

List of Tables

	<u>Page</u>
Table 1. Quantitative risk criteria for IR contours around stationary LNG plants as provided by NFPA 59A (2016).	4
Table 2. DOT-113 tank container parameters used in this study.	7
Table 3. Example route and estimated mileage.	8
Table 4. Train accident rates from FRA data.	13
Table 5. Train accident rates from FRA data.	14
Table 6. Calculated annual accident frequencies for the example ETS mainline route.	14
Table 7. Analysis of train accidents from FRA data.	15
Table 8. Representative probability of position-in-train of first car derailed (1997-2016) given that an accident with derailment has occurred.	17
Table 9. Probability of having ‘X’ number of LNG DOT-113 rail cars involved in a train accident with derailment, by train speed.	18
Table 10. PHMSA pressure tank car incident data from 1971-2017 and equivalent release scenarios based on a sensitivity analysis of spill diameters.	20
Table 11. Consolidated release scenarios for two LNG DOT-113s.	22
Table 12. Consolidated release scenarios for three LNG DOT-113s .	22
Table 13. Consolidated release scenarios for four LNG DOT-113s .	23
Table 14. Consolidated release scenarios for five LNG DOT-113s .	23
Table 15. Consolidated release scenarios for six LNG DOT-113s .	23
Table 16. Consolidated release scenarios for seven LNG DOT-113s .	24
Table 17. Consolidated release scenarios for eight LNG DOT-113s .	24
Table 18. Consolidated release scenarios for nine LNG DOT-113s.	24
Table 19. Consolidated release scenarios for ten LNG DOT-113s.	25
Table 20. Consolidated release scenarios for eleven LNG DOT-113s.	25
Table 21. Probability of immediate ignition for methane in PHAST Risk	29
Table 22. Representative hazard distances for LNG releases from DOT-113 tank cars.	31