

1
00:00:13,669 --> 00:00:18,570
the primary mirror segments on the James

2
00:00:16,379 --> 00:00:21,060
Webb Space Telescope get the most press

3
00:00:18,570 --> 00:00:23,399
because if nothing else their sheer size

4
00:00:21,059 --> 00:00:25,679
but there are other mirrors just as

5
00:00:23,399 --> 00:00:27,629
important that make the telescope work

6
00:00:25,679 --> 00:00:30,689
to tell us more about something called

7
00:00:27,629 --> 00:00:32,070
the tertiary mirror is Kobe Smith he's

8
00:00:30,689 --> 00:00:34,018
here at Ball Aerospace in Boulder

9
00:00:32,070 --> 00:00:37,859
Colorado thanks for having us over

10
00:00:34,018 --> 00:00:40,289
Mary so Kobe what is a tertiary mirror

11
00:00:37,859 --> 00:00:42,509
and how does it fit in to the whole

12
00:00:40,289 --> 00:00:44,189
operation of the telescope sure so you

13
00:00:42,509 --> 00:00:46,049
mentioned the primary mirror segments as

14
00:00:44,189 --> 00:00:47,909
comprised of a primary mirror which is

15
00:00:46,049 --> 00:00:49,439
of course built up from the 18 primary

16
00:00:47,909 --> 00:00:51,179
mirror segments which is shown here so

17
00:00:49,439 --> 00:00:52,409
you imagine your whole prior mirrors 18

18
00:00:51,179 --> 00:00:55,259
these segments all the way around in

19
00:00:52,409 --> 00:00:56,549
space this aft optic subsystem sits

20
00:00:55,259 --> 00:00:57,628
right in the middle of all of those

21
00:00:56,549 --> 00:01:00,119
mirrors all right

22
00:00:57,628 --> 00:01:01,439
the light from you to say there the

23
00:01:00,119 --> 00:01:03,689
galaxy or star you're interested in

24
00:01:01,439 --> 00:01:05,069
reflects off the primary mirrors off the

25
00:01:03,689 --> 00:01:07,950
secondary mirror and into the aperture

26
00:01:05,069 --> 00:01:09,569
here the aft optic subsystem then

27
00:01:07,950 --> 00:01:11,250
reflects off the tertiary mirror then

28
00:01:09,569 --> 00:01:12,538
again off the fine streamer and back to

29

00:01:11,250 --> 00:01:14,459
the science instruments in the back of

30
00:01:12,539 --> 00:01:16,320
the telescope okay so the tertiary is

31
00:01:14,459 --> 00:01:18,658
your third stop in this optical path

32
00:01:16,319 --> 00:01:20,879
exactly so do you have a tertiary mirror

33
00:01:18,659 --> 00:01:22,500
here at Ball Aerospace actually we just

34
00:01:20,879 --> 00:01:23,699
received one from coating let's go down

35
00:01:22,500 --> 00:01:25,670
on the floor and we long packet and

36
00:01:23,700 --> 00:01:27,770
taking an optical test

37
00:01:25,670 --> 00:01:29,960
so this afternoon we're going to unpack

38
00:01:27,769 --> 00:01:32,239
the Koated final polish tertiary mirror

39
00:01:29,959 --> 00:01:34,219
from the shipping container using the

40
00:01:32,239 --> 00:01:36,379
flight transport cart and soft jaws

41
00:01:34,219 --> 00:01:38,689
place it on the optical test stand here

42
00:01:36,379 --> 00:01:41,530
and then wheel that into the tents for

43
00:01:38,689 --> 00:01:41,530

optical test table

44

00:01:42,689 --> 00:01:47,069

where we know we're in the optical test

45

00:01:45,450 --> 00:01:49,290

tent for both the secondary mirror and

46

00:01:47,069 --> 00:01:50,909

the tertiary mirror it's used in

47

00:01:49,290 --> 00:01:53,820

reconfigured for both testing both those

48

00:01:50,909 --> 00:01:56,099

optics over here we have what's called

49

00:01:53,819 --> 00:01:59,369

an interferometer and that's used to

50

00:01:56,099 --> 00:02:01,169

measure the surface quality of these

51

00:01:59,370 --> 00:02:03,030

optics all right it sends out a

52

00:02:01,170 --> 00:02:05,490

wavefront of light which can then it

53

00:02:03,030 --> 00:02:07,790

compares it to known reference and any

54

00:02:05,489 --> 00:02:10,978

deviations in that surface will appears

55

00:02:07,790 --> 00:02:12,390

fringes on our camera screen thanks Kobe

56

00:02:10,979 --> 00:02:14,370

for giving us a sense of what the

57

00:02:12,389 --> 00:02:15,989

tertiary mirror does and the kind of

58
00:02:14,370 --> 00:02:19,080
testing it's going through thank you

59
00:02:15,990 --> 00:02:21,300
great all right so after this tertiary

60
00:02:19,080 --> 00:02:23,340
mirror goes through this optical testing

61
00:02:21,300 --> 00:02:25,740
it'll go through some vibration and

62
00:02:23,340 --> 00:02:28,020
thermal testing before being integrated

63
00:02:25,740 --> 00:02:29,640
with the rest of the telescope thanks

64
00:02:28,020 --> 00:02:32,600
for joining us for another edition of

65
00:02:29,639 --> 00:02:32,599
behind the Webb

66
00:02:39,750 --> 00:02:41,810
you