1
00:00:09,589 --> 00:00:07,030
okay we'll keep watching um just for the

2
00:00:11,430 --> 00:00:09,599
viewers uh who are watching along with

3
00:00:13,350 --> 00:00:11,440
us that'll probably be a bit of a

4
00:00:15,589 --> 00:00:13,360
challenge for us to

5
00:00:17,510 --> 00:00:15,599
to lock on to it but it looks like we

6
00:00:18,550 --> 00:00:17,520
see the craft there and that's what uh

7
00:00:22,230 --> 00:00:18,560
orion

8
00:00:25,429 --> 00:00:22,240
inside of right now and will be pushed

9
00:00:27,429 --> 00:00:25,439
out the back of for the test

10
00:00:29,029 --> 00:00:27,439
and i'll just give you a call as i can

11
00:00:34,389 --> 00:00:29,039
watch it if you if you'd like me to

12
00:00:34,399 --> 00:00:39,590
move right out of the airplane

13
00:00:44,950 --> 00:00:42,950

a good initial extraction

14
00:00:48,630 --> 00:00:44,960
in the test vehicle the ptv is away from

15
00:00:48,640 --> 00:00:55,110
coming down into the programmers

16
00:00:55,120 --> 00:01:07,030
looks good so far

17
00:01:12,550 --> 00:01:08,230
we're still falling out of the

18
00:01:15,109 --> 00:01:13,750
just

19
00:01:16,789 --> 00:01:15,119
cut the programmers away we're going to

20
00:01:20,230 --> 00:01:16,799
let it free fall for 10 seconds and

21
00:01:22,870 --> 00:01:21,590
and stu tell us again what that free

22
00:01:25,190 --> 00:01:22,880
fall does

23
00:01:27,030 --> 00:01:25,200
free fall allows gravity to do its job

24
00:01:28,149 --> 00:01:27,040
and allow us to accelerate to our test

25
00:01:29,030 --> 00:01:28,159
condition

26
00:01:31,590 --> 00:01:29,040
and

27
00:01:33,350 --> 00:01:31,600
the faster we let the vehicle fall

28
00:01:34,550 --> 00:01:33,360
you know the more it is able to

29
00:01:37,670 --> 00:01:34,560
accelerate and give us a more

30
00:01:40,469 --> 00:01:37,680
representative test condition

31
00:01:43,270 --> 00:01:40,479
closer more closely matches the flight

32
00:01:59,749 --> 00:01:43,280
entry that we'll see during the ft-1

33
00:02:03,350 --> 00:02:01,429
so we've had a good

34
00:02:05,590 --> 00:02:03,360
ford bay cover separation i'm just

35
00:02:12,150 --> 00:02:05,600
tracking the the ptv the test vehicle at

36
00:02:12,160 --> 00:02:16,790
and we just cut away

37
00:02:26,309 --> 00:02:18,309
three pilots out

38
00:02:28,869 --> 00:02:27,830

just heard the pop from the chute

39
00:02:30,710 --> 00:02:28,879
inflating

40
00:02:31,830 --> 00:02:30,720
one of i don't know if rad has this on

41
00:02:33,430 --> 00:02:31,840
camera

42
00:02:35,350 --> 00:02:33,440
one shoot's inflated the other two are

43
00:02:37,430 --> 00:02:35,360
not yet this was

44
00:02:38,550 --> 00:02:37,440
one of our other plans objectives which

45
00:02:39,910 --> 00:02:38,560
was

46
00:02:44,470 --> 00:02:39,920
simulating

47
00:02:45,509 --> 00:02:44,480
what happens if one of the reefing

48
00:02:48,150 --> 00:02:45,519
stages

49
00:02:50,550 --> 00:02:48,160
opens prematurely for some reason

50
00:02:52,470 --> 00:02:50,560
and if it skips a stage

51
00:02:53,990 --> 00:02:52,480
uh because we designed this assuming

52
00:02:55,830 --> 00:02:54,000
that the parachutes

53
00:02:58,470 --> 00:02:55,840
share the

54
00:03:01,430 --> 00:02:58,480
reefing yeah thank you yeah reefing is

55
00:03:03,350 --> 00:03:01,440
