1
00:00:07,829 --> 00:00:04,950
a small scale solid rocket motor was

2
00:00:15,030 --> 00:00:07,839
successfully tested may 27 at nasa's

3
00:00:20,550 --> 00:00:17,590
the 21 second firing tested a nasa

4
00:00:22,870 --> 00:00:20,560
subscale motor designed as a versatile

5
00:00:24,230 --> 00:00:22,880
quick turnaround and low-cost way to

6
00:00:29,269 --> 00:00:24,240
determine the performance of new

7
00:00:33,590 --> 00:00:31,509
finding adequate parts replacements for

8
00:00:36,229 --> 00:00:33,600
highly reliable systems used in human

9
00:00:38,630 --> 00:00:36,239
space flight programs involves extensive

10
00:00:40,709 --> 00:00:38,640
testing and qualification efforts it

11
00:00:41,910 --> 00:00:40,719
gives engineers here at marshall

12
00:00:44,069 --> 00:00:41,920
hands-on

13
00:00:46,790 --> 00:00:44,079

experience with these materials with

14
00:00:49,990 --> 00:00:46,800
these processes of these materials so

15
00:00:52,069 --> 00:00:50,000
that we can be engaged

16
00:00:55,110 --> 00:00:52,079
in what's going on full scale

17
00:00:57,270 --> 00:00:55,120
and as well as keeping us technically

18
00:00:59,590 --> 00:00:57,280
sharp testing a subscale version of a

19
00:01:01,670 --> 00:00:59,600
rocket motor is a cost-effective way to

20
00:01:04,229 --> 00:01:01,680
assess new materials technologies or

21
00:01:30,950 --> 00:01:04,239
processes and rapidly evaluate

22
00:01:30,960 --> 00:01:41,109
so

23
00:01:41,119 --> 00:02:43,350
got it

24
00:02:43,360 --> 00:03:14,390
hey john

25
00:03:14,400 --> 00:03:21,430
and this is

26
00:03:21,440 --> 00:03:36,869
so i mean

27
00:03:36,879 --> 00:04:54,230
so

28
00:04:54,240 --> 00:05:22,710
okay

29
00:05:22,720 --> 00:05:27,670
t4

30
00:05:32,550 --> 00:05:30,790
our subscale motor is a single segment

31
00:05:36,070 --> 00:05:32,560
subscale motor it's

32
00:05:37,110 --> 00:05:36,080
the segment is 108 inches long

33
00:05:38,550 --> 00:05:37,120
and

34
00:05:40,230 --> 00:05:38,560
24 inch

35
00:05:43,510 --> 00:05:40,240
is the designation we give it because

36
00:05:45,990 --> 00:05:43,520
it's a 24 inch diameter case the nozzle

37
00:05:48,710 --> 00:05:46,000
is is in a pretty extreme environment

38
00:05:50,790 --> 00:05:48,720

it's about it sees about 5000 degrees

39
00:05:54,070 --> 00:05:50,800
fahrenheit and

40
00:05:58,790 --> 00:05:56,950
600 650 psi

41
00:06:01,510 --> 00:05:58,800
just generally

42
00:06:03,430 --> 00:06:01,520
subscale testing

43
00:06:05,990 --> 00:06:03,440
is there for

44
00:06:08,550 --> 00:06:06,000
us to use as a tool

45
00:06:11,670 --> 00:06:08,560
so that we can look at

46
00:06:14,070 --> 00:06:11,680
new materials new processing new design

47
00:06:16,469 --> 00:06:14,080
anything that changes if we come up with

48
00:06:17,510 --> 00:06:16,479
obsolescence issues

49
00:06:18,950 --> 00:06:17,520
this is a

50
00:06:22,390 --> 00:06:18,960
first look

51
00:06:24,390 --> 00:06:22,400
that that we can see what kind of effect

52
00:06:27,029 --> 00:06:24,400
they're going to have on our performance

53
00:06:29,270 --> 00:06:27,039
of our of our motors

54
00:06:30,469 --> 00:06:29,280
it gives engineers here at marshall

55
00:06:32,710 --> 00:06:30,479
hands-on

56
00:06:35,350 --> 00:06:32,720
experience with these materials with

57
00:06:38,550 --> 00:06:35,360
these processes of these materials so

58
00:06:40,710 --> 00:06:38,560
that we can be engaged

59
00:06:43,670 --> 00:06:40,720
in what's going on full scale

60
00:06:47,189 --> 00:06:43,680
and as well as keeping us technically

61
00:06:49,909 --> 00:06:47,199
sharp so that when issues come up with

62
00:06:53,270 --> 00:06:49,919
flight hardware or with our full-scale

