sequential cars starting with the first car derailed. The following two tables provide the probability of being the first car derailed versus position in the train and the average number of cars derailed in an accident.

Representative probability of first car derailed for Class 1 and 2 Railroads (1995-2015).

Statistic	Car Position in Train			
	1	11	21	31
Yard Derailment Accident	24.8%	1.60%	1.20%	0.82%
Mainline Derailment Accident, Speed < 25 mph	17.3%	1.80%	1.13%	0.97%
Mainline Derailment Accident, Speed ≥ 25 to ≤ 60 mph	15.8%	1.07%	1.02%	0.80%

Average number of cars derailed (1995-2015).

Statistic	No. of Cars
Yard Derailment Accident	4
Mainline Derailment Accident, Speed < 25 mph	5
Mainline Derailment Accident, Speed ≥ 25 to ≤ 60 mph	11

Seven different train configurations were evaluated to demonstrate the effects of blocking LNG ISOs into sequential car groupings on the calculated risk. The baseline configuration (C-1) placed (b) (4) LNG ISOs in sequence from train position (b) to (b) (4). If a train accident leads to a derailment, then each configuration and speed/yard case will represent a distinct probability array for multiple cars being derailed. The probability relationship for multiple cars being derailed from the baseline train configuration C-1 at high speed (≥ 25 to ≤ 60 mph) is shown in the table below. Similar relationships were developed for each train configuration, yard accidents, low speed accidents, and high speed accidents.

Probability of having X number of LNG ISO cars derail in the event of a train accident, where X is the number of LNG ISOs involved, for the baseline train configuration and mainline train movements at high speed.

Number of LNG ISOs Derailed (X)	0	1	2	3	4	5	6	7	8	9	10
Probability	59%	17%	3.7%	3.7%	3.0%	2.1%	2.7%	2.5%	2.3%	2.4%	2.4%

Finally, the loss of containment (LOC) was modeled using a probability versus quantity released relationship developed from analysis of historical PHMSA data. Since data are sparse for (b) (4) (b) (4) ISO containers in rail accidents, pressure tank car data was used as an analog to represent pressurized ISO container failure probability. The probabilities are shown in the table below.