1
00:00:07,670 --> 00:00:04,710
hi everybody dan hewitt here and you're

2
00:00:09,589 --> 00:00:07,680
joining us at chamber a it's a historic

3
00:00:11,509 --> 00:00:09,599
landmark it's one of the largest vacuum

4
00:00:13,589 --> 00:00:11,519
chambers in the world i'm joined right

5
00:00:15,270 --> 00:00:13,599
now by mary ceremeli the lab manager of

6
00:00:17,269 --> 00:00:15,280
this facility mary thanks so much for

7
00:00:19,590 --> 00:00:17,279
being here today uh

8
00:00:21,029 --> 00:00:19,600
no problem it's great so first off real

9
00:00:23,750 --> 00:00:21,039
quick give us a little history about

10
00:00:25,509 --> 00:00:23,760
this chamber i mean it's huge it's large

11
00:00:28,470 --> 00:00:25,519
what's what's it been through what's it

12
00:00:31,910 --> 00:00:28,480
here it was built in the early 1960s and

13
00:00:33,510 --> 00:00:31,920

mid-1960s to test the apollo spacecraft

14
00:00:35,670 --> 00:00:33,520
that went all the way from low earth

15
00:00:37,990 --> 00:00:35,680
orbit to the moon so that's why it's so

16
00:00:40,069 --> 00:00:38,000
large because that was a fairly large

17
00:00:42,229 --> 00:00:40,079
spacecraft that needed a lot of room to

18
00:00:45,510 --> 00:00:42,239
be able to experience the full

19
00:00:46,389 --> 00:00:45,520
thermal and vacuum environment of space

20
00:00:48,229 --> 00:00:46,399
and

21
00:00:49,590 --> 00:00:48,239
it's been getting a lot of upgrades

22
00:00:51,110 --> 00:00:49,600
lately because

23
00:00:53,110 --> 00:00:51,120
yes what have you guys used the chamber

24
00:00:55,270 --> 00:00:53,120
for in the past uh in the past we've

25
00:00:57,029 --> 00:00:55,280
used it for mostly things that were too

26
00:00:59,750 --> 00:00:57,039
big to be tested in smaller chambers

27
00:01:02,310 --> 00:00:59,760
such as the large payload bay radiators

28
00:01:05,030 --> 00:01:02,320
for a space shuttle

29
00:01:07,429 --> 00:01:05,040
or the radiators for space station the

30
00:01:09,750 --> 00:01:07,439
thermal system for space station also

31
00:01:10,950 --> 00:01:09,760
vehicle size things like the beagle

32
00:01:14,149 --> 00:01:10,960
lander

33
00:01:16,950 --> 00:01:14,159
airbag system that went to mars we've

34
00:01:19,429 --> 00:01:16,960
also used it for some movie making too

35
00:01:21,350 --> 00:01:19,439
armageddon future world so it's

36
00:01:23,429 --> 00:01:21,360
definitely a little famous yes it's our

37
00:01:25,030 --> 00:01:23,439
resident diva okay

38
00:01:26,710 --> 00:01:25,040

now upgrades what are some of the

39
00:01:28,310 --> 00:01:26,720
upgrades you guys are making major

40
00:01:30,230 --> 00:01:28,320
infrastructure upgrades to this chamber

41
00:01:32,230 --> 00:01:30,240
what are some of them oh we've we've

42
00:01:34,149 --> 00:01:32,240
made uh

43
00:01:35,990 --> 00:01:34,159
several major infrastructure upgrades

44
00:01:37,830 --> 00:01:36,000
over the last four years to make this

45
00:01:39,990 --> 00:01:37,840
chamber clean enough to test an optical

46
00:01:42,310 --> 00:01:40,000
telescope

47
00:01:44,789 --> 00:01:42,320
as well as make it cold enough those

48
00:01:45,910 --> 00:01:44,799
were the two major uh goals we needed to

49
00:01:48,069 --> 00:01:45,920
have

50
00:01:50,550 --> 00:01:48,079
originally the chamber

51
00:01:52,870 --> 00:01:50,560
could go to about minus 300 degrees

52
00:01:54,710 --> 00:01:52,880
fahrenheit but in order to test the

53
00:01:57,510 --> 00:01:54,720
james webb space telescope we needed it

54
00:02:00,069 --> 00:01:57,520
to operate around minus 440 degrees

55
00:02:03,350 --> 00:02:00,079
fahrenheit much colder than any other

56
00:02:05,590 --> 00:02:03,360
chamber on the planet of this size so

57
00:02:08,229 --> 00:02:05,600
this is new technology this is a

58
00:02:10,150 --> 00:02:08,239
new concept in the world for being able

59
00:02:11,750 --> 00:02:10,160
to get something this size that cold and

60
00:02:13,510 --> 00:02:11,760
keep it there for 90 days while we're

61
00:02:15,270 --> 00:02:13,520
testing like you mentioned you're going

62
00:02:17,430 --> 00:02:15,280
to be testing the james webb space

63
00:02:19,750 --> 00:02:17,440

telescope what is it

64
00:02:22,309 --> 00:02:19,760
the james webb space telescope is the

65
00:02:23,190 --> 00:02:22,319
next hubble it's the next greatest thing

66
00:02:34,309 --> 00:02:23,200
in

67
00:02:35,830 --> 00:02:34,319
telescopes and other satellites it's

68
00:02:38,070 --> 00:02:35,840
actually going to go a million miles

69
00:02:41,270 --> 00:02:38,080
from earth four times farther away than

70
00:02:44,150 --> 00:02:41,280
the moon is from us and hang out at the

71
