



“INSTALAÇÃO DE TANQUES E ARMAZENAGEM PARA COMBUSTÍVEIS LÍQUIDOS NO TERMINAL NORTE DE GRANEIS LÍQUIDOS DO PORTO DE AVEIRO – PROJETO LIVERPOOL”

- PROJETO DE EXECUÇÃO-

ESTUDO DE IMPACTE AMBIENTAL

VOLUME IV – ANEXOS TÉCNICOS

MAIO DE 2022

NOTA INTRODUTÓRIA

A **TRIFÓLIO – ESTUDOS E PROJECTOS AMBIENTAIS E PAISAGÍSTICOS, LDA.**, elaborou o presente Estudo de Impacte Ambiental do Projeto para a “**Instalação de Tanques e Armazenagem para Combustíveis Líquidos no Terminal Norte de Graneis Líquidos do Porto de Aveiro – Projeto LIVERPOOL**”, adiante designado como “**Projeto LIVERPOOL**” no Porto de Aveiro para a **RNM–PRODUTOS QUÍMICOS, S.A.**, em fase de Projeto de Execução.

O Estudo de Impacte Ambiental compreende os seguintes volumes:

VOLUME I – RESUMO NÃO TÉCNICO

VOLUME II – RELATÓRIO SÍNTESE

VOLUME III – PEÇAS DESENHADAS

VOLUME IV – ANEXOS TÉCNICOS

A **TRIFÓLIO** agradece a todos os que colaboraram no fornecimento de informações e elementos de cartografia para a elaboração do presente estudo.

Lisboa, maio de 2022



TRIFÓLIO
Estudos e Projectos
Ambientais e Paisagísticos, Lda.

André Luís Carrêlo

Coordenador Executivo

Eng.º do Ambiente

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1 PROJETO DE EXECUÇÃO

Consta do presente Anexo os seguintes elementos do Projeto de Execução:

- Memória Descritiva
- Plot Plan
- Projeto de Drenagem
- Fundações
- Piping
- P&ID
- Fire Protection System
- Arranjos Exteriores
- Reconhecimento Geológico – Geotécnico para o Projeto “Liverpool” em 2017, pela GEOMA - Geotecnia e Mecânica de Solos, Lda
- Avaliação de Compatibilidade de Localização:
 - Apêndice 1 – Plantas
 - Apêndice 2 – Fichas de Dados de Segurança de produtos
 - Apêndice 3 – Representações Gráficas dos Cenários
 - Apêndice 4 – Resultados PHAST

Input Report

Workspace: RNM_Aveiro

120 s

Study

RNM_Aveiro

Tab	Group	Field	Value	Units
Context of calculations	Selection of context	Weathers to use for this study	Weather folder	
		Parameters to use for this study	120s	
		Obstructions to use for this study		
Material	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Concrete, no bund	
Toxic parameters	Indoor toxic calculations	Specify the downwind building type	Unselected	
		Building type (downwind building type)		
Dispersion	Distances of interest	Distances of interest		m

07 - Rotura braço carga/descarga Navio Gasóleo

Pressure vessel

RNM_Aveiro\120 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume inventory?	No	
		Mass inventory	26500	kg
		Volume inventory	35,8093	m3
		Material to track	Gasóleo	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	3,3	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	

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Scenario	Pipe dimensions	Pipe length	20	m
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	35,8093	m3
		Tank vapour volume	0	m3

		Tank liquid volume	35,8093	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m

	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2

		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
	Radiation levels	Calculate lethality	No	
		Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
	Parameters	Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
		Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Short pipe

Short pipe

RNM_Aveiro\120 s\07 - Rotura braço carga/descarga Navio Gasóleo

Tab	Group	Field	Value	Units
Scenario	Scenario	Scenario type	Line rupture	
	Pipe dimensions	Pipe internal diameter	300	mm
		Pipe length	20	m
	Hole	Orifice diameter		mm
	Release location	Elevation	0,1	m
		Tank head	0	m
	Flow control	Flow controller	Pump (liquid release)	
		Input option	Fixed flow rate	
		Fixed flow rate	316,9	kg/s
	Direction	Pump head		m
		Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge	Model settings	Atmospheric expansion	DNV GL recommended	

parameters		method		
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition	No ignition location	

		location		
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for	Calculate SEP	

		surface emissive power		
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

08 - Fuga braço carga/descarga Navio Gasóleo

Pressure vessel

RNM_Aveiro\120 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume inventory?	No	
		Mass inventory	26500	kg
		Volume inventory	35,8093	m3
		Material to track	Gasóleo	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	3,3	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg

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Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	35,8093	m3
		Tank vapour volume	0	m3
		Tank liquid volume	35,8093	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg

		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	

		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	

		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\120 s\08 - Fuga braço carga/descarga Navio Gasóleo

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	30	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging		s

		time		
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	

		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

12 - Rotura braço carga/descarga Cisterna Gasóleo

Pressure vessel

RNM_Aveiro\120 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume inventory?	No	
		Mass inventory	3800	kg
		Volume inventory	5,13492	m3

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		Material to track	Gasóleo	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	0,5	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length	5	m
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	

Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	5,13492	m3
		Tank vapour volume	0	m3
		Tank liquid volume	5,13492	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	

		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg

		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Short pipe

Short pipe

RNM_Aveiro\120 s\12 - Rotura braço carga/descarga Cisterna Gasóleo

Tab	Group	Field	Value	Units
Scenario	Scenario	Scenario type	Line rupture	
	Pipe dimensions	Pipe internal diameter	100	mm
		Pipe length	5	m
	Hole	Orifice diameter		mm
	Release location	Elevation	0,1	m
		Tank head	0	m
	Flow control	Flow controller	Pump (liquid release)	
		Input option	Fixed flow rate	
		Fixed flow rate	47,5	kg/s
		Pump head		m
	Direction	Outdoor release direction	Horizontal	

		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	

Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum	20	s

		exposure duration		
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

13 - Fuga braço carga/descarga Cisterna Gasóleo

Pressure vessel

RNM_Aveiro\120 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume inventory?	No	
		Mass inventory	3800	kg
		Volume inventory	5,13492	m3
		Material to track	Gasóleo	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	0,5	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	

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Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	5,13492	m3
		Tank vapour volume	0	m3

		Tank liquid volume	5,13492	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m

	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2

		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\120 s\13 - Fuga braço carga/descarga Cisterna Gasóleo

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	10	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	

Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	

	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

20 - Rotura braço carga/descarga Navio Gasolina

Pressure vessel

RNM_Aveiro\120 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume inventory?	No	
		Mass inventory	16600	kg
		Volume inventory	24,0949	m3
		Material to track	Gasolina	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	3,3	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length	20	m
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off	0	/m

		valves		
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	24,0949	m3
		Tank vapour volume	0	m3
		Tank liquid volume	24,0949	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate	BR_1500m2	

		and bunds		
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2

		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Short pipe

Short pipe

RNM_Aveiro\120 s\20 - Rotura braço carga/descarga Navio Gasolina

Tab	Group	Field	Value	Units
Scenario	Scenario	Scenario type	Line rupture	
	Pipe dimensions	Pipe internal diameter	300	mm
		Pipe length	20	m
	Hole	Orifice diameter		mm
	Release location	Elevation	0,1	m

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		Tank head	0	m
	Flow control	Flow controller	Pump (liquid release)	
		Input option	Fixed flow rate	
		Fixed flow rate	193,8	kg/s
		Pump head		m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined	No	

		averaging time		
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	

		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

21 - Fuga braço carga/descarga Navio Gasolina

Pressure vessel

RNM_Aveiro\120 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume inventory?	No	
		Mass inventory	16600	kg
		Volume inventory	24,0949	m3
		Material to track	Gasolina	

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	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	3,3	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying	Modelling of time-	Vacuum relief valve	Operating	

releases	varying leaks and line ruptures			
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	24,0949	m3
		Tank vapour volume	0	m3
		Tank liquid volume	24,0949	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass	3	

		modification factor		
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg

		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

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Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	30	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	

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	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction

	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction

		Pool fire maximum exposure duration	20	s

25 - Rotura braço carga/descarga Cisterna Gasolina

Pressure vessel

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Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume inventory?	No	
		Mass inventory	3500	kg
		Volume inventory	5,08025	m3
		Material to track	Gasolina	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	0,5	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length	5	m
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m

		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	5,08025	m3
		Tank vapour volume	0	m3
		Tank liquid volume	5,08025	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m

	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC

Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Short pipe

Short pipe

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Tab	Group	Field	Value	Units
Scenario	Scenario	Scenario type	Line rupture	
	Pipe dimensions	Pipe internal diameter	100	mm
		Pipe length	5	m
	Hole	Orifice diameter		mm
	Release location	Elevation	0,1	m
		Tank head	0	m
	Flow control	Flow controller	Pump (liquid release)	
		Input option	Fixed flow rate	
		Fixed flow rate	43,6	kg/s
		Pump head		m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity	0	

		head losses		
		Shut-off valve velocity	0	
		head losses		
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame	1726,85	degC

		temperature		
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

26 - Fuga braço carga/descarga Cisterna Gasolina

Pressure vessel

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Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume inventory?	No	
		Mass inventory	3500	kg
		Volume inventory	5,08025	m3
		Material to track	Gasolina	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	0,5	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off	0	/m

		valves		
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	5,08025	m3
		Tank vapour volume	0	m3
		Tank liquid volume	5,08025	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate	Ilha cisternas	

		and bunds		
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2

		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

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Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	10	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m

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		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	

	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	

		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

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Pressure vessel

RNM_Aveiro\120 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	
		Specify volume inventory?	No	
		Mass inventory	9000	kg
		Volume inventory	11,3877	m3
		Material to track	ETHANOL	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	3,3	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length	20	m
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up	Do not force correlation	

		mechanism - continuous		
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	11,3877	m3
		Tank vapour volume	0	m3
		Tank liquid volume	11,3877	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for		

		concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction

	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum	20	s

exposure duration

Geometry	Geometry	East	0	m
		North	0	m

Short pipe

Short pipe

RNM_Aveiro\120 s\33 - Rotura braço descarga Navio Etanol

Tab	Group	Field	Value	Units
Scenario	Scenario	Scenario type	Line rupture	
	Pipe dimensions	Pipe internal diameter	300	mm
		Pipe length	20	m
	Hole	Orifice diameter		mm
	Release location	Elevation	0,1	m
		Tank head	0	m
	Flow control	Flow controller	Pump (liquid release)	
		Input option	Fixed flow rate	
		Fixed flow rate	98,9	kg/s
		Pump head		m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow	0	/m

		valves		
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	

		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for	0,4	fraction

general fires

Pool fire maximum
exposure duration

20

s

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Pressure vessel

RNM_Aveiro\120 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	
		Specify volume inventory?	No	
		Mass inventory	9000	kg
		Volume inventory	11,3877	m3
		Material to track	ETHANOL	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	3,3	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings	0	/m

		in pipe		
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	11,3877	m3
		Tank vapour volume	0	m3
		Tank liquid volume	11,3877	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s

	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame	1726,85	degC

		temperature		
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak
Leak

RNM_Aveiro\120 s\34 - Fuga braço descarga Navio Etanol

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	30	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m

	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	

		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

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Pressure vessel

RNM_Aveiro\120 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	
		Specify volume inventory?	No	
		Mass inventory	2100	kg
		Volume inventory	2,65713	m3
		Material to track	ETHANOL	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	0,5	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length	5	m
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg

Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	2,65713	m3
		Tank vapour volume	0	m3
		Tank liquid volume	2,65713	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg

		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	

		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	

		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Short pipe

Short pipe

RNM_Aveiro\120 s\38 - Rotura flexível carga Cisterna Etanol

Tab	Group	Field	Value	Units
Scenario	Scenario	Scenario type	Line rupture	
	Pipe dimensions	Pipe internal diameter	100	mm
		Pipe length	5	m
	Hole	Orifice diameter		mm
	Release location	Elevation	0,1	m
		Tank head	0	m
	Flow control	Flow controller	Pump (liquid release)	
		Input option	Fixed flow rate	
		Fixed flow rate	26,4	kg/s
		Pump head		m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm

	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	

		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation	5	

		levels		
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

39 - Fuga flexível carga Cisterna Etanol

Pressure vessel

RNM_Aveiro\120 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	
		Specify volume inventory?	No	
		Mass inventory	2100	kg
		Volume inventory	2,65713	m3
		Material to track	ETHANOL	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	0,5	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	

		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	2,65713	m3
		Tank vapour volume	0	m3
		Tank liquid volume	2,65713	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm

		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	

		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction

		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\120 s\39 - Fuga flexível carga Cisterna Etanol

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	10	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	

Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	

		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

Input Report

Workspace: RNM_Aveiro

600 s

Study

RNM_Aveiro

Tab	Group	Field	Value	Units
Context of calculations	Selection of context	Weathers to use for this study	Weather folder	
		Parameters to use for this study	600s	
		Obstructions to use for this study		
Material	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Concrete, no bund	
Toxic parameters	Indoor toxic calculations	Specify the downwind building type	Unselected	
		Building type (downwind building type)		
Dispersion	Distances of interest	Distances of interest		m

05 - Rotura linha bombas p/ ilha Gasóleo

Atmospheric storage tank

RNM_Aveiro\600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume inventory?	No	
		Mass inventory	79400	kg
		Volume inventory	107,293	m3
		Material to track	Gasóleo	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-	PC modelling	

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		component modelling		
Scenario	Pipe dimensions	Pipe length	81	m
	Release location	Elevation	0,1	m
		Tank head	18	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
	Pipe characteristics	Pipe roughness	0,045	mm
Short pipe	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
Time varying releases		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	107,293	m3
		Tank vapour volume	0	m3
		Tank liquid volume	107,293	m3

		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	

	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Short pipe

Short pipe

RNM_Aveiro\600 s\05 - Rotura linha bombas p/ ilha Gasóleo

Tab	Group	Field	Value	Units
Scenario	Scenario	Scenario type	Line rupture	

	Pipe dimensions	Pipe internal diameter	250	mm
		Pipe length	81	m
	Hole	Orifice diameter		mm
	Release location	Elevation	0,1	m
		Tank head	18	m
	Flow control	Flow controller	Pump (liquid release)	
		Input option	Fixed flow rate	
		Fixed flow rate	190,1	kg/s
		Pump head		m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	

Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	

		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

06 - Fuga linha bombas p/ ilha Gasóleo

Atmospheric storage tank

RNM_Aveiro\600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume	No	

		inventory?		
		Mass inventory	79400	kg
		Volume inventory	107,293	m3
		Material to track	Gasóleo	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	18	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	

		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	107,293	m3
		Tank vapour volume	0	m3
		Tank liquid volume	107,293	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations)	Explosion method	Multi-Energy: Uniform confined	

	only)			
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for	0,4	fraction

		general fires		
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak**Leak**

RNM_Aveiro\600 s\06 - Fuga linha bombas p/ ilha Gasóleo

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	25	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	18	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	

		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction

	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

09 - Rotura linha expedição Gasóleo desde a bacia até ao cais

Pressure vessel

RNM_Aveiro\600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume inventory?	No	
		Mass inventory	150800	kg
		Volume inventory	203,775	m3
		Material to track	Gasóleo	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	3,3	bar
		Fluid state	Liquid	

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		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length	403	m
	Release location	Elevation	0,1	m
		Tank head	18	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar

	Inventory data for time-varying releases	Tank volume	203,775	m3
		Tank vapour volume	0	m3
		Tank liquid volume	203,775	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Pipeway	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	

	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	

Surface emissive power		Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Short pipe

Short pipe

RNM_Aveiro\600 s\09 - Rotura linha expedição Gasóleo desde a bacia até ao cais

Tab	Group	Field	Value	Units
Scenario	Scenario	Scenario type	Line rupture	
	Pipe dimensions	Pipe internal diameter	300	mm
		Pipe length	403	m
	Hole	Orifice diameter		mm
	Release location	Elevation	0,1	m
		Tank head	18	m
	Flow control	Flow controller	Pump (liquid release)	
		Input option	Fixed flow rate	
		Fixed flow rate	316,9	kg/s
		Pump head		m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to	Flammable only	

		model		
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Pipeway	

Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	

		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

10 - Fuga linha expedição Gasóleo desde a bacia até ao cais

Pressure vessel

RNM_Aveiro\600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume inventory?	No	
		Mass inventory	150800	kg
		Volume inventory	203,775	m3
		Material to track	Gasóleo	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	3,3	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length	403	m
	Release location	Elevation	0,1	m
		Tank head	18	m

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	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	203,775	m3
		Tank vapour volume	0	m3
		Tank liquid volume	203,775	m3
		Tank liquid level	0	m
		Maximum vapour		m

		release height		
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Pipeway	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass	3	

		modification factor		
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
	Radiation levels	Calculate lethality	No	
		Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
	Parameters	Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
		Mass modification factor	3	
		Fireball maximum exposure duration	20	s
Calculation method	Fireball model	Martinsen time varying		
	TNO model flame temperature	1726,85	degC	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
	Radiation levels	Calculate lethality	No	
		Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
	Parameters	Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
		Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
	Surface emissive power	Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
		Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
	Pool fire	Result types to calculate	Calculate probit	No
Calculate dose			No	

		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\600 s\10 - Fuga linha expedição Gasóleo desde a bacia até ao cais

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	30	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	18	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		

		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Pipeway	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	

		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

18 - Rotura linha bombas p/ ilha Gasolina

Atmospheric storage tank

RNM_Aveiro\600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume	No	

		inventory?		
		Mass inventory	73400	kg
		Volume inventory	106,54	m3
		Material to track	Gasolina	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length	95	m
	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	

		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	106,54	m3
		Tank vapour volume	0	m3
		Tank liquid volume	106,54	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations)	Explosion method	Multi-Energy: Uniform confined	

	only)			
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for	0,4	fraction

		general fires		
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Short pipe

Short pipe

RNM_Aveiro\600 s\18 - Rotura linha bombas p/ ilha Gasolina

Tab	Group	Field	Value	Units
Scenario	Scenario	Scenario type	Line rupture	
	Pipe dimensions	Pipe internal diameter	250	mm
		Pipe length	95	m
	Hole	Orifice diameter		mm
	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Flow control	Flow controller	Pump (liquid release)	
		Input option	Fixed flow rate	
		Fixed flow rate	174,4	kg/s
		Pump head		m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in	0	/m

		pipe		
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	

		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	

		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

19 - Fuga linha bombas p/ ilha Gasolina

Atmospheric storage tank

RNM_Aveiro\600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume inventory?	No	
		Mass inventory	73400	kg
		Volume inventory	106,54	m3
		Material to track	Gasolina	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in	0	/m

		pipe		
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	106,54	m3
		Tank vapour volume	0	m3
		Tank liquid volume	106,54	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and	Terrain and bund definition	Type of terrain for	Land	

terrain		dispersion		
		Type of pool substrate and bunds	BR_1500m2	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	

