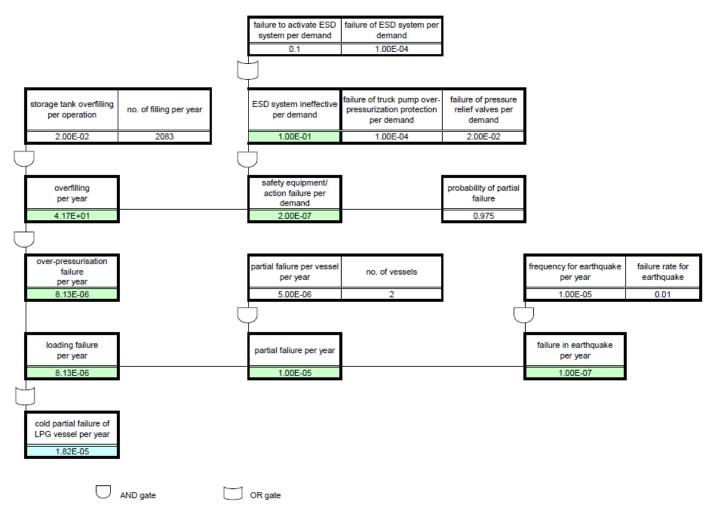
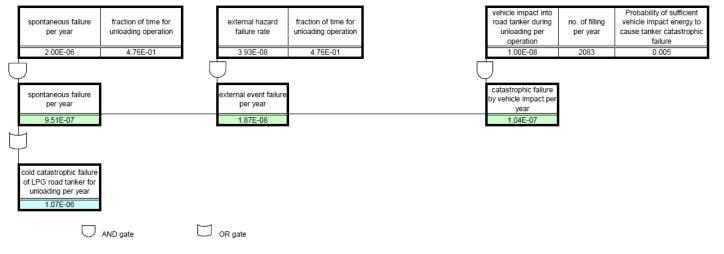


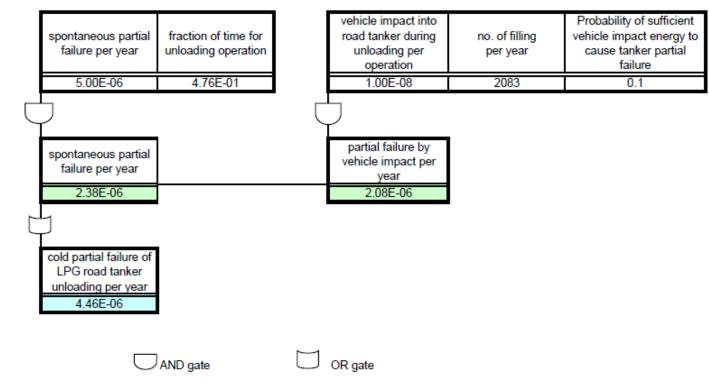
Cold Catastrophic Failure of LPG Vessel (ExxonMobil Petrol cum LPG Filling Station)



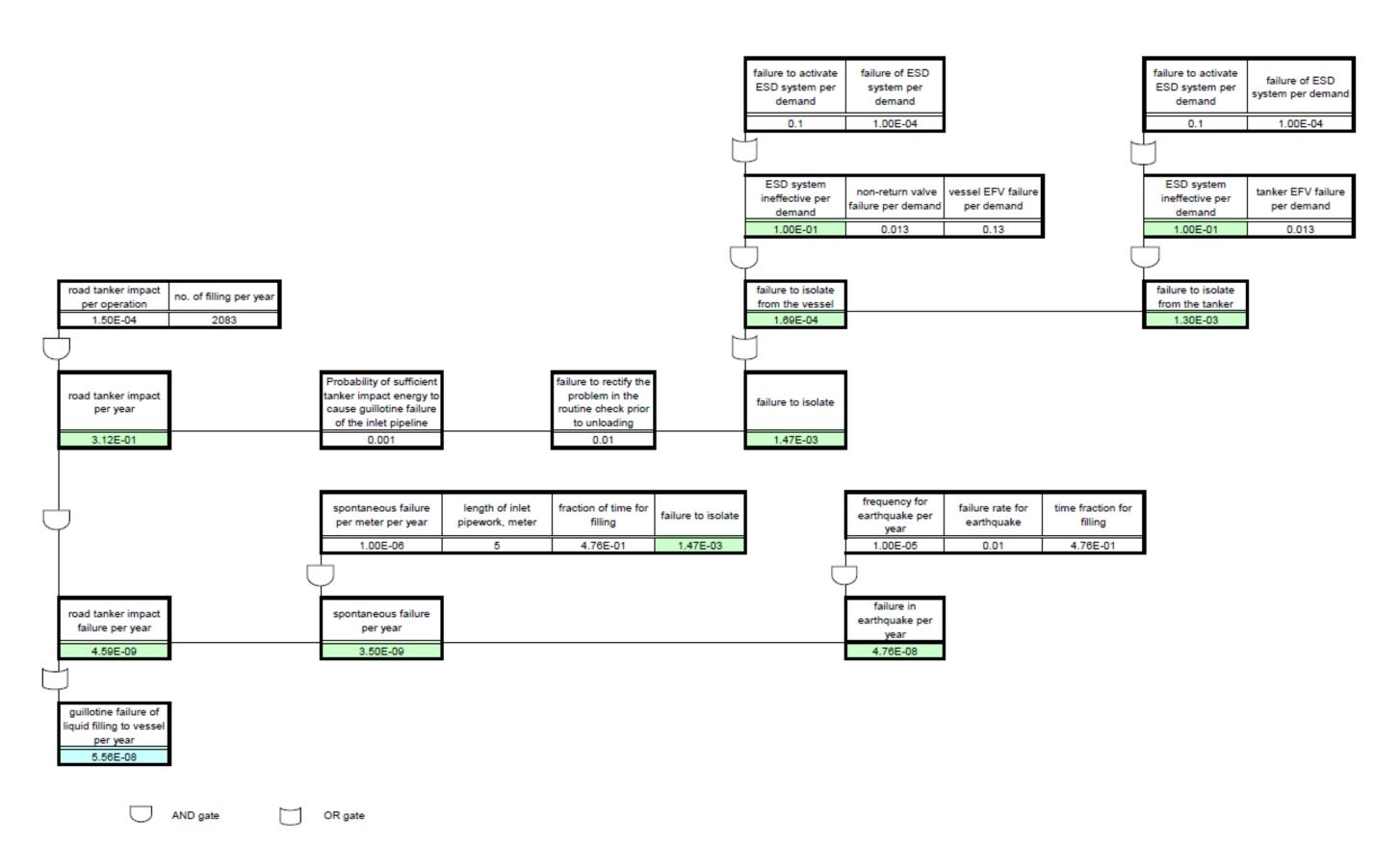
Partial Failure of LPG Vessel (ExxonMobil Petrol cum LPG Filling Station)