is a way to open the the parachute in

56
00:03:07,190 --> 00:03:03,360
in um

57
00:03:10,149 --> 00:03:07,200
gently or softly um

58
00:03:12,149 --> 00:03:10,159
if you went full open it's think of

59
00:03:13,830 --> 00:03:12,159
going extremely fast and hitting your

60
00:03:14,949 --> 00:03:13,840
brakes really really hard you put a lot

61
00:03:17,750 --> 00:03:14,959
of energy

62
00:03:19,350 --> 00:03:17,760
uh into things right it's it's uh

63
00:03:20,790 --> 00:03:19,360

dumps a lot of energy both into the

64
00:03:23,110 --> 00:03:20,800
structure of the vehicle and in the

65
00:03:25,910 --> 00:03:23,120
parachute and so we have

66
00:03:28,229 --> 00:03:25,920
ropes that constrain the diameter of the

67
00:03:31,830 --> 00:03:28,239
parachute and they have pyrotechnic

68
00:03:33,670 --> 00:03:31,840
timers that allow them to open up say

69
00:03:34,630 --> 00:03:33,680
ten percent initially and then i think

70
00:03:36,149 --> 00:03:34,640
uh

71
00:03:37,910 --> 00:03:36,159
finally remembers the exact number i

72
00:03:39,509 --> 00:03:37,920
think it's 10 and then 20 percent and

73
00:03:42,710 --> 00:03:39,519
then we go full open and that allows you

74
00:03:45,830 --> 00:03:42,720
to open up the chutes gracefully and

75
00:03:47,830 --> 00:03:45,840
kind of more slowly spread the energy

76
00:03:49,830 --> 00:03:47,840
into the parachutes and into the vehicle

77
00:03:53,030 --> 00:03:49,840
again by reefing you kind of control and

78
00:03:54,789 --> 00:03:53,040
manage that energy and it allows you to

79
00:03:56,470 --> 00:03:54,799
not design

80
00:04:00,070 --> 00:03:56,480
and carry quite as much mass in the

81
00:04:03,990 --> 00:04:01,750
it looks great from here we're seeing a

82
00:04:06,390 --> 00:04:04,000
really good view thanks uh

83
00:04:08,470 --> 00:04:06,400
for getting that for us um i guess while

84
00:04:10,630 --> 00:04:08,480
we watch it uh make its way down to the

85
00:04:12,949 --> 00:04:10,640
ground we can take a few more questions

86
00:04:14,630 --> 00:04:12,959
we actually have one for for molly from

87
00:04:16,310 --> 00:04:14,640
nick lopez

88
00:04:19,030 --> 00:04:16,320

says what kind of temperatures do you

89
00:04:22,469 --> 00:04:19,040
predict you'll see during entry based on

90
00:04:27,110 --> 00:04:24,469
um well we don't get up to the actual

91
00:04:29,510 --> 00:04:27,120
temperatures that we're going to see in

92
00:04:31,749 --> 00:04:29,520
in flight in the wind tunnel test but

93
00:04:33,590 --> 00:04:31,759
for eft one we're predicting a peak

94
00:04:35,909 --> 00:04:33,600
surface temperature of around 4000

95
00:04:38,390 --> 00:04:35,919
degrees fahrenheit that's two times the

96
00:04:40,870 --> 00:04:38,400
temperature of molten lava

97
00:04:42,150 --> 00:04:40,880
and that's just for our orion's first

98
00:04:44,870 --> 00:04:42,160
flight test which isn't going to

99
00:04:46,950 --> 00:04:44,880
completely stress the system as as far

100
00:04:48,790 --> 00:04:46,960
as orion will once we actually fly

101
00:04:50,710 --> 00:04:48,800
orion's real missions out to the moon

102
00:04:52,070 --> 00:04:50,720
and beyond for those missions we're

103
00:04:54,870 --> 00:04:52,080
going to be seeing peak surface

104
00:05:01,350 --> 00:04:54,880
temperatures upwards of 5000

105
