



MSL



Mars 2020

1
00:00:00,734 --> 00:00:01,968
Mars 2020 Mission Overview

2
00:00:02,001 --> 00:00:03,636
[Narrator] NASA's next Mars
rover is in development ■

3
00:00:03,669 --> 00:00:05,638
and has an ambitious mission.

4
00:00:05,671 --> 00:00:08,441
Decades of Mars research
from previous spacecraft

5
00:00:08,474 --> 00:00:11,644
have shown the planet not only
had water in the ancient past,

6
00:00:11,677 --> 00:00:14,480
but had environments that
could have supported life.

7
00:00:14,513 --> 00:00:16,949
[Thomas Zurbuchen] Mars is
our neighboring planet

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00:00:16,982 --> 00:00:18,985
and in many ways the
most similar to us ■

9
00:00:19,018 --> 00:00:20,887
and certainly in its history.

10
00:00:20,920 --> 00:00:24,490
And the question whether
ancient life was there

11
00:00:24,523 --> 00:00:27,527
is still the question that

keeps us up at night.

12

00:00:28,561 --> 00:00:31,798

[Ken Farley] Mars 2020

has two new objectives:

13

00:00:31,831 --> 00:00:34,901

to specifically seek

the signs of life,

14

00:00:34,934 --> 00:00:38,137

and then sample materials

and prepare a cache

15

00:00:38,170 --> 00:00:41,240

that could be returned to

Earth by a future mission.

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00:00:41,273 --> 00:00:43,943

[Thomas Zurbuchen] Mars

2020 is really the essential

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00:00:43,976 --> 00:00:46,345

first part of a sample

return mission.

18

00:00:46,378 --> 00:00:49,282

So it actually looks at the

environment of these samples

19

00:00:49,315 --> 00:00:51,517

and then collects them

and stores them.

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00:00:51,550 --> 00:00:55,054

Afterwards we will of course go

and bring these samples back.

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00:00:55,087 --> 00:00:59,192

So Mars 2020 is the first half

of a return trip.

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00:01:00,493 --> 00:01:04,197
[Farley] The Mars 2020 mission,
to the maximum extent possible,

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00:01:04,230 --> 00:01:08,634
follows the Mars Science
Laboratory (Curiosity) Mission.

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00:01:08,667 --> 00:01:10,903
We're gonna use a very
similar rocket;

25

00:01:10,936 --> 00:01:12,738
a very similar cruise stage;

26

00:01:12,771 --> 00:01:14,941
a very similar Entry,
Descent and Landing;

27

00:01:14,974 --> 00:01:18,811
and the rover when you step
back will look almost identical.

28

00:01:18,844 --> 00:01:21,347
[Erisa K Hines Stilley] Not only
were a lot of designs already

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00:01:21,380 --> 00:01:23,683
developed for the most part, but
we're also using a lot of spare

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00:01:23,716 --> 00:01:27,954
hardware that we had from MSL
(or "Curiosity") for Mars 2020.

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00:01:27,987 --> 00:01:30,423
If you know where to look on
Lab, you can walk around and see

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00:01:30,456 --> 00:01:33,126
a lot of the EDL hardware and
the cruise stage hardware

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00:01:33,159 --> 00:01:34,560
that's already been built.

34

00:01:34,593 --> 00:01:36,462
[Farley] And this is really
important for understanding

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00:01:36,495 --> 00:01:38,131
why this mission makes sense.

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00:01:38,164 --> 00:01:41,167
We have to do relatively little
in the way of new development.

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00:01:41,200 --> 00:01:44,704
This saves money; it saves risk;
it saves time ■

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00:01:44,737 --> 00:01:47,540
it's the right way to pursue
this kind of mission.

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00:01:48,708 --> 00:01:50,576
[Narrator] Mars 2020 also
features new technologies

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00:01:50,609 --> 00:01:52,111
for Entry, Descent and Landing■-

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00:01:52,144 --> 00:01:54,514
allowing it to target a
smaller landing zone,

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00:01:54,547 --> 00:01:57,416

and even divert from
known risks in the area.

43

00:01:58,717 --> 00:02:00,052
[Hines Stilley] It means that we
can both go to places that are

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00:02:00,085 --> 00:02:01,787
maybe more interesting
to the scientists

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00:02:01,820 --> 00:02:04,257
because we're able to handle
places with more hazards,

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00:02:04,290 --> 00:02:07,760
as well as land closer to the
things they're interested in

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00:02:07,793 --> 00:02:10,796
off the bat ■ so we get to
the science they care about,

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00:02:10,829 --> 00:02:12,265
and more quickly.

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00:02:12,298 --> 00:02:14,367
[Farley] The three key sites
that we are considering

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00:02:14,400 --> 00:02:17,803
right now share one thing
in common: they are all

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00:02:17,836 --> 00:02:20,640
environments that
might have been habitable

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00:02:20,673 --> 00:02:22,308
in the very distant past.

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00:02:22,341 --> 00:02:25,178

One of them is the
floor of an ancient lake;

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00:02:25,211 --> 00:02:27,180

another is a hot spring;

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00:02:27,213 --> 00:02:30,016

and the third one is a site
where hot water interacted

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00:02:30,049 --> 00:02:32,785

with rocks in the
shallow subsurface.

57

00:02:32,818 --> 00:02:35,588

We have instruments on board
which are expressly designed

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00:02:35,621 --> 00:02:39,492

to seek evidence of ancient life
■ what we call "biosignatures"

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00:02:39,525 --> 00:02:44,063

■ and we have the capability
to prepare samples,

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00:02:44,096 --> 00:02:45,398

drill them out of a rock,

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00:02:45,431 --> 00:02:46,799

seal them in a tube,

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00:02:46,832 --> 00:02:48,834

so that a future mission could
go and bring them up ■

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00:02:48,867 --> 00:02:50,303

we call that “caching.”

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00:02:50,336 --> 00:02:53,973
[Zurbuchen) So it is a first
of a new type of mission,

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00:02:54,006 --> 00:02:57,276
which is to bring samples back
to the best labs we have,

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00:02:57,309 --> 00:02:59,111
which are here on Earth.

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00:03:00,279 --> 00:03:05,218
Mars 2020 is a pivotal mission
in our search for life

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00:03:05,251 --> 00:03:08,221
that could finally answer
the age-old question:

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00:03:08,254 --> 00:03:09,855
“Are we alone?”

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00:03:10,589 --> 00:03:11,958
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