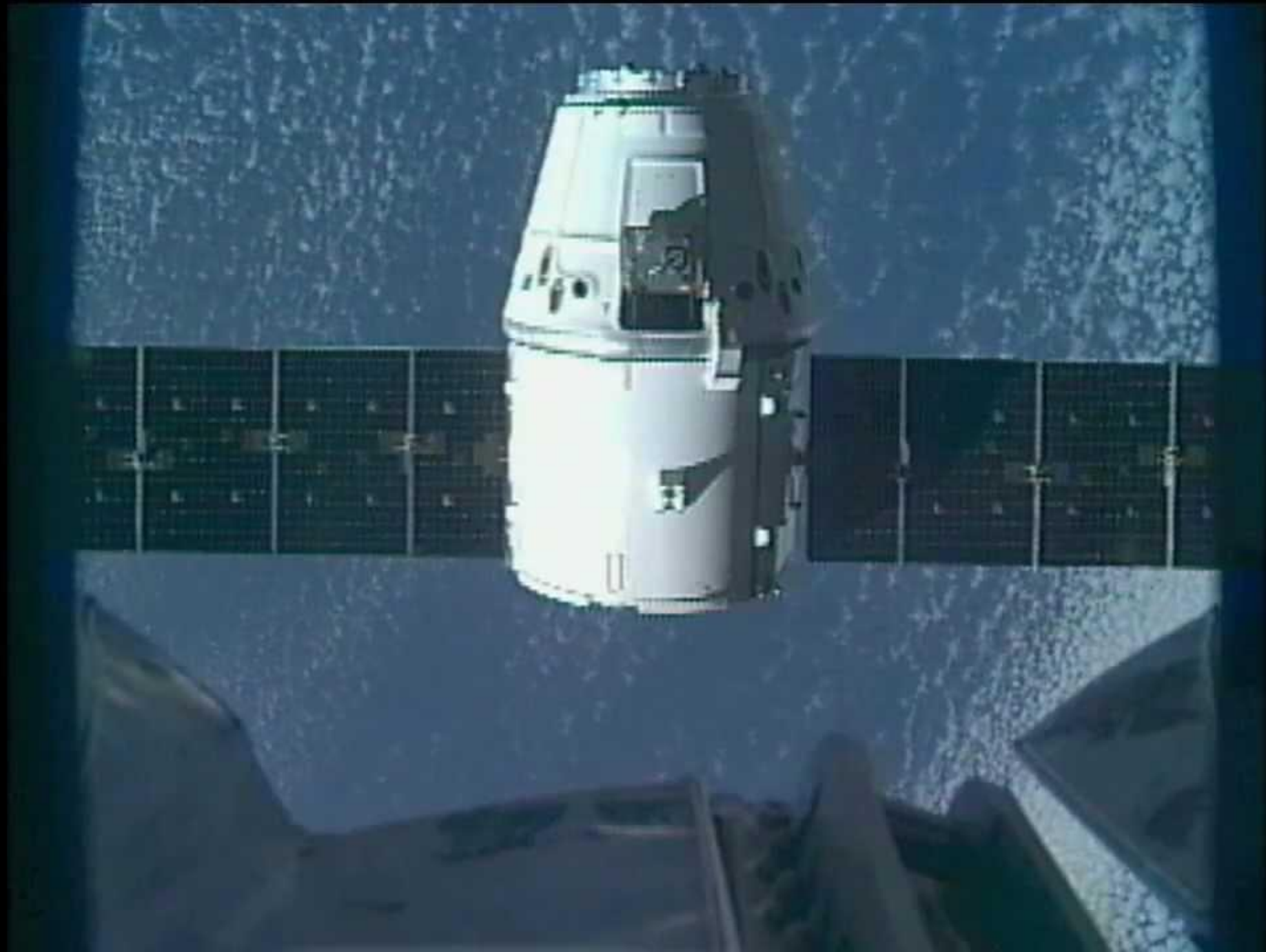

1
00:00:04,870 --> 00:00:03,350
the coating that's on the trunk

2
00:00:07,430 --> 00:00:04,880
of the dragon the nice white coating

3
00:00:07,749 --> 00:00:07,440
that you see as it comes into the dock

4
00:00:10,870 --> 00:00:07,759
with

5
00:00:13,270 --> 00:00:10,880
space station that coating was qualified

6
00:00:15,110 --> 00:00:13,280
on the missy one and two flights and

7
00:00:17,430 --> 00:00:15,120
missy stands for materials on

8
00:00:20,550 --> 00:00:17,440
international space station experiment

9
00:00:21,029 --> 00:00:20,560
and it was a group project experiment

10
00:00:22,950 --> 00:00:21,039
with

11
00:00:24,230 --> 00:00:22,960
the air force research lab the naval

12
00:00:26,230 --> 00:00:24,240
research lab

13
00:00:27,990 --> 00:00:26,240

langley research center glenn research

14
00:00:30,230 --> 00:00:28,000
center and here at marshall

15
00:00:31,990 --> 00:00:30,240
some big companies like lockheed and

16
00:00:33,750 --> 00:00:32,000
boeing and then little companies like

17
00:00:35,190 --> 00:00:33,760
alien science which developed this

18
00:00:39,510 --> 00:00:35,200
coating

19
00:00:41,270 --> 00:00:39,520
had already used for 30 years

20
00:00:43,350 --> 00:00:41,280
for spacecraft but as we get more and

21
00:00:45,190 --> 00:00:43,360
more powerful solar rays

22
00:00:46,470 --> 00:00:45,200
we have to worry more about spacecraft

23
00:00:48,630 --> 00:00:46,480
charging

24
00:00:50,790 --> 00:00:48,640
and in order to to solve that problem

25
00:00:51,750 --> 00:00:50,800
then we look for electrically conductive

26
00:00:53,830 --> 00:00:51,760
coatings

27
00:00:55,910 --> 00:00:53,840
and aelion developed this one and then

28
00:00:56,310 --> 00:00:55,920
we flew it for four years on missy one

29
00:00:58,869 --> 00:00:56,320
and two

30
00:01:00,709 --> 00:00:58,879
were able to qualify it for space while

31
00:01:02,069 --> 00:01:00,719
we can simulate different aspects of the

32
00:01:02,950 --> 00:01:02,079
space environment here on earth we

33
00:01:05,109 --> 00:01:02,960
really can't get

34
00:01:06,950 --> 00:01:05,119