		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\600 s\19 - Fuga linha bombas p/ ilha Gasolina

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	25	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up	Droplet break-up	Do not force correlation	

	mechanism	mechanism - continuous		
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC

Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

22 - Rotura linha expedição Gasolina desde a bacia até ao cais

Pressure vessel
RNM_Aveiro\600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume inventory?	No	
		Mass inventory	93900	kg
		Volume inventory	136,296	m3
		Material to track	Gasolina	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	3,3	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length	431	m
	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off	0	/m

		valves		
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	136,296	m3
		Tank vapour volume	0	m3
		Tank liquid volume	136,296	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate	Pipeway	

		and bunds		
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2

		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Short pipe

Short pipe

RNM_Aveiro\600 s\22 - Rotura linha expedição Gasolina desde a bacia até ao cais

Tab	Group	Field	Value	Units
Scenario	Scenario	Scenario type	Line rupture	
	Pipe dimensions	Pipe internal diameter	250	mm
		Pipe length	431	m
	Hole	Orifice diameter		mm
	Release location	Elevation	0,1	m

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		Tank head	17,7	m
	Flow control	Flow controller	Pump (liquid release)	
		Input option	Fixed flow rate	
		Fixed flow rate	193,8	kg/s
		Pump head		m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined	No	

		averaging time		
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Pipeway	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	

		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

23 - Fuga linha expedição Gasolina desde a bacia até ao cais

Pressure vessel

RNM_Aveiro\600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume inventory?	No	
		Mass inventory	93900	kg
		Volume inventory	136,296	m3
		Material to track	Gasolina	

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	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	3,3	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying	Modelling of time-	Vacuum relief valve	Operating	

releases	varying leaks and line ruptures			
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	136,296	m3
		Tank vapour volume	0	m3
		Tank liquid volume	136,296	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Pipeway	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass	3	

		modification factor		
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg

		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\600 s\23 - Fuga linha expedição Gasolina desde a bacia até ao cais

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	25	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	

	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Pipeway	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction

	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction

		Pool fire maximum exposure duration	20	s

31 - Rotura linha bombas p/ ilha Etanol

Atmospheric storage tank

RNM_Aveiro\600 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	
		Specify volume inventory?	No	
		Mass inventory	18700	kg
		Volume inventory	23,6611	m3
		Material to track	ETHANOL	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length	61	m
	Release location	Elevation	0,1	m
		Tank head	13	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m

		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	23,6611	m3
		Tank vapour volume	0	m3
		Tank liquid volume	23,6611	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	

	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
Explosion parameters	Explosion method (Consequence calculations only)	Indoor mass modification factor	3	
		Explosion method	Multi-Energy: Uniform confined	
		Ignition	Supply late ignition location	No ignition location
		Location of late ignition		m
		Vapour liquid method	Use explosion mass modification factor	Yes
Jet fire	Jet fire method	Explosion mass modification factor	3	
		Jet fire method	Cone model	
		Result types to calculate	Calculate probit	No
			Calculate dose	No
			Calculate lethality	No
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
		Cone model data	Crosswind angle	0 deg
			Horizontal options	Use standard method
			Correlation	Recommended
	Surface emissive power	Flame-shape adjustment if grounded	Yes	
		Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	

		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Short pipe

Short pipe

RNM_Aveiro\600 s\31 - Rotura linha bombas p/ ilha Etanol

Tab	Group	Field	Value	Units
Scenario	Scenario	Scenario type	Line rupture	
	Pipe dimensions	Pipe internal diameter	150	mm
		Pipe length	61	m
	Hole	Orifice diameter		mm
	Release location	Elevation	0,1	m
		Tank head	13	m
	Flow control	Flow controller	Pump (liquid release)	
		Input option	Fixed flow rate	
		Fixed flow rate	44,5	kg/s
		Pump head		m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
	Droplet break-up mechanism	Droplet break-up mechanism -	Use flashing correlation	

		instantaneous		
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass	Yes	

		modification factor		
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction

Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

32 - Fuga linha bombas p/ ilha Etanol

Atmospheric storage tank

RNM_Aveiro\600 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	
		Specify volume inventory?	No	
		Mass inventory	18700	kg
		Volume inventory	23,6611	m3
		Material to track	ETHANOL	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	13	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream	Disallow liquid phase	

		of orifice?	change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	23,6611	m3
		Tank vapour volume	0	m3
		Tank liquid volume	23,6611	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined	No	

		averaging time		
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum	20	s

		exposure duration		
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\600 s\32 - Fuga linha bombas p/ ilha Etanol

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	15	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	13	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	

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		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR_1500m2	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06;	

			2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction

	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

35 - Rotura linha expedição Etanol desde a bacia até ao cais

Pressure vessel

RNM_Aveiro\600 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	
		Specify volume inventory?	No	
		Mass inventory	50900	kg
		Volume inventory	64,4037	m3
		Material to track	ETHANOL	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	3,3	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length	457	m
	Release location	Elevation	0,1	m
		Tank head	13	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m

		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	64,4037	m3
		Tank vapour volume	0	m3
		Tank liquid volume	64,4037	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging		s

		time		
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Pipeway	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	

		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Short pipe

RNM_Aveiro\600 s\35 - Rotura linha expedição Etanol desde a bacia até ao cais

Tab	Group	Field	Value	Units
Scenario	Scenario	Scenario type	Line rupture	
	Pipe dimensions	Pipe internal diameter	200	mm
		Pipe length	457	m
	Hole	Orifice diameter		mm
	Release location	Elevation	0,1	m
		Tank head	13	m
	Flow control	Flow controller	Pump (liquid release)	
		Input option	Fixed flow rate	
		Fixed flow rate	98,9	kg/s
		Pump head		m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity	0	

		head losses		
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Pipeway	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s

	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

36 - Fuga linha expedição Etanol desde a bacia até ao cais

Pressure vessel

RNM_Aveiro\600 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	
		Specify volume inventory?	No	
		Mass inventory	50900	kg
		Volume inventory	64,4037	m3
		Material to track	ETHANOL	
	Phase	Specified condition	Pressure/temperature	
		Temperature	20	degC
		Pressure (gauge)	3,3	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	13	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-	0	/m

		return valves		
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	64,4037	m3
		Tank vapour volume	0	m3
		Tank liquid volume	64,4037	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and	Terrain and bund	Type of terrain for	Land	

terrain	definition	dispersion		
		Type of pool substrate and bunds	Pipeway	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input	5	

		radiation levels		
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\600 s\36 - Fuga linha expedição Etanol desde a bacia até ao cais

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	20	mm
		Use specified discharge coefficient?	No	

		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	13	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	
		Type of risk effects to model	Flammable only	
Discharge parameters	Phase	Phase to be released	Liquid	
	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Pipeway	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
		Ignition	Supply late ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	

		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	

		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

Input Report
 Workspace: RNM_Aveiro
 3600 s
 Study
 RNM_Aveiro

Tab	Group	Field	Value	Units
Context of calculations	Selection of context	Weathers to use for this study	Weather folder	
		Parameters to use for this study	3600s	
		Obstructions to use for this study		
Material	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Concrete, no bund	
Toxic parameters	Indoor toxic calculations	Specify the downwind building type	Unselected	
		Building type (downwind building type)	Buildings\Building type	
Dispersion	Distances of interest	Distances of interest		m

01 - Incendio tanque T-1001 Gasóleo

Atmospheric storage tank
 RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume inventory?	No	
		Mass inventory	1,14802E+07	kg
		Volume inventory	15513,1	m3
		Material to track	Gasóleo	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC

		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	28	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	

Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	15513,1	m3
		Tank vapour volume	0	m3
		Tank liquid volume	15513,1	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Incendio_T-1001 GO	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	

		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction

Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Catastrophic rupture

Catastrophic rupture

RNM_Aveiro\3600 s\01 - Incendio tanque T-1001 Gasóleo

Tab	Group	Field	Value	Units
Scenario	Release location	Elevation	28	m
		Tank head	0	m
	Fireball emissive power	Use vessel burst pressure	No	
		Vessel burst pressure - gauge		bar
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to model	Flammable only	
Discharge parameters	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	

		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Incendio_T-1001 GO	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Pool fire	Result types to calculate	Calculate probit	No	

		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

02 - Rotura catastrófica tanque T-1001 Gasóleo

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume inventory?	No	
		Mass inventory	1,14802E+07	kg
		Volume inventory	15513,1	m3
		Material to track	Gasóleo	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	18	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg

Discharge parameters	Model settings	Atmospheric expansion DNV GL recommended method		
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	15513,1	m3
		Tank vapour volume	0	m3
		Tank liquid volume	15513,1	m3
		Tank liquid level	0	m
		Maximum vapour		m

		release height		
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-1001 GO	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass	3	

		modification factor		
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction

		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Catastrophic rupture

Catastrophic rupture

RNM_Aveiro\3600 s\02 - Rotura catastrófica tanque T-1001 Gasóleo

Tab	Group	Field	Value	Units
Scenario	Release location	Elevation	0,1	m
		Tank head	18	m
	Fireball emissive power	Use vessel burst pressure	No	
		Vessel burst pressure - gauge		bar
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to model	Flammable only	
Discharge parameters	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-1001 GO	
Explosion	Explosion method	Explosion method	Multi-Energy:	

parameters			Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum	20	s

exposure duration

03 - Fuga 100mm tanque T-1001 Gasóleo

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume inventory?	No	
		Mass inventory	1,14802E+07	kg
		Volume inventory	15513,1	m3
		Material to track	Gasóleo	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	18	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in	0	/m

		pipe		
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	15513,1	m3
		Tank vapour volume	0	m3
		Tank liquid volume	15513,1	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging		s

		time		
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-1001 GO	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	

		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\3600 s\03 - Fuga 100mm tanque T-1001 Gasóleo

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	100	mm

		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	18	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-1001 GO	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition	No ignition location	

		location		
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	

		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

04 - Fuga 10mm tanque T-1001 Gasóleo

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume inventory?	No	
		Mass inventory	1,14802E+07	kg
		Volume inventory	15513,1	m3
		Material to track	Gasóleo	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction

	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	18	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	

		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	15513,1	m3
		Tank vapour volume	0	m3
		Tank liquid volume	15513,1	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-1001 GO	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion	Explosion method	Explosion method	Multi-Energy: Uniform	

parameters	(Consequence calculations only)		confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	

		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\3600 s\04 - Fuga 10mm tanque T-1001 Gasóleo

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	10	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	18	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up	Droplet break-up	Do not force correlation	

	mechanism	mechanism - continuous		
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-1001 GO	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum	20	s

		exposure duration		
Jet fire	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction

		Pool fire maximum exposure duration	20	s

11 - Rotura catastrófica cisterna Gasóleo

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasóleo	
		Specify volume inventory?	No	
		Mass inventory	33800	kg
		Volume inventory	45,6738	m3
		Material to track	Gasóleo	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	3	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm

	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	45,6738	m3
		Tank vapour volume	0	m3
		Tank liquid volume	45,6738	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	

		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06;	

			2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Catastrophic rupture

Catastrophic rupture

RNM_Aveiro\3600 s\11 - Rotura catastrófica cisterna Gasóleo

Tab	Group	Field	Value	Units

Scenario	Release location	Elevation	0,1	m
		Tank head	3	m
	Fireball emissive power	Use vessel burst pressure	No	
		Vessel burst pressure - gauge		bar
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasóleo	
		Type of risk effects to model	Flammable only	
Discharge parameters	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	

		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

14 - Incendio tanque T-3002 Gasolina

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume inventory?	No	

		Mass inventory	7,85618E+06	kg
		Volume inventory	11403,2	m3
		Material to track	Gasolina	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	17,7	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off	0	/m

		valves		
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	11403,2	m3
		Tank vapour volume	0	m3
		Tank liquid volume	11403,2	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Incendio T-3002 GA	

	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if	Yes	

		grounded		
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Catastrophic rupture

Catastrophic rupture

RNM_Aveiro\3600 s\14 - Incendio tanque T-3002 Gasolina

Tab	Group	Field	Value	Units
Scenario	Release location	Elevation	17,7	m
		Tank head	0	m
	Fireball emissive power	Use vessel burst pressure	No	
		Vessel burst pressure - gauge		bar
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	
Discharge parameters	Droplet break-up mechanism	Droplet break-up mechanism -	Use flashing correlation	

		instantaneous		
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Incendio T-3002 GA	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s

	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

15 - Rotura catastrófica tanque T-3002 Gasolina

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume inventory?	No	
		Mass inventory	7,85618E+06	kg
		Volume inventory	11403,2	m3
		Material to track	Gasolina	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	

Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar

	Inventory data for time-varying releases	Tank volume	11403,2	m3
		Tank vapour volume	0	m3
		Tank liquid volume	11403,2	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-3002/T-5001 GA/Etanol	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	

	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input	5	

		radiation levels		
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Catastrophic rupture

Catastrophic rupture

RNM_Aveiro\3600 s\15 - Rotura catastrófica tanque T-3002 Gasolina

Tab	Group	Field	Value	Units
Scenario	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Fireball emissive power	Use vessel burst pressure	No	
		Vessel burst pressure - gauge		bar
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	
Discharge parameters	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	

		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-3002/T-5001 GA/Etanol	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2

		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

16 - Fuga 100mm tanque T-3002 Gasolina

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume inventory?	No	
		Mass inventory	7,85618E+06	kg
		Volume inventory	11403,2	m3
		Material to track	Gasolina	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo- component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended method	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up	Droplet break-up	Use flashing correlation	

	mechanism	mechanism - instantaneous		
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	11403,2	m3
		Tank vapour volume	0	m3
		Tank liquid volume	11403,2	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of		ppm

		interest		
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-3002/T-5001 GA/Etanol	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	

		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\3600 s\16 - Fuga 100mm tanque T-3002 Gasolina

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	100	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	

		Type of pool substrate and bunds	BR T-3002/T-5001 GA/Etanol	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction

	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

17 - Fuga 10mm tanque T-3002 Gasolina

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume inventory?	No	
		Mass inventory	7,85618E+06	kg
		Volume inventory	11403,2	m3
		Material to track	Gasolina	
	Phase	Specified condition	Temperature and atmospheric pressure	

		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity	0	

		head losses		
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	11403,2	m3
		Tank vapour volume	0	m3
		Tank liquid volume	11403,2	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-3002/T-5001 GA/Etanol	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg

		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2

		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\3600 s\17 - Fuga 10mm tanque T-3002 Gasolina

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	10	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	17,7	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	

		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-3002/T-5001 GA/Etanol	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	

		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	

		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

24 - Rotura catastrófica cisterna Gasolina

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	Gasolina	
		Specify volume inventory?	No	
		Mass inventory	31000	kg
		Volume inventory	44,9965	m3
		Material to track	Gasolina	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	3	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up	Do not force correlation	

		mechanism - continuous		
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	44,9965	m3
		Tank vapour volume	0	m3
		Tank liquid volume	44,9965	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of		

		interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	

		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Catastrophic rupture

Catastrophic rupture

RNM_Aveiro\3600 s\24 - Rotura catastrófica cisterna Gasolina

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Tab	Group	Field	Value	Units
Scenario	Release location	Elevation	0,1	m
		Tank head	3	m
	Fireball emissive power	Use vessel burst pressure	No	
		Vessel burst pressure - gauge		bar
Material	Material	Material characteristics	Flammable only	
		Material to track	Gasolina	
		Type of risk effects to model	Flammable only	
Discharge parameters	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	

Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

27 - Incendio tanque T-5001 Etanol

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	

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		Specify volume inventory?	No	
		Mass inventory	1,58279E+06	kg
		Volume inventory	2002,7	m3
		Material to track	ETHANOL	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	13	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended method	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-	0	/m

		return valves		
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	2002,7	m3
		Tank vapour volume	0	m3
		Tank liquid volume	2002,7	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	

		Type of pool substrate and bunds	Incendio T-5001 Etanol	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	

		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Catastrophic rupture

Catastrophic rupture

RNM_Aveiro\3600 s\27 - Incendio tanque T-5001 Etanol

Tab	Group	Field	Value	Units
Scenario	Release location	Elevation	13	m
		Tank head	0	m
	Fireball emissive power	Use vessel burst pressure	No	
		Vessel burst pressure - gauge		bar
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	
		Type of risk effects to model	Flammable only	

Discharge parameters	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Incendio T-5001 Etanol	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	

		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

28 - Rotura catastrófica tanque T-5001 Etanol

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	
		Specify volume inventory?	No	
		Mass inventory	1,58279E+06	kg
		Volume inventory	2002,7	m3
		Material to track	ETHANOL	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction

	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	13	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	

		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	2002,7	m3
		Tank vapour volume	0	m3
		Tank liquid volume	2002,7	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-3002/T-5001 GA/Etanol	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion	Explosion method	Explosion method	Multi-Energy: Uniform	

parameters	(Consequence calculations only)		confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	

		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Catastrophic rupture

Catastrophic rupture

RNM_Aveiro\3600 s\28 - Rotura catastrófica tanque T-5001 Etanol

Tab	Group	Field	Value	Units
Scenario	Release location	Elevation	0,1	m
		Tank head	13	m
	Fireball emissive power	Use vessel burst pressure	No	
		Vessel burst pressure - gauge		bar
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	
		Type of risk effects to model	Flammable only	
Discharge parameters	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m

	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-3002/T-5001 GA/Etanol	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation	5	

levels				
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

29 - Fuga 100mm tanque T-5001 Etanol

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	
		Specify volume inventory?	No	
		Mass inventory	1,58279E+06	kg
		Volume inventory	2002,7	m3
		Material to track	ETHANOL	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	13	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change	Disallow liquid phase	

		upstream of orifice?	change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	2002,7	m3
		Tank vapour volume	0	m3
		Tank liquid volume	2002,7	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg

