

JET FIRE REPORT

Study Folder: RDS San Benedetto

Unique Audit Number: 2.996

PHAST 6.5



 RDS San Benedetto

 Study

14" 80 bar Horizontal

Base Case

Data



Weather: Study\Category 2/F

Speed: 2.00 m/s

Stability: F

\RDS San Benedetto\Study\14" 80 bar Horizontal

Flame Data

User-Defined Quantities

Model Correlation Type	SHELL - Johnson	
Material	METHANE	
Ambient Temperature	25,00	degC
Ambient Relative Humidity	0,75	fraction
Ambient Pressure	1,01	bar
Ambient Wind Speed	2,00	m/s
Maximum Exposure Duration	20,00	s
Elevation	1,00	m
Expanded Temperature	-72,04	degC
Release Rate	12,58	kg/s
Liquid Fraction		fraction
Jet Angle from Horizontal	0,00	deg
Crosswind Angle	0,00	deg

	Input	Output
Flame Emissive Power		241,45 kW/m2
Expanded Radius		0,09 m
Jet Velocity	500,00	m/s
Flame Length		37,12 m
Frustrum Lift Off Distance		12,12 m
Frustrum Length		25,51 m
Frustrum Base Width		2,95 m
Frustrum Tip Width		6,99 m
Flame Length in Still Air		46,35 m
Hole to Flame Angle		20,19 deg
Plane Angular Rotation		0,00 deg

Flame on-ground impingement with partial truncation

Radiation Intensity Ellipse

User-Defined Quantities

Observer Inclination	Variable	deg
Observer Orientation	Variable	deg
Exposure Duration	20,00	s

Calculated Quantities

Incident Radiation Level:	3,00	kW/m2
Lethality Level	0,00	%
View Factor	0,01	
Dose Level	865.118,83	(W/m2)^Probit N.s

Downwind semi-axis (A)	36,49	m
Crosswind semi-axis (B)	47,37	m
Offset Ratio (D)	0,85	
Effect Distance	67,69	m
Area	5.430,84	m2

Incident Radiation Level:	5,00	kW/m2
Lethality Level	0,00	%
View Factor	0,02	
Dose Level	1.709.490,54	(W/m2)^Probit N.s

Downwind semi-axis (A)	29,42	m
Crosswind semi-axis (B)	36,74	m
Offset Ratio (D)	1,03	
Effect Distance	59,67	m
Area	3.396,28	m2

Incident Radiation Level:	12,50	kW/m2
Lethality Level	6,53	%
View Factor	0,05	
Dose Level	5.800.161,90	(W/m2)^Probit N.s

Downwind semi-axis (A)	21,13	m
Crosswind semi-axis (B)	22,72	m
Offset Ratio (D)	1,30	
Effect Distance	48,70	m
Area	1.508,02	m2

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Weather: Study/Category 5/D

Speed: 5.00 m/s

Stability: D

\RDS San Benedetto\Study\14" 80 bar Horizontal

Flame Data

User-Defined Quantities

Model Correlation Type	SHELL - Johnson	
Material	METHANE	
Ambient Temperature	25,00	degC
Ambient Relative Humidity	0,75	fraction
Ambient Pressure	1,01	bar
Ambient Wind Speed	5,00	m/s
Maximum Exposure Duration	20,00	s
Elevation	1,00	m
Expanded Temperature	-72,04	degC
Release Rate	12,58	kg/s
Liquid Fraction		fraction
Jet Angle from Horizontal	0,00	deg
Crosswind Angle	0,00	deg

	Input	Output
Flame Emissive Power		231,98 kW/m2
Expanded Radius		0,09 m
Jet Velocity	500,00	m/s
Flame Length		39,61 m
Frustrum Lift Off Distance		12,12 m
Frustrum Length		27,77 m
Frustrum Base Width		2,95 m
Frustrum Tip Width		6,59 m
Flame Length in Still Air		46,35 m
Hole to Flame Angle		14,70 deg
Plane Angular Rotation		0,00 deg

Flame on-ground impingement with partial truncation

Radiation Intensity Ellipse

User-Defined Quantities

Observer Inclination	Variable	deg
Observer Orientation	Variable	deg
Exposure Duration	20,00	s

