



1
00:00:07,880 --> 00:00:06,140
I was one of the optimists that felt the

2
00:00:09,919 --> 00:00:07,890
Rovers would survive the first winter

3
00:00:12,080 --> 00:00:09,929
and that we would have an extended

4
00:00:14,560 --> 00:00:12,090
mission but I never thought they would

5
00:00:17,990 --> 00:00:14,570
last through three Martian winters and

6
00:00:19,820 --> 00:00:18,000
continued to explore for five years we

7
00:00:21,080 --> 00:00:19,830
thought that you know we we were gonna

8
00:00:23,150 --> 00:00:21,090
be lucky if we got three months out of

9
00:00:24,410 --> 00:00:23,160
these Rovers we've got five years out of

10
00:00:26,599 --> 00:00:24,420
these Rovers and they just keep going

11
00:00:28,160 --> 00:00:26,609
and it seems like every day is better

12
00:00:29,179 --> 00:00:28,170
than the day before the mission just

13
00:00:30,980 --> 00:00:29,189

keeps getting better and better and

14

00:00:32,269 --> 00:00:30,990

better the longer it goes how do I feel

15

00:00:39,160 --> 00:00:32,279

about the fact that it's going on for

16

00:00:43,490 --> 00:00:41,840

everyone on the planet Earth is sharing

17

00:00:45,529 --> 00:00:43,500

in the experience of exploring the

18

00:00:47,240 --> 00:00:45,539

surface of Mars through our two

19

00:00:50,060 --> 00:00:47,250

surrogate children Spirit and

20

00:00:52,639 --> 00:00:50,070

Opportunity you're seeing Mars with with

21

00:00:54,020 --> 00:00:52,649

3d color stereo vision just as if you

22

00:00:56,029 --> 00:00:54,030

were standing there yourself the Rovers

23

00:00:57,470 --> 00:00:56,039

are just about your height and so they

24

00:00:58,819 --> 00:00:57,480

see the world from your perspective and

25

00:01:00,470 --> 00:00:58,829

and just as you would see it if you were

26

00:01:03,049 --> 00:01:00,480

there now they are well-named

27

00:01:05,030 --> 00:01:03,059

opportunity really has been incredibly

28

00:01:07,310 --> 00:01:05,040

opportunistic and lucky it basically

29

00:01:08,960 --> 00:01:07,320

found water from its Lander found its

30

00:01:10,760 --> 00:01:08,970

own heat shield we were able to examine

31

00:01:12,140 --> 00:01:10,770

for the first time a heat shield that

32

00:01:15,020 --> 00:01:12,150

was used on another planet cuz it

33

00:01:17,270 --> 00:01:15,030

happened to land nearby spirit really

34

00:01:21,020 --> 00:01:17,280

has had to have a lot of spirit to to

35

00:01:23,359 --> 00:01:21,030

keep going when we were hit by dust

36

00:01:25,130 --> 00:01:23,369

storms we get cleaned off and that's

37

00:01:26,600 --> 00:01:25,140

what's enabled the rover to survive this

38

00:01:28,370 --> 00:01:26,610

long when we broke the right front wheel

39

00:01:30,200 --> 00:01:28,380

we've made one of the major scientific

40

00:01:32,840 --> 00:01:30,210

discoveries by dragging this wheel

41

00:01:34,190 --> 00:01:32,850

behind us we're digging this trench and

42

00:01:36,450 --> 00:01:34,200

we're seeing what's under the surface

43

00:01:38,580 --> 00:01:36,460

and what we're finding every

44

00:01:41,460 --> 00:01:38,590

look are these salts and minerals like

45

00:01:45,290 --> 00:01:41,470

silica and sulfur that had to have been

46

00:01:49,050 --> 00:01:45,300

put there by hot water this last winter

47

00:01:51,660 --> 00:01:49,060

when we had to park for more than nine

48

00:01:53,820 --> 00:01:51,670

months in the same location because we

49

00:01:56,280 --> 00:01:53,830

just didn't have enough power to to

50

00:01:58,710 --> 00:01:56,290

drive the one thing we could still do

51
00:02:00,899 --> 00:01:58,720
was take pictures and we did take over

52
00:02:04,440 --> 00:02:00,909
the course of many many weeks sort of

53
00:02:07,260 --> 00:02:04,450
one frame at a time this beautiful high

54
00:02:09,960 --> 00:02:07,270
resolution full-color image of the

55
00:02:12,090 --> 00:02:09,970
location around spirit and it's one of

56
00:02:15,979 --> 00:02:12,100
the most detailed highest resolution

57
00:02:19,100 --> 00:02:15,989
images we've ever taken from the ground

58
00:02:24,090 --> 00:02:19,110
Kenda Victoria was great I mean it was

59
00:02:25,979 --> 00:02:24,100
21 months of trudging endlessly across

60
00:02:28,500 --> 00:02:25,989
these Plains and hardly seeing the

61
00:02:29,820 --> 00:02:28,510
scenery change at all I mean you know

62
00:02:31,410 --> 00:02:29,830
Victoria is out there we've got the

63
00:02:33,210 --> 00:02:31,420

orbital images we know where it is we

64

00:02:36,000 --> 00:02:33,220

know how far it is we were measuring

65

00:02:38,990 --> 00:02:36,010

distance to the nearest meter and then

66

00:02:42,750 --> 00:02:39,000

one day we're right at the rim of it

67

00:02:44,759 --> 00:02:42,760

there's just this spectacular scenery

68

00:02:48,750 --> 00:02:44,769

this fabulous geology laid out in front

69

00:02:51,990 --> 00:02:48,760

of us and yeah the combination of just

70

00:02:53,310 --> 00:02:52,000

what a glorious view it was plus so much

71

00:02:55,800 --> 00:02:53,320

effort that went into getting there

72

00:02:57,569 --> 00:02:55,810

pulling up to the rental Victoria it was

73

00:03:00,930 --> 00:02:57,579

to me one really special moments in the

74

00:03:02,819 --> 00:03:00,940

whole mission one of the most memorable

75

00:03:05,850 --> 00:03:02,829

and poetic images from the entire

76

00:03:07,979 --> 00:03:05,860

mission is an image that spirit took of

77

00:03:10,199 --> 00:03:07,989

the earth it was the very first picture

78

00:03:13,110 --> 00:03:10,209

that has ever been taken of the earth

79

00:03:14,920 --> 00:03:13,120

the surface of another planet earth is

80

00:03:17,229 --> 00:03:14,930

the evening star

81

00:03:19,420 --> 00:03:17,239

Mars is such a complicated place and

82

00:03:24,160 --> 00:03:19,430

these are such capable vehicles that

83

00:03:25,660 --> 00:03:24,170

there will never come a time regardless

84

00:03:28,059 --> 00:03:25,670

of whether when this mission ends

85

00:03:30,899 --> 00:03:28,069

whether it's tomorrow or five years from

86

00:03:34,030 --> 00:03:30,909

now there's always going to be some