Material Administration (PHMSA) data were used to build the accident model. A flowchart depicting the sequential steps of the accident model is provided in Figure E1. The sections of the report where each analysis block is described are listed in Figure E1.

Figure E1. LNG DOT-113 train accident model overview.

FRA accident data from 1997 through 2016 were analyzed to develop train accident rates. Based on the available data, the train accident rate was calculated as accidents per train mile as shown in the table below.

Table E3. Train accident rates from FRA data.

	Statistic	1997-2016
Mainline	Total Non-Yard (Mainline) Train Miles	12.92×10^{9}
	Non-Yard Accident Rate (/train mile)	2.42×10^{-6}

The position in train derailment probability was evaluated for LNG DOT-113 tank cars as part of the QRA. A derailment model was employed where the probability that LNG DOT-113 tank cars would be derailed in an accident was related to the probability of the first car derailed and average number of cars derailed. It was assumed that a derailment would involve 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.

Table E4. Representative probability of first car derailed for all railroad classes (1997-2016).

Statistic	Car Position in Train			
	1	11	21	31
Mainline Derailment Accident, Speed ≤ 25 mph	13.5%	1.87%	1.23%	1.02%
Mainline Derailment Accident, Speed > 25 to ≤ 50 mph	13.4%	1.20%	0.91%	0.80%