

SUMMARY REPORT

Unique Audit Number: 2.724



Study Folder: RDSPoggiofiorito

PHAST 6.5

RDSPoggiofiorito

Study

6" D15

Base Case

CASE Name:	Data	User-Defined Data
Material		
Material Identifier		METHANE
Type of Vessel		Pressurized Gas
Pressure Specification		Pressure specified
Discharge Pressure (gauge)		90 bar
Discharge Temperature		25 degC
Mass Inventory of material to discharge		2000 kg
Scenario		
Type of Event		Leak
Phase		Vapor
HoleDiameter		15 mm
Building Wake Option		None
Location		
[Elevation		1 m]
Dispersion Concentration of Interest		1E4 ppm
Averaging time associated with Concentration		Flammable
Distances of Interest(1)		1 m
Distances of Interest(2)		5 m
Distances of Interest(3)		10 m
ERPG selection		ERPG is not set
IDLH selection		IDLH is not set
STEL selection		STEL is not set
User Defined Averaging		No user defined averaging time supplied
Bund		
Status of Bund		No bund present
[Type of Bund Surface		Concrete]
[Bund Height		0 m]
[Bund Failure Modeling		Bund cannot fail]
Indoor/Outdoor		
Outdoor Release Direction		Horizontal
Flammable		
Method to use for explosions		TNT
Jet Fire Method		Shell
Dispersion		
Ignition Location		No ignition location
Mass Inventory of material to Disperse		2000 kg
Fireball Parameters		
[Mass Modification Factor		3]
[Calculation method for fireball		DNV Recommended]
[Temperature of fireball		1727 degC]
Jet Fire Parameters		

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Jet fire radiation intensity level 1	3 kW/m ²
Jet fire radiation intensity level 2	5 kW/m ²
Jet fire radiation intensity level 3	12,5 kW/m ²

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Discharge Data

User-Defined Quantities

Material	METHANE
Temperature	25,00 degC
Pressure	91,01 bar
Inventory	2.000,00 kg
Scenario	Leak
Fixed Duration	n/a s

Calculated Quantities

Weather: Study\Category 2/F

Mass Flow of Air (Vent from Vapor Space Only) n/a

Average Values for Segment Number 1

Liquid Fraction	0,00 fraction
Final Temperature	-76,82 degC
Final Velocity	500,00 m/s
Droplet Diameter	0,00 um

Continuous Release Data:

Mass Flowrate	2.62387E+000 kg/s
Release Duration	762,23 s
Orifice Velocity	394,83 m/s
Exit Pressure	48,12 bar
Exit Temperature	-21,22 degC
Discharge Coefficient	0,87
Expanded Radius	0,04 m

Weather: Study\Category 5/D

Mass Flow of Air (Vent from Vapor Space Only) n/a

Average Values for Segment Number 1

Liquid Fraction	0,00 fraction
Final Temperature	-76,82 degC
Final Velocity	500,00 m/s
Droplet Diameter	0,00 um

Continuous Release Data:

Mass Flowrate	2.62387E+000 kg/s
Release Duration	762,23 s
Orifice Velocity	394,83 m/s
Exit Pressure	48,12 bar
Exit Temperature	-21,22 degC
Discharge Coefficient	0,87
Expanded Radius	0,04 m

Consequence Results

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Distance to Concentration Results

The height for user defined concentrations is the user defined height 0 m

All toxic results are reported at the toxic effect height 0 m

All flammable results are reported at the cloud centreline height

Concentration(ppm) Averaging Time			Distance (m)	
			Category 2/F	Category 5/D
User Conc (10000)	18,75	s	97,5501	80,7116
UFL (165000)	18,75	s	3,6517	3,3932
LFL (44000)	18,75	s	14,3353	11,2956
LFL Frac (22000)	18,75	s	45,4235	32,4768

Concentration(ppm) Averaging Time			Heights (m) for above distances	
			Category 2/F	Category 5/D
User Conc (10000)	18,75	s	0	0
UFL (165000)	18,75	s	1,00047	1,00037
LFL (44000)	18,75	s	1,01495	1,00647
LFL Frac (22000)	18,75	s	1,42025	1,07098

Concentration At Distance Results

The height for user defined concentrations is the user defined height 0 m

All toxic results are reported at the toxic effect height 0 m

All flammable results are reported at the cloud centreline height

Distance		Conc.(ppm) at Flammable Avg.Time of 18,75 s	
		Category 2/F	Category 5/D
1	m	413219	408380
5	m	115905	104674
10	m	58126,6	48569,6