		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-3002/T-5001 GA/Etanol	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to	Calculate probit	No	

	calculate			
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m

	North	0	m

Leak

Leak

RNM_Aveiro\3600 s\29 - Fuga 100mm tanque T-5001 Etanol

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	100	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	13	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	

		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-3002/T-5001 GA/Etanol	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	

		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

30 - Fuga 10mm tanque T-5001 Etanol

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	
		Specify volume inventory?	No	
		Mass inventory	1,58279E+06	kg
		Volume inventory	2002,7	m3

		Material to track	ETHANOL	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	13	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	

		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	2002,7	m3
		Tank vapour volume	0	m3
		Tank liquid volume	2002,7	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-3002/T-5001 GA/Etanol	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	

		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	

		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Leak

Leak

RNM_Aveiro\3600 s\30 - Fuga 10mm tanque T-5001 Etanol

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	10	mm
		Use specified discharge coefficient?	No	
		Discharge coefficient		fraction
	Release location	Elevation	0,1	m
		Tank head	13	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge	Model settings	Atmospheric expansion	DNV GL recommended	

parameters		method		
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	BR T-3002/T-5001 GA/Etanol	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	

		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2

		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

37 - Rotura catastrófica cisterna Etanol

Atmospheric storage tank

RNM_Aveiro\3600 s

Tab	Group	Field	Value	Units
Material	Material	Material	ETHANOL	
		Specify volume inventory?	No	
		Mass inventory	31640	kg
		Volume inventory	40,0341	m3
		Material to track	ETHANOL	
	Phase	Specified condition	Temperature and atmospheric pressure	
		Temperature	20	degC
		Pressure (gauge)		bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
	Modelling of mixtures	Multi or pseudo-component modelling	PC modelling	
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	0,1	m
		Tank head	3	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV GL recommended method	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up	Droplet break-up	Use flashing correlation	

	mechanism	mechanism - instantaneous		
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe characteristics	Pipe roughness	0,045	mm
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	40,0341	m3
		Tank vapour volume	0	m3
		Tank liquid volume	40,0341	m3
		Tank liquid level	0	m
		Maximum vapour release height		m
		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
Dispersion	Dispersion scope	Concentration of		ppm

		interest		
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	Roof/lee	
		Wind or release angle from North	0	deg
		Handling of droplets	Trapped	
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Jet fire	Jet fire method	Jet fire method	Cone model	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	

		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Crosswind angle	0	deg
		Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

Catastrophic rupture

Catastrophic rupture

RNM_Aveiro\3600 s\37 - Rotura catastrófica cisterna Etanol

Tab	Group	Field	Value	Units
Scenario	Release location	Elevation	0,1	m
		Tank head	3	m
	Fireball emissive power	Use vessel burst pressure	No	
		Vessel burst pressure - gauge		bar
Material	Material	Material characteristics	Flammable only	
		Material to track	ETHANOL	
		Type of risk effects to model	Flammable only	
Discharge parameters	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
Dispersion	Dispersion scope	Concentration of interest		ppm
		Averaging time for concentration of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
	Distances of interest	Distances of interest		m
	Averaging time for reports	ERPG [1 hr]	No	
		IDLH [30 mins]	No	
		STEL [15 mins]	No	
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Land	
		Type of pool substrate and bunds	Ilha cisternas	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	

		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	37,5; 12,5; 7; 5; 3	kW/m2
		Probit levels	5; 3,72; 7,5	
		Dose levels	37,5; 5,8E+06; 7; 5; 3	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s

Consequence Summary Report

Workspace: RNM_Aveiro

Study: 120 s

Summary Basis

These tables will only report global values set in the parameters. Values that are modified in the study tree will not be reported.

The report is context sensitive, and filters up to the study level. You will need to generate multiple summary reports if you have multiple studies in your workspace.

Discharge Results (after atmospheric expansion)

Path	Scenario	Weather	Peak Flowrate [kg/s]	Temperature [degC]	Liquid mass fraction in material [fraction]	Droplet diameter [um]	Expanded diameter [m]	Velocity [m/s]	End time of release [s]
120 s\07 - Rotura braço carga/descarga Navio Gasóleo	Short pipe	3.3/C	316,9	20,0232	1	7013,33	0,3	6,05829	86,9239
		5.1/D	316,9	20,0232	1	6905,7	0,3	6,05829	86,9239
		2.0/F	316,9	20,0232	1	7162,09	0,3	6,05829	86,9239
120 s\08 - Fuga braço carga/descarga Navio Gasóleo	Leak	3.3/C	10,4371	19,9509	1	232,857	0,0232379	33,2528	120
		5.1/D	10,4371	19,9509	1	229,283	0,0232379	33,2528	120
		2.0/F	10,4371	19,9509	1	237,796	0,0232379	33,2528	120
120 s\12 - Rotura braço carga/descarga Cisterna Gasóleo	Short pipe	3.3/C	47,5	20,0414	1	3853,46	0,1	8,17281	80,6118
		5.1/D	47,5	20,0414	1	3794,33	0,1	8,17281	80,6118
		2.0/F	47,5	20,0414	1	3935,2	0,1	8,17281	80,6118
120 s\13 - Fuga braço carga/descarga Cisterna Gasóleo	Leak	3.3/C	0,45143	19,9927	1	1536,32	0,00774597	12,9448	120
		5.1/D	0,45143	19,9927	1	1512,74	0,00774597	12,9448	120
		2.0/F	0,45143	19,9927	1	1568,91	0,00774597	12,9448	120
120 s\20 - Rotura braço carga/descarga Navio Gasolina	Short pipe	3.3/C	193,8	20,0078	1	10000	0,3	3,97963	90,681

		5.1/D	193,8	20,0078	1	10000	0,3	3,97963	90,681
		2.0/F	193,8	20,0078	1	10000	0,3	3,97963	90,681
120 s\21 - Fuga braço carga/descarga Navio Gasolina	Leak	3.3/C	9,69685	19,9241	1	193,367	0,0232379	33,1837	120
		5.1/D	9,69685	19,9241	1	190,399	0,0232379	33,1837	120
		2.0/F	9,69685	19,9241	1	197,468	0,0232379	33,1837	120
120 s\25 - Rotura braço carga/descarga Cisterna Gasolina	Short pipe	3.3/C	43,6	20,0314	1	3277,48	0,1	8,05805	80,8958
		5.1/D	43,6	20,0314	1	3227,18	0,1	8,05805	80,8958
		2.0/F	43,6	20,0314	1	3346,99	0,1	8,05805	80,8958
120 s\26 - Fuga braço carga/descarga Cisterna Gasolina	Leak	3.3/C	0,419419	19,9885	1	1275,43	0,00774597	12,9187	120
		5.1/D	0,419419	19,9885	1	1255,86	0,00774597	12,9187	120
		2.0/F	0,419419	19,9885	1	1302,48	0,00774597	12,9187	120
120 s\33 - Rotura braço descarga Navio Etanol	Short pipe	3.3/C	98,9	20,0011	1	10000	0,3	1,77034	102,298
		5.1/D	98,9	20,0011	1	10000	0,3	1,77034	102,298
		2.0/F	98,9	20,0011	1	10000	0,3	1,77034	102,298
120 s\34 - Fuga braço descarga Navio Etanol	Leak	3.3/C	10,6101	19,9513	1	234,243	0,0232379	31,6523	120
		5.1/D	10,6101	19,9513	1	230,648	0,0232379	31,6523	120
		2.0/F	10,6101	19,9513	1	239,211	0,0232379	31,6523	120
120 s\38 - Rotura flexível carga Cisterna Etanol	Short pipe	3.3/C	26,4	20,006	1	10000	0,1	4,25314	80,7211
		5.1/D	26,4	20,006	1	10000	0,1	4,25314	80,7211
		2.0/F	26,4	20,006	1	10000	0,1	4,25314	80,7211
120 s\39 - Fuga flexível carga Cisterna Etanol	Leak	3.3/C	0,458883	19,9926	1	1545,65	0,00774597	12,3211	120
		5.1/D	0,458883	19,9926	1	1521,93	0,00774597	12,3211	120

	2.0/F	0,458883	19,9926	1	1578,44	0,00774597	12,3211	120

Dispersion Results

Input dispersion parameters

Core averaging time	18,75	s
Flammable averaging time	18,75	s
Toxic averaging time	600	s
Height of interest	0	m

Distance downwind to defined concentrations

The reported concentration of interest is defined at the scenario

Path	Scenario	Weather	Distance to UFL [m]	Distance to LFL [m]	Distance to LFL fraction [m]
120 s\07 - Rotura braço carga/descarga Navio Gasóleo	Short pipe	3.3/C	2,13664	2,27781	2,33317
		5.1/D	2,25581	2,43615	2,50561
		2.0/F	2,59301	3,06631	3,24882
120 s\08 - Fuga braço carga/descarga Navio Gasóleo	Leak	3.3/C	6,29497	6,90444	7,11704
		5.1/D	6,40789	7,16621	7,43208
		2.0/F	6,72341	8,58745	9,26754
120 s\12 - Rotura braço carga/descarga Cisterna Gasóleo	Short pipe	3.3/C	1,87312	2,01591	2,06934
		5.1/D	1,88132	2,05817	2,12403
		2.0/F	2,32935	2,8301	3,01789
120 s\13 - Fuga braço carga/descarga Cisterna Gasóleo	Leak	3.3/C	1,60302	1,8135	1,87865
		5.1/D	1,56281	1,83896	1,92128
		2.0/F	1,5556	2,27717	2,49122
120 s\20 - Rotura braço carga/descarga Navio Gasolina	Short pipe	3.3/C	1,63085	5,96194	12,8409
		5.1/D	1,74243	6,67933	14,0353
		2.0/F	2,36133	10,2153	20,3655
120 s\21 - Fuga braço carga/descarga Navio Gasolina	Leak	3.3/C	6,9787	21,4957	38,6243
		5.1/D	7,13127	20,7293	35,0102
		2.0/F	7,65862	24,8248	43,504
120 s\25 - Rotura braço	Short pipe	3.3/C	2,0002	9,92355	14,9821

carga/descarga Cisterna
Gasolina

		5.1/D	1,99468	8,88802	13,6393
		2.0/F	2,61941	11,5515	16,8367
120 s\26 - Fuga braço carga/descarga Cisterna Gasolina	Leak	3.3/C	1,59358	1,85414	2,00472
		5.1/D	1,55907	1,89031	2,05042
		2.0/F	1,57837	2,45388	2,85058
120 s\33 - Rotura braço descarga Navio Etanol	Short pipe	3.3/C	0,527582	0,953426	1,74783
		5.1/D	0,538898	0,76551	1,77288
		2.0/F	0,791326	1,51604	2,25844
120 s\34 - Fuga braço descarga Navio Etanol	Leak	3.3/C	5,8352	6,66392	7,95614
		5.1/D	5,905	6,9354	8,1375
		2.0/F	5,84453	8,3559	10,4569
120 s\38 - Rotura flexível carga Cisterna Etanol	Short pipe	3.3/C	0,886275	1,10332	2,51179
		5.1/D	0,846195	1,11949	1,99396
		2.0/F	1,12904	1,74561	3,19106
120 s\39 - Fuga flexível carga Cisterna Etanol	Leak	3.3/C	1,46166	1,72028	1,79752
		5.1/D	1,3935	1,73761	1,83496
		2.0/F	n/a	2,07972	2,33708

Jet Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Flame length [m]	Distance downwind to intensity level 1 (37,5 kW/m ²) [m]	Distance downwind to intensity level 2 (12,5 kW/m ²) [m]	Distance downwind to intensity level 3 (7 kW/m ²) [m]	Distance downwind to intensity level 4 (5 kW/m ²) [m]	Distance downwind to intensity level 5 (3 kW/m ²) [m]
120 s\07 - Rotura braço carga/descarga Navio Gasóleo	Short pipe	3.3/C	1,36006	2,3804	2,3804	2,3804	2,3804	2,3989
		5.1/D	1,17067	2,18381	2,18381	2,18381	2,18381	2,18381
		2.0/F	1,66754	2,69934	2,69934	2,69934	2,69934	2,75196
120 s\08 - Fuga braço carga/descarga Navio Gasóleo	Leak	3.3/C	2,59004	3,6507	3,76234	4,34972	4,75306	5,48448
		5.1/D	2,27262	3,32546	3,50561	4,07133	4,46539	5,18004
		2.0/F	2,96801	4,03144	4,03144	4,6249	5,02841	5,75328
120 s\12 - Rotura braço carga/descarga Cisterna Gasóleo	Short pipe	3.3/C	1,1765	2,19488	2,19488	2,19488	2,19488	2,19488
		5.1/D	1,06082	2,07357	2,07357	2,07357	2,07357	2,07357
		2.0/F	1,35561	2,38186	2,38186	2,38186	2,38186	2,38186
120 s\13 - Fuga braço carga/descarga Cisterna Gasóleo	Leak	3.3/C	0,328604	n/a	0,325176	0,413114	0,459683	0,531565
		5.1/D	0,296943	n/a	0,326784	0,394527	0,435534	0,508107
		2.0/F	0,370334	n/a	0,372616	0,43726	0,488675	0,567888
120 s\20 - Rotura braço carga/descarga Navio Gasolina	Short pipe	3.3/C	9,02542	10,1716	12,4714	14,156	15,3135	17,4132
		5.1/D	7,73864	9,01055	11,2109	12,7347	13,7949	15,7297
		2.0/F	11,037	12,2498	14,3341	16,2929	17,6166	19,9818
120 s\21 - Fuga braço carga/descarga Navio Gasolina	Leak	3.3/C	20,6683	25,5728	33,2876	38,7035	42,4861	49,3808
		5.1/D	18,1725	23,8283	31,209	36,5025	40,2206	47,035
		2.0/F	23,6838	27,5892	35,4597	40,8539	44,5843	51,3544

120 s\25 - Rotura braço carga/descarga Cisterna Gasolina	Short pipe	3.3/C	10,7284	11,9918	15,3566	17,6098	19,162	21,9743
		5.1/D	9,64276	11,5526	14,6505	16,8216	18,3349	21,1018
		2.0/F	12,3778	13,6646	16,4564	18,8695	20,4988	23,4135
120 s\26 - Fuga braço carga/descarga Cisterna Gasolina	Leak	3.3/C	3,24913	4,32161	4,32829	4,96794	5,40166	6,1773
		5.1/D	2,92075	3,97851	4,14681	4,76134	5,18201	5,94439
		2.0/F	3,66556	4,75425	4,75425	5,19899	5,64639	6,43522
120 s\33 - Rotura braço descarga Navio Etanol	Short pipe	3.3/C	5,9056	n/a	6,97984	6,97984	7,05333	7,76363
		5.1/D	5,86386	n/a	6,93355	6,9433	7,38412	8,13905
		2.0/F	6,05528	n/a	7,14249	7,14249	7,14249	7,46169
120 s\34 - Fuga braço descarga Navio Etanol	Leak	3.3/C	17,3039	n/a	19,2834	22,1571	23,9985	27,1666
		5.1/D	15,313	16,6917	18,1239	20,8092	22,5638	25,626
		2.0/F	19,7247	n/a	21,1732	23,7235	25,6129	28,8133
120 s\38 - Rotura flexível carga Cisterna Etanol	Short pipe	3.3/C	5,64077	n/a	6,73322	6,73322	6,81807	7,58088
		5.1/D	5,20174	n/a	6,27472	6,27472	6,6563	7,3786
		2.0/F	6,25477	n/a	7,377	7,377	7,377	7,82082
120 s\39 - Fuga flexível carga Cisterna Etanol	Leak	3.3/C	2,73573	n/a	3,79527	3,79527	3,79527	3,79527
		5.1/D	2,45115	n/a	3,49802	3,49802	3,49802	3,49802
		2.0/F	3,09692	n/a	n/a	4,17077	4,17077	4,17077

Early Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (37,5 kW/m ²) [m]	Distance downwind to intensity level 2 (12,5 kW/m ²) [m]	Distance downwind to intensity level 3 (7 kW/m ²) [m]	Distance downwind to intensity level 4 (5 kW/m ²) [m]	Distance downwind to intensity level 5 (3 kW/m ²) [m]
120 s\07 - Rotura braço carga/descarga Navio Gasóleo	Short pipe	3.3/C	43,7108	n/a	24,1731	43,9003	56,7538	72,4517
		5.1/D	43,7116	n/a	25,1739	49,119	61,4823	75,3299
		2.0/F	43,7028	n/a	22,8514	38,4	50,4367	67,4994
120 s\08 - Fuga braço carga/descarga Navio Gasóleo	Leak	3.3/C	15,326	14,5888	25,3671	33,0828	36,9502	43,4638
		5.1/D	15,4424	14,6854	27,661	34,3742	37,7276	44,5076
		2.0/F	15,1688	14,1621	22,3942	30,5888	34,9605	42,0292
120 s\12 - Rotura braço carga/descarga Cisterna Gasóleo	Short pipe	3.3/C	10,7048	6,35239	17,3091	21,8753	24,6801	30,2144
		5.1/D	10,7054	6,35269	18,277	22,2806	25,2976	30,391
		2.0/F	10,7062	6,35311	15,7053	20,9735	24,1321	29,4887
120 s\13 - Fuga braço carga/descarga Cisterna Gasóleo	Leak	3.3/C	3,18856	5,84785	8,08844	9,60357	10,6393	12,5337
		5.1/D	3,21272	6,13641	8,1942	9,5863	10,5527	12,344
		2.0/F	3,15585	5,35184	7,8592	9,45598	10,5689	12,5829
120 s\20 - Rotura braço carga/descarga Navio Gasolina	Short pipe	3.3/C	43,7026	22,8513	24,5627	27,196	28,7273	31,9737
		5.1/D	43,7087	22,8544	24,9781	27,2299	28,7986	32,0719
		2.0/F	43,7021	22,8511	23,9704	26,9408	28,6813	31,8345
120 s\21 - Fuga braço carga/descarga Navio Gasolina	Leak	3.3/C	19,2784	16,9641	18,5145	19,8362	20,897	22,8769
		5.1/D	19,2066	16,9909	18,5659	19,8414	20,8026	22,6291
		2.0/F	19,3878	16,5496	17,9658	19,438	20,4943	22,6169

