

The Challenges of Getting to Mars

Phoenix Mars Lander: Transport for Launch

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Phoenix is a lander that's going to the north polar highlands of Mars ...

Text: Deborah Bass

... to look for evidence of .

..

Deputy Project Scientist, Phoenix Mission

... habitable zones, places where life might have existed in the past.

Text: 3:30 a.m. -- Lockheed Martin

Text: Littleton, Colorado

Moving flight hardware ...

Text: Chris Lewicki

... not even to mention ...

Text: Flight Systems Engineer, Phoenix Mission

... an entire spacecraft is usually a delicate affair. It's very meticulously coordinated.

There's, you know, arranging a police escort at 3 in the morning on a Monday morning, and all the state and local authorities that need to know about something like that, and all the paperwork that's required to essentially close down a section of the highway for a period of time.

There's a whole analysis process that goes along with making sure that the spacecraft, on the back of a truck, on a flatbed trailer, in the box that it is in, isn't going to be exposed to any environment that it's not rated for.

So we know how much force a pothole in the road will induce on the spacecraft.

Just a little bit into the trip, we had kind of a light rain. And that's another thing that just makes you ill at ease with your spacecraft that you've had in a clean room up until that point in time.

We had to fly a spacecraft on a plane all the way from one side of the country to the

other.

Text: C-17 Globemaster III

And that is a scary thing.

Text: 10:00 a.m. -- Buckley Air Force Base

Text: 4 Hours to Departure

And you kind of look at the box and you look at the aircraft and you wonder, 'Is it going to fit in there?'

When they open those rear doors, there's this cavernous space inside. Even as big as it is, this box just barely fits inside of it. It was a really kind of manual, brute-force operation.

Text: 12:30 p.m. -- 1.5 Hours to Departure

It looks just like we're loading a box onto a plane. Inside this box is such an enormous treasure. This is something that these hundreds and hundreds of people have worked on to make it all come together. We've got Air Force pilots, most trustworthy people. They are flying this spacecraft from Denver to Cape Canaveral. And we trust these pilots. But we still worry. We're tracking this spacecraft and this plane as it's flying across the country. And as Florida comes into view, we think, 'Oh (sigh), we're OK.' And we can relax. We can't be, really. Text: 7:30 p.m. -- Arrival at Kennedy Space Center

Because we have a still huge amount of work to do to get this spacecraft to the launchpad, assembled properly, all fueled up, and ready to go to Mars.

Background music (choral and symphonic medley)

Text: NASA, Jet Propulsion Laboratory, California Institute of Technology