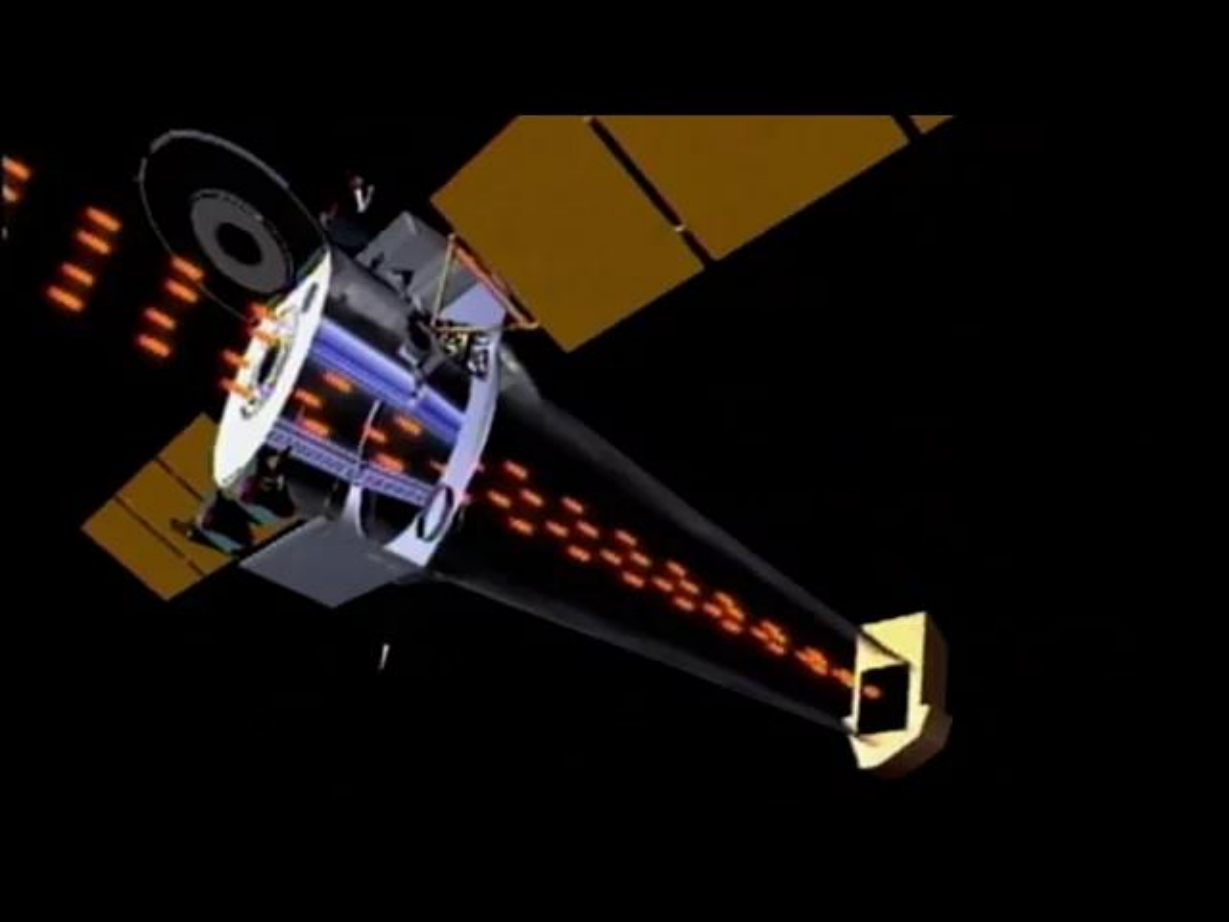

1
00:00:18,070 --> 00:00:15,070
we're here at the Marshall Space Flight

2
00:00:20,200 --> 00:00:18,080
Center in Huntsville Alabama known for

3
00:00:22,900 --> 00:00:20,210
its long history in propulsion research

4
00:00:25,120 --> 00:00:22,910
but this NASA site is still a big player

5
00:00:27,909 --> 00:00:25,130
this time for the James Webb Space

6
00:00:29,530 --> 00:00:27,919
Telescope we're right outside the vacuum

7
00:00:32,230 --> 00:00:29,540
chamber where the mirrors for the Webb

8
00:00:34,210 --> 00:00:32,240
Space Telescope are being tested back in

9
00:00:35,880 --> 00:00:34,220
the 90s this facility was used to test

10
00:00:39,550 --> 00:00:35,890
out one of NASA's Great observatories

11
00:00:41,500 --> 00:00:39,560
the Chandra x-ray Observatory we have

12
00:00:43,599 --> 00:00:41,510
here the project scientist for Chandra

13
00:00:45,610 --> 00:00:43,609

Martin Weiskopf can you tell us a little

14
00:00:48,099 --> 00:00:45,620
bit about the differences between Hubble

15
00:00:50,200 --> 00:00:48,109
and Chandra and James Webb these are

16
00:00:51,520 --> 00:00:50,210
observatories that look at different

17
00:00:53,830 --> 00:00:51,530
parts of what we call the

18
00:00:56,500 --> 00:00:53,840
electromagnetic spectrum that is light

19
00:00:59,080 --> 00:00:56,510
at various different energies from

20
00:01:01,419 --> 00:00:59,090
x-rays where it takes a lot of energy to

21
00:01:03,819 --> 00:01:01,429
produce them to visible light where the

22
00:01:06,130 --> 00:01:03,829
Hubble Space Telescope operates and the

23
00:01:09,010 --> 00:01:06,140
near-infrared where the James Webb

24
00:01:10,990 --> 00:01:09,020
telescope will operate in this way by

25
00:01:13,510 --> 00:01:11,000
studying objects in the universe we can

26
00:01:15,340 --> 00:01:13,520
learn a lot about them that we can't

27
00:01:17,440 --> 00:01:15,350
learn by just simply looking at one

28
00:01:21,100 --> 00:01:17,450
wavelength what kind of information can

29
00:01:23,740 --> 00:01:21,110
be gleaned from x-rays x-ray astronomy

30
00:01:25,480 --> 00:01:23,750
is a system that brought the first

31
00:01:28,480 --> 00:01:25,490
discoveries of black holes in the

32
00:01:30,670 --> 00:01:28,490