120 s\25 - Rotura braço carga/descarga Cisterna Gasolina	Short pipe	3.3/C	10,7063	6,35317	7,50643	8,62617	9,45003	11,0374
		5.1/D	10,7065	6,35324	7,48964	8,62178	9,43302	10,9973
		2.0/F	10,7052	6,35259	7,50738	8,61638	9,45908	11,069
120 s\26 - Fuga braço carga/descarga Cisterna Gasolina	Leak	3.3/C	4,17292	4,66978	4,80707	5,30521	5,67835	6,40271
		5.1/D	4,14574	4,65213	4,72441	5,17051	5,51472	6,18782
		2.0/F	4,2042	4,65396	4,84891	5,39471	5,80007	6,58375
120 s\33 - Rotura braço descarga Navio Etanol	Short pipe	3.3/C	43,7031	29,2775	56,0472	68,7206	78,2388	95,2813
		5.1/D	43,7078	31,4149	57,1391	69,9739	78,9724	95,1999
		2.0/F	43,7038	22,8519	53,5994	67,5894	76,9337	94,0776
120 s\34 - Fuga braço descarga Navio Etanol	Leak	3.3/C	19,8376	17,4836	33,0876	39,349	44,0366	52,3659
		5.1/D	19,7886	18,156	33,7763	40,0227	44,4106	52,221
		2.0/F	19,9034	16,5176	31,3541	38,475	43,0849	51,5661
120 s\38 - Rotura flexível carga Cisterna Etanol	Short pipe	3.3/C	10,7053	6,35267	15,7306	19,3866	22,0309	26,772
		5.1/D	10,7086	6,35431	16,2733	19,8199	22,344	26,7501
		2.0/F	10,7055	6,35274	14,6823	18,9136	21,5517	26,3741
120 s\39 - Fuga flexível carga Cisterna Etanol	Leak	3.3/C	4,16046	4,63141	8,19485	9,90027	10,9608	12,97
		5.1/D	4,15353	4,62357	8,55716	10,0466	11,1462	12,9675
		2.0/F	4,18038	4,61402	7,55331	9,5987	10,7468	12,7614

Late Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (37,5 kW/m2) [m]	Distance downwind to intensity level 2 (12,5 kW/m2) [m]	Distance downwind to intensity level 3 (7 kW/m2) [m]	Distance downwind to intensity level 4 (5 kW/m2) [m]	Distance downwind to intensity level 5 (3 kW/m2) [m]
120 s\07 - Rotura braço carga/descarga Navio Gasóleo	Short pipe	3.3/C	43,7108	n/a	24,1731	43,9003	56,7538	72,4517
		5.1/D	43,7116	n/a	25,1739	49,119	61,4823	75,3299
		2.0/F	43,7028	n/a	22,8514	38,4	50,4367	67,4994
120 s\08 - Fuga braço carga/descarga Navio Gasóleo	Leak	3.3/C	20,7606	n/a	24,5556	37,1969	42,5544	50,6534
		5.1/D	20,7231	n/a	26,3732	39,4703	44,0798	51,6223
		2.0/F	20,8014	n/a	22,1321	33,5243	39,5113	48,6649
120 s\12 - Rotura braço carga/descarga Cisterna Gasóleo	Short pipe	3.3/C	10,7048	6,35239	17,3091	21,8753	24,6801	30,2144
		5.1/D	10,7054	6,35269	18,277	22,2806	25,2976	30,391
		2.0/F	10,7062	6,35311	15,7053	20,9735	24,1321	29,4887
120 s\13 - Fuga braço carga/descarga Cisterna Gasóleo	Leak	3.3/C	4,31924	6,50346	10,1605	12,2608	13,665	16,1996
		5.1/D	4,31161	6,93694	10,3337	12,2309	13,5226	15,8928
		2.0/F	4,32632	5,94463	9,99022	12,0743	13,6008	16,3285
120 s\20 - Rotura braço carga/descarga Navio Gasolina	Short pipe	3.3/C	43,7026	22,8513	24,5627	27,196	28,7273	31,9737
		5.1/D	43,7087	22,8544	24,9781	27,2299	28,7986	32,0719
		2.0/F	43,7021	22,8511	23,9704	26,9408	28,6813	31,8345
120 s\21 - Fuga braço carga/descarga Navio Gasolina	Leak	3.3/C	19,2784	16,9641	18,5145	19,8362	20,897	22,8769
		5.1/D	19,2066	16,9909	18,5659	19,8414	20,8026	22,6291
		2.0/F	19,3878	16,5496	17,9658	19,438	20,4943	22,6169

120 s\25 - Rotura braço carga/descarga Cisterna Gasolina	Short pipe	3.3/C	10,7063	6,35317	7,50643	8,62617	9,45003	11,0374
		5.1/D	10,7065	6,35324	7,48964	8,62178	9,43302	10,9973
		2.0/F	10,7052	6,35259	7,50738	8,61638	9,45908	11,069
120 s\26 - Fuga braço carga/descarga Cisterna Gasolina	Leak	3.3/C	4,17292	4,66978	4,80707	5,30521	5,67835	6,40271
		5.1/D	4,14574	4,65213	4,72441	5,17051	5,51472	6,18782
		2.0/F	4,2042	4,65396	4,84891	5,39471	5,80007	6,58375
120 s\33 - Rotura braço descarga Navio Etanol	Short pipe	3.3/C	43,7031	29,2775	56,0472	68,7206	78,2388	95,2813
		5.1/D	43,7078	31,4149	57,1391	69,9739	78,9724	95,1999
		2.0/F	43,7038	22,8519	53,5994	67,5894	76,9337	94,0776
120 s\34 - Fuga braço descarga Navio Etanol	Leak	3.3/C	19,8376	17,4836	33,0876	39,349	44,0366	52,3659
		5.1/D	19,7886	18,156	33,7763	40,0227	44,4106	52,221
		2.0/F	19,9034	16,5176	31,3541	38,475	43,0849	51,5661
120 s\38 - Rotura flexível carga Cisterna Etanol	Short pipe	3.3/C	10,7053	6,35267	15,7306	19,3866	22,0309	26,772
		5.1/D	10,7086	6,35431	16,2733	19,8199	22,344	26,7501
		2.0/F	10,7055	6,35274	14,6823	18,9136	21,5517	26,3741
120 s\39 - Fuga flexível carga Cisterna Etanol	Leak	3.3/C	4,16046	4,63141	8,19485	9,90027	10,9608	12,97
		5.1/D	4,15353	4,62357	8,55716	10,0466	11,1462	12,9675
		2.0/F	4,18038	4,61402	7,55331	9,5987	10,7468	12,7614

Flash Fire Results

Distance downwind to defined concentrations

The reported LFL and LFL fraction are defined in the respective material property

Path	Scenario	Weather	Distance downwind to LFL [m]	Distance downwind to LFL Fraction [m]
120 s\07 - Rotura braço carga/descarga Navio Gasóleo	Short pipe	3.3/C	2,27781	2,33317
		5.1/D	2,43615	2,50561
		2.0/F	3,06631	3,24882
120 s\08 - Fuga braço carga/descarga Navio Gasóleo	Leak	3.3/C	6,90444	7,11704
		5.1/D	7,16621	7,43208
		2.0/F	8,58745	9,26754
120 s\12 - Rotura braço carga/descarga Cisterna Gasóleo	Short pipe	3.3/C	2,01591	2,06934
		5.1/D	2,05817	2,12403
		2.0/F	2,8301	3,01789
120 s\13 - Fuga braço carga/descarga Cisterna Gasóleo	Leak	3.3/C	1,8135	1,87865
		5.1/D	1,83896	1,92128
		2.0/F	2,27717	2,49122
120 s\20 - Rotura braço carga/descarga Navio Gasolina	Short pipe	3.3/C	5,96194	12,8409
		5.1/D	6,67933	14,0353
		2.0/F	10,2153	20,3655
120 s\21 - Fuga braço carga/descarga Navio Gasolina	Leak	3.3/C	21,4957	38,6243
		5.1/D	20,7293	35,0102
		2.0/F	24,8248	43,504
120 s\25 - Rotura braço carga/descarga Cisterna Gasolina	Short pipe	3.3/C	9,92355	14,9821
		5.1/D	8,88802	13,6393
		2.0/F	11,5515	16,8367
120 s\26 - Fuga braço carga/descarga Cisterna Gasolina	Leak	3.3/C	1,85414	2,00472
		5.1/D	1,89031	2,05042
		2.0/F	2,45388	2,85058
120 s\33 - Rotura braço descarga Navio Etanol	Short pipe	3.3/C	0,953426	1,74783

		5.1/D	0,76551	1,77288
		2.0/F	1,51604	2,25844
120 s\34 - Fuga braço descarga Navio Etanol	Leak	3.3/C	6,66392	7,95614
		5.1/D	6,9354	8,1375
		2.0/F	8,3559	10,4569
120 s\38 - Rotura flexível carga Cisterna Etanol	Short pipe	3.3/C	1,10332	2,51179
		5.1/D	1,11949	1,99396
		2.0/F	1,74561	3,19106
120 s\39 - Fuga flexível carga Cisterna Etanol	Leak	3.3/C	1,72028	1,79752
		5.1/D	1,73761	1,83496
		2.0/F	2,07972	2,33708

Maximum distance to LFL fraction at any height

Path	Scenario	Weather	Max flash fire distance [m]	Height of the max flash fire distance [m]	Time [s]
120 s\07 - Rotura braço carga/descarga Navio Gasóleo	Short pipe	3.3/C	1,79955	0,0593546	49,8125
		5.1/D	2,19922	0,0593035	14,0737
		2.0/F	3,07619	0,0571377	74,753
120 s\08 - Fuga braço carga/descarga Navio Gasóleo	Leak	3.3/C	6,53314	0,0682581	4,82726
		5.1/D	6,86113	0,0677946	118,51
		2.0/F	9,24591	0,0667333	118,503
120 s\12 - Rotura braço carga/descarga Cisterna Gasóleo	Short pipe	3.3/C	1,79894	0,0517831	23,3207
		5.1/D	2,19702	0,0521083	1,89748
		2.0/F	3,06782	0,0501837	13,2912
120 s\13 - Fuga braço carga/descarga Cisterna Gasóleo	Leak	3.3/C	1,76308	0,0490586	118,421
		5.1/D	2,06289	0,0493814	2,2377
		2.0/F	2,72423	0,0485395	118,433
120 s\20 - Rotura braço carga/descarga Navio Gasolina	Short pipe	3.3/C	13,0383	0	93,3606

		5.1/D	14,0325	0	75,5675
		2.0/F	20,2535	0	107,698
120 s\21 - Fuga braço carga/descarga Navio Gasolina	Leak	3.3/C	38,3057	0	123,636
		5.1/D	34,8068	0	38,6657
		2.0/F	43,3233	0	121,668
120 s\25 - Rotura braço carga/descarga Cisterna Gasolina	Short pipe	3.3/C	14,8941	0	7,40015
		5.1/D	13,172	0	7,40015
		2.0/F	16,8385	0	76,4015
120 s\26 - Fuga braço carga/descarga Cisterna Gasolina	Leak	3.3/C	2,031	0,049261	118,484
		5.1/D	2,37804	0,0495974	2,23782
		2.0/F	3,12147	0,0487438	9,48326
120 s\33 - Rotura braço descarga Navio Etanol	Short pipe	3.3/C	1,72054	0	2,09487
		5.1/D	1,78629	0	87,6842
		2.0/F	2,05192	0	6,22144
120 s\34 - Fuga braço descarga Navio Etanol	Leak	3.3/C	8,28203	0,0656604	68,39
		5.1/D	8,51695	0,0652776	61,0772
		2.0/F	10,7496	0,0645707	111,429
120 s\38 - Rotura flexível carga Cisterna Etanol	Short pipe	3.3/C	2,62474	0,0251206	3,94343
		5.1/D	2,07036	0,0253529	79,9441
		2.0/F	3,19195	0	80,2015
120 s\39 - Fuga flexível carga Cisterna Etanol	Leak	3.3/C	1,79757	0,0485759	118,427
		5.1/D	2,04779	0,0489138	118,433
		2.0/F	2,68495	0,0480403	4,82599

Explosion Results

Explosion scenarios for worst-case maximum downwind distance to defined overpressures.

These results are produced during the consequence run and depend on the precise setting of the scenario.

These results may be quite different to the explosion results calculated during the risk or effects modelling as these will depend on the obstructed regions defined on the map.

The reported overpressures are defined in the explosion parameters

Path	Scenario	Weather	Overpressure level [bar]	Maximum distance [m]	Diameter [m]
120 s\20 - Rotura braço carga/descarga Navio Gasolina	Short pipe	3.3/C	0,3	13,2854	6,57087
			0,14	15,4975	10,995
			0,05	22,8807	25,7615
			0,03	30,4067	40,8134
		5.1/D	0,3	13,5092	7,01838
			0,14	15,8719	11,7438
			0,05	23,758	27,5159
			0,03	31,7965	43,5929
		2.0/F	0,3	24,2706	8,54122
			0,14	27,146	14,292
			0,05	36,7432	33,4863
			0,03	46,5259	53,0517
120 s\21 - Fuga braço carga/descarga Navio Gasolina	Leak	3.3/C	0,3	33,6148	7,22967
			0,14	36,0487	12,0974
			0,05	44,1722	28,3443
			0,03	52,4527	44,9054
		5.1/D	0,3	33,6198	7,23952
			0,14	36,0569	12,1139
			0,05	44,1915	28,383
			0,03	52,4833	44,9666
		2.0/F	0,3	46,4067	12,8134
			0,14	50,7203	21,4407
			0,05	65,1179	50,2357
			0,03	79,7937	79,5875
120 s\25 - Rotura braço carga/descarga Cisterna Gasolina	Short pipe	3.3/C	0,3	12,6726	5,34515
			0,14	14,472	8,94403
			0,05	20,478	20,9559
			0,03	26,6	33,2001
		5.1/D	0,3	12,5567	5,11343
			0,14	14,2782	8,5563
			0,05	20,0237	20,0475
			0,03	25,8804	31,7608
		2.0/F	0,3	13,7697	7,53949
			0,14	16,3079	12,6158
			0,05	24,7795	29,559
			0,03	33,4149	46,8297
120 s\34 - Fuga braço descarga Navio Etanol	Leak		0,3	10,7959	1,59181
			0,14	11,3318	2,66358

		0,05	13,1204	6,24079
		0,03	14,9436	9,88716

Supplementary data for worst-case explosion scenarios

Path	Scenario	Weather	Overpressure level [bar]	Explosion flammable mass [kg]	Ignition time [s]	Ignition source [m]	Cloud centre [m]	Explosion centre [m]
120 s\20 - Rotura braço carga/descarga Navio Gasolina	Short pipe	3.3/C	0,3	0,290361	51,4114	10	3,04861	10
			0,14	0,290361	51,4114	10	3,04861	10
			0,05	0,290361	51,4114	10	3,04861	10
			0,03	0,290361	51,4114	10	3,04861	10
		5.1/D	0,3	0,353817	47,7003	10	3,13683	10
			0,14	0,353817	47,7003	10	3,13683	10
			0,05	0,353817	47,7003	10	3,13683	10
			0,03	0,353817	47,7003	10	3,13683	10
		2.0/F	0,3	0,637716	101,836	20	7,43812	20
			0,14	0,637716	101,836	20	7,43812	20
			0,05	0,637716	101,836	20	7,43812	20
			0,03	0,637716	101,836	20	7,43812	20
		3.3/C	0,3	0,386745	4,98541	30	10,7646	30
			0,14	0,386745	4,98541	30	10,7646	30
			0,05	0,386745	4,98541	30	10,7646	30
			0,03	0,386745	4,98541	30	10,7646	30
		5.1/D	0,3	0,388328	4,94926	30	11,0087	30
			0,14	0,388328	4,94926	30	11,0087	30
			0,05	0,388328	4,94926	30	11,0087	30
			0,03	0,388328	4,94926	30	11,0087	30
		2.0/F	0,3	2,1531	66,2497	40	14,8347	40
			0,14	2,1531	66,2497	40	14,8347	40
			0,05	2,1531	66,2497	40	14,8347	40
			0,03	2,1531	66,2497	40	14,8347	40
120 s\25 - Rotura braço carga/descarga Cisterna Gasolina	Short pipe	3.3/C	0,3	0,156296	2,60844	10	4,91738	10
			0,14	0,156296	2,60844	10	4,91738	10
			0,05	0,156296	2,60844	10	4,91738	10
			0,03	0,156296	2,60844	10	4,91738	10
		5.1/D	0,3	0,136838	2,40841	10	4,5189	10
			0,14	0,136838	2,40841	10	4,5189	10
			0,05	0,136838	2,40841	10	4,5189	10
			0,03	0,136838	2,40841	10	4,5189	10
		2.0/F	0,3	0,438627	4,70626	10	5,76713	10
			0,14	0,438627	4,70626	10	5,76713	10
			0,05	0,438627	4,70626	10	5,76713	10
			0,03	0,438627	4,70626	10	5,76713	10
120 s\34 - Fuga braço descarga	Leak		0,3	0,00685654	20,3067	10	4,13362	10
			0,14	0,00685654	20,3067	10	4,13362	10

Navio Etanol			0,05	0,00685654	20,3067	10	4,13362	10
			0,03	0,00685654	20,3067	10	4,13362	10

Consequence Summary Report

Workspace: RNM_Aveiro

Study: 600 s

Summary Basis

These tables will only report global values set in the parameters. Values that are modified in the study tree will not be reported.

The report is context sensitive, and filters up to the study level. You will need to generate multiple summary reports if you have multiple studies in your workspace.

