

## **2.0 Model Description and Procedure**

### **2.1 Model Description**

The load considered for the model was a 40' ISO cryogenic container, in a single-stack configuration. The container measured 8' wide x 8' 6" high x 40' long, and had a maximum weight of 67,200 lb.

Two well car designs were analyzed. One was a Greenbrier car built in 2005 with a load limit of 166,900 lb., and the other was a Thrall car built in 1995 with a load limit of 163,000 lb. Both designs were stand-alone cars.

### **2.2 Analysis Method**

To determine the capability of the well cars to safely carry the cryogenic container, a comparative loading analysis was performed. The live loads for the cryogenic container were compared to the standard AAR loading of double stacked 40' containers, loaded to the maximum car capacity. Load cases are taken from AAR C-II, M-1001 Chapters 4 and 8 and included the following: 1.0 g vertical live load (Paragraphs 4.1.3, 4.2.2.5) a 1.8 g vertical load combined with .45 g lateral load (Paragraphs 4.1.3, 4.2.2.4, 4.2.2.7), and a 2.0 g longitudinal impact load (8.2.4.4.2.2). For all load cases, the maximum vertical, lateral, and longitudinal reaction loads were determined for one connector. The improvement in loading condition for each of the three directions was then calculated.