universe so we look at very interesting

33
00:01:33,789 --> 00:01:30,680
astronomical objects at very great

34
00:01:36,550 --> 00:01:33,799
distances and conjunction with Hubble

35
00:01:38,740 --> 00:01:36,560
Webb will be looking to identify many

36
00:01:41,230 --> 00:01:38,750
Chandra sources that are not seen with

37
00:01:43,030 --> 00:01:41,240
Hubble now we're outside the facility

38
00:01:45,069 --> 00:01:43,040

where the mirror testing is being done

39
00:01:47,260 --> 00:01:45,079
and you can't help but see this long

40
00:01:50,350 --> 00:01:47,270
tube that is connected to the building

41
00:01:52,959 --> 00:01:50,360
itself I'm told it's almost six football

42
00:01:56,459 --> 00:01:52,969
fields long Martin what was this tube

43
00:01:59,469 --> 00:01:56,469
used for this tube is very important for

44
00:02:02,440 --> 00:01:59,479
separating the telescope that was on the

45
00:02:04,749 --> 00:02:02,450
Chandra x-ray Observatory from x-ray

46
00:02:07,749 --> 00:02:04,759
sources located at the other end of the

47
00:02:10,480 --> 00:02:07,759
building it has to be this length in

48
00:02:13,360 --> 00:02:10,490
order to make those x-ray sources appear

49
00:02:15,760 --> 00:02:13,370
like tiny stars so that we could

50
00:02:18,310 --> 00:02:15,770
determine whether our x-ray telescope

51
00:02:20,350 --> 00:02:18,320
could distinguish small objects in the

52
00:02:22,080 --> 00:02:20,360
sky why is it still here Chandra was

53
00:02:25,240 --> 00:02:22,090
tested in the mid night

54
00:02:27,699 --> 00:02:25,250
it's still here because it's very very

55
00:02:29,949 --> 00:02:27,709
useful for many programs the vacuum

56
00:02:33,130 --> 00:02:29,959
chamber is being used to test the web

57
00:02:36,040 --> 00:02:33,140
optics and we hope to be testing x-ray

58
00:02:37,720 --> 00:02:36,050
telescopes in future programs well

59
00:02:40,420 --> 00:02:37,730
thanks for your time Martin quite

60
00:02:42,490 --> 00:02:40,430
welcome the testing here for the Chandra

61
00:02:46,059 --> 00:02:42,500
Observatory ran about six months from

62
00:02:48,039 --> 00:02:46,069
1996 to 1997 then to telescope was sent

63
00:02:50,620 --> 00:02:48,049

off to be integrated with the rest of

64
00:02:54,339 --> 00:02:50,630
the observatory Chandra was launched on