Discharge Results (after atmospheric expansion)

Path	Scenario	Weather	Peak Flowrate [kg/s]	Temperature [degC]	Liquid mass fraction in material [fraction]	Droplet diameter [um]	Expanded diameter [m]	Velocity [m/s]	End time of release [s]
600 s\05 - Rotura linha bombas p/ ilha Gasóleo	Short pipe	3.3/C	190,1	20,0397	1	9398,07	0,25	5,23334	433,153
		5.1/D	190,1	20,0397	1	9253,84	0,25	5,23334	433,153
		2.0/F	190,1	20,0397	1	9597,41	0,25	5,23334	433,153
600 s\06 - Fuga linha bombas p/ ilha Gasóleo	Leak	3.3/C	4,56043	19,9807	1	588,087	0,0193649	20,9231	600
		5.1/D	4,56043	19,9807	1	579,062	0,0193649	20,9231	600
		2.0/F	4,56043	19,9807	1	600,561	0,0193649	20,9231	600
600 s\09 - Rotura linha expedição Gasóleo desde a bacia até ao cais	Short pipe	3.3/C	316,9	20,1656	1	7007,61	0,3	6,05911	542,382
		5.1/D	316,9	20,1656	1	6900,07	0,3	6,05911	542,382
		2.0/F	316,9	20,1656	1	7156,25	0,3	6,05911	542,382
600 s\10 - Fuga linha expedição Gasóleo desde a bacia até ao cais	Leak	3.3/C	12,3308	19,9314	1	166,846	0,0232379	39,2853	600

		5.1/D	12,3308	19,9314	1	164,286	0,0232379	39,2853	600
		2.0/F	12,3308	19,9314	1	170,385	0,0232379	39,2853	600
600 s\18 - Rotura linha bombas p/ ilha Gasolina	Short pipe	3.3/C	174,4	20,0337	1	8001,51	0,25	5,15717	439,293
		5.1/D	174,4	20,0337	1	7878,71	0,25	5,15717	439,293
		2.0/F	174,4	20,0337	1	8171,23	0,25	5,15717	439,293
600 s\19 - Fuga linha bombas p/ ilha Gasolina	Leak	3.3/C	4,05396	19,9724	1	533,342	0,0193649	19,9784	600
		5.1/D	4,05396	19,9724	1	525,157	0,0193649	19,9784	600
		2.0/F	4,05396	19,9724	1	544,654	0,0193649	19,9784	600
600 s\22 - Rotura linha expedição Gasolina desde a bacia até ao cais	Short pipe	3.3/C	193,8	20,1502	1	6474,18	0,25	5,73164	559,73
		5.1/D	193,8	20,1502	1	6374,82	0,25	5,73164	559,73
		2.0/F	193,8	20,1502	1	6611,5	0,25	5,73164	559,73
600 s\23 - Fuga linha expedição Gasolina desde a bacia até ao cais	Leak	3.3/C	7,85969	19,8968	1	141,97	0,0193649	38,73	600
		5.1/D	7,85969	19,8968	1	139,791	0,0193649	38,73	600
		2.0/F	7,85969	19,8968	1	144,981	0,0193649	38,73	600
600 s\31 - Rotura linha bombas p/ ilha Etanol	Short pipe	3.3/C	44,5	20,01	1	10000	0,15	3,18629	439,369
		5.1/D	44,5	20,01	1	10000	0,15	3,18629	439,369
		2.0/F	44,5	20,01	1	10000	0,15	3,18629	439,369
600 s\32 -	Leak	3.3/C	1,4657	19,9851	1	767,027	0,011619	17,4907	600

Fuga linha bombas p/ ilha Etanol									
		5.1/D	1,4657	19,9851	1	755,255	0,011619	17,4907	600
		2.0/F	1,4657	19,9851	1	783,296	0,011619	17,4907	600
600 s\35 - Rotura linha expedição Etanol desde a bacia até ao cais	Short pipe	3.3/C	98,9	20,0672	1	10000	0,2	3,98357	600
		5.1/D	98,9	20,0672	1	10000	0,2	3,98357	600
		2.0/F	98,9	20,0672	1	10000	0,2	3,98357	600
600 s\36 - Fuga linha expedição Etanol desde a bacia até ao cais	Leak	3.3/C	5,3876	19,9365	1	179,468	0,0154919	36,1624	600
		5.1/D	5,3876	19,9365	1	176,714	0,0154919	36,1624	600
		2.0/F	5,3876	19,9365	1	183,275	0,0154919	36,1624	600

Dispersion Results

Input dispersion parameters

Core averaging time	18,75	s
Flammable averaging time	18,75	s
Toxic averaging time	600	s
Height of interest	0	m

Distance downwind to defined concentrations

The reported concentration of interest is defined at the scenario

Path	Scenario	Weather	Distance to UFL [m]	Distance to LFL [m]	Distance to LFL fraction [m]
600 s\05 - Rotura linha bombas p/ ilha Gasóleo	Short pipe	3.3/C	1,66529	1,77868	1,82235
		5.1/D	1,74016	1,88346	1,93819
		2.0/F	2,07569	2,45964	2,60761
600 s\06 - Fuga linha bombas p/ ilha Gasóleo	Leak	3.3/C	3,3341	3,63489	3,74256
		5.1/D	3,37207	3,74998	3,88246
		2.0/F	3,77798	4,76151	5,11814
600 s\09 - Rotura linha expedição Gasóleo desde a bacia até ao cais	Short pipe	3.3/C	2,13671	2,27788	2,33327
		5.1/D	2,25589	2,43625	2,50572
		2.0/F	2,59311	3,06646	3,24905
600 s\10 - Fuga linha expedição Gasóleo desde a bacia até ao cais	Leak	3.3/C	7,99099	8,84427	9,13081
		5.1/D	8,12207	9,18382	9,54596
		2.0/F	8,10175	10,5752	11,4638
600 s\18 - Rotura linha bombas p/ ilha Gasolina	Short pipe	3.3/C	1,73158	8,11402	14,6713
		5.1/D	1,83451	7,7257	15,881
		2.0/F	2,3542	12,864	23,2334
600 s\19 - Fuga linha bombas p/ ilha Gasolina	Leak	3.3/C	3,3265	11,1639	20,8907
		5.1/D	3,37731	9,6399	18,3198

		2.0/F	3,97851	18,7341	29,7124
600 s\22 - Rotura linha expedição Gasolina desde a bacia até ao cais	Short pipe	3.3/C	1,96543	9,31178	14,2629
		5.1/D	2,04636	7,77613	12,1695
		2.0/F	2,72966	14,1443	21,6692
600 s\23 - Fuga linha expedição Gasolina desde a bacia até ao cais	Leak	3.3/C	8,08395	26,5895	45,3081
		5.1/D	8,23127	22,2759	38,0442
		2.0/F	8,33849	34,6987	56,447
600 s\31 - Rotura linha bombas p/ ilha Etanol	Short pipe	3.3/C	0,903499	5,62782	10,142
		5.1/D	0,691349	5,01883	9,29988
		2.0/F	1,20731	6,49399	12,1259
600 s\32 - Fuga linha bombas p/ ilha Etanol	Leak	3.3/C	2,27877	2,61432	2,75364
		5.1/D	2,24253	2,66819	2,83919
		2.0/F	2,15633	3,25915	3,70109
600 s\35 - Rotura linha expedição Etanol desde a bacia até ao cais	Short pipe	3.3/C	0,95362	1,21329	2,9596
		5.1/D	1,08613	1,26881	1,38828
		2.0/F	1,30361	1,86954	3,52425
600 s\36 - Fuga linha expedição Etanol desde a bacia até ao cais	Leak	3.3/C	5,81582	6,7525	7,66769
		5.1/D	5,85136	7,00317	7,77967
		2.0/F	5,37422	7,99006	11,5275

Jet Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Flame length [m]	Distance downwind to intensity level 1 (37,5 kW/m2) [m]	Distance downwind to intensity level 2 (12,5 kW/m2) [m]	Distance downwind to intensity level 3 (7 kW/m2) [m]	Distance downwind to intensity level 4 (5 kW/m2) [m]	Distance downwind to intensity level 5 (3 kW/m2) [m]
600 s\05 - Rotura linha bombas p/ ilha Gasóleo	Short pipe	3.3/C	1,15998	2,17486	2,17486	2,17486	2,17486	2,17486
		5.1/D	0,998277	2,00709	2,00709	2,00709	2,00709	2,00709
		2.0/F	1,41023	2,43464	2,43464	2,43464	2,43464	2,43464
600 s\06 - Fuga linha bombas p/ ilha Gasóleo	Leak	3.3/C	1,31096	2,33793	2,33793	2,33793	2,33793	2,53569
		5.1/D	1,17367	2,19507	2,19507	2,19507	2,19507	2,43201
		2.0/F	1,48869	2,52025	2,52025	2,52025	2,52025	2,65793
600 s\09 - Rotura linha expedição Gasóleo desde a bacia até ao cais	Short pipe	3.3/C	1,37372	2,39437	2,39437	2,39437	2,39437	2,42612
		5.1/D	1,17065	2,1838	2,1838	2,1838	2,1838	2,1838
		2.0/F	1,68187	2,714	2,714	2,714	2,714	2,77736
600 s\10 - Fuga linha expedição Gasóleo desde a bacia até ao cais	Leak	3.3/C	3,24609	4,32174	4,84615	5,60467	6,13444	7,09025
		5.1/D	2,81588	3,88324	4,46089	5,19312	5,70399	6,63595
		2.0/F	3,70947	4,78587	5,17737	5,93297	6,45286	7,38843
600 s\18 - Rotura linha bombas p/ ilha Gasolina	Short pipe	3.3/C	10,3683	11,5577	14,5981	16,6412	18,0493	20,6006
		5.1/D	8,95953	10,6024	13,2717	15,1368	16,4403	18,8201
		2.0/F	12,6456	13,9091	16,6687	19,0209	20,6099	23,4548

600 s\19 - Fuga linha bombas p/ ilha Gasolina	Leak	3.3/C	11,1327	12,7605	16,598	19,2061	21,0093	24,2772
		5.1/D	9,96029	12,2004	15,8282	18,3731	20,1504	23,3974
		2.0/F	12,6594	13,972	17,5619	20,2244	22,0371	25,3001
600 s\22 - Rotura linha expedição Gasolina desde a bacia até ao cais	Short pipe	3.3/C	11,3686	12,7685	16,174	18,4708	20,0593	22,9336
		5.1/D	9,80135	11,6801	14,6884	16,7888	18,2548	20,9342
		2.0/F	13,8473	15,1443	18,4221	21,0512	22,831	26,0153
600 s\23 - Fuga linha expedição Gasolina desde a bacia até ao cais	Leak	3.3/C	21,9273	27,5268	35,8046	41,6486	45,7354	53,1985
		5.1/D	19,1225	25,3805	33,2988	38,9918	43,0005	50,3411
		2.0/F	25,0508	29,4708	37,9869	43,7418	47,7353	54,9948
600 s\31 - Rotura linha bombas p/ ilha Etanol	Short pipe	3.3/C	5,50805	n/a	6,58942	6,58942	6,61918	7,32912
		5.1/D	5,08335	n/a	6,14895	6,14895	6,44381	7,12066
		2.0/F	6,02437	n/a	7,13113	7,13113	7,13113	7,48551
600 s\32 - Fuga linha bombas p/ ilha Etanol	Leak	3.3/C	5,91325	n/a	7,05608	7,05608	7,36411	8,32317
		5.1/D	5,29939	n/a	6,41702	6,51665	7,05282	7,95296
		2.0/F	6,70598	n/a	7,87232	7,87232	7,87232	8,78516
600 s\35 - Rotura linha expedição Etanol desde a bacia até ao cais	Short pipe	3.3/C	6,86598	n/a	7,97663	7,97663	8,4102	9,34256
		5.1/D	6,06319	n/a	7,1471	7,33181	7,82828	8,67335

600 s\36 - Fuga linha expedição Etanol desde a bacia até ao cais	Leak	2.0/F	8,03733	n/a	9,19199	9,19199	9,19199	10,2318
		3.3/C	15,5152	n/a	17,2823	19,8456	21,4877	24,3135
		5.1/D	13,6638	15,0045	16,119	18,5146	20,0772	22,8117
		2.0/F	17,7948	n/a	19,1842	21,4332	23,1174	25,9709

Early Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (37,5 kW/m2) [m]	Distance downwind to intensity level 2 (12,5 kW/m2) [m]	Distance downwind to intensity level 3 (7 kW/m2) [m]	Distance downwind to intensity level 4 (5 kW/m2) [m]	Distance downwind to intensity level 5 (3 kW/m2) [m]
600 s\05 - Rotura linha bombas p/ ilha Gasóleo	Short pipe	3.3/C	43,7035	n/a	24,1695	43,8962	56,747	72,4427
		5.1/D	43,7059	n/a	25,1715	49,1146	61,4764	75,3224
		2.0/F	43,703	n/a	22,8515	38,4002	50,4369	67,4997
600 s\06 - Fuga linha bombas p/ ilha Gasóleo	Leak	3.3/C	10,1333	9,15886	19,8732	24,152	26,9227	32,2142
		5.1/D	10,2101	9,19726	20,7999	24,6924	27,5735	32,4811
		2.0/F	10,0294	9,0301	18,2776	23,1757	26,1448	31,3246
600 s\09 - Rotura linha expedição Gasóleo desde a bacia até ao cais	Short pipe	3.3/C	33,0533	n/a	20,1322	37,6841	47,1498	59,4529
		5.1/D	33,0543	n/a	21,2803	42,2214	50,6268	61,4003
		2.0/F	33,0559	n/a	18,7042	32,6939	42,197	55,7735
600 s\10 - Fuga linha expedição Gasóleo desde a bacia até ao cais	Leak	3.3/C	16,6547	n/a	26,8483	36,0079	40,2196	46,9453
		5.1/D	16,7816	n/a	29,1186	37,6032	41,2568	48,2397
		2.0/F	16,4839	n/a	23,7608	32,9089	37,6503	45,2061
600 s\18 - Rotura linha bombas p/ ilha Gasolina	Short pipe	3.3/C	43,7126	22,8563	24,5678	27,2017	28,7333	31,9801
		5.1/D	43,7067	22,8534	24,9771	27,2288	28,7974	32,0706
		2.0/F	43,7034	22,8517	23,971	26,9415	28,682	31,8353

600 s\19 - Fuga linha bombas p/ ilha Gasolina	Leak	3.3/C	27,0583	17,4946	19,0984	20,7696	21,9437	24,3206
		5.1/D	26,6238	17,279	19,0468	20,4702	21,6651	23,8295
		2.0/F	27,4965	17,6336	18,9024	20,8754	22,1228	24,564
600 s\22 - Rotura linha expedição Gasolina desde a bacia até ao cais	Short pipe	3.3/C	33,0538	17,5269	19,1404	21,1621	22,4198	25,2057
		5.1/D	33,0551	17,5276	19,4108	21,1416	22,5421	25,2615
		2.0/F	33,0535	17,5267	18,6966	21,0256	22,4417	25,1014
600 s\23 - Fuga linha expedição Gasolina desde a bacia até ao cais	Leak	3.3/C	33,0568	17,5284	19,142	21,1638	22,4215	25,2076
		5.1/D	33,0579	17,5289	19,4122	21,1432	22,5437	25,2632
		2.0/F	33,0624	17,5312	18,7009	21,0305	22,4469	25,107
600 s\31 - Rotura linha bombas p/ ilha Etanol	Short pipe	3.3/C	43,7022	29,277	56,0461	68,7194	78,2373	95,2795
		5.1/D	43,7019	31,4106	57,1322	69,9655	78,9628	95,1883
		2.0/F	43,7022	22,8511	53,5975	67,5871	76,9311	94,0744
600 s\32 - Fuga linha bombas p/ ilha Etanol	Leak	3.3/C	8,72097	7,64968	15,3534	18,4266	20,6064	24,5368
		5.1/D	8,77153	7,67143	15,9182	18,867	20,9765	24,6315
		2.0/F	8,6527	7,56427	14,2795	17,8348	20,016	23,9805
600 s\35 - Rotura linha expedição Etanol desde a bacia até ao cais	Short pipe	3.3/C	33,0542	21,3889	43,5531	53,4215	60,8516	74,0953
		5.1/D	33,0577	22,8439	44,4836	54,4574	61,4458	74,0006

600 s\36 - Fuga linha expedição Etanol desde a bacia até ao cais	Leak	2.0/F	33,0523	19,7015	41,5022	52,4996	59,7758	73,1489
		3.3/C	16,4707	15,391	29,0601	34,3775	38,3271	45,3564
		5.1/D	16,576	15,8131	29,9102	35,2176	38,9588	45,5769
		2.0/F	16,3396	14,5368	27,0859	33,1073	36,9676	44,0603

Late Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (37,5 kW/m ²) [m]	Distance downwind to intensity level 2 (12,5 kW/m ²) [m]	Distance downwind to intensity level 3 (7 kW/m ²) [m]	Distance downwind to intensity level 4 (5 kW/m ²) [m]	Distance downwind to intensity level 5 (3 kW/m ²) [m]
600 s\05 - Rotura linha bombas p/ ilha Gasóleo	Short pipe	3.3/C	43,7035	n/a	24,1695	43,8962	56,747	72,4427
		5.1/D	43,7059	n/a	25,1715	49,1146	61,4764	75,3224
		2.0/F	43,703	n/a	22,8515	38,4002	50,4369	67,4997
600 s\06 - Fuga linha bombas p/ ilha Gasóleo	Leak	3.3/C	30,6991	n/a	22,8105	39,6364	48,2245	59,7378
		5.1/D	30,6601	n/a	23,9891	43,7549	51,3341	61,383
		2.0/F	30,792	n/a	21,1689	34,7481	43,6149	56,4036
600 s\09 - Rotura linha expedição Gasóleo desde a bacia até ao cais	Short pipe	3.3/C	33,0533	n/a	20,1322	37,6841	47,1498	59,4529
		5.1/D	33,0543	n/a	21,2803	42,2214	50,6268	61,4003
		2.0/F	33,0559	n/a	18,7042	32,6939	42,197	55,7735
600 s\10 - Fuga linha expedição Gasóleo desde a bacia até ao cais	Leak	3.3/C	33,0531	n/a	20,1321	37,684	47,1496	59,4526
		5.1/D	33,0547	n/a	21,2804	42,2216	50,6273	61,4009
		2.0/F	33,0536	n/a	18,7033	32,6929	42,1954	55,771
600 s\18 - Rotura linha bombas p/ ilha Gasolina	Short pipe	3.3/C	43,7126	22,8563	24,5678	27,2017	28,7333	31,9801
		5.1/D	43,7067	22,8534	24,9771	27,2288	28,7974	32,0706
		2.0/F	43,7034	22,8517	23,971	26,9415	28,682	31,8353

