1
00:00:00,000 --> 00:00:05,000
(MUSIC)

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00:00:05,000 --> 00:00:07,000
Hi! This is Mike Meacham again at the Jet Propulsion Laboratory

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00:00:07,000 --> 00:00:10,000
and I want to talk to you some more about some other inflatable technologies

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00:00:10,000 --> 00:00:14,000
we're working on to slow down bigger and heavier things on Mars.

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00:00:14,000 --> 00:00:16,000
(music)

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00:00:16,000 --> 00:00:19,000
When we're coming into Mars, we're going over 10,000 miles an hour,

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00:00:19,000 --> 00:00:23,000
several times faster than the speed of sound, and we have to wait until we're only

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00:00:23,000 --> 00:00:28,000
going twice the speed of sound before we can deploy our parachute.

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So we wanted to work on some other device that we could inflate when we're going even faster than that,

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00:00:33,000 --> 00:00:36,000
so we can pull the E brake when were coming in.

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00:00:36,000 --> 00:00:38,000
(music)

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00:00:38,000 --> 00:00:43,000
This other device we call the SIAD, Supersonic Inflatable Aerodynamic Decelerator, SIAD.

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We are able to inflate this around our heat shield and increase our drag area

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00:00:48,000 --> 00:00:51,000
by sometimes even twice as much as it normally would be.

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00:00:51,000 --> 00:00:55,000
So we saw that crazy test with the parachute before, right?

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00:00:55,000 --> 00:00:58,000
That's in order for us to load up our parachute to the same types of forces

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00:00:58,000 --> 00:01:03,000
it's going to feel on Mars. We wanted to do the same thing with the SIAD.

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00:01:03,000 --> 00:01:06,000
So we went back to the same track. We had to make a whole new rocket sled.

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00:01:06,000 --> 00:01:09,000
It's a huge one. It's bigger than a house. It weighs 50,000 lbs.

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00:01:09,000 --> 00:01:12,000
So we strap a bunch of rockets to this huge sled.

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00:01:12,000 --> 00:01:16,000
We drive this down the track going about 250 miles per hour and inflate the SIAD

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00:01:16,000 --> 00:01:21,000
and we study all the different things that are going to happen to it under this same aerodynamic load.

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00:01:21,000 --> 00:01:26,000
The atmosphere on Mars is a whole lot thinner than the atmosphere we have here on Earth.

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00:01:26,000 --> 00:01:31,000
There's really only one place you can go to test your devices in a relevant environment

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00:01:31,000 --> 00:01:35,000
and that's way up in the sky here -- the upper atmosphere.

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00:01:35,000 --> 00:01:38,000
Pretty soon we're going to go out to Hawaii to a facility that they have there.

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00:01:38,000 --> 00:01:41,000
We're going to take a balloon that's literally the size of a whole football stadium.

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00:01:41,000 --> 00:01:47,000
It's going to pick up our test vehicle. It's going to go up about 120,000 feet into the upper atmosphere

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00:01:47,000 --> 00:01:49,000
Our test vehicle is going to drop off the balloon.

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00:01:49,000 --> 00:01:54,000
It's going to spin up like a football for stability. Shoot sideways across the sky with a huge rocket.

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Our rocket is going to bring it up to four times the speed of sound,

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where we can test our SIAD and our parachute in the same exact type of environment

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00:02:02,000 --> 00:02:05,000
that they're going to see on Mars.

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00:02:05,000 --> 00:02:08,000
As crazy as these tests sound, they actually performed them over 40 years ago

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00:02:08,000 --> 00:02:12,000
and we've been using that technology since then to land rovers on Mars.