Narrator: NASA's space shuttles are some of the most high-tech and complex vehicles ever built, but they couldn't fly without the help of a much older technology: the railroad.

This is no ordinary train -- it's the NASA Railroad at Kennedy Space Center in Florida.

It carries extremely dangerous freight... one of national importance.

Chris Bryant, URS Locomotive Engineer/Mechanic: "It's not something to just kind of sneeze about, you know.

When we're hauling in, we're hauling four to five million pounds of explosives."

Narrator: One shuttle solid rocket booster contains four motor segments packed with a hard, rubbery, volatile solid propellant.

Every space shuttle launches with two boosters, which give the vehicle the extra thrust it needs during the first two minutes of the climb to orbit.

The large, heavy motor segments have to take a week-long, cross-country train ride from the ATK manufacturing plant in Utah to NASA's Kennedy Space Center in Florida.
Dave Hoffman, Former NASA Railroad Manager: "And shuttle of course, with the segments, it is absolutely essential, because you're looking at an average of approximately 150 tons per segment, and, with eight of them for launch, there really isn't any other, better way to get them here from Utah. It's just an essential lifeline, is what it boils down to."

Narrator: Today this important, but hazardous, job is handled by URS Corporation engineers and mechanics in the railroad shop. The 11-member team takes care of all the rolling stock and the track system -- including electrical work, mechanics, painting, welding and even fabrication. That expertise is essential when it comes to handling the solid rocket booster segments, which travel to Kennedy on cradles inside custom-built railcars. During the trip to Florida, the segments are handed off from rail company to rail company, with the final handoff at NASA's Jay Jay Railroad Yard north of Titusville, Florida.
The Florida East Coast Railway, or FEC, delivers the segments to

Jay Jay, and that's when Kennedy's railroad team takes charge.

After a thorough inspection, empty "spacer" cars are added to prepare the train for the trip across the Indian River to Kennedy.

Will Eriksen, URS Mechanic: "The main purpose for us is to distribute the weight on our bridge coming across the Indian River. If you have all the heavy cars tied together, that puts a strain on the bridge. So, try and separate the weight."

Narrator: The Kennedy rails can handle speeds of up to 60 miles an hour, just like FEC's mainline track.

But because of the heavy and volatile cargo, the top speed here is only 25 miles an hour, and the trains typically move slower than that.

All the work is done by a 1,500-horsepower locomotive known as the EMD SW-1500.

NASA has three of these workhorses. They were built by General Motors between 1968 and 1970, and put to work

NASA Kennedy - Space Shuttle Era_ NASA Railroad Keeps Boosters on Track_gZZV4yZCcEQ - transcript (human).txt[15/09/2019 16:00:53]
for the space agency when shuttle loads demanded a lot more horsepower.

Bryant: "They do have a lot of backbone. And again, when we bring in the segments and the spacer cars, we've got probably close to four-and-a-half to five million pounds that we pull with the one motor."

Narrator: Once the train arrives north of the space center, the spacer cars are removed and taken back to the rail yard.

The booster cars are kept at Suspect Siding, an isolated staging area near the shuttle runway, until they go to the Rotation, Processing and Surge Facility to start final launch preparations.

When the boosters are recovered after launch, the same team loads up the spent segments and sends them back to Utah.

Mike Stephens, URS Lead Mechanic: "We've got a great track record. It's basically a pretty simple process. All the way from Utah, all the way to here, to getting it on the launch pad. And the system has worked great."

Narrator: Kennedy's rail system was activated in 1963 to bring in construction materials.
for the growing space center, as new facilities were built for the Apollo Program.

But throughout the years, the Florida climate took its toll -- and hauling shuttle segments presented unique challenges of their own.

Hoffman: "Well, fast forward 20 years, and the Space Shuttle Program was starting. We were looking at freight cars that were somewhat longer, and a lot heavier, and had a higher center of gravity as well."

Narrator: FEC was paid to upgrade the aging system with heavier rail, welded joints and concrete crossties. Along with rolling stock standards, like hopper cars and gondola cars, Kennedy also has some cars that were modified or even designed here.

In fact, Hoffman himself designed the "booster structures" car.

Hoffman: "These are custom-built cars. It's a concept I came up with to improve on the delivery, or the movement, of the solid rocket booster aft skirts, the forward skirts and the frustums."
Narrator: Many other commodities have traveled these rails, such as nitrogen tetroxide rocket propellant... Air Force Titan rockets... Navy Trident missiles... and the shuttle-derived booster segments for the Ares I-X test flight.

Stephens: "It's not just moving segments. We've done so much more. We've rebuilt the Air Force locomotives. We've built rail cars. We've done painting. I mean, this locomotive here, you can see how much better it looks than the other two and everything. So we're a pretty diverse group and we stay busy."

Narrator: The result is a vital and successful rail line that has stood the test of time. In May 2010, the last load of shuttle solid rocket booster segments came to Kennedy. Bryant: "For the most part, it's kind of like any other railroad, so to speak. We don't run the speeds. But the things that we do and have to do when we're loading and unloading demands your attention, demands respect."

Narrator: The NASA Railroad at Kennedy Space Center has played a quiet but critical role.
role in the Space Shuttle Program, and the hardworking team hopes to put its talents to
use on future spaceflight endeavors.