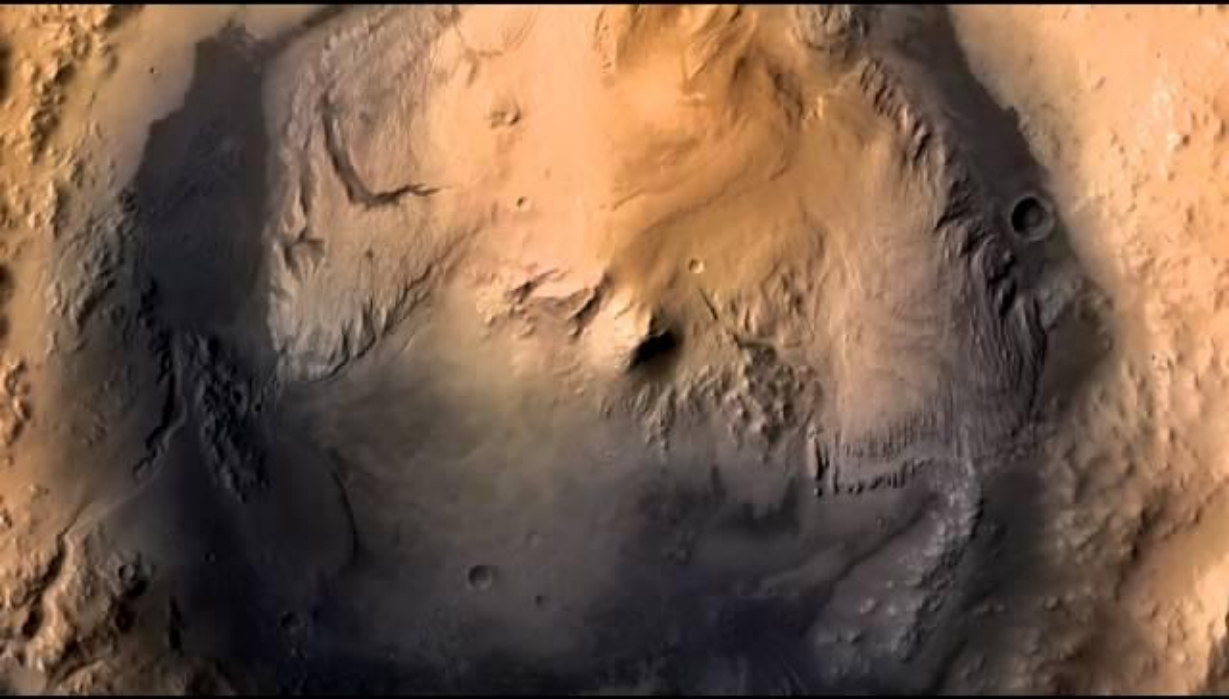

1
00:00:06,060 --> 00:00:12,299
Curiosity is getting ready to make a grand entrance!

2
00:00:12,299 --> 00:00:18,600
The largest rover ever sent to another planet, will touch down in the middle of the night,

3
00:00:18,600 --> 00:00:24,710
after a spectacular entry into the Martian atmosphere and descent to the surface.

4
00:00:24,710 --> 00:00:28,251
And liftoff of the Atlas V with Curiosity.

5
00:00:28,251 --> 00:00:33,000
Curiosity rover made a picture-perfect launch in November 2011.

6
00:00:33,000 --> 00:00:40,700
And Now, after more than 8 months and 350 million miles, it’s time to get down to

7
00:00:40,700 --> 00:00:41,700
business.

8
00:00:41,700 --> 00:00:47,060
But first Curiosity must get down to that surface safely.

9
00:00:47,060 --> 00:00:54,440
When she arrives at Mars, Curiosity has seven minutes to go from 13,000 miles an hour to

10
00:00:54,440 --> 00:00:56,190
a soft landing.

11
00:00:56,190 --> 00:01:01,780
These so called “seven minutes of terror”

encompass a sequence of steps that we cannot

12
00:01:01,780 --> 00:01:09,030
control or even witness in real time because
signals take fourteen minutes to reach Earth

13
00:01:09,030 --> 00:01:10,159
from Mars.

14
00:01:10,159 --> 00:01:16,350
Curiosity's heat shield burning at a temperature
of nearly 3000 degrees Fahrenheit will protect

15
00:01:16,350 --> 00:01:20,079
the rover as it slows down rapidly.

16
00:01:20,079 --> 00:01:25,450
On the way down, the spacecraft fires thrusters
to stay on target for Gail Crater

17
00:01:25,450 --> 00:01:35,939
Then, at 1000 miles per hour, the chute opens,
slowing the spacecraft below the speed of

18
00:01:35,939 --> 00:01:36,939
sound.

19
00:01:36,939 --> 00:01:42,619
Next, the heat shield is jettisoned, and Curiosity
begins looking for the surface with landing

20
00:01:42,619 --> 00:01:48,560
radars that lets onboard computers know how
far it is above the ground.

21
00:01:48,560 --> 00:01:54,890
About five minutes into entry, the spacecraft
is moving about 200 miles per hour and is

22

00:01:54,890 --> 00:02:04,649
about a mile up, the Descent Stage with curiosity
fastened underneath, tucked drops from the

23
00:02:04,649 --> 00:02:11,230
parachute, fires up its landing engines and
slows the system to a near stop.

24
00:02:11,230 --> 00:02:17,989
Curiosity first gets to stretch her legs at
approximately 2 miles per hour, about 60 feet

25
00:02:17,989 --> 00:02:19,189
above the ground.

26
00:02:19,189 --> 00:02:27,180
With wheels deployed, Curiosity is lowered
on a Skycrane to the surface.

27
00:02:27,180 --> 00:02:32,530
After touch down, the Sky Crane's work is
done and it cuts loose to fly a safe distance

28
00:02:32,530 --> 00:02:37,129
away from our newest rover on Mars.

29
00:02:37,129 --> 00:02:46,459
In a few days as Curiosity stands up her mast,
she will give us our first close up of Gale

30
00:02:46,459 --> 00:02:54,370
Crater—an impact crater 96 miles wide with
a 3-mile high mountain at its center.

31
00:02:54,370 --> 00:02:59,670
The crater's rock layers were laid down
and then eroded away, showing us a cross-section

32
00:02:59,670 --> 00:03:01,420
of Mars' history.

33
00:03:01,420 --> 00:03:07,159
Liquid water was necessary to form the geology
we've seen from orbit…and that makes Gale

34
00:03:07,159 --> 00:03:16,430
Crater a great place to look for evidence
of places that could have once harbored life.

35
00:03:16,430 --> 00:03:22,450
During her two Earth year primary mission,
Curiosity will tell us about Mars' geology,

36
00:03:22,450 --> 00:03:27,799
weather and current radiation levels, which
are key to sending humans there someday.

37
00:03:27,799 --> 00:03:32,739
The rover's laser will examine rocks and
will help find places to take samples for

38
00:03:32,739 --> 00:03:38,549
the onboard chemistry lab that can identify
minerals and organic materials—the building

39
00:03:38,549 --> 00:03:41,170
blocks of life.

40
00:03:41,170 --> 00:03:49,799
This nuclear-powered, one-ton rover will take
us ever closer to examining deep layers of