

E.2.2 Mainline Risk

The risk posed by the LNG DOT-113s along the mainline was evaluated by calculating the Individual Risk and the Societal Risk for a one-mile section of the routes exposed to various population densities. Two speed ranges, low speed (≤ 25 mph) and high speed (>25 mph to ≤ 50 mph), were applied in the model to demonstrate the effects of train speed restrictions. One train configuration was evaluated, with only LNG DOT-113s from train position 11 to the end of the train.

The tables below compare the calculated risk metrics for low speed and high speed movement, respectively, along a one-mile section of the mainline for the low, medium and high population density (500, 11,000 and 20,000 people/mile²). The figure compares the aggregate SR for the high speed and low speed train cases. The example route is 227 miles, represented by population densities as described in Section 7.2. The aggregate societal risk profile for the example route indicates a likelihood of observing one fatality approximately once every 200 years for high speed mainline transport and approximately once every 350 years for the low speed mainline transport.

Table E8. Summary of the risk metrics for mainline LNG DOT-113 car train movements at low speed.

Population density (people/mile ²)	SR Integral (total risk, yr ⁻¹)	Maximum IR (yr ⁻¹)	Maximum Distance to Zone 1 - 1×10^{-5} IR (ft)	Maximum Distance to Zone 2 - 1×10^{-6} IR (ft)	Maximum Distance to Zone 3 - 3×10^{-7} IR (ft)
500	3.61×10^{-5}	9.47×10^{-7}	N/A	N/A	455
11,000	1.36×10^{-3}	1.14×10^{-6}	N/A	160	500
20,000	2.96×10^{-3}	1.24×10^{-6}	N/A	195	510

Table E9. Summary of the risk metrics for mainline LNG DOT-113 car train movements at high speed.

Population density (people/mile ²)	SR Integral (total risk, yr ⁻¹)	Maximum IR (yr ⁻¹)	Maximum Distance to Zone 1 - 1×10^{-5} IR (ft)	Maximum Distance to Zone 2 - 1×10^{-6} IR (ft)	Maximum Distance to Zone 3 - 3×10^{-7} IR (ft)
500	8.15×10^{-5}	2.11×10^{-6}	N/A	382	569
11,000	3.06×10^{-3}	2.57×10^{-6}	N/A	430	615
20,000	6.63×10^{-3}	2.82×10^{-6}	N/A	448	632