



1
00:00:12,549 --> 00:00:10,470
in recognition of african american

2
00:00:14,549 --> 00:00:12,559
history month nasa salutes the

3
00:00:16,870 --> 00:00:14,559
contributions of african americans to

4
00:00:18,550 --> 00:00:16,880
the cause of space exploration my name

5
00:00:20,470 --> 00:00:18,560
is james fraction i'm an electrical

6
00:00:21,349 --> 00:00:20,480
engineer at nasa goddard space flight

7
00:00:22,630 --> 00:00:21,359
center

8
00:00:25,509 --> 00:00:22,640
one thing

9
00:00:27,109 --> 00:00:25,519
about this environment is that you

10
00:00:29,669 --> 00:00:27,119
don't go

11
00:00:30,950 --> 00:00:29,679
solo with many things around here if not

12
00:00:33,030 --> 00:00:30,960
anything at all

13
00:00:35,590 --> 00:00:33,040

i'm consistently working with

14

00:00:38,229 --> 00:00:35,600

my the design team that i'm a part of or

15

00:00:39,350 --> 00:00:38,239

even from working with the lab personnel

16

00:00:41,110 --> 00:00:39,360

also there's always some type of

17

00:00:43,590 --> 00:00:41,120

communication between other individuals

18

00:00:46,150 --> 00:00:43,600

that's going on so and i'm a pretty

19

00:00:49,110 --> 00:00:46,160

social guy so i don't mind that

20

00:00:52,229 --> 00:00:49,120

mms is a mission where we are in the

21

00:00:55,029 --> 00:00:52,239

process of designing and building a four

22

00:00:57,270 --> 00:00:55,039

identically instrumented spacecraft uh

23

00:00:59,270 --> 00:00:57,280

for the purposes of using the earth's

24

00:01:01,750 --> 00:00:59,280

magnetosphere as

25

00:01:05,030 --> 00:01:01,760

a basically a huge lab what the plan is

26

00:01:07,190 --> 00:01:05,040

is to study a concept called magnetic

27

00:01:09,350 --> 00:01:07,200

reconnection it's a process where the

28

00:01:12,230 --> 00:01:09,360

energy within the

29

00:01:14,310 --> 00:01:12,240

magnetic field of the earth is tapped

30

00:01:16,230 --> 00:01:14,320

and basically heat and kinetic energy is

31

00:01:19,030 --> 00:01:16,240

produced and scientists are very curious

32

00:01:21,190 --> 00:01:19,040

as to exactly how this process works so

33

00:01:23,510 --> 00:01:21,200

the reason we have four spacecraft is so

34

00:01:25,590 --> 00:01:23,520

that we can fly them in a tetrahedral

35

00:01:27,990 --> 00:01:25,600

formation and with the instruments on

36

00:01:28,870 --> 00:01:28,000

board each uh spacecraft we're able to

37

00:01:32,630 --> 00:01:28,880

actually

38

00:01:35,749 --> 00:01:32,640

do a 3d imaging of the magnetic

39

00:01:37,590 --> 00:01:35,759

reconnection events as they happen

40

00:01:39,910 --> 00:01:37,600

i am a member of the

41

00:01:42,550 --> 00:01:39,920

cnhdh which stands for command and data

42

00:01:45,190 --> 00:01:42,560

handling uh the subsystem of the member

43

00:01:47,670 --> 00:01:45,200

of their design team and my particular

44

00:01:50,149 --> 00:01:47,680

role on mms was to

45

00:01:52,950 --> 00:01:50,159

design a backplane which essentially is

46

00:01:55,190 --> 00:01:52,960

a bridge that connects the multiple cars

47

00:01:59,190 --> 00:01:55,200

that are within the cnhdh subsystem

48

00:02:01,830 --> 00:01:59,200

together it was pretty challenging and

49

00:02:04,870 --> 00:02:01,840

it was definitely a great work

50

00:02:08,630 --> 00:02:04,880

assignment environmental testing is uh

51
00:02:11,110 --> 00:02:08,640
done to ensure that the flight hardware

52
00:02:13,270 --> 00:02:11,120
would be able to withstand the rigors of

53
00:02:15,589 --> 00:02:13,280
the space environment

54
00:02:17,190 --> 00:02:15,599
so with projects i've worked on it's

55
00:02:19,670 --> 00:02:17,200
typically composed of three different

56
00:02:21,990 --> 00:02:19,680
tests there's the electromagnetic

57
00:02:25,030 --> 00:02:22,000
interference test another test is the

58
00:02:28,309 --> 00:02:25,040
vibration test and once that passes we

59
00:02:30,309 --> 00:02:28,319
go to a third round of testing which is

60
00:02:32,790 --> 00:02:30,319
thermal vacuum testing and essentially

61
00:02:35,030 --> 00:02:32,800
what that is is an assimilation of the

62
00:02:37,990 --> 00:02:35,040
space environment where we put the

63
00:02:40,790 --> 00:02:38,000

command and data handling system into a

64

00:02:43,350 --> 00:02:40,800

vacuum environment and we

65

00:02:45,270 --> 00:02:43,360

proceed to test the

66

00:02:47,430 --> 00:02:45,280

system over a variety of different

67

00:02:49,589 --> 00:02:47,440

temperatures

68

00:02:51,750 --> 00:02:49,599

a message i have for kids out there is

69

00:02:54,309 --> 00:02:51,760

to make sure that their math and science

70

00:02:57,030 --> 00:02:54,319

skills are strong and uh the last thing

71

00:02:58,070 --> 00:02:57,040

is just to be true to yourself i mean if

72

00:03:00,470 --> 00:02:58,080

you know

73

00:03:03,110 --> 00:03:00,480

that science or

74

00:03:04,949 --> 00:03:03,120

math or you know some type of it could

75

00:03:07,030 --> 00:03:04,959

be you know any other type of major out

76

00:03:08,710 --> 00:03:07,040

there or type of subject out there it's

77

00:03:10,949 --> 00:03:08,720

something that you have a strong passion

78

00:03:12,229 --> 00:03:10,959

for even if you may be a little hesitant