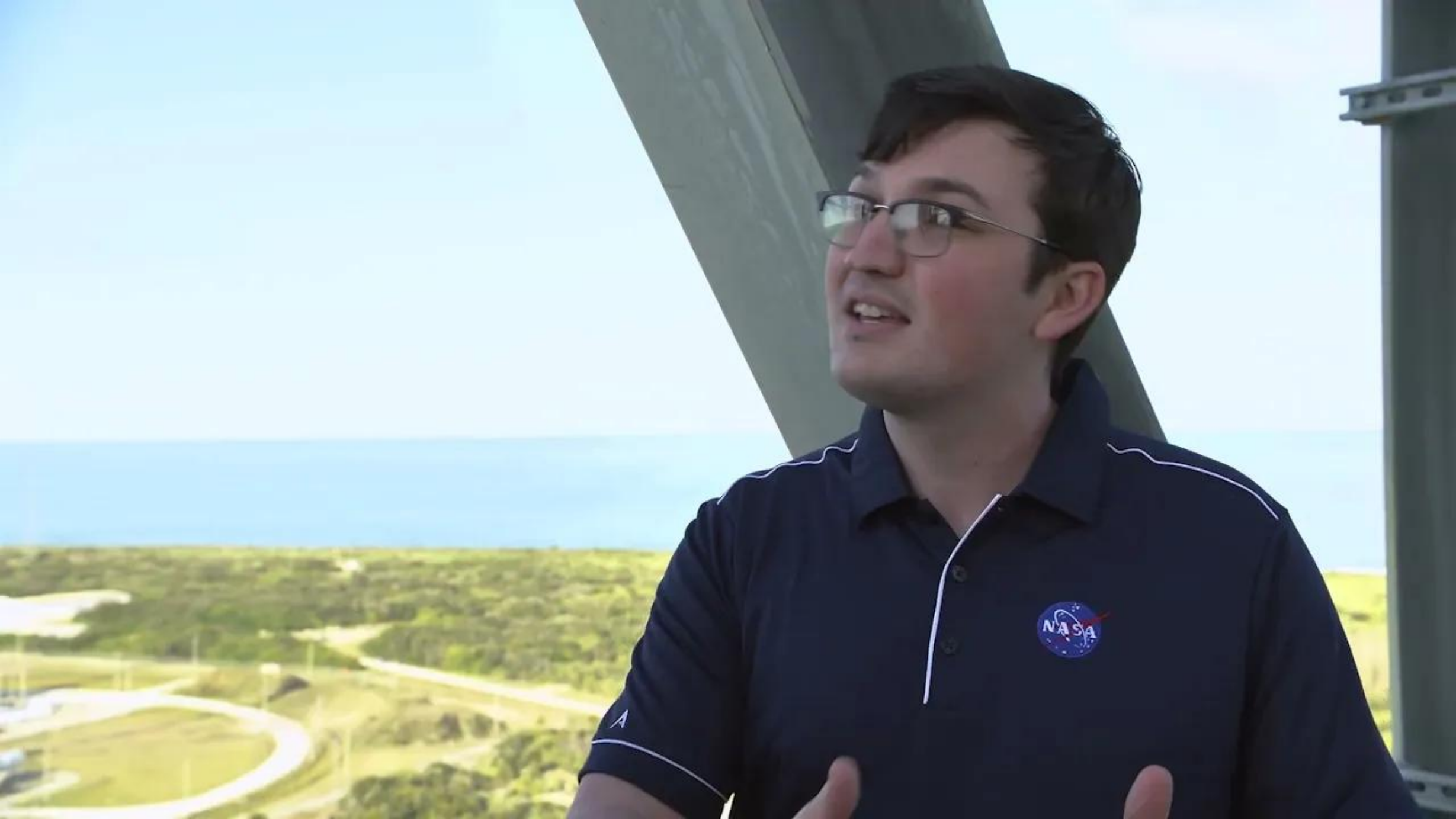
NASA

1
00:00:09,030 --> 00:00:06,550
[Music]

2
00:00:10,629 --> 00:00:09,040
hey alex hey daryl good to see you good

3
00:00:12,950 --> 00:00:10,639
to see you too hey thanks for having me

4
00:00:15,749 --> 00:00:12,960
out so this is it this is it this is the

5
00:00:17,590 --> 00:00:15,759
pli the nasa portable lightning

6
00:00:18,790 --> 00:00:17,600
instrumentation i see it right here

7
00:00:20,870 --> 00:00:18,800
you're gonna take it up there all the

8
00:00:22,310 --> 00:00:20,880
way to where the top of the rocket is

9
00:00:24,390 --> 00:00:22,320
yeah right right around where the

10
00:00:26,150 --> 00:00:24,400
payload fairing is level five all right

11
00:00:29,250 --> 00:00:26,160
that's where we're going well you need a

12
00:00:33,670 --> 00:00:29,260
hand yeah come help us

13
00:00:35,590 --> 00:00:33,680

[Music]