600 s\19 - Fuga linha bombas p/ ilha Gasolina	Leak	3.3/C	27,0583	17,4946	19,0984	20,7696	21,9437	24,3206
		5.1/D	26,6238	17,279	19,0468	20,4702	21,6651	23,8295
		2.0/F	27,4965	17,6336	18,9024	20,8754	22,1228	24,564
600 s\22 - Rotura linha expedição Gasolina desde a bacia até ao cais	Short pipe	3.3/C	33,0538	17,5269	19,1404	21,1621	22,4198	25,2057
		5.1/D	33,0551	17,5276	19,4108	21,1416	22,5421	25,2615
		2.0/F	33,0535	17,5267	18,6966	21,0256	22,4417	25,1014
600 s\23 - Fuga linha expedição Gasolina desde a bacia até ao cais	Leak	3.3/C	33,0568	17,5284	19,142	21,1638	22,4215	25,2076
		5.1/D	33,0579	17,5289	19,4122	21,1432	22,5437	25,2632
		2.0/F	33,0624	17,5312	18,7009	21,0305	22,4469	25,107
600 s\31 - Rotura linha bombas p/ ilha Etanol	Short pipe	3.3/C	43,7022	29,277	56,0461	68,7194	78,2373	95,2795
		5.1/D	43,7019	31,4106	57,1322	69,9655	78,9628	95,1883
		2.0/F	43,7022	22,8511	53,5975	67,5871	76,9311	94,0744
600 s\32 - Fuga linha bombas p/ ilha Etanol	Leak	3.3/C	16,2242	11,6704	25,1934	30,4408	34,3368	41,2691
		5.1/D	16,1562	11,9278	25,7512	30,9347	34,5906	41,0518
		2.0/F	16,3437	11,4098	23,9619	29,9846	33,8458	40,9401
600 s\35 - Rotura linha expedição Etanol desde a bacia até ao cais	Short pipe	3.3/C	33,0542	21,3889	43,5531	53,4215	60,8516	74,0953
		5.1/D	33,0577	22,8439	44,4836	54,4574	61,4458	74,0006

600 s\36 - Fuga linha expedição Etanol desde a bacia até ao cais	Leak	2.0/F	33,0523	19,7015	41,5022	52,4996	59,7758	73,1489
		3.3/C	30,7625	20,9798	41,9616	51,2165	58,1824	70,593
		5.1/D	30,6271	22,1213	42,7549	52,0617	58,5862	70,2841
		2.0/F	30,9222	19,3969	40,1082	50,4922	57,3468	69,9476

Flash Fire Results

Distance downwind to defined concentrations

The reported LFL and LFL fraction are defined in the respective material property

Path	Scenario	Weather	Distance downwind to LFL [m]	Distance downwind to LFL Fraction [m]
600 s\05 - Rotura linha bombas p/ ilha Gasóleo	Short pipe	3.3/C	1,77868	1,82235
		5.1/D	1,88346	1,93819
		2.0/F	2,45964	2,60761
600 s\06 - Fuga linha bombas p/ ilha Gasóleo	Leak	3.3/C	3,63489	3,74256
		5.1/D	3,74998	3,88246
		2.0/F	4,76151	5,11814
600 s\09 - Rotura linha expedição Gasóleo desde a bacia até ao cais	Short pipe	3.3/C	2,27788	2,33327
		5.1/D	2,43625	2,50572
		2.0/F	3,06646	3,24905
600 s\10 - Fuga linha expedição Gasóleo desde a bacia até ao cais	Leak	3.3/C	8,84427	9,13081
		5.1/D	9,18382	9,54596
		2.0/F	10,5752	11,4638
600 s\18 - Rotura linha bombas p/ ilha Gasolina	Short pipe	3.3/C	8,11402	14,6713
		5.1/D	7,7257	15,881
		2.0/F	12,864	23,2334
600 s\19 - Fuga linha bombas p/ ilha Gasolina	Leak	3.3/C	11,1639	20,8907
		5.1/D	9,6399	18,3198
		2.0/F	18,7341	29,7124
600 s\22 - Rotura linha expedição Gasolina desde a bacia até ao cais	Short pipe	3.3/C	9,31178	14,2629
		5.1/D	7,77613	12,1695
		2.0/F	14,1443	21,6692
600 s\23 - Fuga linha expedição Gasolina	Leak	3.3/C	26,5895	45,3081

desde a bacia até ao cais				
		5.1/D	22,2759	38,0442
		2.0/F	34,6987	56,447
600 s\31 - Rotura linha bombas p/ ilha Etanol	Short pipe	3.3/C	5,62782	10,142
		5.1/D	5,01883	9,29988
		2.0/F	6,49399	12,1259
600 s\32 - Fuga linha bombas p/ ilha Etanol	Leak	3.3/C	2,61432	2,75364
		5.1/D	2,66819	2,83919
		2.0/F	3,25915	3,70109
600 s\35 - Rotura linha expedição Etanol desde a bacia até ao cais	Short pipe	3.3/C	1,21329	2,9596
		5.1/D	1,26881	1,38828
		2.0/F	1,86954	3,52425
600 s\36 - Fuga linha expedição Etanol desde a bacia até ao cais	Leak	3.3/C	6,7525	7,66769
		5.1/D	7,00317	7,77967
		2.0/F	7,99006	11,5275

Maximum distance to LFL fraction at any height

Path	Scenario	Weather	Max flash fire distance [m]	Height of the max flash fire distance [m]	Time [s]
600 s\05 - Rotura linha bombas p/ ilha Gasóleo	Short pipe	3.3/C	1,34308	0,0565758	1,15761
		5.1/D	1,72299	0,197897	427,24
		2.0/F	2,203	0,0547565	99,9006
600 s\06 - Fuga linha bombas p/ ilha Gasóleo	Leak	3.3/C	3,9945	0,0825335	591,593
		5.1/D	4,08859	0,0822689	10,5423
		2.0/F	4,68588	0,0815546	591,589
600 s\09 - Rotura linha expedição Gasóleo desde a	Short pipe	3.3/C	1,79955	0,0593546	1,22775

bacia até ao cais

		5.1/D	2,19923	0,0593035	10,0567
		2.0/F	3,07628	0,0571377	534,917
600 s\10 - Fuga linha expedição Gasóleo desde a bacia até ao cais	Leak	3.3/C	8,70055	0,0765865	4,10761
		5.1/D	9,12468	0,0758849	591,7
		2.0/F	12,0365	0,07431	591,688
600 s\18 - Rotura linha bombas p/ ilha Gasolina	Short pipe	3.3/C	14,6711	0	116,335
		5.1/D	15,8782	0	432,586
		2.0/F	23,2412	0	219,647
600 s\19 - Fuga linha bombas p/ ilha Gasolina	Leak	3.3/C	20,7942	0	569,624
		5.1/D	18,1562	0	535,515
		2.0/F	29,5808	0	591,633
600 s\22 - Rotura linha expedição Gasolina desde a bacia até ao cais	Short pipe	3.3/C	13,8323	0	11,524
		5.1/D	12,0821	0	5,65677
		2.0/F	21,5879	0	67,6078
600 s\23 - Fuga linha expedição Gasolina desde a bacia até ao cais	Leak	3.3/C	45,1687	0	539,425
		5.1/D	37,9889	0	537,128
		2.0/F	56,1131	0	594,131
600 s\31 - Rotura linha bombas p/ ilha Etanol	Short pipe	3.3/C	10,1248	0	230,555
		5.1/D	9,30089	0	432,22
		2.0/F	12,0543	0	228,528
600 s\32 - Fuga linha bombas p/ ilha Etanol	Leak	3.3/C	2,8507	0,0785924	300,688
		5.1/D	2,89141	0,079134	169,105
		2.0/F	4,02767	0,0769806	572,584
600 s\35 - Rotura linha expedição	Short pipe	3.3/C	2,92708	0,0270999	2,5567

Etanol desde a bacia
até ao cais

		5.1/D	2,22998	0,0285858	2,13122
		2.0/F	3,45894	0	11,8374
600 s\36 - Fuga linha expedição Etanol desde a bacia até ao cais	Leak	3.3/C	8,20192	0,0680748	570,619
		5.1/D	7,96345	0,0675284	595,353
		2.0/F	11,5277	0,0335783	588,58

Explosion Results

Explosion scenarios for worst-case maximum downwind distance to defined overpressures.

These results are produced during the consequence run and depend on the precise setting of the scenario.

These results may be quite different to the explosion results calculated during the risk or effects modelling as these will depend on the obstructed regions defined on the map.

The reported overpressures are defined in the explosion parameters

Path	Scenario	Weather	Overpressure level [bar]	Maximum distance [m]	Diameter [m]
600 s\10 - Fuga linha expedição Gasóleo desde a bacia até ao cais	Leak	2.0/F	0,3	10,3202	0,640433
			0,14	10,5358	1,07164
			0,05	11,2554	2,51085
			0,03	11,9889	3,97789
600 s\18 - Rotura linha bombas p/ ilha Gasolina	Short pipe	3.3/C	0,3	12,7251	5,45025
			0,14	14,5599	9,11989
			0,05	20,684	21,368
			0,03	26,9264	33,8529
		5.1/D	0,3	12,3663	4,73253
			0,14	13,9595	7,91894
			0,05	19,2771	18,5541
			0,03	24,6975	29,395
		2.0/F	0,3	26,8026	13,6052
			0,14	31,3828	22,7656
			0,05	46,6701	53,3401
			0,03	62,2529	84,5057
600 s\19 - Fuga linha bombas p/ ilha Gasolina	Leak	3.3/C	0,3	23,6789	7,35785
			0,14	26,1559	12,3119
			0,05	34,4234	28,8469
			0,03	42,8508	45,7015
		5.1/D	0,3	11,8085	3,61709
			0,14	13,0262	6,05247
			0,05	17,0905	14,181
			0,03	21,2333	22,4667
		2.0/F	0,3	23,6399	7,27988
			0,14	26,0907	12,1814
			0,05	34,2706	28,5412
			0,03	42,6086	45,2172
600 s\22 - Rotura linha expedição Gasolina desde a bacia até ao cais	Short pipe	3.3/C	0,3	12,9983	5,99662
			0,14	15,0171	10,0341
			0,05	21,755	23,5101
			0,03	28,6233	37,2465
		5.1/D	0,3	12,5789	5,15782
			0,14	14,3153	8,63057
			0,05	20,1108	20,2215
			0,03	26,0183	32,0365
		2.0/F	0,3	27,301	14,6021
			0,14	32,2168	24,4336

			0,05	48,6241	57,2482
			0,03	65,3486	90,6972
600 s\23 - Fuga linha expedição	Leak	3.3/C	0,3	44,1566	8,3132
			0,14	46,9552	13,9105
Gasolina desde a bacia até ao cais			0,05	56,2962	32,5924
			0,03	65,8177	51,6354
		5.1/D	0,3	33,8649	7,72988
			0,14	36,4672	12,9344
			0,05	45,1527	30,3054
			0,03	54,0061	48,0123
		2.0/F	0,3	59,8363	19,6725
			0,14	66,459	32,918
			0,05	88,5636	77,1272
			0,03	111,096	122,191
600 s\31 - Rotura linha bombas p/ ilha Etanol	Short pipe	3.3/C	0,3	13,1899	6,3798
			0,14	15,3377	10,6753
			0,05	22,5062	25,0124
			0,03	29,8133	39,6266
		2.0/F	0,3	13,5998	7,19965
			0,14	16,0236	12,0472
			0,05	24,1133	28,2266
			0,03	32,3595	44,7189
600 s\36 - Fuga linha expedição	Leak		0,3	11,068	2,13591
			0,14	11,787	3,57401
Etanol desde a bacia até ao cais			0,05	14,187	8,37395
			0,03	16,6333	13,2667

Supplementary data for worst-case explosion scenarios

Path	Scenario	Weather	Overpressure level [bar]	Explosion flammable mass [kg]	Ignition time [s]	Ignition source [m]	Cloud centre [m]	Explosion centre [m]
600 s\10 - Fuga linha expedição	Leak	2.0/F	0,3	0,000271034	1,26	10	5,63254	10
			0,14	0,000271034	1,26	10	5,63254	10
			0,05	0,000271034	1,26	10	5,63254	10
			0,03	0,000271034	1,26	10	5,63254	10
Gasóleo desde a bacia até ao cais								
600 s\18 - Rotura linha bombas p/ ilha Gasolina	Short pipe	3.3/C	0,3	0,165698	4,03637	10	4,07097	10
			0,14	0,165698	4,03637	10	4,07097	10
			0,05	0,165698	4,03637	10	4,07097	10
			0,03	0,165698	4,03637	10	4,07097	10
		5.1/D	0,3	0,10848	5,31717	10	3,47392	10
			0,14	0,10848	5,31717	10	3,47392	10

			0,05	0,10848	5,31717	10	3,47392	10
			0,03	0,10848	5,31717	10	3,47392	10
		2.0/F	0,3	2,57743	51,3333	20	7,69555	20
			0,14	2,57743	51,3333	20	7,69555	20
			0,05	2,57743	51,3333	20	7,69555	20
			0,03	2,57743	51,3333	20	7,69555	20
600 s\19 - Fuga linha bombas p/ ilha Gasolina	Leak	3.3/C	0,3	0,407682	458,939	20	5,95385	20
			0,14	0,407682	458,939	20	5,95385	20
			0,05	0,407682	458,939	20	5,95385	20
			0,03	0,407682	458,939	20	5,95385	20
		5.1/D	0,3	0,0484335	1,25527	10	5,07533	10
			0,14	0,0484335	1,25527	10	5,07533	10
			0,05	0,0484335	1,25527	10	5,07533	10
			0,03	0,0484335	1,25527	10	5,07533	10
		2.0/F	0,3	0,394858	69,6664	20	8,18999	20
			0,14	0,394858	69,6664	20	8,18999	20
			0,05	0,394858	69,6664	20	8,18999	20
			0,03	0,394858	69,6664	20	8,18999	20
600 s\22 - Rotura linha expedição Gasolina desde a bacia até ao cais	Short pipe	3.3/C	0,3	0,220693	3,24326	10	4,60293	10
			0,14	0,220693	3,24326	10	4,60293	10
			0,05	0,220693	3,24326	10	4,60293	10
			0,03	0,220693	3,24326	10	4,60293	10
		5.1/D	0,3	0,140432	3,21795	10	4,04154	10
			0,14	0,140432	3,21795	10	4,04154	10
			0,05	0,140432	3,21795	10	4,04154	10
			0,03	0,140432	3,21795	10	4,04154	10
		2.0/F	0,3	3,18648	40,8988	20	8,67994	20
			0,14	3,18648	40,8988	20	8,67994	20
			0,05	3,18648	40,8988	20	8,67994	20
			0,03	3,18648	40,8988	20	8,67994	20
600 s\23 - Fuga linha expedição Gasolina desde a bacia até ao cais	Leak	3.3/C	0,3	0,587993	23,3919	40	11,7484	40
			0,14	0,587993	23,3919	40	11,7484	40
			0,05	0,587993	23,3919	40	11,7484	40
			0,03	0,587993	23,3919	40	11,7484	40
		5.1/D	0,3	0,472701	4,64214	30	11,4513	30
			0,14	0,472701	4,64214	30	11,4513	30
			0,05	0,472701	4,64214	30	11,4513	30
			0,03	0,472701	4,64214	30	11,4513	30
		2.0/F	0,3	7,79198	255,586	50	20,2487	50

			0,14	7,79198	255,586	50	20,2487	50
			0,05	7,79198	255,586	50	20,2487	50
			0,03	7,79198	255,586	50	20,2487	50
600 s\31 - Rotura linha bombas p/ ilha Etanol	Short pipe	3.3/C	0,3	0,441418	223,744	10	3,24038	10
			0,14	0,441418	223,744	10	3,24038	10
			0,05	0,441418	223,744	10	3,24038	10
			0,03	0,441418	223,744	10	3,24038	10
		2.0/F	0,3	0,6344	173,082	10	3,87776	10
			0,14	0,6344	173,082	10	3,87776	10
			0,05	0,6344	173,082	10	3,87776	10
			0,03	0,6344	173,082	10	3,87776	10
600 s\36 - Fuga linha expedição Etanol desde a bacia até ao cais	Leak		0,3	0,0165644	156,215	10	4,07593	10
			0,14	0,0165644	156,215	10	4,07593	10
			0,05	0,0165644	156,215	10	4,07593	10
			0,03	0,0165644	156,215	10	4,07593	10

Consequence Summary Report

Workspace: RNM_Aveiro

Study: 3600 s

Summary Basis

These tables will only report global values set in the parameters. Values that are modified in the study tree will not be reported.

The report is context sensitive, and filters up to the study level. You will need to generate multiple summary reports if you have multiple studies in your workspace.