Calculated Quantities

Incident Radiation Level:	3,00	kW/m2
Lethality Level	0,00	%
View Factor	0,01	
Dose Level	865.118,83	(W/m2)^Probit N.s
Downwind semi-axis (A)	34,47	m
Crosswind semi-axis (B)	47,22	m
Offset Ratio (D)	0,96	
Effect Distance	67,40	m
Area	5.113,91	m2
Incident Radiation Level:	5,00	kW/m2
Lethality Level	0,00	%
View Factor	0,02	
Dose Level	1.709.490,54	(W/m2)^Probit N.s
Downwind semi-axis (A)	28,73	m
Crosswind semi-axis (B)	36,66	m
Offset Ratio (D)	1,10	
Effect Distance	60,30	m
Area	3.308,44	m2
Incident Radiation Level:	12,50	kW/m2
Lethality Level	6,53	%
View Factor	0,05	
Dose Level	5.800.161,90	(W/m2)^Probit N.s
Downwind semi-axis (A)	22,08	m
Crosswind semi-axis (B)	22,58	m
Offset Ratio (D)	1,29	
Effect Distance	50,66	m
Area	1.566,73	m2

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Study

14" 80 bar Horizontal

Base Case

CASE Name:	Data	User-Defined Data
Material		
Material Identifier		METHANE
Type of Vessel		Pressurized Gas
Pressure Specification		Pressure specified
Discharge Pressure (gauge)		80 bar
Discharge Temperature		25 degC
Mass Inventory of material to discharge		2000 kg
Scenario		
Type of Event		Leak
Phase		Vapor
HoleDiameter		35 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		
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		
Jet fire radiation intensity level 1		3 kW/m2

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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	81,01 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	-72,04 degC
Final Velocity	500,00 m/s
Droplet Diameter	0,00 um

Continuous Release Data:

Mass Flowrate	1.25827E+001 kg/s
Release Duration	158,95 s
Orifice Velocity	396,41 m/s
Exit Pressure	43,06 bar
Exit Temperature	-20,75 degC
Discharge Coefficient	0,87
Expanded Radius	0,09 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	-72,04 degC
Final Velocity	500,00 m/s
Droplet Diameter	0,00 um

Continuous Release Data:

Mass Flowrate	1.25827E+001 kg/s
Release Duration	158,95 s
Orifice Velocity	396,41 m/s
Exit Pressure	43,06 bar
Exit Temperature	-20,75 degC
Discharge Coefficient	0,87
Expanded Radius	0,09 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	145,011	175,852
UFL (165000)	18,75	s	7,1977	6,78516
LFL (44000)	18,75	s	51,5136	43,0614
LFL Frac (22000)	18,75	s	113,696	110,187

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	1,00137	1,00123
LFL (44000)	18,75	s	1,83661	1,22403
LFL Frac (22000)	18,75	s	6,55539	2,82798

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		598211	594287
5	m		224217	213475
10	m		124667	114131

Distance			Heights (m) for above concentrations	
			Category 2/F	Category 5/D
1	m		1,00001	1,00001
5	m		1,0005	1,0005
10	m		1,00347	1,00343

Distance			Conc.(ppm) at Core Avg.Time of 18,75 s	
			Category 2/F	Category 5/D
1	m		4,05631e-019	6,48704e-006
5	m		8285,15	19108,6
10	m		69411	65345,9

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	Truncated	Truncated
	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/m2	67,6885	67,4033
Radiation Level	5	kW/m2	59,6703	60,2958
Radiation Level	12,5	kW/m2	48,6962	50,6573

Radiation Effects: Jet Fire Distance

			Category 2/F	Radiation Level (kW/m2) Category 5/D
Distance Of Interest 1	m		5,09135	3,90071
Distance Of Interest 5	m		8,80736	7,90262
Distance Of Interest 10	m		62,5265	59,6028

Flash Fire Envelope

All flammable results are reported at the cloud centreline height

			Category 2/F	Category 5/D
Furthest Extent	22000	ppm	113,696	110,187
Furthest Extent	44000	ppm	51,5136	43,0614

			Category 2/F	Category 5/D
Furthest Extent	22000	ppm	6,55539	2,82798
Furthest Extent	44000	ppm	1,83661	1,22403

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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	201,687	183,031
Overpressure	0,1379	bar	133,74	128,91
Overpressure	0,2068	bar	128,369	124,632

			Supplementary Data at 0,02068 bar	
			Category 2/F	Category 5/D
Supplied Flammable Mass		kg	19,7782	9,99517
Used Flammable Mass		kg	19,7782	9,99517
Overpressure Radius		m	91,6867	73,031
Distance to:				
- Ignition Source		m	110	110
- Cloud Front/Centre		m	110	110
- Explosion Centre		m	110	110

			Supplementary Data at 0,1379 bar	
			Category 2/F	Category 5/D
Supplied Flammable Mass		kg	19,7782	9,99517
Used Flammable Mass		kg	19,7782	9,99517
Overpressure Radius		m	23,74	18,9095
Distance to:				
- Ignition Source		m	110	110
- Cloud Front/Centre		m	110	110
- Explosion Centre		m	110	110

