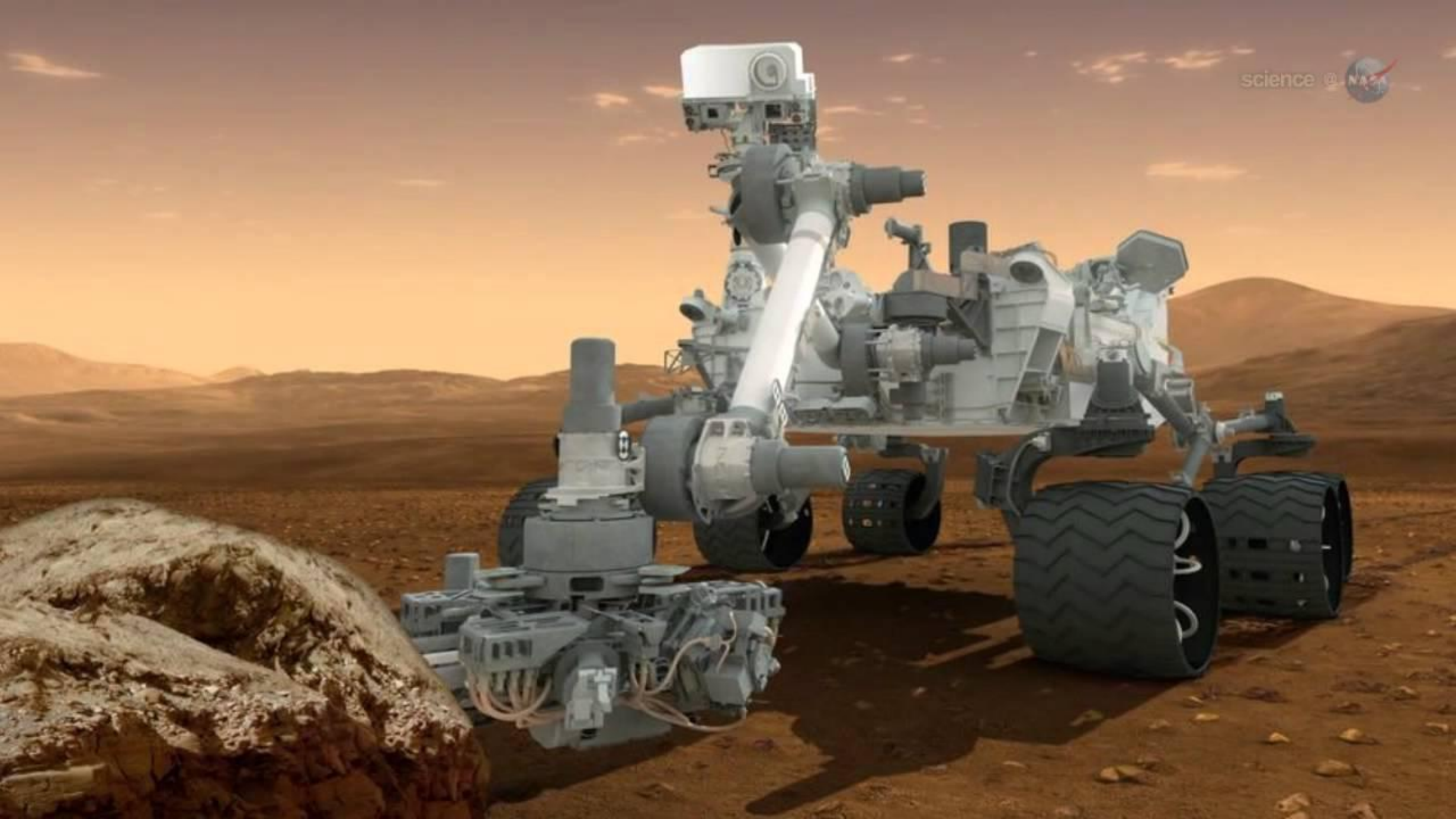
science @ NASA

1
00:00:09,990 --> 00:00:07,190
where will curiosity go first presented

2
00:00:12,629 --> 00:00:10,000
by science at nasa

3
00:00:15,430 --> 00:00:12,639
by now it's old news that nasa's new

4
00:00:17,910 --> 00:00:15,440
mars rover curiosity is resting safely

5
00:00:19,990 --> 00:00:17,920
on the surface of the red planet after a

6
00:00:21,910 --> 00:00:20,000
daredevil landing that had the nation

7
00:00:24,470 --> 00:00:21,920
holding its breath

8
00:00:25,750 --> 00:00:24,480
now mission scientists are anxious to

9
00:00:27,670 --> 00:00:25,760
start moving

10
00:00:30,630 --> 00:00:27,680
with such a sweet set of wheels at their

11
00:00:33,270 --> 00:00:30,640
disposal and the open road before them

12
00:00:34,950 --> 00:00:33,280
just where will they go first

13
00:00:37,110 --> 00:00:34,960

we won't have to travel far for

14
00:00:39,590 --> 00:00:37,120
excitement says project scientist john

15
00:00:41,110 --> 00:00:39,600
gratzinger we landed in the best

16
00:00:45,029 --> 00:00:41,120
possible place within the landing

17
00:00:47,110 --> 00:00:45,039
ellipse the bottom of an alluvial fan

18
00:00:49,750 --> 00:00:47,120
an alluvial fan is a pattern of

19
00:00:51,990 --> 00:00:49,760
sedimentary rocks dirt and sand

20
00:00:54,790 --> 00:00:52,000
deposited by flowing water

21
00:00:55,910 --> 00:00:54,800
in this case perhaps an ancient martian

22
00:00:58,150 --> 00:00:55,920
river

23
00:01:00,709 --> 00:00:58,160
since life as we know it requires liquid

24
00:01:03,110 --> 00:01:00,719
water this is an excellent first place

25
00:01:06,149 --> 00:01:03,120
to search for clues of a mars that was

26
00:01:08,390 --> 00:01:06,159
once hospitable to life

27
00:01:10,789 --> 00:01:08,400
the alluvial fan indicates that water

28
00:01:12,390 --> 00:01:10,799
flowed across the surface so we'll head

29
00:01:14,710 --> 00:01:12,400
downhill to where water might have

30
00:01:16,469 --> 00:01:14,720
collected we'll be looking for minerals

31
00:01:17,910 --> 00:01:16,479
like salts that might tell us where

32
00:01:19,990 --> 00:01:17,920
water has been

33
00:01:22,310 --> 00:01:20,000
it's kind of like a scavenger hunt with

34
00:01:24,230 --> 00:01:22,320
minerals as clues

35
00:01:26,789 --> 00:01:24,240
after that gratzinger says it's full

36
00:01:29,270 --> 00:01:26,799
speed ahead to the base of mount sharp a

37
00:01:31,990 --> 00:01:29,280
5 000 meter tall mountain that holds

38
00:01:33,990 --> 00:01:32,000

within its ancient layers possible clues

39
00:01:35,670 --> 00:01:34,000
to life on the red planet

40
00:01:38,149 --> 00:01:35,680
we'll have to make a deal with ourselves

41
00:01:39,990 --> 00:01:38,159
not to stop too often along the way

42
00:01:42,310 --> 00:01:40,000
mount sharp is the reason we chose this

43
00:01:44,389 --> 00:01:42,320
landing site so we need to hightail it

44
00:01:46,310 --> 00:01:44,399
on over there

45
00:01:48,389 --> 00:01:46,320
deputy program manager richard cook

46
00:01:49,350 --> 00:01:48,399
describes the temptation to stop along

47
00:01:51,749 --> 00:01:49,360
the way

48