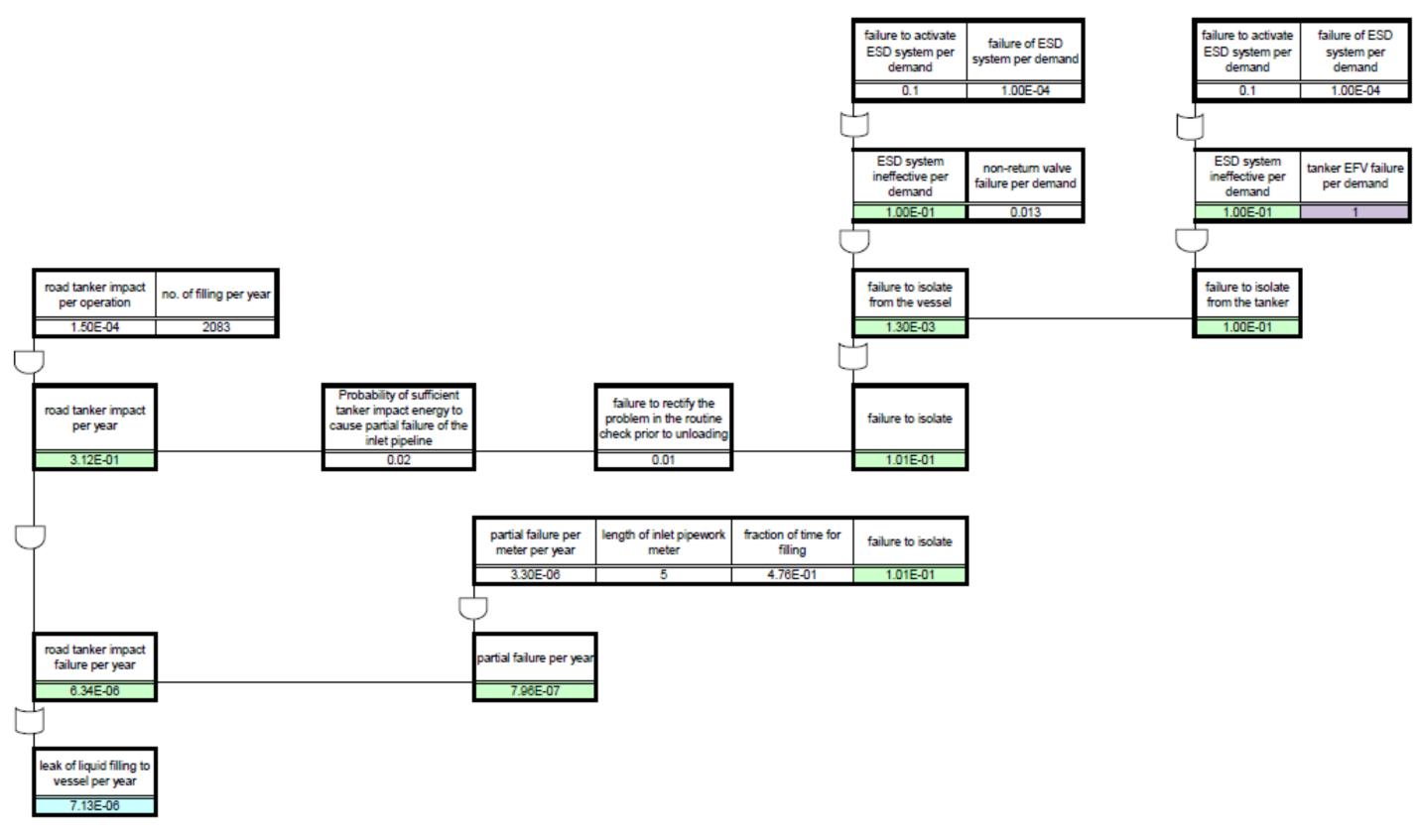
Cold Catastrophic failure of Road Tanker (ExxonMobil Petrol cum LPG Filling Station)



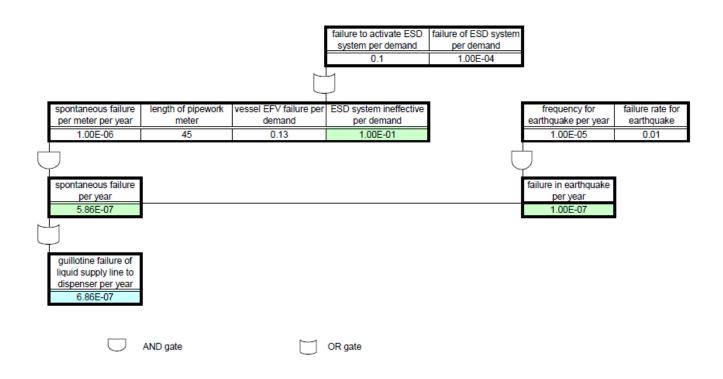
Partial failure of Road Tanker (ExxonMobil Petrol cum LPG Filling Station)



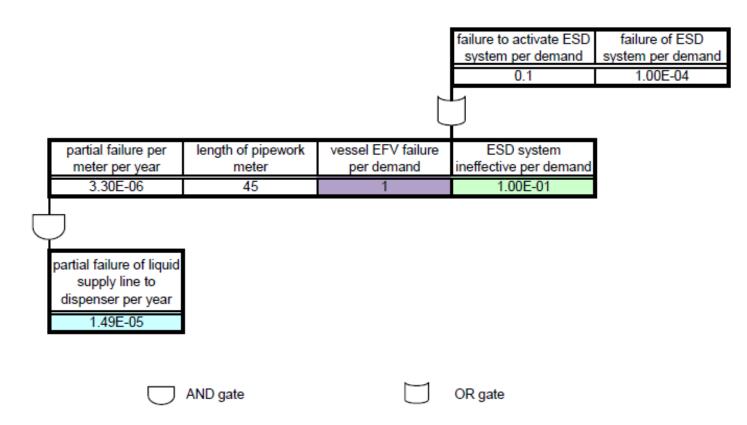
Guillotine failure of Inlet Pipeline (ExxonMobil Petrol cum LPG Filling Station)



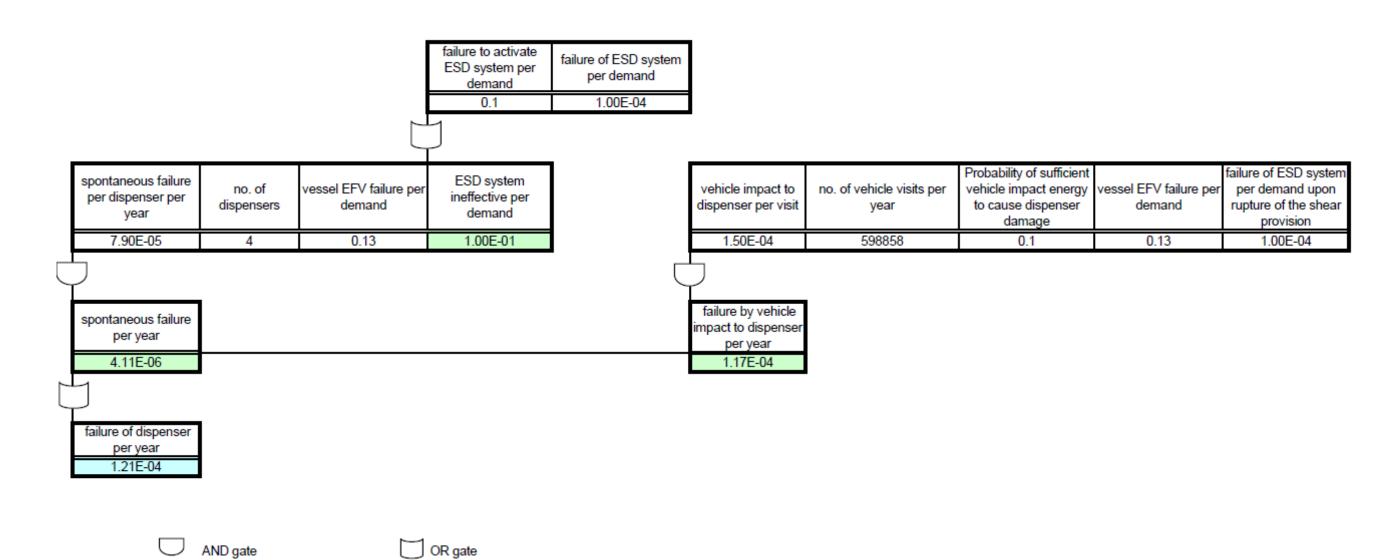
Partial failure of Inlet Pipeline (ExxonMobil Petrol cum LPG Filling Station)