00:05:05,189 --> 00:05:02,710
so that brings up another question that

106
00:05:06,950 --> 00:05:05,199
we've gotten from uh phillip online and

107
00:05:08,870 --> 00:05:06,960
he asked how can the

108
00:05:10,710 --> 00:05:08,880
module be adapted for future missions

109
00:05:17,990 --> 00:05:10,720
does it needs to change before the next

110
00:05:22,870 --> 00:05:20,230
certain parts of the vehicle are have

111
00:05:24,230 --> 00:05:22,880
already changed between the first flight

112
00:05:26,150 --> 00:05:24,240
test and what we're going to be flying

113
00:05:29,029 --> 00:05:26,160

on future missions

114
00:05:30,550 --> 00:05:29,039
but the material that surrounds the

115
00:05:31,990 --> 00:05:30,560
vehicle we call it its thermal

116
00:05:34,870 --> 00:05:32,000
protection system and that's what

117
00:05:37,189 --> 00:05:34,880
protects it from those high temperatures

118
00:05:39,510 --> 00:05:37,199
on the surface it's an insulative layer

119
00:05:41,830 --> 00:05:39,520
that's also designed to burn away and

120
00:05:43,029 --> 00:05:41,840
take that energy away from the surface

121
00:05:44,790 --> 00:05:43,039
um

122
00:05:46,950 --> 00:05:44,800
that thickness of that material can

123
00:05:49,830 --> 00:05:46,960
change depending on your on

124
00:05:52,150 --> 00:05:49,840
your mission and then also we'll learn a

125
00:05:54,310 --> 00:05:52,160
lot from the exploration flight test 1

126
00:05:56,070 --> 00:05:54,320
or orion's first flight test and that

127
00:05:58,309 --> 00:05:56,080
will feed into the design for the future

128
00:06:00,309 --> 00:05:58,319
flight tests we might need to

129
00:06:02,309 --> 00:06:00,319
adjust certain thicknesses or adjust

130
00:06:03,350 --> 00:06:02,319
what material is used for certain

131
00:06:05,110 --> 00:06:03,360
regions

132
00:06:07,430 --> 00:06:05,120
and those are the design changes that

133
00:06:11,430 --> 00:06:07,440
we'll go into between the first flight

134
00:06:16,150 --> 00:06:13,430
great and it looks like we've got the

135
00:06:19,189 --> 00:06:16,160
vehicle touched down now on the desert

136
00:06:21,830 --> 00:06:19,199
in yuma everything looking good stew

137
00:06:24,150 --> 00:06:21,840
yes uh if you see this i'm assuming

138
00:06:27,670 --> 00:06:24,160

brad's got the shot you see two of the

139
00:06:30,150 --> 00:06:27,680
three parachutes uh and they're just

140
00:06:31,110 --> 00:06:30,160
starting now starting to deflate

141
00:06:32,710 --> 00:06:31,120
um

142
00:06:34,710 --> 00:06:32,720
like i said the ground winds here today

143
00:06:37,670 --> 00:06:34,720
are in the

144
00:06:39,830 --> 00:06:37,680
789 knot range and uh these parachutes

145
00:06:41,670 --> 00:06:39,840
are very effective and so and one of the

146
00:06:43,590 --> 00:06:41,680
things we have to do is make sure we get

147
00:06:45,350 --> 00:06:43,600
them deflated and

148
00:06:46,790 --> 00:06:45,360
these the last two are hanging on for a

149
00:06:48,070 --> 00:06:46,800
little bit

150
00:06:49,749 --> 00:06:48,080
but the vehicle's down it was a good

151
00:06:51,510 --> 00:06:49,759
test uh

152
00:06:54,629 --> 00:06:51,520
and i saw the ford bay cover we

153
00:06:57,189 --> 00:06:54,639
obviously had a good clean separation uh

154
00:06:58,070 --> 00:06:57,199
it's down on the ground already