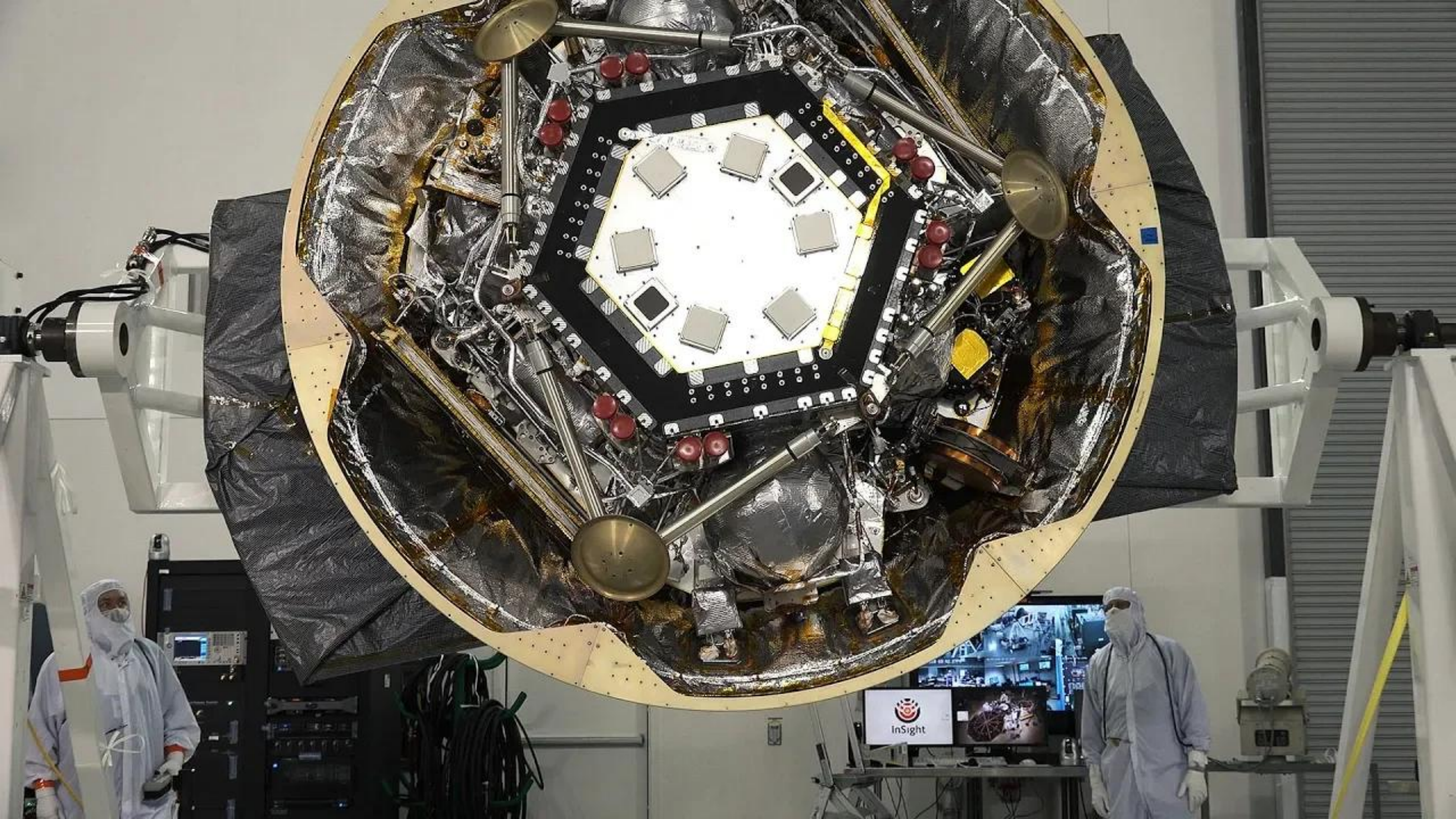
InSight

1
00:00:06,700 --> 00:00:10,070
NASA is about to attempt something they've
never done before.

2
00:00:10,070 --> 00:00:15,139
"This is the first time we've had an interplanetary
launch from Vandenberg Air Force Base in California.

3
00:00:15,139 --> 00:00:21,250
The cool thing about this launch is that we've
got such a capable rocket, the Atlas V, we

4
00:00:21,250 --> 00:00:23,060
don't have to launch from Florida."

5
00:00:23,060 --> 00:00:27,130
"InSight is going to be the first time we've
had a spacecraft leave Earth's orbit launching

6
00:00:27,130 --> 00:00:28,340
from California.