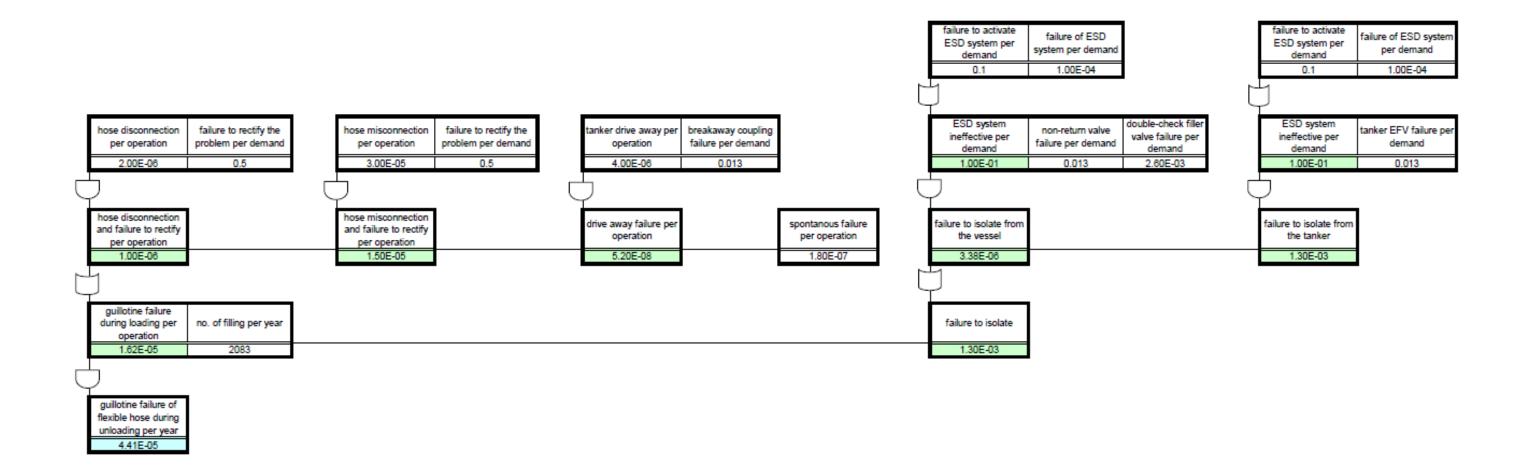
Guillotine failure of the Liquid Supply Pipeline to the Dispenser (ExxonMobil Petrol cum LPG Filling Station)



Partial failure of the Liquid Supply Pipeline to the Dispenser (ExxonMobil Petrol cum LPG Filling Station)



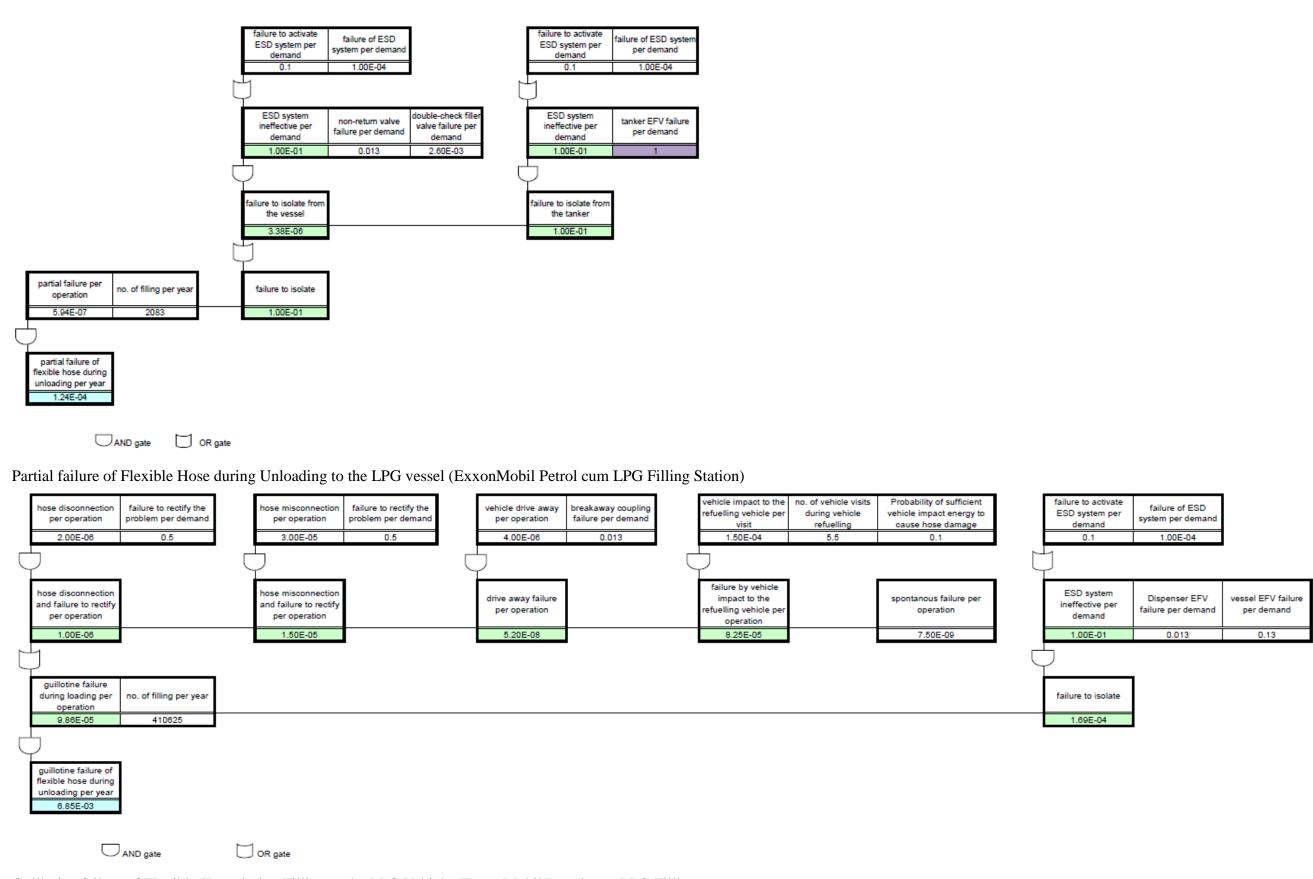
Failure of the Dispenser (ExxonMobil Petrol cum LPG Filling Station)



Guillotine failure of Flexible Hose during Unloading to the LPG vessel (ExxonMobil Petrol cum LPG Filling Station)

