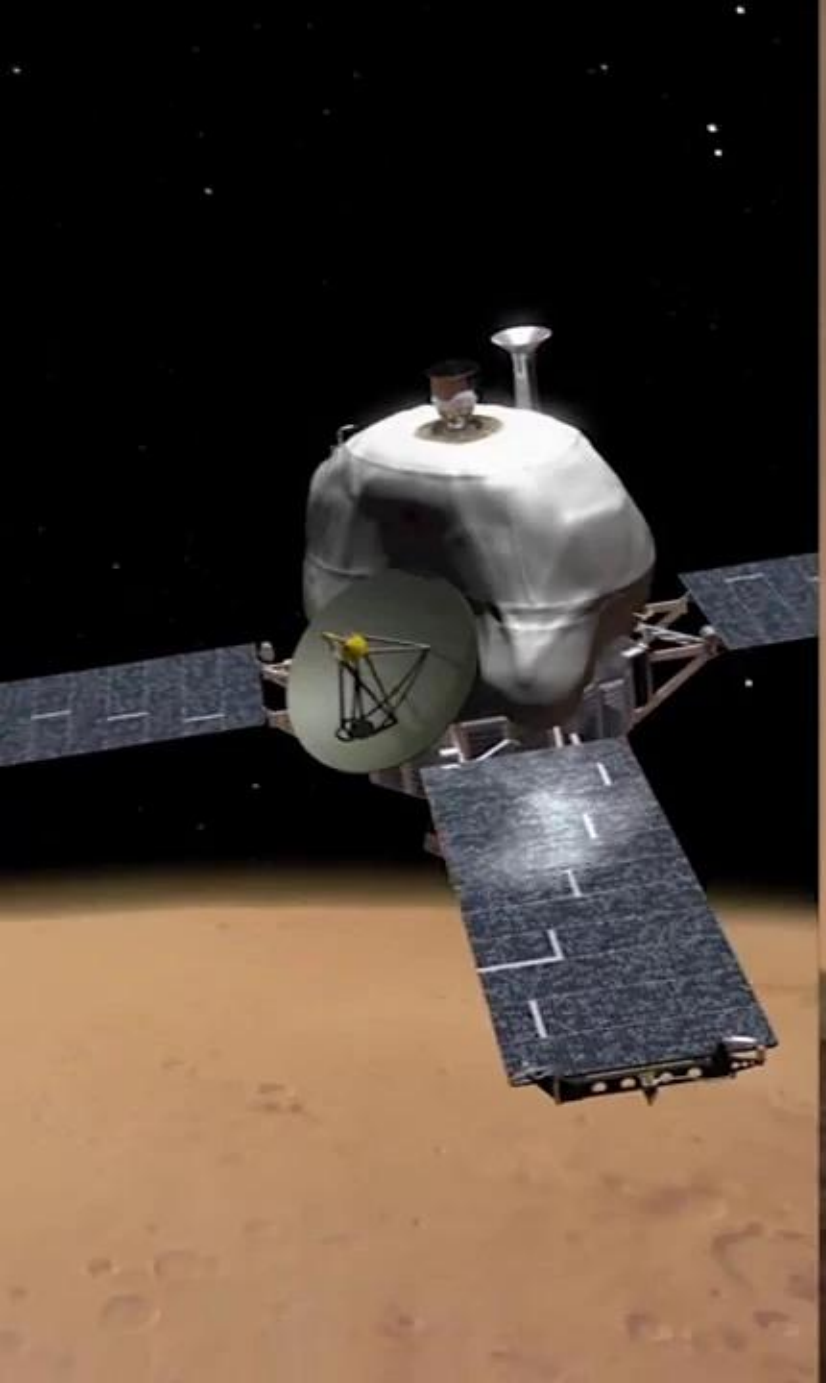

1
00:00:00,740 --> 00:00:02,000
[music]

2
00:00:05,660 --> 00:00:11,730
The planet Mars has been mysterious for
centuries but over the past few decades

3
00:00:11,730 --> 00:00:15,719
a fleet of orbiting and landed
spacecraft has greatly advanced our

4
00:00:15,719 --> 00:00:20,340
understanding of it. Based on this
knowledge Mars scientists are now ready

5
00:00:20,340 --> 00:00:25,199
to take the next big step bringing
Martian samples back to earth where the

6
00:00:25,199 --> 00:00:27,930
full power of our terrestrial
laboratories could be applied to

7
00:00:27,930 --> 00:00:32,700
unlocking the story of the red planet's
geology climate and especially its

8
00:00:32,700 --> 00:00:38,760
potential for life, either in the past or
even today. But however you tackle it

9
00:00:38,760 --> 00:00:43,410
returning samples from Mars is
definitely a complicated problem, so how

10
00:00:43,410 --> 00:00:48,480
could we actually get a sample from Mars? One approach is to use a series of three

11
00:00:48,480 --> 00:00:54,449

spacecraft working together like a relay team to deliver samples to Earth. NASA's

12
00:00:54,449 --> 00:00:59,100
next Mars rover, currently in development and planned for launch in 2020, will

13
00:00:59,100 --> 00:01:02,789
acquire a set of carefully selected samples of rocks and surface material

14
00:01:02,789 --> 00:01:08,159
and store them in sealed tubes for possible return to Earth. NASA and the

15
00:01:08,159 --> 00:01:10,950
European Space Agency are now working together

16
00:01:10,950 --> 00:01:14,340
to explore options for a pair of missions that could take the next steps

17
00:01:14,340 --> 00:01:19,770
to bring these samples back. In one scenario after the Mars 2020 Rover has

18
00:01:19,770 --> 00:01:22,049
placed its collected samples on the Martian surface

19
00:01:22,049 --> 00:01:27,299
a second follow-on mission would land nearby, deploy a small Rover to fetch the

20
00:01:27,299 --> 00:01:31,020
samples, and bring them back to the lander where there would be loaded into

21
00:01:31,020 --> 00:01:37,880

a container and placed atop a small
rocket. The rocket would then lift off

22
00:01:38,060 --> 00:01:42,530
carrying the samples up into Mars orbit.

23
00:01:42,560 --> 00:01:47,370
Waiting in orbit will be a third
spacecraft, an Earth return orbiter that

24
00:01:47,370 --> 00:01:52,440
would find the samples in space, catch up with them, capture the container and

25
00:01:52,440 --> 00:01:58,830
bring it back to Earth. With Mars samples
safely back on earth scientists around

26
00:01:58,830 --> 00:02:02,130
the world would be able to study them in
state-of-the-art laboratories for

27
00:02:02,130 --> 00:02:07,320
decades to come. The payoff of a sample
return would be a breakthrough in our