

Thank you. It's great to see so many of you interested in this series on "Survival in Outer Space."

谢谢。见到你们这么多人对“生存在外太空”这个系列感兴趣真是太棒了。

Please excuse the cameras, we're being videotaped for the local TV stations.

请原谅这些摄像机，我们正在为地方电视台录像。

Tonight, I'm going to talk about the most basic aspect of survival—the space suit.

今晚我将要谈论最基本的生存因素——宇航服

When most of you imagine an astronaut, that's probably the first thing that comes to mind, right?

当你们中的大多数人想象一个宇航员的时候，那可能是脑子里首先要想到的，对吗？

Well, without space suits, it would not be possible for us to survive in space.

好，没有宇航服，对我们来说生存在太空中是不可能的。

For example, outer space is a vacuum—there's no gravity or air pressure; without protection, a body would explode.

举例来说，外层空间是一个真空空间——没有重力和气压；没有防护的话，人体将会爆炸。

What's more, we'd cook in the sun or freeze in the shade with temperatures ranging from a toasty 300 degrees above to a cool 300 degrees below zero Fahrenheit.

更重要的是，从酷热的零上 300 华氏度到冰冷的零下 300 华氏度的温度范围里，我们会在阳光下被烤熟或者在阴影下被冰封

The space suit that NASA has developed is truly a marvel.

NASA 研制出的的宇航服真是个奇迹

This photo enlargement here is a life-size image of an actual space suit worn by astronauts on the last space shuttle mission.

这张放大的照片是个与实物大小一样的，一件真正的被宇航员在最近一次航天飞机任务中穿过的宇航服图像。

This part is the torso.

这个部分是躯干。

It's made of seven extremely durable layers.

它是由七个极其耐用的层次制成的

This thick insulation protects against temperature extremes and radiation.

这个厚厚的隔离层防御了极端温度和辐射。

Next is what they call a "bladder" of oxygen that's an inflatable sac, filled with oxygen, to simulate atmospheric pressure.

下一个是所谓的氧气囊，那是一个可充气的囊，充满了氧气，用来模拟大气压强。

This bladder presses against the body with the same force as the Earth's atmosphere at sea level.

这个囊状物压在皮肤上，带着同样的力量，就像地球空气在海平面上一样。

The innermost layers provide liquid cooling and ventilation.

最内层提供了液体冷却和通风设备。

Despite all the layers, the suit is flexible, allowing free movement so we can work. 尽管有所有这些层，宇航服是有灵活性的，允许自由运动，所以我们能够工作。

Another really sophisticated part of the space suit is the helmet.

另一个非常复杂的宇航服的部分是头盔

I brought one along to show you. Can I have a volunteer come and demonstrate?

我带了一个过来展示给你们。我能找个志愿者过来演示一下吗？