OR gate

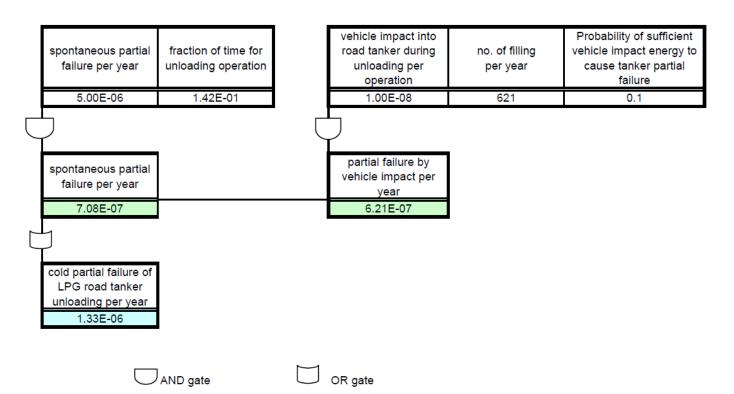
AND gate



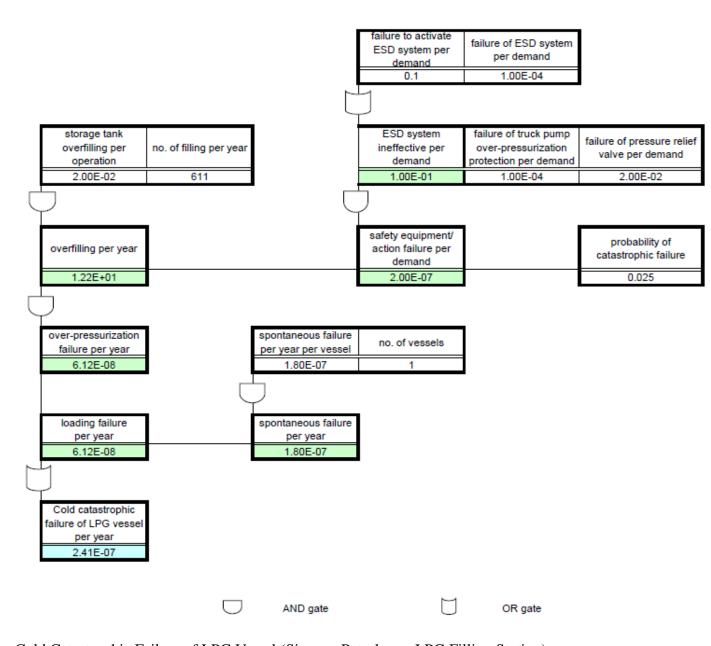
Guillotine failure of Flexible Hose during Filling to the LPG Vehicle (ExxonMobil Petrol cum LPG Filling Station)



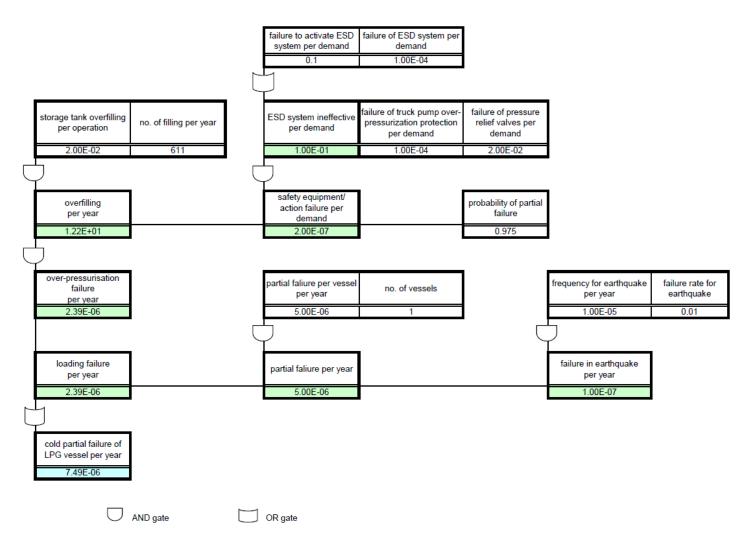
Cold Catastrophic failure of Petrol Road Tanker (ExxonMobil Petrol cum LPG Filling Station)



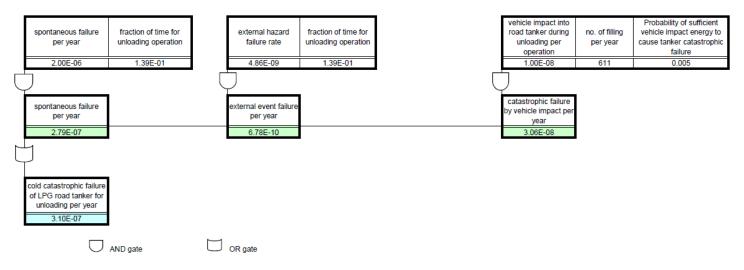
Partial failure of Petrol Road Tanker (ExxonMobil Petrol cum LPG Filling Station)



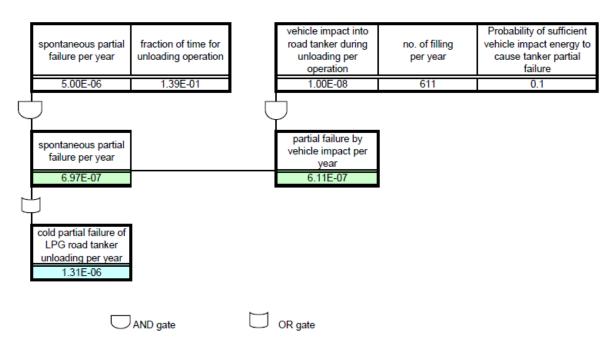
Cold Catastrophic Failure of LPG Vessel (Sinopec Petrol cum LPG Filling Station)