the synergistic effects of the uv

35
00:01:09,510 --> 00:01:06,960
radiation the thermal cycling

36
00:01:10,230 --> 00:01:09,520
everything all together so the real

37
00:01:12,710 --> 00:01:10,240
environment

38
00:01:15,590 --> 00:01:12,720

is the best one to test in and so we had

39
00:01:17,830 --> 00:01:15,600
these samples in space for four years

40
00:01:18,710 --> 00:01:17,840
and we were able to bring them back and

41
00:01:20,950 --> 00:01:18,720
analyze them

42
00:01:23,270 --> 00:01:20,960
and look at what worked and what didn't

43
00:01:24,550 --> 00:01:23,280
work so we had some that stayed just as

44
00:01:26,390 --> 00:01:24,560
white

45
00:01:28,710 --> 00:01:26,400
after four years as they were in the

46
00:01:31,030 --> 00:01:28,720
very beginning and then we had some

47
00:01:33,030 --> 00:01:31,040
that turned a nice chocolate brown due

48
00:01:34,710 --> 00:01:33,040
to their uv radiation

49
00:01:37,030 --> 00:01:34,720
a coating not only protects the

50
00:01:37,990 --> 00:01:37,040
underlying metal from corrosion while

51
00:01:39,830 --> 00:01:38,000
it's on earth and

52
00:01:41,830 --> 00:01:39,840
sitting in the salt air at the cape

53
00:01:44,469 --> 00:01:41,840
waiting for launch it also

54
00:01:45,830 --> 00:01:44,479
passively controls what temperature the

55
00:01:47,749 --> 00:01:45,840
inside

56
00:01:49,270 --> 00:01:47,759
of the cabin would be so we want to make

57
00:01:51,030 --> 00:01:49,280
it comfortable for the astronauts we

58
00:01:52,149 --> 00:01:51,040
don't want it too hot or too cold and we

59
00:01:54,149 --> 00:01:52,159
want to know

60
00:01:55,190 --> 00:01:54,159
that that coating will stay the same

61
00:01:57,670 --> 00:01:55,200
throughout

62
00:01:58,630 --> 00:01:57,680
the whole space flight and not change

63
00:02:01,109 --> 00:01:58,640

over time

64
00:02:02,789 --> 00:02:01,119
we do have one coating that was used for

65
00:02:04,469 --> 00:02:02,799
the curiosity rover we

66
00:02:05,990 --> 00:02:04,479
also looked at some different coatings

67
00:02:08,469 --> 00:02:06,000
for lunar missions

68
00:02:10,710 --> 00:02:08,479
for lagrangian point missions and then