moon

18

00:00:27,272 --> 00:00:29,887

in a single launch. Or send robotic

19

00:00:30,087 --> 00:00:31,336

probes deep into the solar system

20

00:00:31,536 --> 00:00:33,272

to make amazing discoveries.

21

00:00:33,472 --> 00:00:39,535

When you're designing, testing and

22

00:00:39,735 --> 00:00:42,087

building the rocket that will take

23

00:00:42,287 --> 00:00:43,456

astronauts back to the Moon,

24

00:00:43,656 --> 00:00:45,256

there really are a lot of small

25

00:00:45,456 --> 00:00:47,184

steps to get from here to there.

26

00:00:47,384 --> 00:00:48,887

But those small steps add up to

27

00:00:49,087 --> 00:00:50,576

some really big rocket pieces.

28

00:00:50,776 --> 00:00:52,192

So where are we?

29

00:00:52,392 --> 00:00:54,408

Near the top of the rocket, the

30

00:00:54,608 --> 00:00:55,928

interim cryogenic propulsion stage

31

00:00:56,128 --> 00:00:57,536

will give Orion a push toward

32

00:00:57,736 --> 00:00:59,679

the Moon. But its job isn't done

33

00:00:59,879 --> 00:01:01,655

there. It will separate from Orion

34

00:01:01,855 --> 00:01:03,263

and 13 CubeSats – little spacecraft

35

00:01:03,463 --> 00:01:06,207

and science missions about the

36

00:01:06,407 --> 00:01:07,752

size of a shoebox – will be

37

00:01:07,952 --> 00:01:09,112

released into deep space from

38

00:01:09,312 --> 00:01:10,728

the Orion Stage Adapter.

39

00:01:10,928 --> 00:01:12,118

These little hitchhikers will

40

00:01:12,318 --> 00:01:13,745

each have their own mission.

41

00:01:13,945 --> 00:01:15,240

Some will be going to the Moon,

42

00:01:15,440 --> 00:01:16,680

one will study space weather

43

00:01:16,880 --> 00:01:18,064

and one's going to rendezvous an

44

00:01:18,264 --> 00:01:20,577

asteroid! These parts of the

45

00:01:20,777 --> 00:01:22,447

rocket are finished and ready to go.

46

00:01:22,647 --> 00:01:24,488

There's another adapter that

47

00:01:24,688 --> 00:01:26,015

Partially covers the interim

48

00:01:26,215 --> 00:01:27,976

cryogenic propulsion stage and

49

00:01:28,176 --> 00:01:29,384

connects the core stage to the

50

00:01:29,584 --> 00:01:31,120

upper part of the rocket: the

51

00:01:31,320 --> 00:01:32,792

Launch Vehicle Stage Adapter.

52

00:01:32,992 --> 00:01:34,392

Workers are putting the finishing

53

00:01:34,592 --> 00:01:35,848

touches on this adapter.

54

00:01:36,048 --> 00:01:37,543

Next we come to the core stage,

55

00:01:37,743 --> 00:01:39,000

the backbone of the rocket.

56

00:01:39,200 --> 00:01:40,815

Engineers at Michoud Assembly

57

00:01:41,015 --> 00:01:42,504

Facility near New Orleans have

58

00:01:42,704 --> 00:01:43,888

built the five big components of

59

00:01:44,088 --> 00:01:45,055

the stage, including the

60

00:01:45,255 --> 00:01:47,144

enormous fuel tanks. Now they're

61

00:01:47,344 --> 00:01:48,279

outfitting the insides with

62

00:01:48,479 --> 00:01:50,008

computers, electrical cables and

63

00:01:50,208 --> 00:01:51,416

everything else the core stage

64

00:01:51,616 --> 00:01:52,497
will need. And then they'll

65

00:01:52,697 --> 00:01:53,904
join the pieces together.

66

00:01:54,104 --> 00:01:55,232
At the bottom of the core stage

67

00:01:55,432 --> 00:01:57,600
are the four RS-25 engines that

68

00:01:57,800 --> 00:01:58,870
use liquid hydrogen and liquid

69

00:01:59,070 --> 00:02:00,648
oxygen stored in the core stage

70

00:02:00,848 --> 00:02:02,263
tanks. Those engines are ready

71

00:02:02,463 --> 00:02:03,936
now. They've got the latest

72

00:02:04,136 --> 00:02:05,721
computers installed and they're go.

73

00:02:05,921 --> 00:02:08,104
Attached to the side of the core

74

00:02:08,304 --> 00:02:09,096
stage are two solid rocket

75

00:02:09,296 --> 00:02:10,463
boosters. They provide most of

76

00:02:10,663 --> 00:02:12,103

the thrust, or the big push, to

77

00:02:12,303 --> 00:02:13,968

get SLS to space.

78

00:02:14,168 --> 00:02:15,358

The central section of the

79

00:02:15,558 --> 00:02:16,510

boosters, where the propellant

80

00:02:16,710 --> 00:02:17,919

is stored, are the motors.

81

00:02:18,119 --> 00:02:19,407

They're also complete.

82

00:02:19,607 --> 00:02:21,478

The top and bottom – or forward

83

00:02:21,678 --> 00:02:23,151

and aft, in rocketspeak -- parts

84

00:02:23,351 --> 00:02:24,639

of the boosters are still being

85

00:02:24,839 --> 00:02:25,943

readied for flight; they'll

86

00:02:26,143 --> 00:02:27,176

soon be done too.

87

00:02:27,376 --> 00:02:29,367

So, interim cryogenic propulsion

88

00:02:29,567 --> 00:02:30,791

stage: GO

89

00:02:30,991 --> 00:02:33,368

Orion Stage Adapter: GO

90

00:02:33,568 --> 00:02:35,920

Launch Vehicle Stage Adapter: READY

91

00:02:36,120 --> 00:02:38,719

Four RS-25 engines: They're a GO

92

00:02:38,919 --> 00:02:41,120

Solid rocket motors: GO

93

00:02:41,320 --> 00:02:43,319

Forward and aft booster structures:

94

00:02:43,519 --> 00:02:45,071

They'll soon be done too.

95

00:02:45,271 --> 00:02:47,160

The core stage major structures

96

00:02:47,360 --> 00:02:48,880

are GO and the interiors are

97

00:02:49,080 --> 00:02:50,232

moving toward final assembly.

98

00:02:50,432 --> 00:02:52,158

Next time, we'll take a closer

99

00:02:52,358 --> 00:02:53,590

look at putting it all together,

100

00:02:53,790 --> 00:02:54,847

because all roads lead to

101

00:02:55,047 --> 00:02:56,311

Kennedy Space Center, where

102

00:02:56,511 --> 00:02:57,543

Exploration Mission One will all

103

00:02:57,743 --> 00:02:59,407

come together.

104

00:02:59,607 --> 00:03:01,087

Until then, I'm Stephen Granade,

105

00:03:01,287 --> 00:03:02,689

reminding you that there are