Discharge Results (after atmospheric expansion)

Path	Scenario	Weather	Peak Flowrate [kg/s]	Temperature [degC]	Liquid mass fraction in material [fraction]	Droplet diameter [um]	Expanded diameter [m]	Velocity [m/s]	End time of release [s]
3600 s\01 - Incendio tanque T-1001 Gasóleo	Catastrophic rupture	3.3/C		20	1	10000		0	
		5.1/D		20	1	10000		0	
		2.0/F		20	1	10000		0	
3600 s\02 - Rotura catastrófica tanque T-1001 Gasóleo		3.3/C		19,9903	1	10000		2,95745	
		5.1/D		19,9903	1	10000		2,95745	
		2.0/F		19,9903	1	10000		2,95745	
3600 s\03 - Fuga 100mm tanque T-1001 Gasóleo	Leak	3.3/C	72,9668	19,9807	1	588,087	0,0774597	20,9231	3600
		5.1/D	72,9668	19,9807	1	579,062	0,0774597	20,9231	3600
		2.0/F	72,9668	19,9807	1	600,561	0,0774597	20,9231	3600
3600 s\04 - Fuga 10mm tanque T-1001 Gasóleo		3.3/C	0,729668	19,9807	1	588,087	0,00774597	20,9231	3600
		5.1/D	0,729668	19,9807	1	579,062	0,00774597	20,9231	3600
		2.0/F	0,729668	19,9807	1	600,561	0,00774597	20,9231	3600

3600 s\11 - Catastrophic rupture	3.3/C		19,9984	1	10000		1,20415	
Rotura catastrófica cisterna Gasóleo		5.1/D		19,9984	1	10000	1,20415	
		2.0/F		19,9984	1	10000	1,20415	
3600 s\14 - Incendio tanque T-3002 Gasolina		3.3/C		20	1	10000	0	
		5.1/D		20	1	10000	0	
		2.0/F		20	1	10000	0	
3600 s\15 - Rotura catastrófica tanque T-3002 Gasolina		3.3/C		19,9862	1	10000	2,82546	
		5.1/D		19,9862	1	10000	2,82546	
		2.0/F		19,9862	1	10000	2,82546	
3600 s\16 - Fuga 100mm tanque T-3002 Gasolina	Leak	3.3/C	64,8633	19,9724	1	533,342	0,0774597	19,9784 3600
		5.1/D	64,8633	19,9724	1	525,157	0,0774597	19,9784 3600
		2.0/F	64,8633	19,9724	1	544,654	0,0774597	19,9784 3600
3600 s\17 - Fuga 10mm tanque T-3002 Gasolina		3.3/C	0,648633	19,9724	1	533,342	0,00774597	19,9784 3600
		5.1/D	0,648633	19,9724	1	525,157	0,00774597	19,9784 3600
		2.0/F	0,648633	19,9724	1	544,654	0,00774597	19,9784 3600
3600 s\24 - Rotura catastrófica cisterna Gasolina	Catastrophic rupture	3.3/C		19,9977	1	10000	1,16325	
		5.1/D		19,9977	1	10000	1,16325	
		2.0/F		19,9977	1	10000	1,16325	

3600 s\27 - Incendio tanque T- 5001 Etanol		3.3/C		20	1	10000		0	
		5.1/D		20	1	10000		0	
		2.0/F		20	1	10000		0	
3600 s\28 - Rotura catastrófica tanque T- 5001 Etanol		3.3/C		19,9926	1	10000		2,47356	
		5.1/D		19,9926	1	10000		2,47356	
		2.0/F		19,9926	1	10000		2,47356	
3600 s\29 - Fuga 100mm tanque T- 5001 Etanol	Leak	3.3/C	65,1422	19,9851	1	767,027	0,0774597	17,4907	3600
		5.1/D	65,1422	19,9851	1	755,255	0,0774597	17,4907	3600
		2.0/F	65,1422	19,9851	1	783,296	0,0774597	17,4907	3600
3600 s\30 - Fuga 10mm tanque T- 5001 Etanol		3.3/C	0,651422	19,9851	1	767,027	0,00774597	17,4907	3600
		5.1/D	0,651422	19,9851	1	755,255	0,00774597	17,4907	3600
		2.0/F	0,651422	19,9851	1	783,296	0,00774597	17,4907	3600
3600 s\37 - Rotura catastrófica cisterna Etanol	Catastrophic rupture	3.3/C		19,9983	1	10000		1,18817	
		5.1/D		19,9983	1	10000		1,18817	
		2.0/F		19,9983	1	10000		1,18817	

Dispersion Results

Input dispersion parameters

Core averaging time	18,75	s
Flammable averaging time	18,75	s
Toxic averaging time	600	s
Height of interest	0	m

Distance downwind to defined concentrations

The reported concentration of interest is defined at the scenario

Path	Scenario	Weather	Distance to UFL [m]	Distance to LFL [m]	Distance to LFL fraction [m]
3600 s\01 - Incendio tanque T-1001 Gasóleo	Catastrophic rupture	3.3/C	48,4372	54,1741	55,7632
		5.1/D	50,5727	57,5283	59,267
		2.0/F	45,2948	53,3513	54,9066
3600 s\02 - Rotura catastrófica tanque T- 1001 Gasóleo		3.3/C	19,3277	19,4441	19,4602
		5.1/D	19,8217	19,9364	19,9523
		2.0/F	18,8239	18,9387	18,9546
3600 s\03 - Fuga 100mm tanque T- 1001 Gasóleo	Leak	3.3/C	5,09313	5,45277	5,59034
		5.1/D	5,2216	5,66962	5,83941
		2.0/F	6,27898	7,50893	7,98024
3600 s\04 - Fuga 10mm tanque T-1001 Gasóleo		3.3/C	2,31457	2,64172	2,73926
		5.1/D	2,27224	2,69074	2,81376
		2.0/F	2,18128	3,20945	3,52527
3600 s\11 - Rotura catastrófica cisterna Gasóleo	Catastrophic rupture	3.3/C	3,88042	3,88443	3,91
		5.1/D	4,13688	4,1409	4,16387
		2.0/F	3,41007	3,41614	3,41698
3600 s\14 - Incendio tanque T-3002 Gasolina		3.3/C	54,6579	222,764	291,168
		5.1/D	45,4103	229,343	304,657
		2.0/F	51,1192	178,092	235,223
3600 s\15 - Rotura		3.3/C	17,4565	64,1675	90,3637

catastrófica tanque T-3002 Gasolina

		5.1/D	17,6426	62,213	89,9741
		2.0/F	16,9242	66,5653	88,111
3600 s\16 - Fuga 100mm tanque T-3002 Gasolina	Leak	3.3/C	5,43188	40,2941	65,3889
		5.1/D	5,32148	33,1837	56,3852
		2.0/F	8,12799	54,1213	79,5062
3600 s\17 - Fuga 10mm tanque T-3002 Gasolina		3.3/C	2,25731	4,32105	11,8861
		5.1/D	2,22443	2,76553	9,21366
		2.0/F	2,20815	11,4307	19,1763
3600 s\24 - Rotura catastrófica cisterna Gasolina	Catastrophic rupture	3.3/C	4,0349	12,7078	19,2088
		5.1/D	4,13049	13,1294	20,5148
		2.0/F	3,45542	9,86396	13,7644
3600 s\27 - Incendio tanque T-5001 Etanol		3.3/C	25,6648	34,809	92,4874
		5.1/D	27,5245	36,658	96,1645
		2.0/F	23,7691	24,415	65,4507
3600 s\28 - Rotura catastrófica tanque T-5001 Etanol		3.3/C	9,52304	9,62558	22,0067
		5.1/D	9,76156	9,836	24,3767
		2.0/F	9,05465	9,13197	21,0379
3600 s\29 - Fuga 100mm tanque T-5001 Etanol	Leak	3.3/C	3,95995	4,63764	11,8333
		5.1/D	3,99571	4,84276	12,8946
		2.0/F	4,39343	6,32323	15,4863
3600 s\30 - Fuga 10mm tanque T-5001 Etanol		3.3/C	1,93674	2,28184	2,39585
		5.1/D	1,86897	2,3165	2,4548
		2.0/F	1,12413	2,75	6,32157
3600 s\37 - Rotura catastrófica cisterna Etanol	Catastrophic rupture	3.3/C	3,78943	3,81171	6,90614
		5.1/D	3,97012	3,98742	7,8788

2.0/F

3,25418

3,27245

4,36157

Jet Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Flame length [m]	Distance downwind to intensity level 1 (37,5 kW/m2) [m]	Distance downwind to intensity level 2 (12,5 kW/m2) [m]	Distance downwind to intensity level 3 (7 kW/m2) [m]	Distance downwind to intensity level 4 (5 kW/m2) [m]	Distance downwind to intensity level 5 (3 kW/m2) [m]
3600 s\03 - Fuga 100mm tanque T-1001 Gasóleo	Leak	3.3/C	2,47025	3,52812	3,52812	3,98111	4,34608	4,99942
		5.1/D	2,19442	3,24193	3,26555	3,77367	4,12615	4,76611
		2.0/F	2,84719	3,91416	3,91416	4,26903	4,64238	5,30891
3600 s\04 - Fuga 10mm tanque T-1001 Gasóleo		3.3/C	0,633157	1,63904	1,63904	1,63904	1,63904	1,63904
		5.1/D	0,570979	1,57364	1,57364	1,57364	1,57364	1,57364
		2.0/F	0,711643	1,72021	1,72021	1,72021	1,72021	1,72021
3600 s\16 - Fuga 100mm tanque T-3002 Gasolina		3.3/C	21,7271	26,2349	34,1136	39,5827	43,3848	50,3071
		5.1/D	19,3145	24,8801	32,352	37,6859	41,4295	48,2835
		2.0/F	25,0149	28,1772	36,5104	42,1211	45,9816	52,9493
3600 s\17 - Fuga 10mm tanque T-3002 Gasolina		3.3/C	5,59889	6,73607	7,92141	9,14625	9,98218	11,493
		5.1/D	5,02422	6,13887	7,57668	8,76564	9,58852	11,0911
		2.0/F	6,34316	7,49899	8,3628	9,61412	10,4614	11,9676
3600 s\29 - Fuga 100mm tanque T-5001		3.3/C	16,1094	n/a	17,5007	20,0081	21,685	24,5064

Etanol

		5.1/D	14,3473	15,6693	16,6564	19,0341	20,579	23,2717
		2.0/F	18,5576	n/a	20,0202	21,4387	23,234	26,2514
3600 s\30 - Fuga 10mm tanque T- 5001 Etanol		3.3/C	4,26207	n/a	5,36387	5,36387	5,36387	5,85913
		5.1/D	3,8234	n/a	4,90705	4,90705	4,97387	5,60448
		2.0/F	4,82493	n/a	5,94362	5,94362	5,94362	6,17194

Early Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (37,5 kW/m2) [m]	Distance downwind to intensity level 2 (12,5 kW/m2) [m]	Distance downwind to intensity level 3 (7 kW/m2) [m]	Distance downwind to intensity level 4 (5 kW/m2) [m]	Distance downwind to intensity level 5 (3 kW/m2) [m]
3600 s\03 - Fuga 100mm tanque T-1001 Gasóleo	Leak	3.3/C	40,5384	n/a	27,2879	46,3624	58,2992	73,0237
		5.1/D	40,8457	n/a	28,4155	51,6017	63,004	76,0502
		2.0/F	40,1224	n/a	25,8307	40,6856	51,9482	67,8765
3600 s\04 - Fuga 10mm tanque T-1001 Gasóleo		3.3/C	4,05323	7,14331	10,4435	12,4037	13,7234	16,111
		5.1/D	4,08393	7,59737	10,6573	12,4492	13,6752	15,9287
		2.0/F	4,01168	6,50393	10,1415	12,0994	13,5161	16,0562
3600 s\16 - Fuga 100mm tanque T-3002 Gasolina		3.3/C	76,7718	39,3859	41,6978	45,9756	48,3808	53,0943
		5.1/D	76,7716	39,3858	42,4394	46,1638	48,3292	53,2862
		2.0/F	76,7728	39,3864	40,7942	45,4407	48,1281	52,9752
3600 s\17 - Fuga 10mm tanque T-3002 Gasolina		3.3/C	19,3144	12,9037	14,4548	15,7771	16,8393	18,8209
		5.1/D	18,4212	12,4568	14,0004	15,2622	16,2012	17,9907
		2.0/F	20,1988	13,2703	14,6779	16,2004	17,2614	19,4273
3600 s\29 - Fuga 100mm tanque T-5001		3.3/C	58,4315	43,8951	76,5103	92,9452	105,231	127,351

Etanol

		5.1/D	58,778	47,5393	78,2053	94,9401	106,695	127,966
		2.0/F	57,9619	39,8371	72,9761	90,8207	102,839	124,835
3600 s\30 - Fuga 10mm tanque T- 5001 Etanol		3.3/C	5,81277	5,95412	11,0844	13,2871	14,7605	17,4778
		5.1/D	5,84635	5,96724	11,5525	13,5801	15,0563	17,5612
		2.0/F	5,76746	5,87778	10,2145	12,7996	14,3203	17,0418

Late Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (37,5 kW/m2) [m]	Distance downwind to intensity level 2 (12,5 kW/m2) [m]	Distance downwind to intensity level 3 (7 kW/m2) [m]	Distance downwind to intensity level 4 (5 kW/m2) [m]	Distance downwind to intensity level 5 (3 kW/m2) [m]
3600 s\01 - Incendio tanque T-1001 Gasóleo	Catastrophic rupture	3.3/C	31,0057	n/a	19,5414	36,6954	45,3931	57,0105
		5.1/D	31,0101	n/a	20,9945	40,8924	48,5898	58,7449
		2.0/F	31,007	n/a	18,1054	31,8207	40,7487	53,6128
3600 s\02 - Rotura catastrófica tanque T-1001 Gasóleo		3.3/C	64,3683	n/a	34,2163	59,0354	76,2888	97,8112
		5.1/D	64,3517	n/a	35,2955	65,9509	82,8448	102,036
		2.0/F	64,3633	n/a	33,1817	51,8928	67,8862	90,9863
3600 s\03 - Fuga 100mm tanque T-1001 Gasóleo	Leak	3.3/C	64,3377	n/a	34,2015	59,0125	76,26	97,7742
		5.1/D	64,3393	n/a	35,2894	65,9407	82,8322	102,021
		2.0/F	64,339	n/a	33,1695	51,8766	67,8656	90,959
3600 s\04 - Fuga 10mm tanque T-1001 Gasóleo		3.3/C	30,0593	n/a	21,7072	38,5828	46,9436	58,2409
		5.1/D	29,9815	n/a	22,9503	42,5694	49,9222	59,7627
		2.0/F	30,1509	n/a	20,1994	33,7494	42,4347	54,9973
3600 s\11 - Rotura catastrófica cisterna Gasóleo	Catastrophic rupture	3.3/C	10,7048	6,3524	17,3092	21,8753	24,6801	30,2145
		5.1/D	10,705	6,35251	18,2766	22,2801	25,297	30,3903
		2.0/F	10,7054	6,3527	15,7048	20,9725	24,1309	29,4873
3600 s\14 -		3.3/C	27,0256	14,5128	16,1165	17,7859	18,9906	21,4648

Incendio tanque T- 3002 Gasolina								
		5.1/D	27,0147	14,5073	16,2822	17,7731	19,0635	21,4871
		2.0/F	27,0109	14,5055	15,7845	17,7267	18,9592	21,388
3600 s\15 - Rotura catastrófica tanque T- 3002 Gasolina		3.3/C	76,7955	39,3978	41,7101	45,989	48,3948	53,1093
		5.1/D	76,793	39,3965	42,4506	46,176	48,3417	53,2998
		2.0/F	76,808	39,404	40,8123	45,4602	48,1486	52,9974
3600 s\16 - Fuga 100mm tanque T- 3002 Gasolina	Leak	3.3/C	76,7718	39,3859	41,6978	45,9756	48,3808	53,0943
		5.1/D	76,7716	39,3858	42,4394	46,1638	48,3292	53,2862
		2.0/F	76,7728	39,3864	40,7942	45,4407	48,1281	52,9752
3600 s\17 - Fuga 10mm tanque T- 3002 Gasolina		3.3/C	19,3144	12,9037	14,4548	15,7771	16,8393	18,8209
		5.1/D	18,4212	12,4568	14,0004	15,2622	16,2012	17,9907
		2.0/F	20,1988	13,2703	14,6779	16,2004	17,2614	19,4273
3600 s\24 - Rotura catastrófica cisterna Gasolina	Catastrophic rupture	3.3/C	10,7051	6,35253	7,5057	8,62536	9,44917	11,0364
		5.1/D	10,7049	6,35243	7,48868	8,62073	9,43191	10,996
		2.0/F	10,7049	6,35247	7,50724	8,61623	9,45892	11,0688
3600 s\27 - Incendio tanque T- 5001 Etanol		3.3/C	14,0035	8,00177	20,0527	24,6653	28,0666	34,1259
		5.1/D	14,0051	8,1632	20,6621	25,2057	28,4174	34,0784
		2.0/F	14,0046	8,00232	18,8319	24,1238	27,4821	33,6483
3600 s\28 - Rotura catastrófica		3.3/C	76,7843	54,0812	93,233	114,21	129,786	158,01

tanque T-5001 Etanol								
		5.1/D	76,7755	59,0295	94,7925	116,007	130,945	158,052
		2.0/F	76,7771	48,876	89,6674	112,399	127,811	155,959
3600 s\29 - Fuga 100mm tanque T-5001 Etanol	Leak	3.3/C	76,7721	54,0723	93,2196	114,194	129,768	157,987
		5.1/D	76,7726	59,027	94,7892	116,003	130,941	158,046
		2.0/F	76,7769	48,8759	89,6672	112,398	127,811	155,958
3600 s\30 - Fuga 10mm tanque T-5001 Etanol		3.3/C	23,5488	16,623	34,1131	41,4059	46,8838	56,6189
		5.1/D	23,2426	17,0259	34,5032	41,7423	46,8225	55,8854
		2.0/F	23,8404	15,7234	32,7449	41,054	46,4783	56,4565
3600 s\37 - Rotura catastrófica cisterna Etanol	Catastrophic rupture	3.3/C	10,7073	6,35364	15,7332	19,3897	22,0345	26,7764
		5.1/D	10,7087	6,35435	16,2734	19,82	22,3441	26,7503
		2.0/F	10,7078	6,35391	14,6852	18,9174	21,5559	26,3793

Flash Fire Results

Distance downwind to defined concentrations

The reported LFL and LFL fraction are defined in the respective material property

Path	Scenario	Weather	Distance downwind to LFL [m]	Distance downwind to LFL Fraction [m]
3600 s\01 - Incendio tanque T-1001 Gasóleo	Catastrophic rupture	3.3/C	54,1741	55,7632
		5.1/D	57,5283	59,267
		2.0/F	53,3513	54,9066
3600 s\02 - Rotura catastrófica tanque T-1001 Gasóleo		3.3/C	19,4441	19,4602
		5.1/D	19,9364	19,9523
		2.0/F	18,9387	18,9546
3600 s\03 - Fuga 100mm tanque T-1001 Gasóleo	Leak	3.3/C	5,45277	5,59034
		5.1/D	5,66962	5,83941
		2.0/F	7,50893	7,98024
3600 s\04 - Fuga 10mm tanque T-1001 Gasóleo		3.3/C	2,64172	2,73926
		5.1/D	2,69074	2,81376
		2.0/F	3,20945	3,52527
3600 s\11 - Rotura catastrófica cisterna Gasóleo	Catastrophic rupture	3.3/C	3,88443	3,91
		5.1/D	4,1409	4,16387
		2.0/F	3,41614	3,41698
3600 s\14 - Incendio tanque T-3002 Gasolina		3.3/C	222,764	291,168
		5.1/D	229,343	304,657
		2.0/F	178,092	235,223
3600 s\15 - Rotura catastrófica tanque T-3002 Gasolina		3.3/C	64,1675	90,3637
		5.1/D	62,213	89,9741
		2.0/F	66,5653	88,111
3600 s\16 - Fuga 100mm tanque T-3002 Gasolina	Leak	3.3/C	40,2941	65,3889
		5.1/D	33,1837	56,3852
		2.0/F	54,1213	79,5062
3600 s\17 - Fuga 10mm		3.3/C	4,32105	11,8861

tanque T-3002 Gasolina

		5.1/D	2,76553	9,21366
		2.0/F	11,4307	19,1763
3600 s\24 - Rotura catastrófica cisterna Gasolina	Catastrophic rupture	3.3/C	12,7078	19,2088
		5.1/D	13,1294	20,5148
		2.0/F	9,86396	13,7644
3600 s\27 - Incendio tanque T-5001 Etanol		3.3/C	34,809	92,4874
		5.1/D	36,658	96,1645
		2.0/F	24,415	65,4507
3600 s\28 - Rotura catastrófica tanque T- 5001 Etanol		3.3/C	9,62558	22,0067
		5.1/D	9,836	24,3767
		2.0/F	9,13197	21,0379
3600 s\29 - Fuga 100mm tanque T-5001 Etanol	Leak	3.3/C	4,63764	11,8333
		5.1/D	4,84276	12,8946
		2.0/F	6,32323	15,4863
3600 s\30 - Fuga 10mm tanque T-5001 Etanol		3.3/C	2,28184	2,39585
		5.1/D	2,3165	2,4548
		2.0/F	2,75	6,32157
3600 s\37 - Rotura catastrófica cisterna Etanol	Catastrophic rupture	3.3/C	3,81171	6,90614
		5.1/D	3,98742	7,8788
		2.0/F	3,27245	4,36157

