NARRATOR: Welcome to NASA's spacecraft chamber of horrors.

Here spacecraft and components suffer through a grueling battery of tests, all in an effort to see if they are truly handle their mission and surviving the rigors of spaceflight.

As this centrifuge whips them around, they experience the kind of G-forces or gravitational forces that they can expect to see on launch. Now, this centrifuge is not for human use. It can go up to 30 Gs which is way more than a human being can stand.

They get shaken on any number of vibration tables to simulate the vibrations during launch.

There is no sound in space, but the ride up can be noisy enough to break things.

Inside this acoustics chamber, the instruments are blasted with noise in order to make sure they can survive the rocket trip to space.

Some, like the new SLIC carrier, come here to the static load test facility. Some call it "the rack." Inside this frame, hydraulic actuators operated by a team of engineers push and pull the new composite payload carrier, testing it's ability to withstand the stresses of launch and re-entry. Based on the results from the 1000 strain gages placed on the carrier - it passed.

In the Electromagnetic Interference test chamber, radio waves are blasted at the instrument to see if they any will disrupt its operations. The instruments are also tested to see if they produce any radio waves that could interfere with other instruments or systems.

This is the Space Environment Chamber.

Inside this enormous tank, spacecraft and instruments like the new Wide Field Camera 3 experience the harshness of space. The air is pumped out to simulate the vacuum of space and then the real testing begins. This chamber can heat to a blazing 300 degrees above zero Fahrenheit, and then drop to minus 310 degrees Fahrenheit. In here, the spacecraft must endure the huge temperature extremes it will experience in orbit, as it travels from full sunshine to the darkenss of Earth's shadow. A typical test can take many weeks.

If the spacecraft survives the torture here, it's pretty much ready for space. If not, better it breaks here than after launch. Here we have the ability to understand the problem, correct it, and test again. All this testing helps reduce the risk of failure on orbit and increase the spacecraft's potential for scientific success.