1
00:00:11,890 --> 00:00:12,613
A space shuttle liftoff is an awe-inspiring sight -- but the journey doesn't begin on the launch pad.

2
00:00:17,900 --> 00:00:19,633
It has to get there first.

3
00:00:20,540 --> 00:00:21,410
Rollout means moving a fully assembled space shuttle, and its mobile launcher platform,

4
00:00:25,470 --> 00:00:29,203
across more than 3 miles of NASA's Kennedy Space Center.

5
00:00:29,880 --> 00:00:31,549
Bob Myers/Crawler Engineer "You try to think of it kind of like a job,

6
00:00:31,550 --> 00:00:31,666
but it gives you a real great sense of pride to know that you're carrying the nation's space program on your bac

7
00:00:39,100 --> 00:00:39,216
It begins inside the Vehicle Assembly Building, or VAB,

8
00:00:42,650 --> 00:00:47,983
where the shuttle is joined to its external fuel tank and solid rocket boosters.

9
00:00:48,580 --> 00:00:56,180
The entire assembly is built on top of the mobile launcher -- which rests on a set of six, 22-foot-tall pedestals.

10
00:00:56,190 --> 00:00:57,036
The 12-million-pound load is carefully picked up and carried on the back of a crawler-transporter --

11
00:01:02,010 --> 00:01:07,076
a nearly 6-million-pound beast of a machine capable of incredible precision.

12
00:01:07,770 --> 00:01:08,483
It takes 20 to 30 minutes for the crawler's jacking, equalization and leveling system,

13
00:01:12,790 --> 00:01:17,723

called the JEL, to lift the entire load high enough to clear the supports.

14
00:01:17,840 --> 00:01:19,670
When the vehicle is ready and the weather is right, the shuttle launch director gives the go-ahead to begin the

15
00:01:23,810 --> 00:01:25,293
Ray Trapp/Crawler Manager "Well, probably other than launch-landing, one of the most critical times for

16
00:01:29,260 --> 00:01:30,763
the vehicle is between the VAB and the pad. Because there's no weather protection. There's no lightning prote

17
00:01:35,490 --> 00:01:41,090
The crawler and its extraordinary cargo start off down the 130-foot-wide crawlerway,

18
00:01:41,100 --> 00:01:45,100
inching along at the careful speed of almost 1 mile an hour.

19
00:01:45,450 --> 00:01:50,116
A team of about 30 United Space Alliance crawler drivers, technicians,

20
00:01:50,350 --> 00:01:56,616
mechanics and supervisors operate the crawler during the move, which takes at least six hours.

21
00:01:57,160 --> 00:01:57,383
The rollout team stays sharp during the 12- to 14-hour shift by taking turns at different jobs.

22
00:02:03,270 --> 00:02:04,230
Bob Myers/Crawler Engineer "So, it is a long evening -- typically we do it at night.

23
00:02:07,910 --> 00:02:08,500
But we do try to change out as far as in the driving positions and the other positions on the crawler,

24
00:02:14,120 --> 00:02:17,853
so that nobody gets too fatigued or anything like that."

25
00:02:18,020 --> 00:02:19,390
The crawler has identical front and rear driver cabs, a control room and two engine rooms,

26
00:02:22,650 --> 00:02:26,916
each with a huge, 2,750-horsepower diesel engine for propulsion.

27
00:02:28,850 --> 00:02:33,783
As slow and precise as the rollout is, crawler drivers have to plan ahead.

28
00:02:34,020 --> 00:02:35,863
Ray Trapp/Crawler Manager "So you have to really be on your game,

29
00:02:36,510 --> 00:02:36,786
and you have to be thinking ahead about where you want to be one, two, three minutes ahead of time."

30
00:02:42,900 --> 00:02:43,166
Even with so much strength and engineering capability, the crawler has a few, more basic needs to support.

31
00:02:49,700 --> 00:02:50,153
There are no meal breaks or bathroom
stops once the crawler gets going,

32
00:02:53,980 --> 00:02:54,900
so they bring it all with them -- including the bathroom.

33
00:02:56,860 --> 00:02:59,170
Ray Trapp/Crawler Manager "Anything we need, we bring with us. We're self-sufficient as far as water, electric

34
00:03:02,150 --> 00:03:03,403
We bring our own food, refrigerator and microwave,

35
00:03:04,230 --> 00:03:10,430
and one of the most important things we have with us here on the crawler is our Port-O-Lets."

36
00:03:11,180 --> 00:03:12,416
There's one more critical challenge ahead once the shuttle arrives at the launch pad.

37
00:03:15,610 --> 00:03:16,790
The crawler's JEL system must keep the shuttle level as it moves up the ramp to the top of the pad.

38

00:03:21,030 --> 00:03:22,033
Then, drivers in both cabs position the mobile launcher platform over another set of pedestals,

39
00:03:26,360 --> 00:03:26,396
with the help of a high-tech laser alignment system.

40
00:03:29,790 --> 00:03:31,586
Bob Myers/Crawler Engineer "Probably, I'll call it, the culmination of the trip is, of course,

41
00:03:34,260 --> 00:03:34,560
taking the crawler and the shuttle and the platform up on the pad and docking it.

42
00:03:39,360 --> 00:03:40,170
That's always kind of what you'd call a tense time, and you want to get it exactly right. You want to set it down

43
00:03:47,150 --> 00:03:47,213
At that point, the shuttle is secured at the launch pad and rollout is complete.

44
00:03:52,420 --> 00:03:52,856
Now the shuttle is ready to start final preparations for another exciting mission.

45
00:03:57,450 --> 00:04:03,916
Ray Trapp/Crawler Manager "We're coming down the hill, looking at the vehicle sitting on the pad,