NASAfacts

Crawler-Transporter 2

NASA's Kennedy Space Center in Florida is upgrading one of its two massive crawler-transporters as the agency continues to prepare for its journey to Mars. Crawler-transporter 2 (CT-2) is more than 50 years old, but with the current modifications conducted by the Ground Systems Development and Operations (GSDO) Program, CT-2 is expected to be in service for many years to come.

The crawler is the size of a baseball infield. The crawler's top speed is one mile per hour loaded and two miles per hour unloaded. To date, CT-2 has traveled 2,236 miles.

Recent modifications to the crawler include redesigned and upgraded roller bearings, removal and replacement of the existing bearings with a new assembly that can carry a greater load, and an improved lubrication system. These redesigns will give the crawler a longer operational life and enable the giant vehicle to carry the heavier loads anticipated with the Space Launch System (SLS) rocket.

CT-2 will carry the mobile launcher (ML) with the SLS atop from the Vehicle Assembly Building (VAB) to Launch Pad 39B. The crawler has four reinforced pickup points on its surface that secure into place underneath the ML to carry it to the pad. Pinch blocks are located on some of the pickup points to secure the load being carried. The crawler does not interface with the rocket, enabling it to carry future vehicles with no additional modifications needed.

Once the CT-2 makes its eight-hour trek to the pad with engineers and technicians aboard, the ML and SLS will be lowered onto mount mechanisms. After power transfers are complete, the CT-2 will roll

NASA's upgraded crawler-transporter 2 (CT-2) exited the Vehicle Assembly Building (VAB) at Kennedy Space Center on March 23, 2016, for its trek along the crawlerway to Launch Pad 39B to test recently completed upgrades and modifications for the agency's Journey to Mars. The Ground Systems Development and Operations Program at Kennedy oversaw upgrades to the crawler in the VAB. The crawler will carry the mobile launcher with Orion atop the Space Launch System rocket to Pad 39B for Exploration Mission-1, scheduled for late 2018. Photo credit: NASA/Kim Shiflett

back down the pad slope, and park just outside the pad perimeter gate. CT-2 will wait there until a few days prior to launch in case a rollback is required. Then it will roll to the Mobile Service Structure park site to be protected during launch.

Engineers have been testing CT-2 incrementally to prepare for the first integrated test flight of SLS and NASA's Orion spacecraft, known as Exploration Mission 1 (EM-1), targeted for November 2018. NASA has tested different rollout variations. The 20-year-life modifications roll tested the new 1500 kilowatt generators, parking and service brakes, control system modifications, diesel engine refurbishments, vent hoods, exhaust and other Phase I upgrades.

The Roller Bearing Phase I roll verified that the new roller bearings on CT-2's trucks A and C operated properly, while the Roller Bearing Phase II roll verified the same for CT-2's trucks B and D. A recent jacking, equalization and leveling (JEL) cylinders rollout was performed to verify that the upgraded cylinders are operating properly.

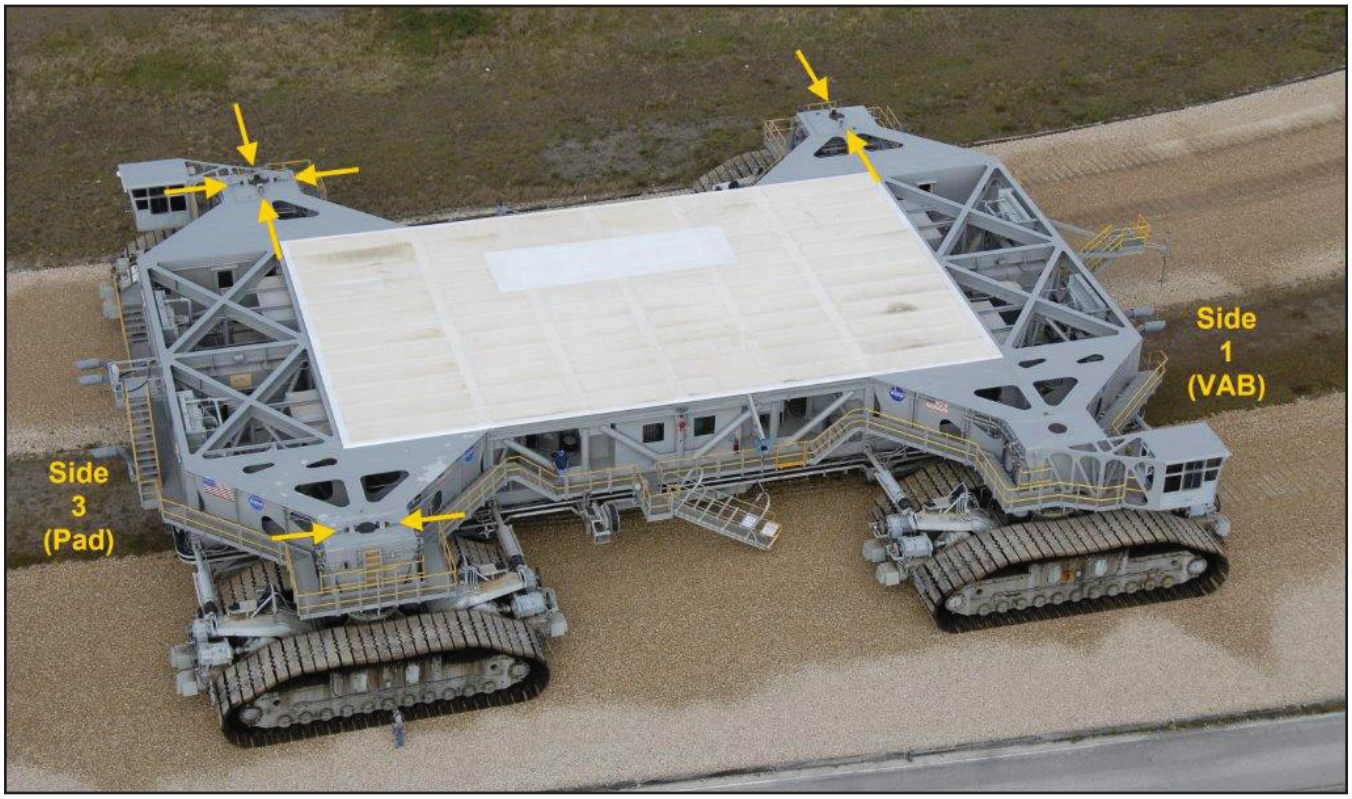
CT-2 FACTS

Weight: Approximately 6.6 million pounds (or the weight of about 15 Statues of Liberty or 1,000 pickup trucks).

Height: Varies from approximately 20 feet to 26 feet, based on the position of the jacking, equalization and leveling cylinders.

Load Capacity: Able to transport 18 million pounds (or the weight of more than 20 fully loaded 777 airplanes).

For more information about the Ground Systems Development and Operations Program, visit **http://www.nasa.gov/groundsystems.**



An aerial view of crawler-transporter 2 showing the four pickup points that will be use to lift the mobile launcher with NASA's Space Launch System and Orion spacecraft on top for the trip to Launch Pad 39B for Exploration Mission-1, scheduled for late 2018. Photo credit: NASA

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