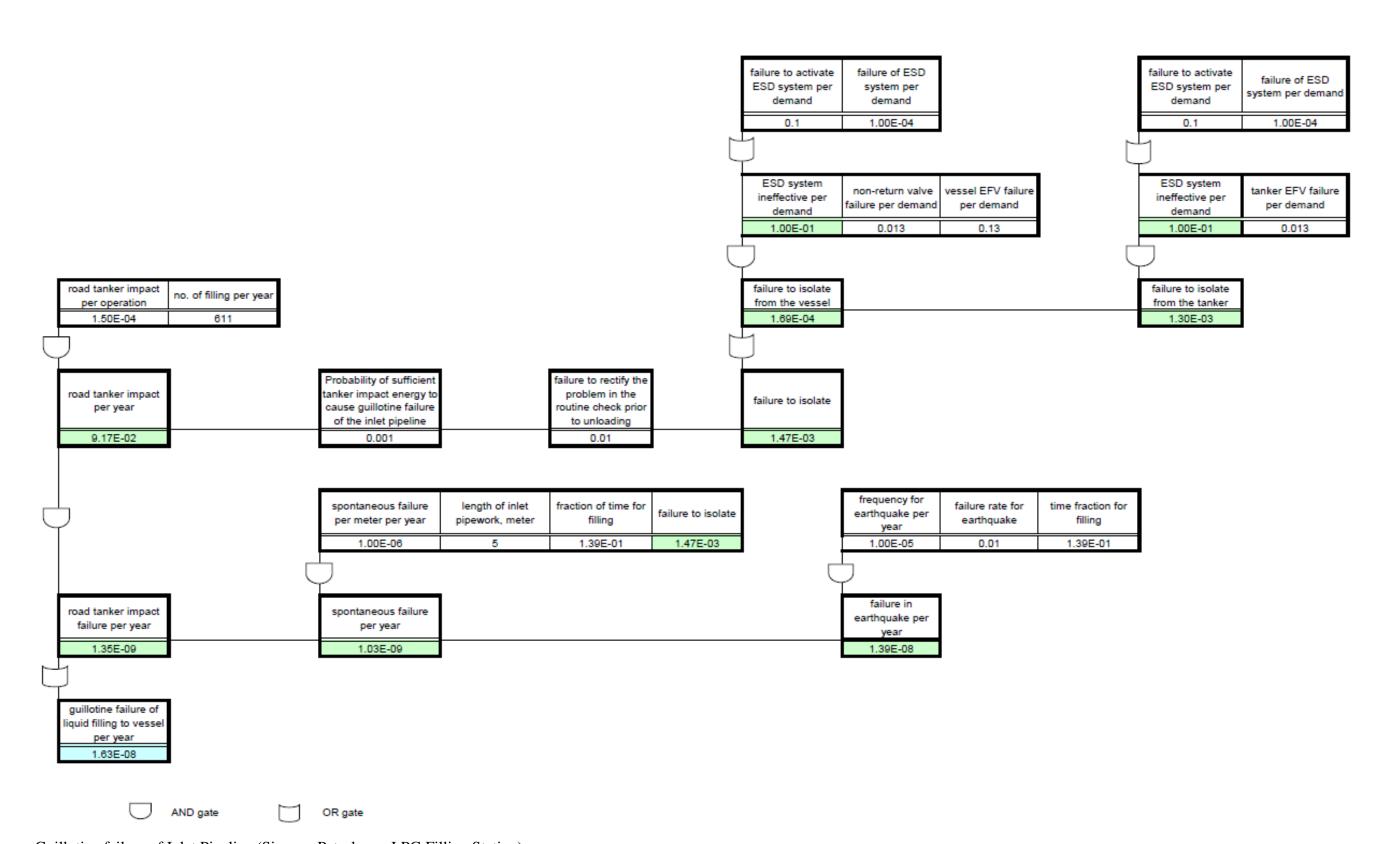
Partial Failure of LPG Vessel (Sinopec Petrol cum LPG Filling Station)



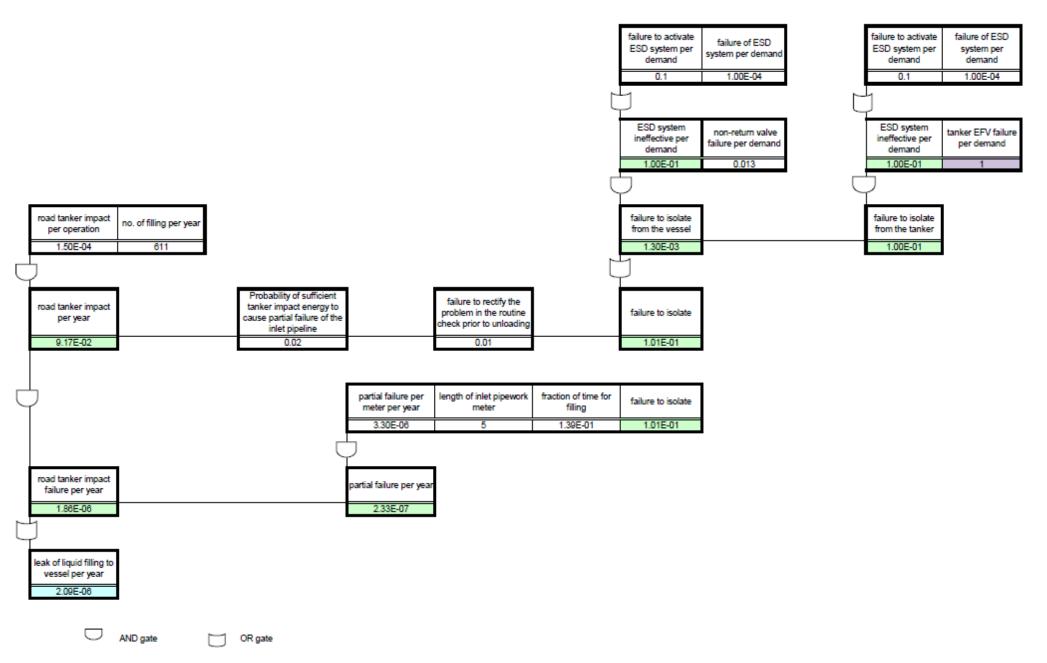
Cold Catastrophic failure of Road Tanker (Sinopec Petrol cum LPG Filling Station)



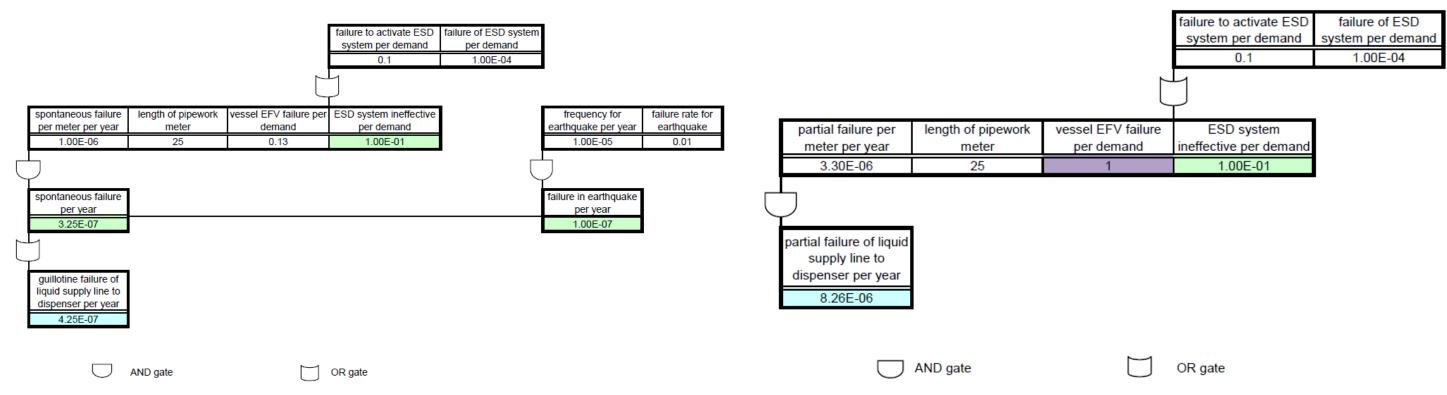
Partial failure of Road Tanker (Sinopec Petrol cum LPG Filling Station)



Guillotine failure of Inlet Pipeline (Sinopec Petrol cum LPG Filling Station)