Distance		Heights (m) for above concentrations	
		Category 2/F	Category 5/D
1	m	1,00001	1,00001
5	m	1,00088	1,00085
10	m	1,00553	1,00488

Distance		Conc.(ppm) at Core Avg.Time of 18,75 s	
		Category 2/F	Category 5/D
1	m	0	3,66621e-015
5	m	1914,71	7223,72
10	m	31446,4	29276,3

Distance		Heights (m) for above concentrations	
		Category 2/F	Category 5/D
1	m	0	0
5	m	0	0
10	m	0	0

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Jet Fire Hazard

Jet fire method used: SHELL - Johnson

Jet Fire Status	Category 2/F	Category 5/D
Flame Direction	Hazard	Hazard
	Horizontal	Horizontal

Radiation Effects: Jet Fire Ellipse

This table gives the distances to the specified radiation levels for each jet fire listed in the above hazard table

			Category 2/F	Category 5/D
Radiation Level	3	kW/m ²	30,1687	30,0658
Radiation Level	5	kW/m ²	27,0762	27,3302
Radiation Level	12,5	kW/m ²	22,6654	23,4591

Radiation Effects: Jet Fire Distance

			Category 2/F	Radiation Level (kW/m ²) Category 5/D
Distance Of Interest 1	m		1,80326	1,70393
Distance Of Interest 5	m		31,6001	31,1046
Distance Of Interest 10	m		63,5617	65,992

Flash Fire Envelope

All flammable results are reported at the cloud centreline height

			Category 2/F	Category 5/D
Furthest Extent	22000	ppm	45,4235	32,4768
Furthest Extent	44000	ppm	14,3353	11,2956

			Category 2/F	Category 5/D
Furthest Extent	22000	ppm	1,42025	1,07098
Furthest Extent	44000	ppm	1,01495	1,00647

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Explosion Effects: Late Ignition

Explosion Model Used : TNT

Explosion Location Criterion: Cloud Front (LFL Fraction)

All distances are measured from the Source

All flammable results are reported at the cloud centreline height

			Maximum Distance (m) at Overpressure Level	
			Category 2/F	Category 5/D
Overpressure	0,02068	bar	67,206	53,1191
Overpressure	0,1379	bar	47,0443	35,9861
Overpressure	0,2068	bar	45,4507	34,6319

			Supplementary Data at 0,02068 bar	
			Category 2/F	Category 5/D
Supplied Flammable Mass		kg	0,516728	0,317087
Used Flammable Mass		kg	0,516728	0,317087
Overpressure Radius		m	27,206	23,1191
Distance to:				
- Ignition Source		m	40	30
- Cloud Front/Centre		m	40	30
- Explosion Centre		m	40	30

			Supplementary Data at 0,1379 bar	
			Category 2/F	Category 5/D
Supplied Flammable Mass		kg	0,516728	0,317087
Used Flammable Mass		kg	0,516728	0,317087
Overpressure Radius		m	7,04431	5,9861
Distance to:				
- Ignition Source		m	40	30
- Cloud Front/Centre		m	40	30
- Explosion Centre		m	40	30

			Supplementary Data at 0,2068 bar	
			Category 2/F	Category 5/D
Supplied Flammable Mass		kg	0,516728	0,317087
Used Flammable Mass		kg	0,516728	0,317087
Overpressure Radius		m	5,45072	4,63191
Distance to:				
- Ignition Source		m	40	30
- Cloud Front/Centre		m	40	30
- Explosion Centre		m	40	30

			Overpressures (bar gauge) at Distances	
			Category 2/F	Category 5/D
Distance	1	m	0,0805604	0,0721477
Distance	5	m	0,199006	0,176509
Distance	10	m	1	1

			Supplementary Data at 1 m	
			Category 2/F	Category 5/D
Supplied Flammable Mass		kg	0,370876	0,295878
Used Flammable Mass		kg	0,370876	0,295878

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		Supplementary Data at 5 m	
		Category 2/F	Category 5/D
Supplied Flammable Mass	kg	0,370876	0,295878
Used Flammable Mass	kg	0,370876	0,295878

		Supplementary Data at 10 m	
		Category 2/F	Category 5/D
Supplied Flammable Mass	kg	0,370876	0,295878
Used Flammable Mass	kg	0,370876	0,295878

Weather Conditions

		Category 2/F	Category 5/D
Wind Speed	m/s	2	5
Pasquill Stability		F	D
Surface Roughness Length		183,156	183,156
Surface Roughness Parameter		0,0999999	0,0999999
Atmospheric Temperature	degC	25	25
Surface Temperature	degC	25	25
Relative Humidity	fraction	0,75	0,75