



1
00:00:00,000 --> 00:00:05,552
MUSIC

2
00:00:06,907 --> 00:00:09,672
as SLS, there are a lot of things you have to

3
00:00:09,707 --> 00:00:12,088
think about. The problem we plan to

4
00:00:12,123 --> 00:00:15,560
address is called geysering. One of the first

5
00:00:15,595 --> 00:00:18,392
things we have to get our arms around is

6
00:00:18,427 --> 00:00:20,640
how we load the vehicle with cryogenic

7
00:00:20,675 --> 00:00:22,504
propellants, and how we safely load the

8
00:00:22,539 --> 00:00:24,704
vehicle. Geysering happens whenever heat

9
00:00:24,739 --> 00:00:28,824
is entered into the system and a large bubble

10
00:00:28,859 --> 00:00:32,248
forms and it displaces liquid and allows that

11
00:00:32,283 --> 00:00:35,040
liquid to come crashing back down and cause

12
00:00:35,075 --> 00:00:37,392
a hammering effect on the system. And this

13
00:00:37,427 --> 00:00:40,424

hammering effect can damage the tank or

14

00:00:40,459 --> 00:00:44,233

the feed lines or other components. So we

15

00:00:44,268 --> 00:00:48,335

put together a full-scale test bed here at

16

00:00:48,370 --> 00:00:52,488

Marshall that simulates the LO2 feed system

17

00:00:52,523 --> 00:00:54,792

for core stage. We're utilizing test stand 4670

18

00:00:54,827 --> 00:00:58,816

at Marshall. We've set a tank that Boeing

19

00:00:58,851 --> 00:01:01,880

procured, which is representative of the

20

00:01:01,915 --> 00:01:05,791

SLS height. And we have full-scale feed lines

21

00:01:05,826 --> 00:01:08,863

where we matched geometry to the SLS

22

00:01:08,898 --> 00:01:12,167

flight LOX feed system. We plan to mitigate

23

00:01:12,202 --> 00:01:17,680

the risk of geysering with circulation induced

24

00:01:17,715 --> 00:01:20,040

by helium injection. We've got two feed lines

25

00:01:20,075 --> 00:01:22,560

which feed four engines. The two feed lines

26
00:01:22,595 --> 00:01:26,000
are connected by a 4-inch crossover. We've

27
00:01:26,035 --> 00:01:28,552
got two helium injection ports. Helium

28
00:01:28,587 --> 00:01:32,248
injection will induce circulation up one feed

29
00:01:32,283 --> 00:01:35,535
line. Cold, fresh LOX from the LOX tank will

30
00:01:35,570 --> 00:01:37,487
flow down the other feed line and across the

31
00:01:37,522 --> 00:01:40,072
crossover into the other feed line. Circulation

32
00:01:40,107 --> 00:01:43,143
will prevent a stagnant system and therefore

33
00:01:43,178 --> 00:01:46,304
prevent geysers. Antigeyser is one of many

34
00:01:46,339 --> 00:01:48,928
development tests we have in a series that

35
00:01:48,963 --> 00:01:51,688
help us ensure a successful maiden flight for