

A man in a blue shirt stands in a complex industrial environment, likely a rocket engine test cell. He is surrounded by large pipes, valves, and machinery. The background features a large, circular, ribbed structure, possibly a part of the engine or a test chamber. The lighting is bright, highlighting the metallic surfaces and the man's face.

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1
00:00:00,000 --> 00:00:02,658
We're here in the propulsion

2
00:00:02,693 --> 00:00:04,545
development lab here at Marshall

3
00:00:04,580 --> 00:00:06,474
Space Flight Center, and this

4
00:00:06,509 --> 00:00:10,042
is the F-1 engine. Engine 6049

5
00:00:10,077 --> 00:00:11,659
is what its destination is. It

6
00:00:11,694 --> 00:00:13,619
was originally slated for the

7
00:00:13,654 --> 00:00:15,274
Apollo 11 flight. However due

8
00:00:15,309 --> 00:00:18,306
to an anomaly on a stage test,

9
00:00:18,341 --> 00:00:20,666
it was recycled and planned for

10
00:00:20,701 --> 00:00:21,922
a future test that was

11
00:00:21,957 --> 00:00:23,259
cancelled so this is how we

12
00:00:23,294 --> 00:00:25,194
were able to have it today for

13
00:00:25,229 --> 00:00:27,138

our testing. After we

14

00:00:27,173 --> 00:00:28,675

disassembled the first engine,

15

00:00:28,710 --> 00:00:29,955

we started looking at components

16

00:00:29,990 --> 00:00:31,634

that we would like to potentially

17

00:00:31,669 --> 00:00:33,322

test, and the first part that we

18

00:00:33,357 --> 00:00:34,754

looked at was the gas generator

19

00:00:34,789 --> 00:00:36,818

system, which is the part that

20

00:00:36,853 --> 00:00:38,618

drives the turbine on the engine

21

00:00:38,653 --> 00:00:40,442

and provides the propellants to

22

00:00:40,477 --> 00:00:42,202

the injector. We pulled the gas

23

00:00:42,237 --> 00:00:43,530

generator off, which is located

24

00:00:43,565 --> 00:00:45,499

here on the engine and disassembled

25

00:00:45,534 --> 00:00:47,362

it and refurbished it, and its now

26

00:00:47,397 --> 00:00:49,202

located in Test Stand 116 for

27

00:00:49,237 --> 00:00:51,322

hot-fire testing. We will be

28

00:00:51,357 --> 00:00:53,794

running the F-1 gas generator

29

00:00:53,829 --> 00:00:58,234

test using a heritage gas

30

00:00:58,269 --> 00:01:01,067

generator and running it with

31

00:01:01,102 --> 00:01:04,114

liquid oxygen and RP-1. We took

32

00:01:04,149 --> 00:01:05,586

this engine apart, and we're

33

00:01:05,621 --> 00:01:07,562

testing it to develop the

34

00:01:07,597 --> 00:01:09,138

performance models and the

35

00:01:09,173 --> 00:01:10,794

combustion stability models

36

00:01:10,829 --> 00:01:12,530

as well as the combustion

37

00:01:12,565 --> 00:01:13,915

properties so that we can

38

00:01:13,950 --> 00:01:15,594

influence designs in the future

39

00:01:15,629 --> 00:01:17,770

for the Space Launch System. For

40

00:01:17,805 --> 00:01:19,218

future work in SLS, one of the

41

00:01:19,253 --> 00:01:21,633

biggest things we're looking at

42

00:01:21,668 --> 00:01:23,066

is manufacturability. How can

43

00:01:23,101 --> 00:01:24,530

we do things easier and cheaper

44

00:01:24,565 --> 00:01:26,809

and faster. This provides a

45

00:01:26,844 --> 00:01:28,841

great opportunity. Taking the F-1,

46

00:01:28,876 --> 00:01:30,098

which is one of the biggest

47

00:01:30,133 --> 00:01:31,570

engines, you know, that America

48

00:01:31,605 --> 00:01:33,202

has ever made, to be able to take

49

00:01:33,237 --> 00:01:34,402

that and look at the components

50

00:01:34,437 --> 00:01:35,970

and look for how can we do rapid

51
00:01:36,005 --> 00:01:39,522
prototyping, rapid manufacturing

52
00:01:39,557 --> 00:01:41,475
to reinvent these or make design

53
00:01:41,510 --> 00:01:43,921
changes. How do we speed up that

54
00:01:43,956 --> 00:01:45,858
whole process when we are going

55
00:01:45,893 --> 00:01:47,874
to design an engine and test it?

56
00:01:47,909 --> 00:01:49,234
The data that we're going to

57
00:01:49,269 --> 00:01:50,754
collect from our F-1 gas generator

58
00:01:50,789 --> 00:01:51,930
test program, we'll be able to

59
00:01:51,965 --> 00:01:53,282
share with the U.S. aerospace

60
00:01:53,317 --> 00:01:54,746
industry to develop engines like

61
00:01:54,781 --> 00:01:57,297
this in the future. The best part

62
00:01:57,332 --> 00:01:59,049
of this project for me as been

63
00:01:59,084 --> 00:02:01,010

being able to take an engine from

64

00:02:01,045 --> 00:02:03,154

the start, take it down to its

65

00:02:03,189 --> 00:02:05,514

bare bones, clean it up, go in

66

00:02:05,549 --> 00:02:07,490

and inspect it as best we could,

67

00:02:07,525 --> 00:02:08,746

and then reassemble it and see it

68

00:02:08,781 --> 00:02:09,954

get to the point of being hot

69

00:02:09,989 --> 00:02:11,386

fired. So this is the first time

70

00:02:11,421 --> 00:02:12,899

that I've been involved in a test

71

00:02:12,934 --> 00:02:15,602

like this. And knowing all the

72

00:02:15,637 --> 00:02:16,938

history and seeing it come apart,

73

00:02:16,973 --> 00:02:18,530

and being involved from the very

74

00:02:18,565 --> 00:02:19,850

beginning, and seeing it go back

75

00:02:19,885 --> 00:02:21,362

together and out on to the test

76

00:02:21,397 --> 00:02:22,730

stand is something that I'm really