7
00:00:28,340 --> 00:00:33,050
We've actually done studies for it, even up
to decades ago, but it just comes down to

8
00:00:33,050 --> 00:00:37,760
whether or not the mission had extra propellant
left over, and whether there was an operational

9
00:00:37,760 --> 00:00:41,030
reason to switch from an East Coast launch
to a West Coast.

10
00:00:41,030 --> 00:00:43,080
This is just the first time all of it came
together."

11
00:00:43,080 --> 00:00:47,540

"What we're going to do is we're going to
unload the spacecraft really, really carefully

12
00:00:47,540 --> 00:00:50,860
and then we're going to drive it a couple
of miles to the Astrotech facility, where

13
00:00:50,860 --> 00:00:54,080
they have a clean room all set up for us.

14
00:00:54,080 --> 00:00:55,230
Got about two months here.

15
00:00:55,230 --> 00:01:00,540
All we got to do is clean it up, test it out,
put the fuel in the tanks, and bolt it on

16
00:01:00,540 --> 00:01:04,839
the rocket, and off we go to Mars."

17
00:01:04,839 --> 00:01:07,280
"It's unlike other missions that we've done
on Mars.

18
00:01:07,280 --> 00:01:11,259
We have a number of orbiters, a number of
landers that we've successfully explored this

19
00:01:11,259 --> 00:01:12,509
amazing planet.

20
00:01:12,509 --> 00:01:16,520
But this actually is the first mission where
we're looking on the inside, the inner space

21
00:01:16,520 --> 00:01:17,520
of Mars."

22
00:01:17,520 --> 00:01:20,719

Sending a science mission to Mars is not easy.

23
00:01:20,719 --> 00:01:23,520
Landing a probe on the surface is even harder.

24
00:01:23,520 --> 00:01:28,420
InSight’s compact and incredibly efficient
design makes sure it gets there and touches

25
00:01:28,420 --> 00:01:29,549
down safely.

26
00:01:29,549 --> 00:01:34,850
"So the crew stage itself is the critical
component that actually gets us to Mars.

27
00:01:34,850 --> 00:01:38,369
There's an aeroshell that absorbs the heat
as we re-enter the atmosphere.

28
00:01:38,369 --> 00:01:42,799
That aeroshell enables us to go through the
atmosphere of Mars successfully without getting

29
00:01:42,799 --> 00:01:44,939
the inside of the lander itself too hot.

30
00:01:44,939 --> 00:01:47,729
We deploy a parachute, that parachute does
two things.

31
00:01:47,729 --> 00:01:52,649
It really ensures the stability of the aeroshell
as it's starting to get closer to the surface.

32
00:01:52,649 --> 00:01:57,689
It also slows down the spacecraft further
until finally we drop out of the combination

33

00:01:57,689 --> 00:02:03,759
back shell and parachute and then we do a
propulsive decent down to the surface."

34
00:02:03,759 --> 00:02:13,220
"Planetary protection is what we do to responsibly
explore other planets and moons in our solar system.

35
00:02:14,220 --> 00:02:17,920
In order to do that, we need to make sure
we send a clean spacecraft there.

36
00:02:17,920 --> 00:02:21,640
We would hate to get to another planet or
moon and think we discovered life, but it

37
00:02:21,640 --> 00:02:24,090
was actually something that we brought with
us.

38
00:02:24,090 --> 00:02:28,409
So we collect our samples on InSight, any
part of InSight that's going to land on the

39
00:02:28,409 --> 00:02:33,540
surface of Mars, we bring it back to our lab
and we process it using a NASA procedure.

40
00:02:33,540 --> 00:02:38,500
If we run into a situation where we take a
sample and it comes back as having higher

41
00:02:38,500 --> 00:02:43,691
number of bacteria then what we want, then
we make sure that engineers go back in and

42
00:02:43,691 --> 00:02:49,180
clean those surfaces with the whole idea that
eventually with missions that have life detection

43

00:02:49,180 --> 00:02:55,750
capabilities, we don't want to cloud our ability
to potentially find life on another planet

44
00:02:55,750 --> 00:02:56,750
or moons."

45
00:02:56,750 --> 00:03:01,030
The work being done now here at Astrotech
is critical to insure Insight’s safe arrival

46
00:03:01,030 --> 00:03:03,560
and landing on the red planet.

47
00:03:03,560 --> 00:03:08,720
It has to be perfect before it leaves Earth
on the six-month journey to Mars.

48
00:03:08,720 --> 00:03:14,220
As soon as the spacecraft is fueled and tested,
InSight will be encapsulated and sent to the