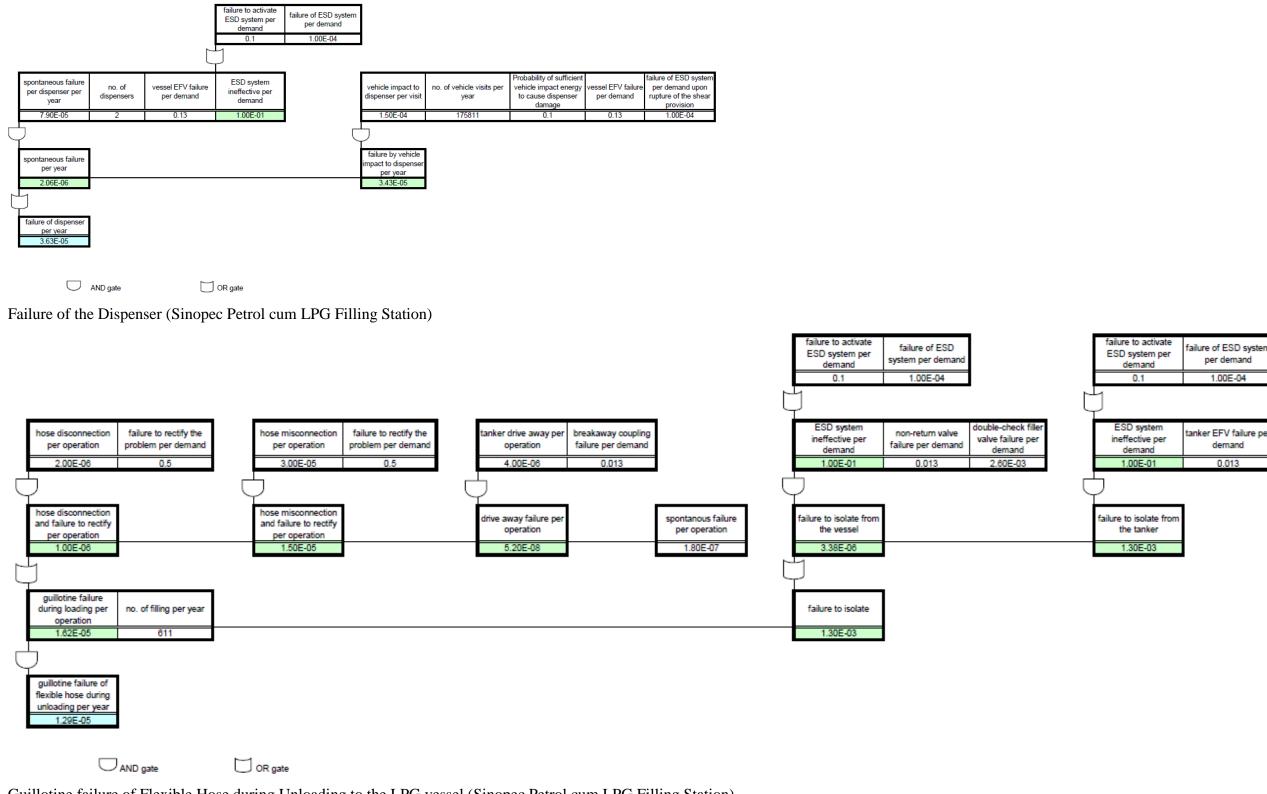


Partial failure of Inlet Pipeline (Sinopec Petrol cum LPG Filling Station)

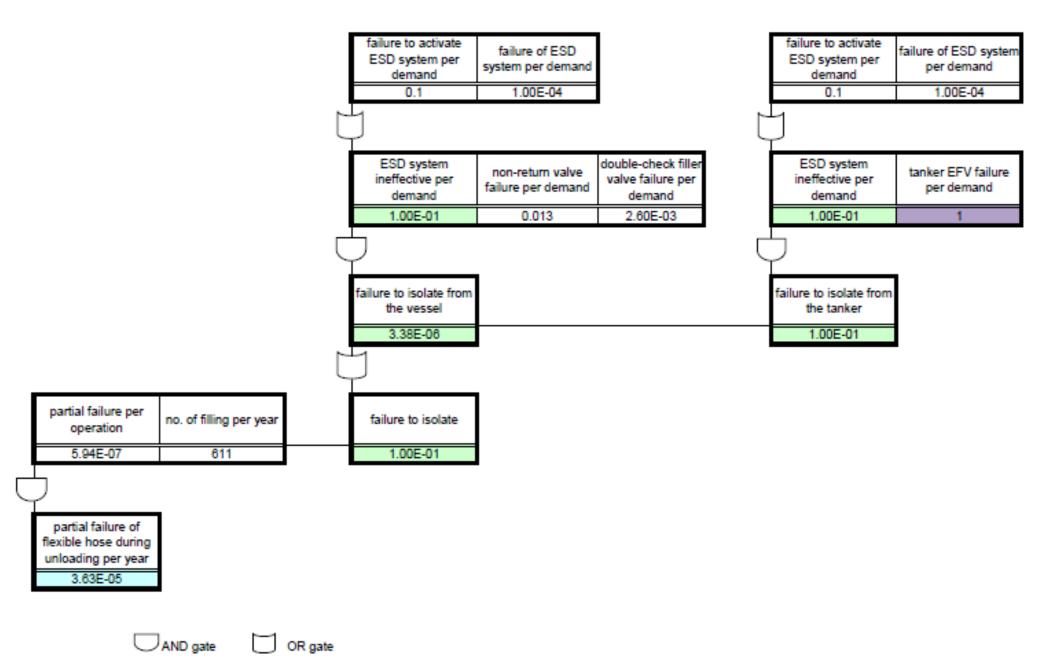


Guillotine failure of the Liquid Supply Pipeline to the Dispenser (Sinopec Petrol cum LPG Filling Station)

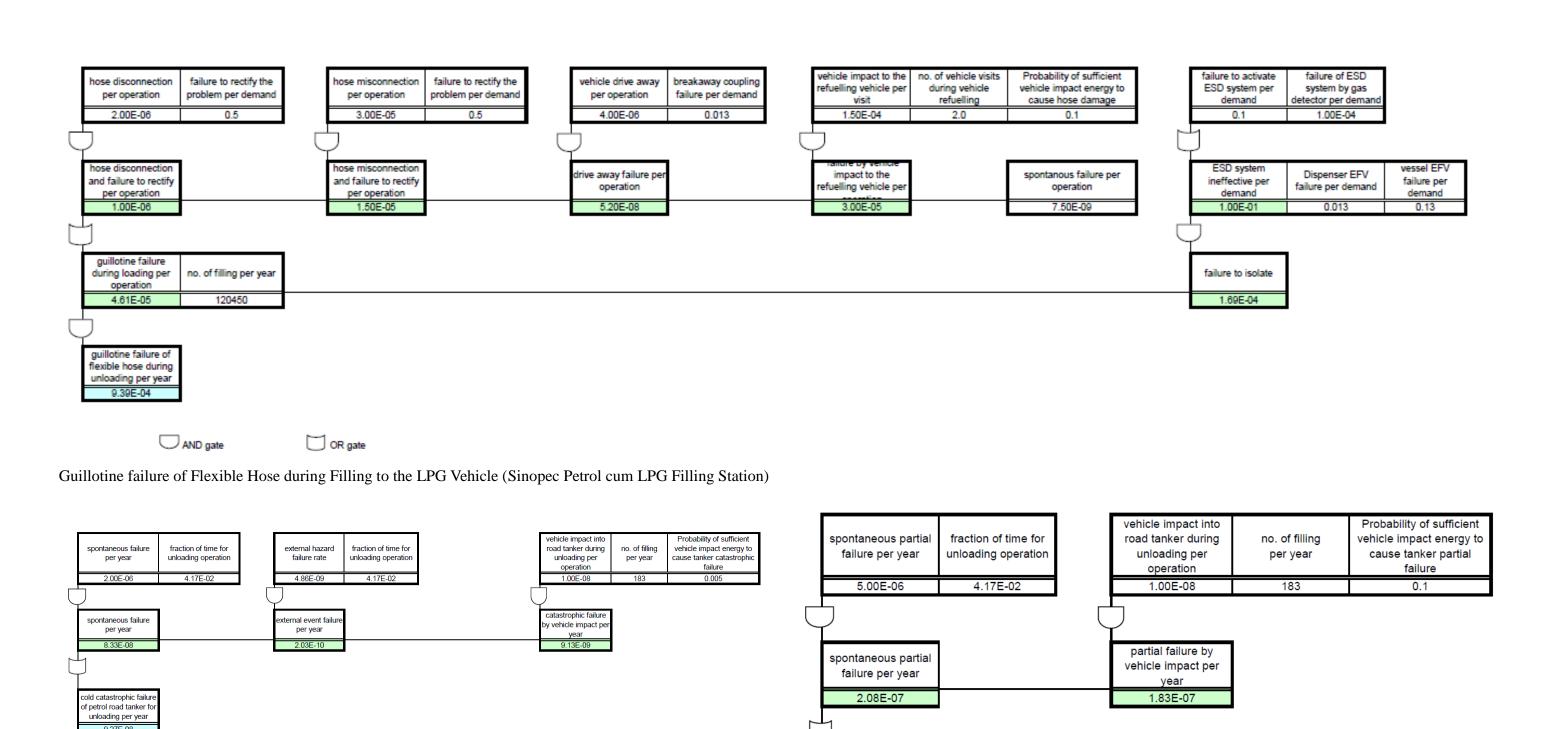
Partial failure of the Liquid Supply Pipeline to the Dispenser (Sinopec Petrol cum LPG Filling Station)



