1
00:00:13,099 --> 00:00:18,020
As each piece of the James Webb Space Telescope
is built, it has to be tested rigorously.

2
00:00:18,020 --> 00:00:21,500
But the telescope, at some point, needs to
be tested as a whole.

3
00:00:21,500 --> 00:00:26,070
Webb, though, is enormous, standing sev- eral
stories tall.

4
00:00:26,070 --> 00:00:31,619
To make sure the observatory will work in
deep space, NASA has to use its biggest thermal

5
00:00:31,619 --> 00:00:35,590
vacuum chamber it has, the one here at the
Johnson Space Center in Houston, Texas.

6
00:00:35,590 --> 00:00:36,660
Mary Estacion/Reporter: Hi Mary [Cerimele]!

7
00:00:36,660 --> 00:00:38,390
Mary Cerimele/Deputy Project Manager, JWST
Chamber Test: Hi!

8
00:00:38,390 --> 00:00:43,020
Estacion: I understand that you can tell us
more about what you guys are doing with this

9
00:00:43,020 --> 00:00:44,020
chamber.

10
00:00:44,020 --> 00:00:48,790
Cerimele: We embarked on a rather large construction
project to get our thermal vacuum chamber

11
00:00:48,790 --> 00:00:51,329

ready for James Webb Space Telescope.

12
00:00:51,329 --> 00:00:54,969
This chamber has a lot of history, stemming
back from Apollo times.

13
00:00:54,969 --> 00:01:00,460
The chamber itself was actually built in the
1960's to get ready for the space race.

14
00:01:00,460 --> 00:01:04,890
Mary: We see a nice wide angle of this, can
we get a closer view of what's really going

15
00:01:04,890 --> 00:01:05,890
in here?

16
00:01:05,890 --> 00:01:07,490
Cerimele: We can go inside and take a closer
look.

17
00:01:07,490 --> 00:01:09,620
Estacion: Mary, why are you taking us out
here?

18
00:01:09,620 --> 00:01:15,360
Cerimele: Well, these are the original liquid
nitrogen tanks that we used for the testing

19
00:01:15,360 --> 00:01:21,320
of Apollo and it contains all the liquid nitrogen
we need to make the chamber below 300 degrees

20
00:01:21,320 --> 00:01:22,320
Fahrenheit.

21
00:01:22,320 --> 00:01:23,320
Estacion: What are we going to see next?

22

00:01:23,320 --> 00:01:26,409
Cerimele: We're going to look at some of the
things we've had to remove from the Apollo

23
00:01:26,409 --> 00:01:30,130
testing to get ready for James Webb and go
up to the fifth level.

24
00:01:30,130 --> 00:01:34,100
Cerimele: Solar lamps were part of testing
for the Apollo.

25
00:01:34,100 --> 00:01:39,840
The vehicle needed to have a high intensity
heat source on one side at a time.

26
00:01:39,840 --> 00:01:44,930
Some of them will be closed off and some of
them will be used to pass in new piping for

27
00:01:44,930 --> 00:01:45,930
helium.

28
00:01:45,930 --> 00:01:46,930
Estacion: The helium is for what?

29
00:01:46,930 --> 00:01:52,640
Cerimele: The helium will supply, basically
a big soup can inside the can of the chamber

30
00:01:52,640 --> 00:01:54,579
which is going to make the chamber cold.

31
00:01:54,579 --> 00:01:58,579
Estacion: Colder than the 300 degrees below
zero that Apollo had to face?

32
00:01:58,579 --> 00:02:02,260
Cerimele: Colder than the nitrogen temperatures
we have for Apollo.

33
00:02:02,260 --> 00:02:07,340
It'll go below 400 degrees for the James Webb Space Telescope.

34
00:02:07,340 --> 00:02:11,890
Cerimele: Here we are at the fifth level entrance to the chamber and I'll let our lead for test

35
00:02:11,890 --> 00:02:15,240
operations tell you what we have to do for the vehicle inside the chamber.

36
00:02:15,240 --> 00:02:18,800
Pat O'Rear/Lead,Test Operations: As you can see there's some work going on.

37
00:02:18,800 --> 00:02:21,210
The scaffolding has just been erected.

38
00:02:21,210 --> 00:02:24,140
We're about to get ready to install the helium shroud.

39
00:02:24,140 --> 00:02:28,300
O'Rear: We have to mask off anything when we're done that could be a crack or what we

40
00:02:28,300 --> 00:02:32,000
call a stray light path into the interior of the chamber.

41
00:02:32,000 --> 00:02:37,600
Any heat sources, any light sources, those would all affect the proper operation of the

42
00:02:37,600 --> 00:02:38,600
telescope.

43

00:02:38,600 --> 00:02:40,090
Estacion: We're down on the ground level.

44
00:02:40,090 --> 00:02:41,090
O'Rear: This is it!

45
00:02:41,090 --> 00:02:43,950
This is the floor of the chamber.

46
00:02:43,950 --> 00:02:49,340
What you're actually standing on now used
to be an old Apollo lunar turntable.

47
00:02:49,340 --> 00:02:53,170
This part of the floor used to rotate and
that's one of the things that's been changed

48
00:02:53,170 --> 00:02:54,610
for James Webb.

49
00:02:54,610 --> 00:02:59,220
The mechanism that turned the floor had an
oil-based seal.

50
00:02:59,220 --> 00:03:04,300
Contamination is a risk for us, so that's
been replaced and welded.

51
00:03:04,300 --> 00:03:05,400
Floor doesn't turn anymore.

52
00:03:05,400 --> 00:03:11,720
Estacion: So now you can see how NASA's past
is paving the way for NASA's future.