
Wide Field Camera 3
Thermal Vacuum Test
NASA
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National Aeronautics & Space Administration

1
00:00:26,230 --> 00:00:17,349
me

2
00:00:30,070 --> 00:00:27,910
your spacecraft and components suffer

3
00:00:31,509 --> 00:00:30,080
through a grueling battery of tests all

4
00:00:33,430 --> 00:00:31,519
in an effort to see if they are truly

5
00:00:40,229 --> 00:00:33,440
capable of performing their mission and

6
00:00:44,310 --> 00:00:42,229
as this centrifuge whips them around

7
00:00:46,069 --> 00:00:44,320
they experience the kind of g-forces or

8
00:00:57,029 --> 00:00:46,079
gravitational forces that they can

9
00:01:01,670 --> 00:00:59,590
now this centrifuge is not for human use

10
00:01:04,310 --> 00:01:01,680
it can go up to 30 g's which is way more

11
00:01:05,750 --> 00:01:04,320
than a human being can stand

12
00:01:07,270 --> 00:01:05,760
they get shaken on any number of

13
00:01:11,190 --> 00:01:07,280

vibration tables to simulate the

14
00:01:18,550 --> 00:01:13,510
there's no sound in space but the ride

15
00:01:22,469 --> 00:01:20,710
inside this acoustics chamber the

16
00:01:23,749 --> 00:01:22,479
instruments are blasted with noise in

17
00:01:43,190 --> 00:01:23,759
order to make sure they'll be able to

18
00:01:48,230 --> 00:01:45,749
some like the new slick carrier come to

19
00:01:50,950 --> 00:01:48,240
this static load test facility

20
00:01:53,510 --> 00:01:50,960
some call it the rack

21
00:01:55,749 --> 00:01:53,520
inside this frame hydraulic actuators

22
00:01:58,149 --> 00:01:55,759
operated by a team of engineers push and

23
00:01:59,910 --> 00:01:58,159
pull the new composite payload carrier

24
00:02:03,910 --> 00:01:59,920
testing its ability to withstand the

25
00:02:08,389 --> 00:02:05,830
based on the results from the thousand

26
00:02:10,790 --> 00:02:08,399
strain gauges placed on the carrier it

27
00:02:12,630 --> 00:02:10,800
passed

28
00:02:14,550 --> 00:02:12,640
in the electromagnetic interference test

29
00:02:16,070 --> 00:02:14,560
chamber radio waves are blasted at the

30
00:02:17,510 --> 00:02:16,080
instrument to see if they will disrupt

31
00:02:19,190 --> 00:02:17,520
its operations

32
00:02:20,710 --> 00:02:19,200
the instruments are also tested to see

33
00:02:22,150 --> 00:02:20,720
if they produce any radio waves that

34
00:02:25,830 --> 00:02:22,160
could interfere with other instruments

35
00:02:25,840 --> 00:02:37,430
this is the space environment chamber

36
00:02:41,430 --> 00:02:39,750
inside this enormous tank spacecraft and

37
00:02:43,430 --> 00:02:41,440
instruments like the new wide field

38
00:02:44,470 --> 00:02:43,440

camera 3 experience the harshness of

39
00:02:46,229 --> 00:02:44,480
space

40
00:02:47,830 --> 00:02:46,239
the air is pumped out to simulate the

41
00:02:49,430 --> 00:02:47,840
vacuum of space and then the real

42
00:02:51,830 --> 00:02:49,440
testing begins

43
00:02:53,670 --> 00:02:51,840
this chamber can heat to a blazing 300

44
00:02:56,390 --> 00:02:53,680
degrees fahrenheit and then drop to

45
00:02:58,309 --> 00:02:56,400
minus 310 degrees fahrenheit

46
00:02:59,910 --> 00:02:58,319
in here the spacecraft must endure the

47
00:03:02,229 --> 00:02:59,920
huge temperature extremes it will

48
00:03:04,149 --> 00:03:02,239
experience in orbit as it travels from

49
00:03:05,430 --> 00:03:04,159
full sunshine to the darkness of earth's

50
00:03:28,390 --> 00:03:05,440
shadow

51
00:03:33,270 --> 00:03:30,149
if the spacecraft survives the torture

52
00:03:35,509 --> 00:03:33,280
in here it's pretty much ready for space

53
00:03:37,509 --> 00:03:35,519
if not better it breaks here than after

54
00:03:39,350 --> 00:03:37,519
launch here we have the ability to

55
00:03:40,869 --> 00:03:39,360
understand the problem correct it and

56
00:03:42,710 --> 00:03:40,879
test again

57
00:03:44,470 --> 00:03:42,720
all this testing helps reduce the risk

58
00:03:46,149 --> 00:03:44,480
of failure on orbit