			Supplementary Data at 0,2068 bar	
			Category 2/F	Category 5/D
Supplied Flammable Mass		kg	19,7782	9,99517
Used Flammable Mass		kg	19,7782	9,99517
Overpressure Radius		m	18,3694	14,6318
Distance to:				
- Ignition Source		m	110	110
- Cloud Front/Centre		m	110	110
- Explosion Centre		m	110	110

			Overpressures (bar gauge) at Distances	
			Category 2/F	Category 5/D
Distance	1	m	0,141169	0,141695
Distance	5	m	0,365728	0,367204
Distance	10	m	1	1

			Supplementary Data at 1 m	
			Category 2/F	Category 5/D
Supplied Flammable Mass		kg	1,12772	1,13584
Used Flammable Mass		kg	1,12772	1,13584

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		Supplementary Data at 5 m	
		Category 2/F	Category 5/D
Supplied Flammable Mass	kg	1,12772	1,13584
Used Flammable Mass	kg	1,12772	1,13584

		Supplementary Data at 10 m	
		Category 2/F	Category 5/D
Supplied Flammable Mass	kg	1,12772	1,13584
Used Flammable Mass	kg	1,12772	1,13584

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

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14" 80 bar Vertical

Base Case

Data



Weather: Study\Category 2/F

Speed: 2,00 m/s

Stability: F

\RDS San Benedetto\Study\14" 80 bar Vertical

Flame Data

User-Defined Quantities

Model Correlation Type	SHELL - DNV recommended	
Material	METHANE	
Ambient Temperature	25,00	degC
Ambient Relative Humidity	0,75	fraction
Ambient Pressure	1,01	bar
Ambient Wind Speed	2,00	m/s
Maximum Exposure Duration	20,00	s
Elevation	1,00	m
Expanded Temperature	-72,04	degC
Release Rate	12,58	kg/s
Liquid Fraction		fraction
Jet Angle from Horizontal	90,00	deg
Crosswind Angle	0,00	deg

	Input	Output
Flame Emissive Power		165,42 kW/m2
Expanded Radius		0,09 m
Jet Velocity	500,00	m/s
Flame Length		33,33 m
Frustrum Lift Off Distance		6,20 m
Frustrum Length		27,16 m
Frustrum Base Width		2,36 m
Frustrum Tip Width		9,37 m
Flame Length in Still Air		46,35 m
Hole to Flame Angle		6,12 deg
Plane Angular Rotation		0,00 deg

Flame Co-ordinates

X	Z	R	Phi
m	m	m	deg
0,00	7,20	0,00	6,12
0,00	7,20	1,18	6,12
2,89	34,21	4,68	6,12
2,89	34,21	0,00	6,12



Radiation Intensity Ellipse

User-Defined Quantities

Observer Inclination	Variable	deg
Observer Orientation	Variable	deg
Exposure Duration	20,00	s

Calculated Quantities

Incident Radiation Level:	3,00	kW/m2
Lethality Level	0,00	%
View Factor	0,02	
Dose Level	865.118,83	(W/m2)^Probit N.s

Downwind semi-axis (A)	36,14	m
Crosswind semi-axis (B)	36,06	m
Offset Ratio (D)	0,07	
Effect Distance	38,82	m
Area	4.093,54	m2

Incident Radiation Level:	5,00	kW/m2
Lethality Level	0,00	%
View Factor	0,03	
Dose Level	1.709.490,54	(W/m2)^Probit N.s

Downwind semi-axis (A)	21,60	m
Crosswind semi-axis (B)	21,81	m
Offset Ratio (D)	0,12	
Effect Distance	24,10	m
Area	1.480,03	m2

Incident Radiation Level:	12,50	kW/m2
Lethality Level	6,53	%
View Factor	0,08	
Dose Level	5.800.161,90	(W/m2)^Probit N.s

Downwind semi-axis (A)	Not Reached	m
Crosswind semi-axis (B)	Not Reached	m
Offset Ratio (D)	Not Reached	
Effect Distance	n/a	m
Area	n/a	m2

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Radiation Distance

User-Defined Quantities

Maximum Distance	38,82	m
Angle from Wind Direction	0,00	deg
Height above Origin	0,00	m
Observer Inclination	Variable	deg
Observer Orientation	Variable	deg

