



NASA LYNDON B. JOHNSON  
SPACE CENTER  
LANDING AND IMPACT RESEARCH  
FACILITY

1  
00:00:09,589 --> 00:00:06,630  
america has a new spacecraft its name is

2  
00:00:12,390 --> 00:00:09,599  
orion it will take us beyond earth orbit

3  
00:00:14,390 --> 00:00:12,400  
for the first time in a generation

4  
00:00:16,870 --> 00:00:14,400  
it will be able to travel farther out

5  
00:00:18,470 --> 00:00:16,880  
into our solar system than we have ever

6  
00:00:21,750 --> 00:00:18,480  
gone before

7  
00:00:25,589 --> 00:00:21,760  
allowing humankind to extend its reach

8  
00:00:30,950 --> 00:00:29,349  
orion is not a blueprint or an idea

9  
00:00:33,270 --> 00:00:30,960  
it is real

10  
00:00:34,229 --> 00:00:33,280  
across the united states people are

11  
00:00:37,110 --> 00:00:34,239  
building

12  
00:00:40,790 --> 00:00:37,120  
testing and getting ready for orion's

13  
00:00:43,670 --> 00:00:40,800

first flight test into space

14

00:00:47,350 --> 00:00:43,680

creating a spaceship is hard work

15

00:00:49,990 --> 00:00:47,360

work that satisfies a desire to lead

16

00:00:51,510 --> 00:00:50,000

a desire to achieve

17

00:01:09,270 --> 00:00:51,520

and a desire

18

00:01:09,280 --> 00:01:15,590

no no no no no

19

00:01:21,190 --> 00:01:18,469

at a factory deep in southern louisiana

20

00:01:23,429 --> 00:01:21,200

workers are cutting metal welding and

21

00:01:27,270 --> 00:01:23,439

building the first orion vehicle that

22

00:01:29,670 --> 00:01:27,280

will fly into space the flight is called

23

00:01:32,149 --> 00:01:29,680

exploration flight test 1 and it will

24

00:01:33,830 --> 00:01:32,159

launch an uncrewed orion vehicle into

25

00:01:36,469 --> 00:01:33,840

earth orbit

26

00:01:38,870 --> 00:01:36,479

orion has a big job

27

00:01:41,270 --> 00:01:38,880

its design allows for missions deeper

28

00:01:42,550 --> 00:01:41,280

into our solar system than we have ever

29

00:01:43,990 --> 00:01:42,560

gone before

30

00:01:45,910 --> 00:01:44,000

in nasa's history we've designed

31

00:01:48,630 --> 00:01:45,920

spacecraft for sometimes very specific

32

00:01:50,789 --> 00:01:48,640

missions like mercury and gemini with

33

00:01:53,109 --> 00:01:50,799

orion we designed and developed it from

34

00:01:55,510 --> 00:01:53,119

the beginning with exploration in mind

35

00:01:56,709 --> 00:01:55,520

it can go to the moon mars an asteroid

36

00:01:58,870 --> 00:01:56,719

take our crews and bring them home

37

00:02:00,469 --> 00:01:58,880

safely so orion will be able to do all

38

00:02:02,870 --> 00:02:00,479

of those things

39

00:02:03,830 --> 00:02:02,880

as engineers prepare to test orion in

40

00:02:06,069 --> 00:02:03,840

space

41

00:02:07,270 --> 00:02:06,079

other tests also put the vehicle through

42

00:02:08,389 --> 00:02:07,280

its paces

43

00:02:12,229 --> 00:02:08,399

on land

44

00:02:16,229 --> 00:02:15,270

in colorado engineers conduct acoustic

45

00:02:19,110 --> 00:02:16,239

tests

46

00:02:21,110 --> 00:02:19,120

blasting orion with a wall of sound that

47

00:02:24,949 --> 00:02:21,120

simulates the extreme noise and

48

00:02:27,030 --> 00:02:24,959

vibration experienced during a launch

49

00:02:29,910 --> 00:02:27,040

more than 600 instruments test the

50

00:02:38,070 --> 00:02:29,920

durability of orion's avionics

51  
00:02:43,830 --> 00:02:40,790  
orion will land in the ocean and at the

52  
00:02:46,710 --> 00:02:43,840  
langley research center in virginia a 22

53  
00:02:49,190 --> 00:02:46,720  
000 pound orion test article undergoes a

