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1
00:00:09,049 --> 00:00:06,920
we're setting up for testing an rs.25

2
00:00:11,480 --> 00:00:09,059
engine which is similar to the previous

3
00:00:13,400 --> 00:00:11,490
space shuttle main engine that was used

4
00:00:15,499 --> 00:00:13,410
in the space shuttle program and so

5
00:00:18,859 --> 00:00:15,509
we're going to be testing this engine to

6
00:00:20,630 --> 00:00:18,869
cover the new areas for how this engine

7
00:00:23,210 --> 00:00:20,640
would operate under this new system

8
00:00:25,820 --> 00:00:23,220
called SLS the overall test objective

9
00:00:27,410 --> 00:00:25,830
for engine zero five to five as it's

10
00:00:30,410 --> 00:00:27,420
currently on the stand is to take it

11
00:00:32,930 --> 00:00:30,420
from the the original ssme test profile

12
00:00:35,780 --> 00:00:32,940
up to the profile that's intended to be

13
00:00:37,520 --> 00:00:35,790

used on the SLS vehicle and so in order

14
00:00:39,350 --> 00:00:37,530
to do that instead of making that change

15
00:00:41,060 --> 00:00:39,360
all at once which increase the overall

16
00:00:43,040 --> 00:00:41,070
risk level of the testing we are

17
00:00:45,709 --> 00:00:43,050
gradually stepping through the changes

18
00:00:48,560 --> 00:00:45,719
to the start profile as well as the main

19
00:00:50,180 --> 00:00:48,570
steady state testing profile so some of

20
00:00:52,100 --> 00:00:50,190
the two main changes from a hardware

21
00:00:54,170 --> 00:00:52,110
perspective on the engine are the

22
00:00:56,540 --> 00:00:54,180
controller and then some of the nozzle

23
00:00:57,950 --> 00:00:56,550
insulation so the old controller was out

24
00:00:59,779 --> 00:00:57,960
of date and you can't even make it

25
00:01:02,479 --> 00:00:59,789
anymore plus it wouldn't talk well with

26
00:01:04,130 --> 00:01:02,489
the other SLS computers so we developed

27
00:01:05,870 --> 00:01:04,140
a new controller that can actually

28
00:01:08,359 --> 00:01:05,880
control the engines that it stays on

29
00:01:11,149 --> 00:01:08,369
thrust and mixture ratio one of our

30
00:01:12,350 --> 00:01:11,159
other key performance parameters is one

31
00:01:14,660 --> 00:01:12,360
of the main things we're doing in the

32
00:01:16,550 --> 00:01:14,670
test program when you are running a hot

33
00:01:18,289 --> 00:01:16,560
fire test on an engine there's more that

34
00:01:20,359 --> 00:01:18,299
goes into it that might meet the eye at

35
00:01:22,490 --> 00:01:20,369
first glance it's not only the engine

36
00:01:24,499 --> 00:01:22,500
and the engine control software that has

37
00:01:26,780 --> 00:01:24,509
to be ready for test there's facility

38
00:01:28,730 --> 00:01:26,790

software and data recording systems and

39
00:01:30,200 --> 00:01:28,740
all of the control systems have to

40
00:01:31,789 --> 00:01:30,210
properly talk to each other which means

41
00:01:33,890 --> 00:01:31,799
they have to be speaking each other's

42
00:01:35,719 --> 00:01:33,900
language at the same time and that's

43
00:01:38,090 --> 00:01:35,729
usually a difficult endeavor intakes

44
00:01:39,620 --> 00:01:38,100
takes a few tries to get right usually

45
00:01:41,840 --> 00:01:39,630
doesn't happen on the first try so we

46
00:01:43,550 --> 00:01:41,850
spent some months and some weeks putting

47
00:01:45,499 --> 00:01:43,560
some significant effort in and making

48
00:01:48,650 --> 00:01:45,509
sure that that all ran seamlessly as it

49
00:01:51,570 --> 00:01:48,660
did on test 1008 for the artist

50
00:01:54,060 --> 00:01:51,580
the first hot fire test followed the

51
00:01:55,530 --> 00:01:54,070
ssme test profile exactly so that we

52
00:01:57,000 --> 00:01:55,540
could establish that we could still run

53
00:01:59,130 --> 00:01:57,010
the engine in the same way that we did

54
00:02:01,020 --> 00:01:59,140
under the shuttle program the second

55
00:02:04,140 --> 00:02:01,030
test program begins stepping us into the

56
00:02:05,820 --> 00:02:04,150
rs.25 program objectives to be able to