Calculated Quantities

X Coordinates m	Y Coordinates m	Z Coordinates m	Incident Radiation kW/m2	Lethality Level %	View Factor
0,00			4,21		
0,79			5,18		
1,58			6,07		
2,38			6,83		
3,17			7,42		
3,96			7,86		
4,75			8,15		
5,55			8,32		
6,34			8,39		
7,13			8,38		
7,92			8,24		
8,71			8,22		
9,51			8,09		
10,30			7,93		
11,09			7,76		
11,88			7,59		
12,68			7,41		
13,47			7,22		
14,26			7,04		
15,05			6,86		
15,84			6,68		
16,64			6,50		
17,43			6,33		
18,22			6,15		
19,01			5,99		
19,81			5,82		
20,60			5,66		
21,39			5,50		
22,18			5,35		
22,97			5,20		
23,77			5,06		
24,56			4,92		
25,35			4,78		
26,14			4,64		
26,94			4,51		
27,73			4,39		
28,52			4,26		

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X Coordinates m	Y Coordinates m	Z Coordinates m	Incident Radiation kW/m2	Lethality Level %	View Factor
29,31			4,14		
30,10			4,02		
30,90			3,91		
31,69			3,81		
32,48			3,71		
33,27			3,62		
34,07			3,52		
34,86			3,43		
35,65			3,34		
36,44			3,25		
37,23			3,17		
38,03			3,08		
38,82			3,00		

 **Weather:** Study/Category 5/D
Speed: 5.00 **m/s** **Stability:** D

\RDS San Benedetto\Study\14" 80 bar Vertical

Flame Data

User-Defined Quantities

Model Correlation Type	SHELL - DNV recommended	
Material	METHANE	
Ambient Temperature	25,00	degC
Ambient Relative Humidity	0,75	fraction
Ambient Pressure	1,01	bar
Ambient Wind Speed	5,00	m/s
Maximum Exposure Duration	20,00	s
Elevation	1,00	m
Expanded Temperature	-72,04	degC
Release Rate	12,58	kg/s
Liquid Fraction		fraction
Jet Angle from Horizontal	90,00	deg
Crosswind Angle	0,00	deg

	Input	Output
Flame Emissive Power		233,31 kW/m2
Expanded Radius		0,09 m
Jet Velocity	500,00	m/s
Flame Length		25,91 m
Frustrum Lift Off Distance		4,36 m
Frustrum Length		21,68 m
Frustrum Base Width		2,33 m
Frustrum Tip Width		8,00 m
Flame Length in Still Air		46,35 m
Hole to Flame Angle		15,30 deg
Plane Angular Rotation		0,00 deg

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Flame Co-ordinates

X	Z	R	Phi
m	m	m	deg
0,00	5,36	0,00	15,30
0,00	5,36	1,17	15,30
5,72	26,27	4,00	15,30
5,72	26,27	0,00	15,30

Radiation Intensity Ellipse

User-Defined Quantities

Observer Inclination	Variable	deg
Observer Orientation	Variable	deg
Exposure Duration	20,00	s

Calculated Quantities

Incident Radiation Level:	3,00	kW/m2
Lethality Level	0,00	%
View Factor	0,01	
Dose Level	865.118,83	(W/m2)^Probit N.s
Downwind semi-axis (A)	40,48	m
Crosswind semi-axis (B)	40,95	m
Offset Ratio (D)	0,12	
Effect Distance	45,44	m
Area	5.207,63	m2
Incident Radiation Level:	5,00	kW/m2
Lethality Level	0,00	%
View Factor	0,02	
Dose Level	1.709.490,54	(W/m2)^Probit N.s
Downwind semi-axis (A)	28,80	m
Crosswind semi-axis (B)	28,78	m
Offset Ratio (D)	0,18	
Effect Distance	34,12	m
Area	2.604,21	m2
Incident Radiation Level:	12,50	kW/m2
Lethality Level	6,53	%
View Factor	0,05	
Dose Level	5.800.161,90	(W/m2)^Probit N.s
Downwind semi-axis (A)	6,28	m
Crosswind semi-axis (B)	9,27	m
Offset Ratio (D)	1,07	
Effect Distance	13,01	m
Area	182,95	m2

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Radiation Distance

User-Defined Quantities

Maximum Distance	45,44	m
Angle from Wind Direction	0,00	deg
Height above Origin	0,00	m
Observer Inclination	Variable	deg
Observer Orientation	Variable	deg