00:02:46,150 --> 00:02:44,160
l2 lagrange point where it's in at that

72
00:02:48,229 --> 00:02:46,160
point that's why it's so cold it's very

73
00:02:49,990 --> 00:02:48,239
very cold at that point since we're so

74
00:02:50,949 --> 00:02:50,000
far from the influence of the earth and

75
00:02:53,830 --> 00:02:50,959
the moon

76
00:02:56,150 --> 00:02:53,840
and it will be able to look for the most

77
00:02:58,630 --> 00:02:56,160
faint sources of light as close to the

78
00:03:00,309 --> 00:02:58,640
big bang as we can get

79
00:03:02,550 --> 00:03:00,319
why do we need to put something like

80
00:03:04,869 --> 00:03:02,560
james webb in a chamber like this oh

81
00:03:06,949 --> 00:03:04,879
well james webb is breaking new ground

82
00:03:10,070 --> 00:03:06,959
on all its technologies on its materials

83
00:03:11,350 --> 00:03:10,080
technologies and its sensor technologies

84
00:03:13,430 --> 00:03:11,360
um

85
00:03:15,509 --> 00:03:13,440
all these things need to be tested out

86
00:03:17,430 --> 00:03:15,519
before we launch it off to earth because

87
00:03:19,030 --> 00:03:17,440
once it gets out to the l2 point we're

88
00:03:21,270 --> 00:03:19,040

not getting it back we're not be able to

89
00:03:22,630 --> 00:03:21,280
service it refuel it we're not going to

90
00:03:24,229 --> 00:03:22,640
be able to jump up there and repair it

91
00:03:26,390 --> 00:03:24,239
we're not able to repair it so it's got

92
00:03:28,229 --> 00:03:26,400
to work before we launch it so we have

93
00:03:30,630 --> 00:03:28,239
to fully test out all the systems the

94
00:03:32,390 --> 00:03:30,640
way it will operate

95
00:03:34,789 --> 00:03:32,400
on the ground here where it's cheap and

96
00:03:37,350 --> 00:03:34,799
easy to do so the inside of that chamber

97
00:03:38,710 --> 00:03:37,360
is basically going to be like what james

98
00:03:40,789 --> 00:03:38,720
webb is going to live in when it's a

99
00:03:42,789 --> 00:03:40,799
million miles away that's right it looks

100
00:03:44,869 --> 00:03:42,799
very unassuming it looks very black

101
00:03:46,550 --> 00:03:44,879
that's what the james webb telescope was

102
00:03:48,550 --> 00:03:46,560
going to be looking at is a lot of black

103
00:03:50,710 --> 00:03:48,560
and searching for very faint sources of

104
00:03:52,869 --> 00:03:50,720
light amongst that black and it's it's

105
00:03:54,550 --> 00:03:52,879
going to be very very cold and what are

106
00:03:55,990 --> 00:03:54,560
what are just some of the general tests

107
00:03:58,229 --> 00:03:56,000
you guys are going to be running on the

108
00:04:01,270 --> 00:03:58,239
telescope once it's inside once it's

109
00:04:03,270 --> 00:04:01,280
inside we're going to be exercising the

110
00:04:04,470 --> 00:04:03,280
the infrared sensors

111
00:04:07,350 --> 00:04:04,480
we're going to be

112
00:04:08,949 --> 00:04:07,360
seeing what the mirror assemblies do

113
00:04:11,670 --> 00:04:08,959

when they're exposed all exposed

114
00:04:13,429 --> 00:04:11,680
together at the same time to the cold

115
00:04:15,270 --> 00:04:13,439
environment so far they've been tested

116
00:04:17,110 --> 00:04:15,280
individually we're going to test all 18

117
00:04:19,909 --> 00:04:17,120
mirror segments together

118
00:04:21,270 --> 00:04:19,919
and make sure that the mechanics and the

119
00:04:23,030 --> 00:04:21,280
electronics

120
00:04:25,030 --> 00:04:23,040
all work the way they're supposed to

121
00:04:26,150 --> 00:04:25,040
before it flies this is one of the last

122
00:04:28,150 --> 00:04:26,160
tests

123
00:04:30,790 --> 00:04:28,160
of the all the systems on the james webb

124
00:04:32,790 --> 00:04:30,800
telescope before it leaves to go to its

125
00:04:34,950 --> 00:04:32,800
launch site so it's the last place where

126
00:04:37,590 --> 00:04:34,960
everything will be together to test so

127
00:04:39,430 --> 00:04:37,600
last stop last chance very important get

128
00:04:41,270 --> 00:04:39,440
it ready before very important because

129
00:04:44,070 --> 00:04:41,280
it will launch less than a year later

130
00:04:47,030 --> 00:04:44,080
after it leaves here from french guiana

131
00:04:48,950 --> 00:04:47,040
okay yeah all right well fascinating

132
00:04:50,710 --> 00:04:48,960
again cavernous historic chamber you

133
00:04:51,510 --> 00:04:50,720
guys are doing some amazing work out

134
00:04:53,189 --> 00:04:51,520
here

135
00:04:55,030 --> 00:04:53,199
thanks for giving us an inside look real

136
00:04:56,870 --> 00:04:55,040
quick really appreciate it

137
00:04:58,469 --> 00:04:56,880
and if you want to find out more about

138
00:05:00,790 --> 00:04:58,479

the james webb space telescope or