



1
00:00:00,000 --> 00:00:10,996
MUSIC

2
00:00:11,031 --> 00:00:11,763
So the Launch Vehicle Stage

3
00:00:11,798 --> 00:00:13,396
Adapter is being built at

4
00:00:13,431 --> 00:00:14,611
Marshall Space Flight Center in

5
00:00:14,646 --> 00:00:16,475
Huntsville Alabama. The adapter

6
00:00:16,510 --> 00:00:17,835
is part of the Space Launch

7
00:00:17,870 --> 00:00:19,556
System building the most powerful

8
00:00:19,591 --> 00:00:20,963
rocket in the history of space

9
00:00:20,998 --> 00:00:23,834
craft. The Launch Vehicle Adapter

10
00:00:23,869 --> 00:00:26,235
sits on top of the core stage and

11
00:00:26,270 --> 00:00:27,538
connects to the upper stage

12
00:00:27,573 --> 00:00:29,651
inside this launch system. The

13
00:00:29,686 --> 00:00:30,819

LVSA is comprised of two

14

00:00:30,854 --> 00:00:33,162
rings and a forward and aft cone.

15

00:00:33,197 --> 00:00:35,362
We have the forward ring which

16

00:00:35,397 --> 00:00:37,418
is a forging machined down into a

17

00:00:37,453 --> 00:00:39,498
ring and we have the aft flange

18

00:00:39,533 --> 00:00:41,346
which is a segmented welded

19

00:00:41,381 --> 00:00:42,762
flange we did here at Marshall.

20

00:00:42,797 --> 00:00:44,929
Machine shop is now machining it

21

00:00:44,964 --> 00:00:46,466
down to its final configuration

22

00:00:46,501 --> 00:00:48,250
to be welded at a later date. We

23

00:00:48,285 --> 00:00:49,578
have forward and aft cone

24

00:00:49,613 --> 00:00:51,146
segments. We currently have

25

00:00:51,181 --> 00:00:52,483
welded up the forward cone

26

00:00:52,518 --> 00:00:55,130
complete. It's in for inspection

27

00:00:55,165 --> 00:00:56,817
now. With a cone, if you if you

28

00:00:56,852 --> 00:00:58,017
need to hit a certain height you

29

00:00:58,052 --> 00:00:59,305
have to go to a certain diameter.

30

00:00:59,340 --> 00:01:00,874
So there is a challenge involved

31

00:01:00,909 --> 00:01:02,402
in that and what we have taken

32

00:01:02,437 --> 00:01:03,609
advantage of recently is white

33

00:01:03,644 --> 00:01:04,793
light scanning and marrying it

34

00:01:04,828 --> 00:01:06,649
with laser tracker. Friction stir

35

00:01:06,684 --> 00:01:08,393
welding, it is not the time to

36

00:01:08,428 --> 00:01:10,273
weld that takes all the time, it

37

00:01:10,308 --> 00:01:11,833
is the setup of fixturing, the

38

00:01:11,868 --> 00:01:13,752

holding of parts. There is a lot

39

00:01:13,787 --> 00:01:14,681
of expertise going into that.

40

00:01:14,716 --> 00:01:16,096
The weld its is self is really,

41

00:01:16,131 --> 00:01:18,576
if you see one you've seen them

42

00:01:18,611 --> 00:01:19,977
all. So here is a fun piece of

43

00:01:20,012 --> 00:01:21,288
trivia; when we have completed

44

00:01:21,323 --> 00:01:22,736
all the friction stir welding on

45

00:01:22,771 --> 00:01:26,113
the LVSA cones and made a full

46

00:01:26,148 --> 00:01:29,393
item, we will have done 450 feet

47

00:01:29,428 --> 00:01:30,496
linear feet of friction stir

48

00:01:30,531 --> 00:01:32,337
welding. And that is equivalent

49

00:01:32,372 --> 00:01:34,376
to a football field and a half.

50

00:01:34,411 --> 00:01:36,640
So if you were to run the length

51
00:01:36,675 --> 00:01:37,880
of a football field you would have

52
00:01:37,915 --> 00:01:38,872
to go one and a half times to

53
00:01:38,907 --> 00:01:40,432
have done the same amount of

54
00:01:40,467 --> 00:01:41,616
friction stir welding that we are

55
00:01:41,651 --> 00:01:43,303
going to have on the LVSA. The

56
00:01:43,338 --> 00:01:45,088
most complicated thing that we

57
00:01:45,123 --> 00:01:46,231
are going to deal with building

58
00:01:46,266 --> 00:01:48,792
LVSA is welding the forward 14

59
00:01:48,827 --> 00:01:52,782
foot cone to the aft 14 foot cone.

60
00:01:52,817 --> 00:01:54,462
But that is going to be the

61
00:01:54,497 --> 00:01:55,919
biggest challenge, trying to meet

62
00:01:55,954 --> 00:01:57,583
the parallelism and flatness of

63
00:01:57,618 --> 00:01:59,047

the forward and aft flange...

64

00:01:59,082 --> 00:02:01,047

welding that center joint. We

65

00:02:01,082 --> 00:02:03,118

have got a tremendous amount of

66

00:02:03,153 --> 00:02:04,734

money invested in the forward

67

00:02:04,769 --> 00:02:06,494

cone and tremendous amount of

68

00:02:06,529 --> 00:02:07,695

money invested in the aft cone