14
00:00:37,590 --> 00:00:35,600
now that we're inside the vif and we're

15
00:00:39,990 --> 00:00:37,600
about 13 stories up

16
00:00:41,830 --> 00:00:40,000
tell me a little bit about this box

17
00:00:43,590 --> 00:00:41,840
you've got some looks like some sensors

18
00:00:45,830 --> 00:00:43,600
here that's right so we got the current

19
00:00:48,069 --> 00:00:45,840
probe which is over near the rocket and

20
00:00:50,869 --> 00:00:48,079
we have three more sensors over here

21
00:00:52,709 --> 00:00:50,879
this one is an electric field sensor

22
00:00:55,029 --> 00:00:52,719
this one up here is a magnetic field

23
00:00:57,430 --> 00:00:55,039
sensor and this little one over here

24
00:00:59,590 --> 00:00:57,440
that's a gps antenna that's how we we

25
00:01:01,910 --> 00:00:59,600
get it make sure our data stays uh

26
00:01:04,070 --> 00:01:01,920
synchronized in time so that we can

27
00:01:06,469 --> 00:01:04,080
correlate that data to all the other

28
00:01:08,310 --> 00:01:06,479
lightning detection networks in the area

29
00:01:10,870 --> 00:01:08,320
so what happens if there's a lightning

30
00:01:11,670 --> 00:01:10,880
strike somewhere nearby what does this

31
00:01:14,630 --> 00:01:11,680
do

32
00:01:17,030 --> 00:01:14,640
so if it's close enough to cause any uh

33
00:01:19,030 --> 00:01:17,040
interference in this area these field

34
00:01:21,670 --> 00:01:19,040
sensors will pick it up first

35
00:01:23,749 --> 00:01:21,680
and they'll cause the entire system to

36
00:01:24,469 --> 00:01:23,759
take a snapshot of that data and record

37
00:01:26,789 --> 00:01:24,479
it

38
00:01:28,710 --> 00:01:26,799

and how is that helpful we'll know what

39
00:01:30,630 --> 00:01:28,720
the peak of it was we'll know how long

40
00:01:32,469 --> 00:01:30,640
the transient lasted we'll be able to

41
00:01:34,069 --> 00:01:32,479
calculate how much energy traveled

42
00:01:36,149 --> 00:01:34,079
through there we'll have a lot more

43
00:01:39,270 --> 00:01:36,159
information to work on

44
00:01:40,870 --> 00:01:39,280
small box big rocket but it's got a big

45
00:01:44,270 --> 00:01:40,880
role in the whole scheme of things it's

46
00:01:50,550 --> 00:01:48,389
[Music]

47
00:01:52,789 --> 00:01:50,560
so we can see those lightning towers out

48
00:01:54,950 --> 00:01:52,799
there and ula tells me that that

49
00:01:57,510 --> 00:01:54,960
protects the rocket when the lightning

50
00:01:59,670 --> 00:01:57,520
strikes so why do we need the pli yeah

51
00:02:01,510 --> 00:01:59,680
so this system over here we call that

52
00:02:03,270 --> 00:02:01,520
the lightning protection system that's

53
00:02:05,109 --> 00:02:03,280
designed to protect it from a direct

54
00:02:06,950 --> 00:02:05,119
lightning strike that means the the

55
00:02:09,029 --> 00:02:06,960
lightning is attaching directly to the

56
00:02:10,550 --> 00:02:09,039
rocket and we're concerned about you

57
00:02:13,190 --> 00:02:10,560
know a lightning strike out there in the

58
00:02:14,869 --> 00:02:13,200
ocean maybe just a mile away and the

59
00:02:17,350 --> 00:02:14,879
energy in a lightning strike is so

60
00:02:19,910 --> 00:02:17,360
intense it creates these very powerful

61
00:02:21,510 --> 00:02:19,920
magnetic and electric fields and those

62
00:02:23,510 --> 00:02:21,520
are the things we're concerned about

63
00:02:25,990 --> 00:02:23,520

because that magnetic field can come

64
00:02:28,630 --> 00:02:26,000
through and couple into the umbilical

65
00:02:30,550 --> 00:02:28,640
cable it's a huge loop it makes a big

66
00:02:33,350 --> 00:02:30,560
old loop and that's the current we're

67
00:02:35,509 --> 00:02:33,360
looking for with the pli has the pli

68
00:02:37,830 --> 00:02:35,519
ever prevented a long launch delay for a

69
00:02:40,550 --> 00:02:37,840
previous mission march 2020 where the

70
00:02:42,070 --> 00:02:40,560
data from the pli gave the spacecraft

71
00:02:43,750 --> 00:02:42,080
team the confidence to go ahead and

72
00:02:46,309 --> 00:02:43,760
launch so there was a lightning strike

73
00:02:48,710 --> 00:02:46,319
around the mars perseverance rocket

74
00:02:50,630 --> 00:02:48,720
that's right and you saw it and we

75
00:02:52,070 --> 00:02:50,640
gathered that data yep and it launched

76
00:02:53,589 --> 00:02:52,080
on time it did

77
00:02:56,110 --> 00:02:53,599
and it's up there now