54  
00:02:54,309 --> 00:02:49,200  
series of drop tests to certify the

55  
00:02:58,550 --> 00:02:56,550  
the drop velocities differ from test to

56  
00:03:01,190 --> 00:02:58,560  
test representing different landing

57  
00:03:03,670 --> 00:03:01,200  
positions and conditions orion might

58  
00:03:05,910 --> 00:03:03,680  
face in the pacific ocean

59  
00:03:08,710 --> 00:03:05,920  
some tests even turn the vehicle upside

60  
00:03:12,790 --> 00:03:08,720  
down deliberately it's all a part of the

61  
00:03:17,990 --> 00:03:15,750  
flying at 25 000 feet a drop test

62  
00:03:20,710 --> 00:03:18,000  
article that mimics the orion parachute

63  
00:03:22,790 --> 00:03:20,720

compartment is released from a c-130

64

00:03:24,550 --> 00:03:22,800

aircraft

65

00:03:27,589 --> 00:03:24,560

one of many tests for the orion

66

00:03:29,750 --> 00:03:27,599

parachute system the parachutes slow the

67

00:03:32,630 --> 00:03:29,760

speed of the drop test article to

68

00:03:34,949 --> 00:03:32,640

roughly 25 feet per second as it comes

69

00:03:35,990 --> 00:03:34,959

to a stop on the sands of the arizona

70

00:03:37,910 --> 00:03:36,000

desert

71

00:03:40,149 --> 00:03:37,920

the lessons learned during orion's

72

00:03:43,190 --> 00:03:40,159

parachute development are also being

73

00:03:53,350 --> 00:03:43,200

applied by nasa's commercial partners as

74

00:03:59,589 --> 00:03:56,070

for safety orion has its own launch

75

00:04:01,910 --> 00:03:59,599

abort system a 35-foot tower which can

76  
00:04:03,509 --> 00:04:01,920  
pull the spacecraft away from danger if

77  
00:04:06,229 --> 00:04:03,519  
there are problems with the rocket it

78  
00:04:07,750 --> 00:04:06,239  
sits upon before or during the climb to

79  
00:04:09,670 --> 00:04:07,760  
space

80  
00:04:11,670 --> 00:04:09,680  
this test of the launch abort system

81  
00:04:14,309 --> 00:04:11,680  
called pad abort 1

82  
00:04:17,909 --> 00:04:14,319  
simulates an escape while still sitting

83  
00:04:23,270 --> 00:04:20,710  
too fast for normal cameras to observe

84  
00:04:26,790 --> 00:04:23,280  
the test is really only visible in slow

85  
00:04:32,790 --> 00:04:30,070  
abort motors fire applying 500 000

86  
00:04:36,550 --> 00:04:32,800  
pounds of thrust accelerating from zero

87  
00:04:38,310 --> 00:04:36,560  
to 450 miles per hour in the first two

88  
00:04:40,469 --> 00:04:38,320

seconds of flight

89

00:04:43,870 --> 00:04:40,479

this is the kind of speed needed to

90

00:04:46,629 --> 00:04:43,880

escape the top of a speeding rocket

91

00:04:49,189 --> 00:04:46,639

simultaneously another set of motors is

92

00:04:51,350 --> 00:04:49,199

designed to do the steering keeping the

93

00:04:53,430 --> 00:04:51,360

vehicle clear of any danger

94

00:04:55,510 --> 00:04:53,440

and positioning the craft or a

95

00:04:57,270 --> 00:04:55,520

parachuted landing

96

00:04:59,510 --> 00:04:57,280

finally the launch abort system

97

00:05:01,590 --> 00:04:59,520

jettisons itself

98

00:05:05,670 --> 00:05:01,600

successfully completing the first flight

99

00:05:07,670 --> 00:05:05,680

test of this important safety feature

100

00:05:10,550 --> 00:05:07,680

engineers have gathered data from this

101  
00:05:11,510 --> 00:05:10,560  
flight and prepare for ascent abort

102  
00:05:13,670 --> 00:05:11,520  
tests

103  
00:05:15,830 --> 00:05:13,680  
which will fire the launch abort system

104  
00:05:18,310 --> 00:05:15,840  
while on a moving rocket

105  
00:05:30,150 --> 00:05:18,320  