Guillotine failure of Flexible Hose during Unloading to the LPG vessel (Sinopec Petrol cum LPG Filling Station)



Partial failure of Flexible Hose during Unloading to the LPG vessel (Sinopec Petrol cum LPG Filling Station)



Cold Catastrophic failure of Petrol Road Tanker (Sinopec Petrol cum LPG Filling Station)

OR gate

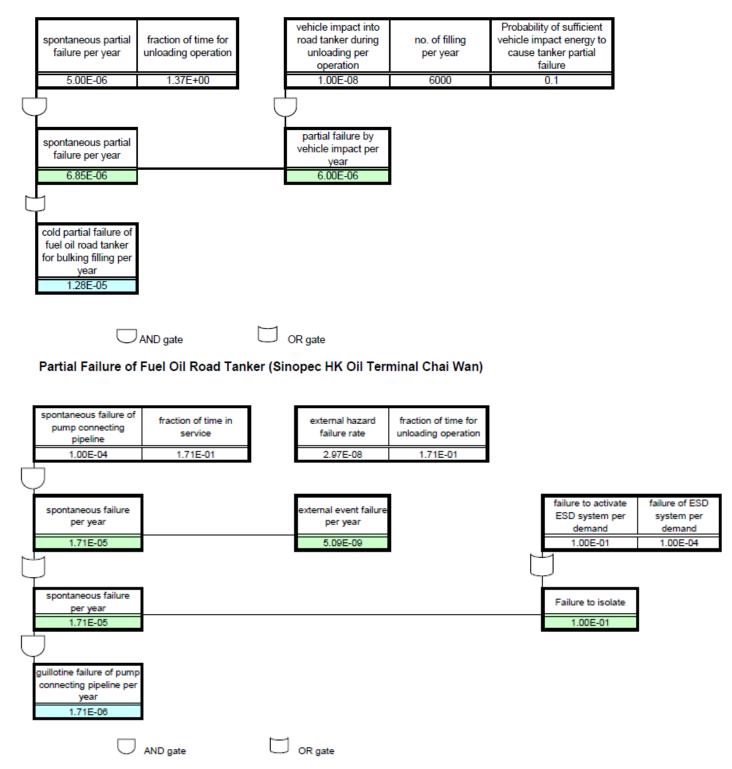
O AND gate

Partial failure of Petrol Road Tanker (Sinopec Petrol cum LPG Filling Station)

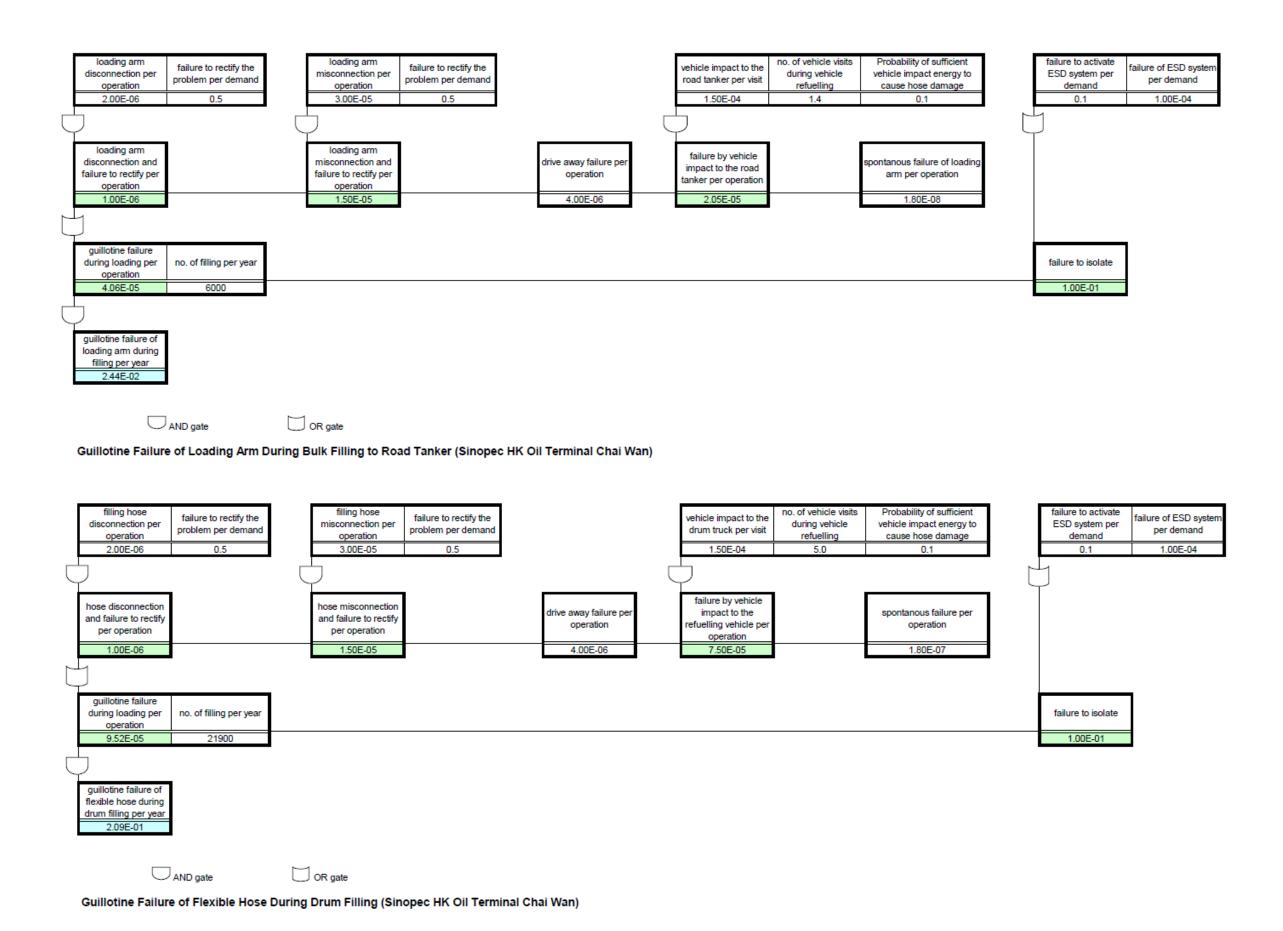
cold partial failure of petrol road tanker

unloading per year 3.91E-07

spontaneous failure	fraction of time for		external hazard failure rate	fraction of time for		vehicle impact into road tanker during	no. of filling	Probability of sufficient vehicle impact energy to		
per year	unloading operation		failure rate	unloading operation		unloading per operation	per year	cause tanker catastrophic failure		
2.005.08	1 275+00		2.075.00	1.275+00			2000	0.005		
2.00E-06	1.37E+00		2.97E-08	1.37E+00		1.00E-08	6000	0.005		
7			J)				
spontaneous failure			external event failure			catastrophic failure by vehicle impact per				
per year			per year			year				
2.74E-06			4.07E-08			3.00E-07				
5										
cold catastrophic failure of fuel oil road tanker for bulk filling per year										
3.08E-06										
	AND gate		OR gate							
Cold Catastrophic Failure of Fuel Oil Road Tanker (Sinopec HK Oil Terminal Chai Wan)										