Calculated Quantities

X Coordinates m	Y Coordinates m	Z Coordinates m	Incident Radiation kW/m2	Lethality Level %	View Factor
0,00			11,29		
0,93			13,81		
1,85			15,73		
2,78			16,91		
3,71			17,41		
4,64			17,38		
5,56			17,10		
6,49			16,61		
7,42			16,02		
8,35			15,41		
9,27			14,79		
10,20			14,19		
11,13			13,60		
12,06			13,04		
12,98			12,51		
13,91			12,13		
14,84			11,78		
15,77			11,42		
16,69			11,04		
17,62			10,67		
18,55			10,28		
19,47			9,89		
20,40			9,51		
21,33			9,13		
22,26			8,76		
23,18			8,40		
24,11			8,05		
25,04			7,71		
25,97			7,38		
26,89			7,06		
27,82			6,76		
28,75			6,46		
29,68			6,18		
30,60			5,91		
31,53			5,66		
32,46			5,41		
33,39			5,18		

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X Coordinates m	Y Coordinates m	Z Coordinates m	Incident Radiation kW/m2	Lethality Level %	View Factor
34,31			4,95		
35,24			4,74		
36,17			4,54		
37,10			4,35		
38,02			4,17		
38,95			3,99		
39,88			3,83		
40,80			3,67		
41,73			3,52		
42,66			3,38		
43,59			3,25		
44,51			3,12		
45,44			3,00		

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Study

14" 80 bar Vertical

Base Case

CASE Name:	Data	User-Defined Data
Material		
Material Identifier		METHANE
Type of Vessel		Pressurized Gas
Pressure Specification		Pressure specified
Discharge Pressure (gauge)		80 bar
Discharge Temperature		25 degC
Mass Inventory of material to discharge		2000 kg
Scenario		
Type of Event		Leak
Phase		Vapor
HoleDiameter		35 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		Vertical
Flammable		
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		
Jet fire radiation intensity level 1		3 kW/m2

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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	81,01 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	-72,04 degC
Final Velocity	500,00 m/s
Droplet Diameter	0,00 um

Continuous Release Data:

Mass Flowrate	1.25827E+001 kg/s
Release Duration	158,95 s
Orifice Velocity	396,41 m/s
Exit Pressure	43,06 bar
Exit Temperature	-20,75 degC
Discharge Coefficient	0,87
Expanded Radius	0,09 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	-72,04 degC
Final Velocity	500,00 m/s
Droplet Diameter	0,00 um

Continuous Release Data:

Mass Flowrate	1.25827E+001 kg/s
Release Duration	158,95 s
Orifice Velocity	396,41 m/s
Exit Pressure	43,06 bar
Exit Temperature	-20,75 degC
Discharge Coefficient	0,87
Expanded Radius	0,09 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		Category 2/F	Category 5/D
User Conc (10000)	18,75	s	No Hazard	No Hazard
UFL (165000)	18,75	s	0,113736	0,224644
LFL (44000)	18,75	s	1,37193	2,17192
LFL Frac (22000)	18,75	s	4,54337	5,28732

Concentration(ppm)	Averaging Time		Category 2/F	Category 5/D	Heights (m) for above distances
User Conc (10000)	18,75	s	0	0	0
UFL (165000)	18,75	s	8,30624	6,67236	6,67236
LFL (44000)	18,75	s	21,0912	14,996	14,996
LFL Frac (22000)	18,75	s	29,081	19,6783	19,6783

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	64112,4	69758	
5	m	20396,3	23478,2	
10	m	12929,3	13168,8	

Distance		Category 2/F	Category 5/D	Heights (m) for above concentrations
1	m	17,9241	11,6901	
5	m	29,9106	19,2951	
10	m	35,5242	23,3579	

Distance		Conc.(ppm) at Core Avg.Time of 18,75 s	Category 2/F	Category 5/D
1	m	<Min. Conc.	<Min. Conc.	
5	m	<Min. Conc.	<Min. Conc.	
10	m	<Min. Conc.	<Min. Conc.	

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

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Jet Fire Hazard

Jet fire method used: SHELL - DNV recommended

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

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/m2	38,8193	45,4415
Radiation Level	5	kW/m2	24,0975	34,1192
Radiation Level	12,5	kW/m2	Not Reached	13,0079

Radiation Effects: Jet Fire Distance

			Category 2/F	Radiation Level (kW/m2) Category 5/D
Distance Of Interest 1	m		5,42444	13,9885
Distance Of Interest 5	m		8,21652	17,3212
Distance Of Interest 10	m		7,9929	14,316

Flash Fire Envelope

All flammable results are reported at the cloud centreline height

			Category 2/F	Category 5/D
Furthest Extent	22000	ppm	4,54337	5,28732
Furthest Extent	44000	ppm	1,37193	2,17192

			Category 2/F	Category 5/D
Furthest Extent	22000	ppm	29,081	19,6783
Furthest Extent	44000	ppm	21,0912	14,996

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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