

Initiating Event Frequency	Derailment Probability	Multiple ISO Accident Probability	Release Probability	Outcome Event Frequency	
Yard accidents $7.23 \times 10^{-3} \text{ yr}^{-1}$	Derailment 7.22×10^{-1}	1 car 3.37×10^{-2}	No release	9.58×10^{-1}	$1.68 \times 10^{-4} \text{ yr}^{-1}$
			1.17 kg/s	1.40×10^{-2}	$2.46 \times 10^{-6} \text{ yr}^{-1}$
			18.8 kg/s	2.50×10^{-2}	$4.40 \times 10^{-6} \text{ yr}^{-1}$
			CR ⁴⁸ of 1 ISO	3.00×10^{-3}	$5.28 \times 10^{-7} \text{ yr}^{-1}$
		2 cars 3.00×10^{-2}	No release	9.18×10^{-1}	$1.44 \times 10^{-4} \text{ yr}^{-1}$
			1.57 kg/s	2.70×10^{-2}	$4.23 \times 10^{-6} \text{ yr}^{-1}$
			19.4 kg/s	4.86×10^{-2}	$7.61 \times 10^{-6} \text{ yr}^{-1}$
			37.6 kg/s	6.25×10^{-4}	$9.78 \times 10^{-8} \text{ yr}^{-1}$
		3 cars 3.20×10^{-2}	CR of 1 ISO	5.98×10^{-3}	$9.36 \times 10^{-7} \text{ yr}^{-1}$
			CR of 2 ISOs	9.00×10^{-6}	$1.41 \times 10^{-9} \text{ yr}^{-1}$
			No release	8.79×10^{-1}	$1.47 \times 10^{-4} \text{ yr}^{-1}$
			2.01 kg/s	3.91×10^{-2}	$6.53 \times 10^{-6} \text{ yr}^{-1}$
		4 cars 1.06×10^{-1}	20.0 kg/s	7.09×10^{-2}	$1.18 \times 10^{-5} \text{ yr}^{-1}$
			40.8 kg/s	1.84×10^{-3}	$3.07 \times 10^{-7} \text{ yr}^{-1}$
			CR of 1 ISO	8.95×10^{-3}	$1.49 \times 10^{-6} \text{ yr}^{-1}$
			CR of 2 ISOs	2.69×10^{-5}	$4.49 \times 10^{-9} \text{ yr}^{-1}$
		4 cars 1.06×10^{-1}	No release	8.42×10^{-1}	$4.66 \times 10^{-4} \text{ yr}^{-1}$
			2.51 kg/s	5.03×10^{-2}	$2.78 \times 10^{-5} \text{ yr}^{-1}$
			20.6 kg/s	9.18×10^{-2}	$5.08 \times 10^{-5} \text{ yr}^{-1}$
			38.8 kg/s	3.54×10^{-3}	$1.96 \times 10^{-6} \text{ yr}^{-1}$
			59.0 kg/s	6.11×10^{-5}	$3.38 \times 10^{-8} \text{ yr}^{-1}$
			CR of 1 ISO	1.19×10^{-2}	$6.58 \times 10^{-6} \text{ yr}^{-1}$
			CR of 2 ISOs	5.37×10^{-7}	$2.97 \times 10^{-8} \text{ yr}^{-1}$
		CR of 3 ISOs	1.08×10^{-7}	$5.96 \times 10^{-11} \text{ yr}^{-1}$	

Figure 30. Event tree for yard movement for train Configuration 1 (C-1). “Outcome Event Frequency” is the product of the “Initiating Event Frequency,” “Derailment Probability,” “Multiple ISO Accident Probability,” and “Release Probability.”

⁴⁸ The abbreviation “CR” represents a catastrophic rupture where the entire (b) (4) gallons contained in the ISO is released instantaneously.