a tougher and higher fidelity workout

106  
00:05:34,629 --> 00:05:32,150  
for all the important testing that takes

107  
00:05:37,590 --> 00:05:34,639  
place on earth the ultimate test for

108  
00:05:39,590 --> 00:05:37,600  
orion will be in the unique environment

109  
00:05:41,350 --> 00:05:39,600  
of space

110  
00:05:43,189 --> 00:05:41,360  
exploration flight test one will put

111  
00:05:44,950 --> 00:05:43,199  
critical orion systems to the test in

112  
00:05:46,629 --> 00:05:44,960  
the real flight environments

113  
00:05:48,550 --> 00:05:46,639

we'll see if orion's design performs the

114

00:05:50,870 --> 00:05:48,560

way we expect and by doing that it helps

115

00:05:52,629 --> 00:05:50,880

us correct any issues we find now which

116

00:05:53,749 --> 00:05:52,639

will avoid costly changes to the design

117

00:05:55,430 --> 00:05:53,759

in the future

118

00:05:56,629 --> 00:05:55,440

so it's a really smart investment to add

119

00:05:58,070 --> 00:05:56,639

a flight like this early in the

120

00:06:00,710 --> 00:05:58,080

development process

121

00:06:03,670 --> 00:06:00,720

exploration flight test 1 will launch an

122

00:06:05,670 --> 00:06:03,680

uncrewed orion test spacecraft on a

123

00:06:08,230 --> 00:06:05,680

heavy lift rocket the launch abort

124

00:06:11,029 --> 00:06:08,240

system will separate from the craft

125

00:06:12,309 --> 00:06:11,039

then orion will go for two orbits around

126  
00:06:14,710 --> 00:06:12,319  
the earth

127  
00:06:17,270 --> 00:06:14,720  
while in space critical systems in the

128  
00:06:19,670 --> 00:06:17,280  
vehicle will be put to the test both

129  
00:06:20,870 --> 00:06:19,680  
validating and influencing design

130  
00:06:23,029 --> 00:06:20,880  
decisions

131  
00:06:25,350 --> 00:06:23,039  
the test continues with a high-speed

132  
00:06:27,510 --> 00:06:25,360  
re-entry rivaling conditions a

133  
00:06:28,790 --> 00:06:27,520  
spacecraft would experience returning

134  
00:06:31,189 --> 00:06:28,800  
from the moon

135  
00:06:33,430 --> 00:06:31,199  
and giving engineers important data

136  
00:06:35,749 --> 00:06:33,440  
about this phase of flight

137  
00:06:38,070 --> 00:06:35,759  
finally the spacecraft's parachute

138  
00:06:39,110 --> 00:06:38,080

system will be deployed for a landing in

139

00:06:41,029 --> 00:06:39,120

the ocean

140

00:06:47,189 --> 00:06:41,039

where recovery teams will get a chance

141

00:06:52,550 --> 00:06:50,070

for orion the tests will continue and

142

00:06:54,870 --> 00:06:52,560

the work is underway

143

00:06:56,309 --> 00:06:54,880

people across the nation are pouring

144

00:07:00,070 --> 00:06:56,319

their skills

145

00:07:03,029 --> 00:07:00,080

knowledge and enthusiasm for exploration

146

00:07:05,110 --> 00:07:03,039

into the development of america's next

147

00:07:07,430 --> 00:07:05,120

spacecraft so it's an incredibly

148

00:07:09,270 --> 00:07:07,440

exciting time to be working on the orion

149

00:07:10,469 --> 00:07:09,280

project of course we're building the

150

00:07:12,309 --> 00:07:10,479

spacecraft that's going to take us

151

00:07:13,830 --> 00:07:12,319

further than we've ever gone

152

00:07:15,909 --> 00:07:13,840

and the team that's working on it is

153

00:07:17,990 --> 00:07:15,919

extremely talented and dedicated both

154

00:07:19,749 --> 00:07:18,000

from nasa and the industry team human

155

00:07:21,830 --> 00:07:19,759

exploration space is a dream we all

156

00:07:23,350 --> 00:07:21,840

believe in and we're turning our dreams