63
00:06:55,029 --> 00:06:53,280

test programs that we're able to better

64
00:06:56,710 --> 00:06:55,039
answer questions we have the experience

65
00:06:58,710 --> 00:06:56,720
with these materials

66
00:07:03,830 --> 00:06:58,720
they've been a wonderful team to work

67
00:07:07,589 --> 00:07:03,840
with and to be able to follow the whole

68
00:07:09,589 --> 00:07:07,599
test from from the design from from

69
00:07:11,110 --> 00:07:09,599
starting the contract

70
00:07:13,350 --> 00:07:11,120
through the design through the

71
00:07:17,430 --> 00:07:13,360
manufacturing and assembly

72
00:07:19,589 --> 00:07:17,440
to the test date is very rewarding and

73
00:07:22,550 --> 00:07:19,599
now i can't wait to to see what what the

74
00:07:24,469 --> 00:07:22,560
data we get out of this and and

75
00:07:25,909 --> 00:07:24,479
which i'm positive we've got a wonderful

76
00:07:27,909 --> 00:07:25,919
test bed here

77
00:07:28,950 --> 00:07:27,919
it's very exciting it's it's a it's a

78
00:07:31,430 --> 00:07:28,960
pretty

79
00:07:33,430 --> 00:07:31,440
nerve-wracking 21 seconds

80
00:07:35,110 --> 00:07:33,440
but but it's very exciting and very

81
00:07:36,710 --> 00:07:35,120
rewarding

82
00:07:40,710 --> 00:07:36,720
for this nozzle

83
00:07:44,070 --> 00:07:40,720
we redesigned the contour of the nozzle

84
00:07:46,309 --> 00:07:44,080
to represent future full-scale motors

85
00:07:48,790 --> 00:07:46,319
and in developing that design we had to

86
00:07:51,909 --> 00:07:48,800
go through the analyses to prove that it

87
00:07:52,710 --> 00:07:51,919
would be safe to test the nozzle directs

88
00:07:58,869 --> 00:07:52,720

the

89
00:08:00,790 --> 00:07:58,879
vehicle off a pad

90
00:08:02,550 --> 00:08:00,800
our goal is to

91
00:08:04,230 --> 00:08:02,560
is to push the limits of the material

92
00:08:06,390 --> 00:08:04,240
here so that we will have safe

93
00:08:08,390 --> 00:08:06,400
full-scale tests and flight motors in

94
00:08:12,070 --> 00:08:08,400
the future our primary objectives were

95
00:08:13,909 --> 00:08:12,080
the nozzle but these tests are useful to

96
00:08:15,430 --> 00:08:13,919
pretty much everyone within solid

97
00:08:17,990 --> 00:08:15,440
propulsion

98
00:08:20,230 --> 00:08:18,000
we have on this test a

99
00:08:22,150 --> 00:08:20,240
some propellant objectives they're going

100
00:08:24,790 --> 00:08:22,160
to learn about

101
00:08:27,670 --> 00:08:24,800
cracks and and how they would how they

102
00:08:29,510 --> 00:08:27,680
would perform during a full scale motor

103
00:08:31,589 --> 00:08:29,520
and we also have some individuals taking

104
00:08:33,190 --> 00:08:31,599
some plume impingement

105
00:08:35,110 --> 00:08:33,200
measurements they're looking at the

106
00:08:37,110 --> 00:08:35,120
acoustic and vibration loads that a

107
00:08:38,149 --> 00:08:37,120
solid rocket would create on a vehicle

108
00:08:40,550 --> 00:08:38,159
as

109
00:08:43,110 --> 00:08:40,560
future heavy lift vehicles

110
00:08:46,630 --> 00:08:43,120
are developed

111
00:08:49,269 --> 00:08:46,640
we'll be able to adapt our subscale test

112
00:08:51,030 --> 00:08:49,279
to meet those designs and the material

113
00:08:53,030 --> 00:08:51,040

needs that we'll have for those vehicles

114
00:08:55,110 --> 00:08:53,040
our team was composed of young engineers

115
00:08:58,310 --> 00:08:55,120
and and experienced engineers and it

116
00:09:00,070 --> 00:08:58,320
really was a great a a great experience

117
00:09:02,710 --> 00:09:00,080
working with all of them

118
00:09:04,550 --> 00:09:02,720
as the younger engineers developed the

119
00:09:06,150 --> 00:09:04,560
hands-on experience that those that have