00:01:54,149 --> 00:01:51,759
it'll be like taking a family vacation

49
00:01:56,630 --> 00:01:54,159
but instead of the family you have 400

50
00:01:58,709 --> 00:01:56,640
scientists who want to stop and look at

51
00:02:00,870 --> 00:01:58,719
every site

52
00:02:02,630 --> 00:02:00,880
curiosity is bristling with instruments

53
00:02:04,469 --> 00:02:02,640
custom made to look for the chemical

54
00:02:07,429 --> 00:02:04,479
building blocks of life

55
00:02:10,309 --> 00:02:07,439
a laser on curiosity's mast can take aim

56
00:02:12,470 --> 00:02:10,319
at interesting rocks and vaporize small

57
00:02:13,589 --> 00:02:12,480
spots on them from up to seven meters

58
00:02:16,309 --> 00:02:13,599
away

59
00:02:18,470 --> 00:02:16,319
the microblasts produce plasma clouds

60
00:02:20,869 --> 00:02:18,480
and the scientists can examine the light

61
00:02:23,110 --> 00:02:20,879
reflected off of these clouds to learn

62
00:02:25,750 --> 00:02:23,120
what the rocks are made of

63
00:02:28,470 --> 00:02:25,760

the mast also sports a high resolution

64
00:02:30,470 --> 00:02:28,480
camera called mast cam which has already

65
00:02:32,309 --> 00:02:30,480
begun observing and photographing the

66
00:02:35,030 --> 00:02:32,319
rover's surroundings

67
00:02:37,910 --> 00:02:35,040
the rover's robotic arm wields its own

68
00:02:40,229 --> 00:02:37,920
array of instruments the alpha particle

69
00:02:42,150 --> 00:02:40,239
x-ray spectrometer will measure the

70
00:02:45,110 --> 00:02:42,160
abundance of chemical elements in the

71
00:02:46,309 --> 00:02:45,120
dust soils rocks and samples the rover

72
00:02:48,949 --> 00:02:46,319
gathers

73
00:02:51,190 --> 00:02:48,959
the mars hand lens imager acts like a

74
00:02:54,070 --> 00:02:51,200
geologist's magnifying lens that can

75
00:02:56,390 --> 00:02:54,080
take its own color photos

76
00:02:58,309 --> 00:02:56,400
ultimately samples will be delivered to

77
00:02:59,430 --> 00:02:58,319
a pair of on-board laboratory

78
00:03:01,830 --> 00:02:59,440
instruments

79
00:03:04,390 --> 00:03:01,840
one of them sam short for sample

80
00:03:06,710 --> 00:03:04,400
analysis at mars will explore the red

81
00:03:07,670 --> 00:03:06,720
planet by sniffing the air bird dog

82
00:03:10,149 --> 00:03:07,680
style

83
00:03:12,869 --> 00:03:10,159
it has vents for sniffing the atmosphere

84
00:03:15,509 --> 00:03:12,879
and detecting gases like methane

85
00:03:18,070 --> 00:03:15,519
sam can also sniff the gases released by

86
00:03:19,270 --> 00:03:18,080
rock or soil samples it heats in its own

87
00:03:22,149 --> 00:03:19,280
oven

88
00:03:24,710 --> 00:03:22,159

can 400 scientists gripped by the thrill

89
00:03:26,390 --> 00:03:24,720
of the greatest family vacation ever

90
00:03:29,750 --> 00:03:26,400
really rushed to their destination

91
00:03:32,390 --> 00:03:29,760
without stopping to savor every site

92
00:03:34,630 --> 00:03:32,400
gratzinger makes just one guarantee

93
00:03:37,750 --> 00:03:34,640
in the coming months and years curiosity

94
00:03:40,149 --> 00:03:37,760
will tell us an incredible story

95
00:03:42,710 --> 00:03:40,159
for more postcards from curiosity as it