Maximum distance to LFL fraction at any height

Path	Scenario	Weather	Max flash fire distance [m]	Height of the max flash fire distance [m]	Time [s]
3600 s\01 - Incendio tanque T-1001 Gasóleo	Catastrophic rupture	3.3/C	53,5808	0	3,27192
		5.1/D	59,4639	0	3,33514
		2.0/F	54,6774	0	3,36077
3600 s\02 - Rotura		3.3/C	19,3398	0	0,19

catastrófica tanque T-1001 Gasóleo					
		5.1/D	18,8104	0	0,320263
		2.0/F	19,2185	0	0,212
3600 s\03 - Fuga 100mm tanque T-1001 Gasóleo	Leak	3.3/C	5,75431	0,060215	3548,79
		5.1/D	6,14849	0,0598975	3548,79
		2.0/F	8,56692	0,0587061	3548,78
3600 s\04 - Fuga 10mm tanque T-1001 Gasóleo		3.3/C	2,53884	0,0794979	3548,72
		5.1/D	2,65006	0,0794487	7,51436
		2.0/F	3,45439	0,0792226	71,4944
3600 s\11 - Rotura catastrófica cisterna Gasóleo	Catastrophic rupture	3.3/C	4,13729	0	0,264416
		5.1/D	4,17091	0	0,2264
		2.0/F	3,31136	0	0,282943
3600 s\14 - Incendio tanque T-3002 Gasolina		3.3/C	289,175	0	54,8985
		5.1/D	301,926	0	47,2468
		2.0/F	233,991	0	73,9351
3600 s\15 - Rotura catastrófica tanque T-3002 Gasolina		3.3/C	89,4312	0	25,3823
		5.1/D	88,8673	0	19,5404
		2.0/F	86,6167	0	39,3954
3600 s\16 - Fuga 100mm tanque T-3002 Gasolina	Leak	3.3/C	65,1644	0	783,074
		5.1/D	56,1578	0	782,081
		2.0/F	79,4268	0	863,99
3600 s\17 - Fuga 10mm tanque T-3002 Gasolina		3.3/C	11,8463	0	3555,99
		5.1/D	9,22694	0,038649	2396,11
		2.0/F	19,0343	0	3403,86
3600 s\24 - Rotura catastrófica cisterna Gasolina	Catastrophic rupture	3.3/C	18,8909	0	6,99267
		5.1/D	19,9656	0	5,48694

		2.0/F	13,6526	0	11,1332
3600 s\27 - Incendio		3.3/C	91,9937	0	15,8081
tanque T-5001					
Etanol					
		5.1/D	93,8916	0	15,5822
		2.0/F	65,2533	0	17,2311
3600 s\28 - Rotura		3.3/C	21,6769	0	6,80663
catastrófica tanque					
T-5001 Etanol					
		5.1/D	23,9605	0	5,8097
		2.0/F	20,8903	0	11,1786
3600 s\29 - Fuga	Leak	3.3/C	11,9611	0,0399074	848,491
100mm tanque T-					
5001 Etanol					
		5.1/D	13,0131	0,0446591	848,482
		2.0/F	15,2921	0	855,725
3600 s\30 - Fuga		3.3/C	2,27983	0,0752729	1797,04
10mm tanque T-5001					
Etanol					
		5.1/D	2,29862	0,0774265	188,807
		2.0/F	6,29415	0	3400
3600 s\37 - Rotura	Catastrophic rupture	3.3/C	6,68015	0	2,05688
catastrófica cisterna					
Etanol					
		5.1/D	7,70183	0	2,16733
		2.0/F	4,30891	0	2,90031

Explosion Results

Explosion scenarios for worst-case maximum downwind distance to defined overpressures.

These results are produced during the consequence run and depend on the precise setting of the scenario.

These results may be quite different to the explosion results calculated during the risk or effects modelling as these will depend on the obstructed regions defined on the map.

The reported overpressures are defined in the explosion parameters

Path	Scenario	Weather	Overpressure level [bar]	Maximum distance [m]	Diameter [m]
3600 s\01 - Incendio tanque T- 1001 Gasóleo	Catastrophic rupture	3.3/C	0,3	56,9408	13,8816
			0,14	61,614	23,2281
			0,05	77,2118	54,4236
			0,03	93,1111	86,2222
		5.1/D	0,3	57,6388	15,2775
			0,14	62,7819	25,5638
			0,05	79,9481	59,8963
			0,03	97,4463	94,8925
		2.0/F	0,3	55,9513	11,9025
			0,14	59,9582	19,9165
			0,05	73,3322	46,6644
			0,03	86,9648	73,9295
3600 s\02 - Rotura catastrófica tanque T-1001 Gasóleo		3.3/C	0,3	10,559	1,11791
			0,14	10,9353	1,8706
			0,05	12,1914	4,38284
			0,03	13,4718	6,94365
		5.1/D	0,3	10,5144	1,02889
			0,14	10,8608	1,72164
			0,05	12,0169	4,03381
			0,03	13,1953	6,39069
		2.0/F	0,3	10,5044	1,00878
			0,14	10,844	1,68799
			0,05	11,9775	3,95497
			0,03	13,1329	6,26578
3600 s\14 - Incendio tanque T- 3002 Gasolina		3.3/C	0,3	308,522	77,0434
			0,14	340,413	160,825
			0,05	477,968	515,936
			0,03	630,738	881,475
		5.1/D	0,3	321,319	102,638
			0,14	358,25	196,501
			0,05	521,339	602,679
			0,03	704,749	1049,5
		2.0/F	0,3	267,521	75,0412
			0,14	296,687	153,374
			0,05	413,299	426,598
			0,03	554,638	869,277
3600 s\15 - Rotura catastrófica tanque		3.3/C	0,3	98,6606	37,3212
			0,14	113,455	86,9107

T-3002 Gasolina			0,05	175,994	231,987
			0,03	246,014	392,027
		5.1/D	0,3	93,4313	46,8627
			0,14	109,208	78,4153
			0,05	171,247	242,493
			0,03	242,088	384,177
		2.0/F	0,3	107,062	54,1239
			0,14	125,283	90,5655
			0,05	194,906	249,812
			0,03	267,886	395,772
3600 s\16 - Fuga 100mm tanque T- 3002 Gasolina	Leak	3.3/C	0,3	73,7006	27,4012
			0,14	82,9252	45,8505
			0,05	113,714	107,428
			0,03	145,098	170,196
		5.1/D	0,3	62,1635	24,327
			0,14	70,3532	40,7064
			0,05	97,6878	95,3755
			0,03	125,551	151,102
		2.0/F	0,3	94,8596	49,7193
			0,14	111,598	83,1952
			0,05	167,464	194,927
			0,03	224,41	308,819
3600 s\17 - Fuga 10mm tanque T- 3002 Gasolina		3.3/C	0,3	11,6931	3,38625
			0,14	12,8331	5,66621
			0,05	16,638	13,276
			0,03	20,5164	21,0329
		2.0/F	0,3	11,6248	3,24961
			0,14	12,7188	5,43758
			0,05	16,3701	12,7403
			0,03	20,0921	20,1842
3600 s\24 - Rotura catastrófica cisterna Gasolina	Catastrophic rupture	3.3/C	0,3	16,199	12,3979
			0,14	20,3727	20,7454
			0,05	34,3034	48,6067
			0,03	48,5033	77,0067
		5.1/D	0,3	15,9984	11,9969
			0,14	20,0372	20,0743
			0,05	33,5172	47,0343
			0,03	47,2578	74,5156
		2.0/F	0,3	16,2964	12,5927
			0,14	20,5357	21,0714
			0,05	34,6852	49,3705
			0,03	49,1083	78,2166
3600 s\27 - Incendio tanque T- 5001 Etanol		3.3/C	0,3	61,6765	3,35297
			0,14	62,8053	5,61053
			0,05	86,2218	132,444
			0,03	124,914	209,828

		5.1/D	0,3	58,7089	17,4178
			0,14	64,5726	29,1451
			0,05	94,4059	128,812
			0,03	132,643	225,286
		2.0/F	0,3	44,555	9,10992
			0,14	49,8936	39,7872
			0,05	76,6109	93,2219
			0,03	106,422	172,844
3600 s\28 - Rotura catastrófica tanque T-5001 Etanol		3.3/C	0,3	15,2417	10,4833
			0,14	18,7709	17,5417
			0,05	30,5502	41,1005
			0,03	42,5573	65,1146
		5.1/D	0,3	15,733	11,466
			0,14	19,593	19,1861
			0,05	32,4766	44,9531
			0,03	45,6092	71,2183
		2.0/F	0,3	15,5164	11,0328
			0,14	19,2306	18,4612
			0,05	31,6274	43,2547
			0,03	44,2638	68,5276
3600 s\29 - Fuga 100mm tanque T- 5001 Etanol	Leak	3.3/C	0,3	11,5802	3,1603
			0,14	12,6441	5,28813
			0,05	16,1951	12,3901
			0,03	19,8147	19,6294
		5.1/D	0,3	11,3095	2,61907
			0,14	12,1912	4,38248
			0,05	15,1341	10,2682
			0,03	18,1338	16,2677
		2.0/F	0,3	10,9052	1,81041
			0,14	11,5147	3,02936
			0,05	13,5489	7,09782
			0,03	15,6225	11,2449

Supplementary data for worst-case explosion scenarios

Path	Scenario	Weather	Overpressure level [bar]	Explosion flammable mass [kg]	Ignition time [s]	Ignition source [m]	Cloud centre [m]	Explosion centre [m]
3600 s\01 - Incendio tanque T- 1001 Gasóleo	Catastrophic rupture	3.3/C	0,3	2,76008	3,01096	50	11,2746	50
			0,14	2,76008	3,01096	50	11,2746	50
			0,05	2,76008	3,01096	50	11,2746	50
			0,03	2,76008	3,01096	50	11,2746	50
		5.1/D	0,3	3,67926	2,77949	50	8,14045	50
			0,14	3,67926	2,77949	50	8,14045	50
			0,05	3,67926	2,77949	50	8,14045	50

			0,03	3,67926	2,77949	50	8,14045	50
		2.0/F	0,3	1,73988	2,96912	50	10,3434	50
			0,14	1,73988	2,96912	50	10,3434	50
			0,05	1,73988	2,96912	50	10,3434	50
			0,03	1,73988	2,96912	50	10,3434	50
3600 s\02 - Rotura catastrófica tanque T- 1001 Gasóleo		3.3/C	0,3	0,00144154	1E-08	10	0,00939674	10
			0,14	0,00144154	1E-08	10	0,00939674	10
			0,05	0,00144154	1E-08	10	0,00939674	10
			0,03	0,00144154	1E-08	10	0,00939674	10
		5.1/D	0,3	0,00112385	1E-08	10	0,0289643	10
			0,14	0,00112385	1E-08	10	0,0289643	10
			0,05	0,00112385	1E-08	10	0,0289643	10
			0,03	0,00112385	1E-08	10	0,0289643	10
		2.0/F	0,3	0,00105923	1E-08	10	0	10
			0,14	0,00105923	1E-08	10	0	10
			0,05	0,00105923	1E-08	10	0	10
			0,03	0,00105923	1E-08	10	0	10
3600 s\14 - Incendio tanque T- 3002 Gasolina		3.3/C	0,3	468,032	37,5825	270	174,648	270
			0,14	908,676	33,4397	260	162,461	260
			0,05	2332,45	21,8257	220	122,642	220
			0,03	2925,23	16,4184	190	99,5894	190
		5.1/D	0,3	1106,59	31,4955	270	171,852	270
			0,14	1657,45	28,7725	260	160,38	260
			0,05	3717,77	19,5211	220	119,392	220
			0,03	4937,13	13,3674	180	87,7637	180
		2.0/F	0,3	432,482	59,7176	230	116,012	230
			0,14	788,144	49,71	220	108,514	220
			0,05	1318,51	34,7187	200	95,8534	200
			0,03	2805,46	8,91359	120	47,6703	120
3600 s\15 - Rotura catastrófica tanque T- 3002 Gasolina		3.3/C	0,3	53,2028	16,6234	80	43,7423	80
			0,14	143,406	12,022	70	32,2139	70
			0,05	212,04	8,3276	60	22,991	60
			0,03	257,322	5,40921	50	15,4178	50
		5.1/D	0,3	105,329	9,95127	70	37,3042	70
			0,14	105,329	9,95127	70	37,3042	70
			0,05	242,171	4,46466	50	18,2212	50
			0,03	242,171	4,46466	50	18,2212	50
		2.0/F	0,3	162,269	31,3509	80	24,7737	80
			0,14	162,269	31,3509	80	24,7737	80
			0,05	264,768	19,1931	70	17,0075	70
			0,03	264,768	19,1931	70	17,0075	70

3600 s\16 - Leak	3.3/C	0,3	21,0562	559,882	60	20,721	60	
Fuga		0,14	21,0562	559,882	60	20,721	60	
100mm		0,05	21,0562	559,882	60	20,721	60	
tanque T-3002		0,03	21,0562	559,882	60	20,721	60	
Gasolina								
		5.1/D	0,3	14,7345	436,97	50	16,6877	50
			0,14	14,7345	436,97	50	16,6877	50
			0,05	14,7345	436,97	50	16,6877	50
			0,03	14,7345	436,97	50	16,6877	50
		2.0/F	0,3	125,789	557,208	70	32,7728	70
			0,14	125,789	557,208	70	32,7728	70
			0,05	125,789	557,208	70	32,7728	70
			0,03	125,789	557,208	70	32,7728	70
3600 s\17 - Fuga 10mm		3.3/C	0,3	0,0397397	1101,88	10	1,82134	10
tanque T-3002			0,14	0,0397397	1101,88	10	1,82134	10
Gasolina			0,05	0,0397397	1101,88	10	1,82134	10
			0,03	0,0397397	1101,88	10	1,82134	10
		2.0/F	0,3	0,0351207	292,162	10	4,22319	10
			0,14	0,0351207	292,162	10	4,22319	10
			0,05	0,0351207	292,162	10	4,22319	10
			0,03	0,0351207	292,162	10	4,22319	10
3600 s\24 - Rotura catastrófica cisterna	Catastrophic rupture	3.3/C	0,3	1,95036	1,6927	10	4,13834	10
Gasolina			0,14	1,95036	1,6927	10	4,13834	10
			0,05	1,95036	1,6927	10	4,13834	10
			0,03	1,95036	1,6927	10	4,13834	10
		5.1/D	0,3	1,76714	1,39865	10	4,61756	10
			0,14	1,76714	1,39865	10	4,61756	10
			0,05	1,76714	1,39865	10	4,61756	10
			0,03	1,76714	1,39865	10	4,61756	10
		2.0/F	0,3	2,04375	3,95979	10	2,52645	10
			0,14	2,04375	3,95979	10	2,52645	10
			0,05	2,04375	3,95979	10	2,52645	10
			0,03	2,04375	3,95979	10	2,52645	10
3600 s\27 - Incendio tanque T-5001 Etanol		3.3/C	0,3	0,0640794	6,7627	60	40,2816	60
			0,14	0,0640794	6,7627	60	40,2816	60
			0,05	65,5359	1,68122	20	2,30481	20
			0,03	65,5359	1,68122	20	2,30481	20
		5.1/D	0,3	8,98269	5,05706	50	28,6168	50
			0,14	8,98269	5,05706	50	28,6168	50
			0,05	60,2909	2,36828	30	7,87411	30
			0,03	81,113	1,58818	20	1,66566	20
		2.0/F	0,3	1,28521	4,59935	40	21,4553	40
			0,14	22,8528	2,75813	30	10,7174	30

			0,05	22,8528	2,75813	30	10,7174	30
			0,03	36,6313	1,8	20	2,69157	20
3600 s\28 - Rotura catastrófica tanque T- 5001 Etanol		3.3/C	0,3	1,95851	0,509184	10	1,47199	10
			0,14	1,95851	0,509184	10	1,47199	10
			0,05	1,95851	0,509184	10	1,47199	10
			0,03	1,95851	0,509184	10	1,47199	10
		5.1/D	0,3	2,56251	0,361756	10	1,48281	10
			0,14	2,56251	0,361756	10	1,48281	10
			0,05	2,56251	0,361756	10	1,48281	10
			0,03	2,56251	0,361756	10	1,48281	10
		2.0/F	0,3	2,28289	0,99468	10	1,12452	10
			0,14	2,28289	0,99468	10	1,12452	10
			0,05	2,28289	0,99468	10	1,12452	10
			0,03	2,28289	0,99468	10	1,12452	10
3600 s\29 - Fuga 100mm tanque T- 5001 Etanol	Leak	3.3/C	0,3	0,0536554	196,91	10	4,01812	10
			0,14	0,0536554	196,91	10	4,01812	10
			0,05	0,0536554	196,91	10	4,01812	10
			0,03	0,0536554	196,91	10	4,01812	10
		5.1/D	0,3	0,0305399	109,195	10	2,9836	10
			0,14	0,0305399	109,195	10	2,9836	10
			0,05	0,0305399	109,195	10	2,9836	10
			0,03	0,0305399	109,195	10	2,9836	10
		2.0/F	0,3	0,010087	22,4942	10	4,61635	10
			0,14	0,010087	22,4942	10	4,61635	10
			0,05	0,010087	22,4942	10	4,61635	10
			0,03	0,010087	22,4942	10	4,61635	10