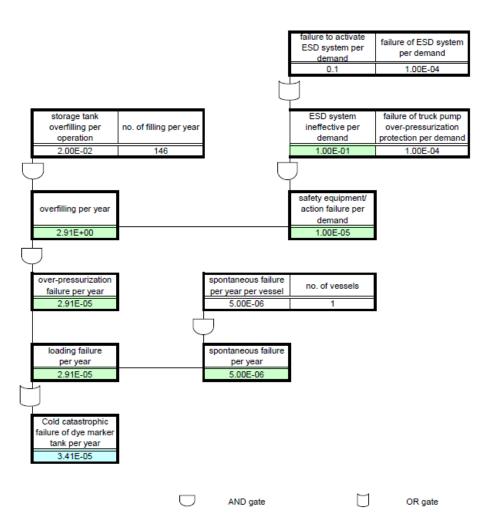


Guillotine Failure of Pump Connecting Pipeine in Pump Farm (Sinopec HK Oil Terminal Chai Wan)

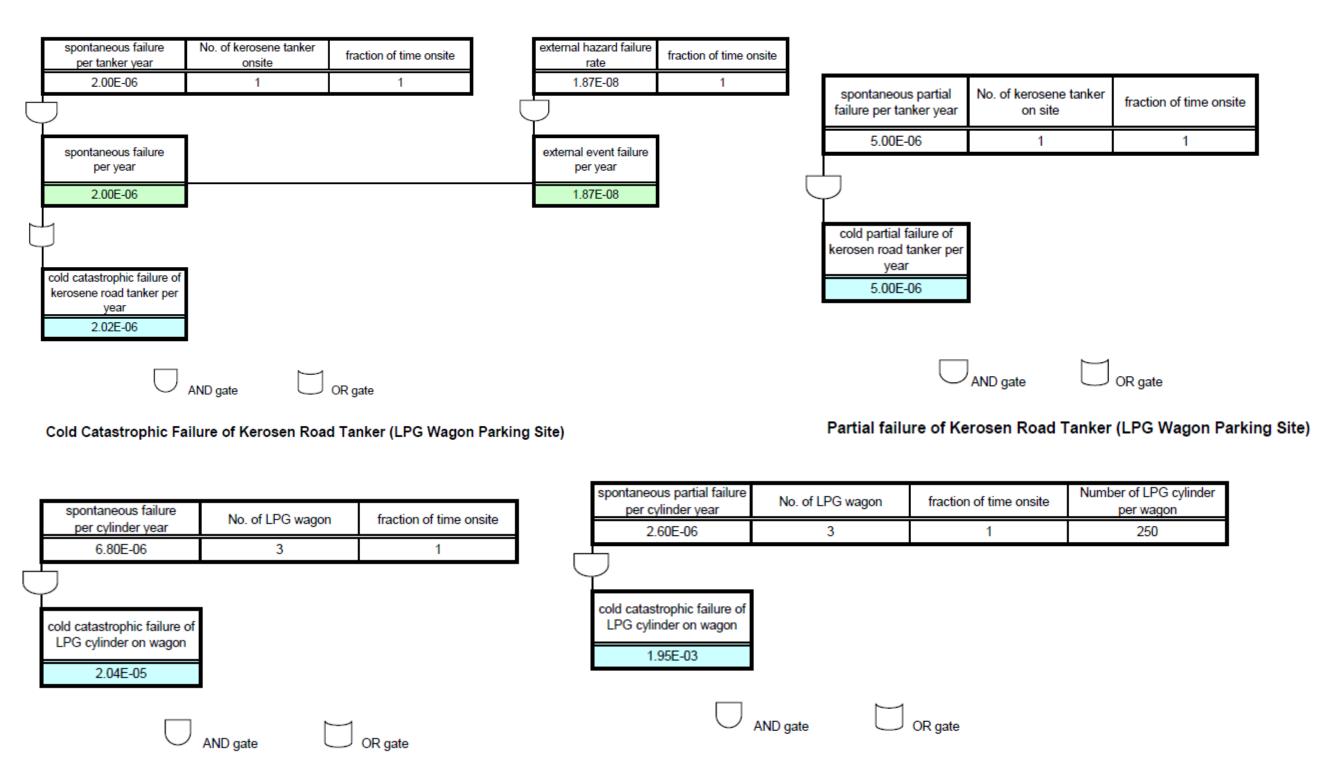


	em per demand	loading hose misconnection per operation	problem per demand	Vessel steere from jetty operatio	per failure per demar	-	Frequency of stri by another ves per visit		act energy				
2.00E-06	0.5	3.00E-05	0.5	4.00E-0	6 0.013		8.00E-06		1				
loading hose disconnection and failure to rectify per		loading hose misconnection and failure to rectify per operation	•	steer away f			failure by vess impact per opera			spontanous failure pe operation	er	failure to activate rapid isolation per demand	EFV failure per demand
1.00E-06	ŧ	1.50E-05		5.20E-0	8		8.00E-06			1.80E-07		1.00E-01	1
guillotine failure during unloading per no. of operation 2.42E-05	filling per year											rapid isolation failure	
guillotine failure of loading hose during filling per year													
3.54E-04	ate 🗀 c	OR gate											
Guillotine Failure of Je	etty Loading Hose Dur	ring Unloading	at Jetty (Sinopec HK Oi	l Terminal Cha	i Wan)								
spontaneous failure leng per meter per year		on of time of Es	SD system ineffective per demand		frequency for earthquake per year	Fraction of unload		re rate for rthquake	Fre	vaccal nar vicit	Probability of vessel impact to cause hose		ssel visit per rear
1.00E-07	100	0.03	0.1	Г	1.00E-05	0.03	3	0.01		8.00E-06	0.015	5	146
spontaneous failure per year 3.33E-08					failure in earthquake per year 3.33E-09				fa	ilure by vessel impact per operation 1.75E-05			
guillotine failure of fixed pipeline per year 1.76E-05													
☐ AND	gate		OR	gate									
			(Sinones HK Oil Ter										

Guillotine failure of Fixed Pipeline from Tank to Jetty (Sinopec HK Oil Terminal Chai Wan)



Cold Catastrophic Failure of Dye Marker Tank (Sinopec HK Oil Terminal Chai Wan)



Cold Catastrophic Failure of LPG Cylinder (LPG Wagon Parking Site)

Partial failure of of LPG Cylinder (LPG Wagon Parking Site)