



1
00:00:07,220 --> 00:00:05,660
my name is Shaun Hegarty

2
00:00:08,930 --> 00:00:07,230
a little bill the engineer on the Mars

3
00:00:10,190 --> 00:00:08,940
Science Laboratory so as you can see

4
00:00:12,350 --> 00:00:10,200
down there we just recently completed

5
00:00:14,539 --> 00:00:12,360
two testing the wheels and suspension

6
00:00:16,670 --> 00:00:14,549
system on the flight rover now the

7
00:00:18,170 --> 00:00:16,680
mobility system might look familiar

8
00:00:20,599 --> 00:00:18,180
it's a classic rocker-bogie suspension

9
00:00:22,790 --> 00:00:20,609
system we've used the last two

10
00:00:24,320 --> 00:00:22,800
generations of mars rovers and it does a

11
00:00:26,330 --> 00:00:24,330
lot of thing that actually the mobility

12
00:00:28,070 --> 00:00:26,340
system hasn't done in the past so for

13
00:00:30,320 --> 00:00:28,080

this mission mobility system not only

14

00:00:32,030 --> 00:00:30,330

drives the rover around it's also the

15

00:00:33,410 --> 00:00:32,040

landing gear the wheels are actually the

16

00:00:36,530 --> 00:00:33,420

first thing that make contact with the

17

00:00:37,700 --> 00:00:36,540

surface of Mars now just about

18

00:00:40,130 --> 00:00:37,710

everything you see on the mobility

19

00:00:42,080 --> 00:00:40,140

system looks black but that doesn't mean

20

00:00:43,369 --> 00:00:42,090

it's all the same material the tubes the

21

00:00:45,500 --> 00:00:43,379

suspension arms coming down to the

22

00:00:48,020 --> 00:00:45,510

wheels those are all titanium the tires

23

00:00:50,150 --> 00:00:48,030

themselves those are aluminum the shell

24

00:00:51,889 --> 00:00:50,160

on those tires is actually a piece of

25

00:00:53,420 --> 00:00:51,899

machined aluminum as about 30

26
00:00:55,010 --> 00:00:53,430
thousandths of an inch thick that's

27
00:00:57,439 --> 00:00:55,020
about the thickness of seven pieces of

28
00:00:59,869 --> 00:00:57,449
paper and when they're that thin

29
00:01:01,790 --> 00:00:59,879
it makes them actually soft so they

30
00:01:03,680 --> 00:01:01,800
behave in much the way that a rubber

31
00:01:06,440 --> 00:01:03,690
tire would behave and give you that

32
00:01:08,300 --> 00:01:06,450
springy load for it for landing for

33
00:01:10,130 --> 00:01:08,310
driving over rocks this test was sort of

34
00:01:11,570 --> 00:01:10,140
an obstacle course for the rover is we

35
00:01:13,520 --> 00:01:11,580
have to drive over obstacles with

36
00:01:15,080 --> 00:01:13,530
certain Heights and those correspond to

37
00:01:16,100 --> 00:01:15,090
rocks of certain Heights that we expect

38
00:01:18,020 --> 00:01:16,110

to see on the surface of Mars

39

00:01:19,670 --> 00:01:18,030

so those ramps were mimicking those

40

00:01:21,140 --> 00:01:19,680

rocks to make sure that we can actually

41

00:01:22,999 --> 00:01:21,150

drive over them and get to assignments

42

00:01:25,580 --> 00:01:23,009

now you notice that it's six wheel drive

43

00:01:27,830 --> 00:01:25,590

and all four corner wheels steer now

44

00:01:29,690 --> 00:01:27,840

those wheels can steer plus or minus 90

45

00:01:31,819 --> 00:01:29,700

degrees and what that allows you to do

46

00:01:34,760 --> 00:01:31,829

is actually position the wheels kind of

47

00:01:36,649 --> 00:01:34,770

toe in and turn the rover in place and

48

00:01:39,050 --> 00:01:36,659

it makes it a very maneuverable platform

49

00:01:40,760 --> 00:01:39,060

the position itself for science now

50

00:01:43,460 --> 00:01:40,770

Hawaii what you saw in that test was

51
00:01:45,410 --> 00:01:43,470
actually top speed of the rover about 4

52
00:01:47,539 --> 00:01:45,420
centimeters per second or to put another

53
00:01:49,580 --> 00:01:47,549
way it takes about 40 minutes to go the

54
00:01:51,830 --> 00:01:49,590
length of a football field we want to go

55
00:01:52,999 --> 00:01:51,840
slow because when you are 50 million

56
00:01:55,100 --> 00:01:53,009
miles away from the nearest service

57
00:01:56,899 --> 00:01:55,110
station it's ok to go a little slow and

58
00:01:58,160 --> 00:01:56,909
be a little careful my name is Shaun