

SUMMARY REPORT

Unique Audit Number:

491



Study Folder: TOP EVENT 1

PHAST v6.00



TOP EVENT 1



Methanol spill out

Outside containment basins

Base Case

CASE Name:

Data

User-Defined Data

Material

Material Identifier	METHANOL
Type of Vessel	Unpressurized (at atmospheric pressure)
Pressure Specification	Pressure not used
Discharge Temperature	44 C
Inventory of material to discharge	790 kg

Scenario

Type of Event	Leak
Phase	Liquid
Hole Diameter	100 mm

Vessel

Averaging used for time varying	Overall Average
Type of Tank	Rectangular
Tank Height	1.1 m
Tand Width	1.1 m
Tank Length	1.1 m

Location

Northern location of dispersion source	0 m
Eastern location of dispersion source	0 m
Height of Discharge above surface	0.4 m
Dispersion Concentration of Interest	10 ppm
Averaging time associated with Concentration	Flammable
Status of Dike	No dike present
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

Indoor/Outdoor

Outdoor Release Direction	Down - Impinging on the Ground
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Flammable

Location of Ignition	5 m
Method to use for explosions	TNT
Jet Fire Method	Shell

Dispersion

Ignition Location	Ignition location supplied
Inventory of material to Disperse	790 kg

Bleve Parameters

BLEVE radiation level 1	3 kW/m2
BLEVE radiation level 2	5 kW/m2
BLEVE radiation level 3	7 kW/m2

Jet Fire Parameters

Date: 10/01/2014

1 of 5

Time: 18.49.54

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Jet fire radiation level 1	3 kW/m2
Jet fire radiation level 2	5 kW/m2
Jet fire radiation level 3	7 kW/m2

Pool Fire Parameters

Pool fire radiation level 1	3 kW/m2
Pool fire radiation level 2	5 kW/m2
Pool fire radiation level 3	7 kW/m2

Multi Energy Explosion

Use Unconfined Volumes	No
Use Fractions	No
Use 1st Confined Source	No
Use 2nd Confined Source	No
Use 3rd Confined Source	No
Use 4th Confined Source	No
Use 5th Confined Source	No
Use 6th Confined Source	No
Use 7th Confined Source	No

Discharge Data

User-Defined Quantities

Material	METHANOL
Temperature	44,00 C
Pressure	1,01 bar
Inventory	790,00 kg
Scenario	Leak

Calculated Quantities

Weather: Category 2/F

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

Average Values for Segment Number 1

Liquid Fraction	1,00 fraction
FinalTemperature	43,87 C
Final Velocity	1,63 m/s
Droplet Diameter	0,81 mm
Continuous Release Data:	
Mass Flowrate	5,93 kg/s
Release Duration	58,78 s
Orifice Velocity	n/a m/s
Exit Pressure	n/a bar
Exit Temperature	n/a C
Discharge Coefficient	n/a
Expanded Radius	n/a m

Weather: Category 5/D

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

Average Values for Segment Number 1

Liquid Fraction	1,00 fraction
FinalTemperature	43,87 C

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Final Velocity	1,63 m/s
Droplet Diameter	0,81 mm
Continuous Release Data:	
Mass Flowrate	5,93 kg/s
Release Duration	58,78 s
Orifice Velocity	n/a m/s
Exit Pressure	n/a bar
Exit Temperature	n/a C
Discharge Coefficient	n/a
Expanded Radius	n/a m

Consequence Results

Distance to Concentration Results

Concentration(ppm) Averaging Time			Distance (m)	
			Category 2/F	Category 5/D
User Conc (10)	18.75	s	264.144	54.1849
UFL (360000)	18.75	s	0.386979	0.282449
LFL (73000)	18.75	s	0.848274	0.960212
LFL Frac (36500)	18.75	s	1.17666	1.33828

Concentration At Distance Results

Distance		Conc.(ppm) at Flammable Avg.Time of 18.75 s	
		Category 2/F	Category 5/D
10	m	988.991	472.024
25	m	390.012	56.1548
50	m	158.676	12.2763
Distance		Conc.(ppm) at Core Avg.Time of 18.75 s	
		Category 2/F	Category 5/D
10	m	988.991	472.024
25	m	390.012	56.1548
50	m	158.676	12.2763

Jet Fire Hazard

Jet Fire Status	Category 2/F	
	Hazard	Category 5/D Hazard

Radiation Effects: Jet Fire Ellipse

			Distance (m)	
			Category 2/F	Category 5/D
Radiation Level	3	kW/m2	Model Error	Model Error
Radiation Level	5	kW/m2	Not Reached	Not Reached
Radiation Level	7	kW/m2	Not Reached	Not Reached

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Radiation Effects: Jet Fire Distance

			Radiation Level (kW/m2)	
			Category 2/F	Category 5/D
Distance Of Interest 10	m	0.00069661	0.000174447	
Distance Of Interest 25	m	9.36722e-005	2.49477e-005	
Distance Of Interest 50	m	2.12965e-005	5.79074e-006	

Early Pool Fire Hazard

		Category 2/F	Category 5/D
Early Pool Fire Status		Hazard	Hazard

Radiation Effects: Early Pool Fire Ellipse

			Distance (m)	
			Category 2/F	Category 5/D
Radiation Level 3	kW/m2	Model Error	Model Error	
Radiation Level 5	kW/m2	Model Error	Model Error	
Radiation Level 7	kW/m2	Model Error	Model Error	

Radiation Effects: Early Pool Fire Distance

			Radiation Level (kW/m2)	
			Category 2/F	Category 5/D
Distance Of Interest 10	m	23.564	26.4888	
Distance Of Interest 25	m	2.25343	1.79195	
Distance Of Interest 50	m	0.457035	0.347131	

Late Pool Fire Hazard

		Category 2/F	Category 5/D
Late Pool Fire Status		Hazard	Hazard

Radiation Effects: Late Pool Fire Ellipse

			Distance (m)	
			Category 2/F	Category 5/D
Radiation Level 3	kW/m2	Model Error	Model Error	
Radiation Level 5	kW/m2	Model Error	Model Error	
Radiation Level 7	kW/m2	Model Error	Model Error	

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Radiation Effects: Late Pool Fire Distance

			Radiation Level (kW/m2)	
			Category 2/F	Category 5/D
Distance Of Interest 10	m		33.3706	40.8508
Distance Of Interest 25	m		3.17675	2.58101
Distance Of Interest 50	m		0.632319	0.484409

Flash Fire Envelope

			Distance (m)	
			Category 2/F	Category 5/D
Furthest Extent	36500	ppm	1.17666	1.33828
Furthest Extent	73000	ppm	0.848274	0.960212

Weather Conditions

			Category 2/F	Category 5/D
Wind Speed	m/s		2	5
Pasquill Stability			F	D
Surface Roughness Parameter			0.1	0.1
Atmospheric Temperature	C		9.85	9.85
Surface Temperature	C		9.85	9.85
Relative Humidity	fraction		0.7	0.7