

ANNESSO TECNICO 6.

Elaborati di calcolo Scenari incidentali ragionevolmente credibili

Ipotesi N. 25

TRR S.r.l.

Il Direttore Generale

Ing. *Alfredo Romano*



DISCHARGE SUMMARY

Study Folder: 70977-Fase 1-Metanolo

Unique Audit Number: 180.713

Phast 6.6



70977-Fase 1-Metanolo

Pompa

Vessel/Pipe Source

Base Case

Data

Weather: Global Weathers\Category 2/F
Speed: 2,00 m/s Stability: F

Full Case Path: \70977-Fase 1-Metanolo\Pompa\Vessel/Pipe Source

User-Defined Quantities

Material	METHANOL
Temperature	25,00 degC
Pressure	101,01 bar
Inventory	500,00 kg
Scenario	Leak

Calculated Quantities

Mass Flow of Air (Vent from Vapor Space only)	n/a	kg/s
Wind Speed at Height	0,52	m/s
Average Values for Segment Number	1	
Liquid Fraction	1,00	fraction
Final Temperature	23,53	degC
Final Velocity	182,67	m/s
Droplet Diameter	7,13	um
Continuous Release Data:		
Mass Flowrate	6.80914E+000	kg/s
Release Duration	73,43	s
Orifice Velocity	182,67	m/s
Exit Pressure	1,01	bar
Exit Temperature	23,53	degC
Discharge Coefficient	0,60	
Expanded Radius	0,00	m

DISCHARGE SUMMARY

Study Folder: 70977-Fase 1-Metanolo

Unique Audit Number: 180.713

Phast 6.6



Weather:

Global Weathers\Category 5/D

Speed:

5.00 m/s

Stability:

D

Full Case Path:

\\70977-Fase 1-Metanolo\Pompa\Vessel/Pipe Source

User-Defined Quantities

Material	METHANOL
Temperature	25,00 degC
Pressure	101,01 bar
Inventory	500,00 kg
Scenario	Leak

Calculated Quantities

Mass Flow of Air (Vent from Vapor Space only)	n/a	kg/s
Wind Speed at Height	2,58	m/s
Average Values for Segment Number	1	
Liquid Fraction	1,00	fraction
Final Temperature	23,53	degC
Final Velocity	182,67	m/s
Droplet Diameter	7,13	um
Continuous Release Data:		
Mass Flowrate	6.80914E+000	kg/s
Release Duration	73,43	s
Orifice Velocity	182,67	m/s
Exit Pressure	1,01	bar
Exit Temperature	23,53	degC
Discharge Coefficient	0,60	
Expanded Radius	0,00	m

DISCHARGE SUMMARY

Study Folder: 70977-Fase 1-Metanolo

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DETAILED DISPERSION REPORT

Unique Audit Number: 180.757



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

70977-Fase 1-Metanolo

Pompa

User Defined Source-D5

Base Case

Data

Weather: Global Weathers\Category 2/F

Speed: 2,00 m/s Stability: F

\70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

Material: METHANOL

Note: C/Line Concentration is calculated at an averaging time of: 18,75 s
 Plume Width and Height are calculated at an averaging time of: 600,00 s
 and a Concentration of Interest of: 6.700,00 ppm
 Concentration at Height calculated at a Height of: 0,00 m

For Instantaneous releases (and if present in this report) the Mass Flowrate is the Mass of Released Material in the cloud, and the C/Line Distance is the same as the Time.

Downwind Distance m	C/Line Height m	C/Line Conc ppm	Plume Half-width m	Plume Total Depth m	Vapor Temperature degC	Liquid Fraction fraction	Time s	Liquid Temperature degC	Centroid Velocity m/s	Cloud Density kg/m3
Segment Number: 1			Start Time: 0,00 s							
0,00	1,00	947.143,70	1,50	2,31	63,09	0,05	0,00	63,09	0,12	1,23
0,01	1,00	947.143,70	1,50	2,31	63,09	0,05	0,00	63,09	0,12	1,23
0,02	1,00	881.767,02	1,37	2,22	61,22	0,05	0,13	61,22	0,15	1,22
0,04	0,99	775.074,66	1,26	2,15	57,93	0,05	0,25	57,93	0,20	1,21
0,08	0,98	629.346,63	1,18	2,08	52,81	0,04	0,42	52,81	0,26	1,20
0,15	0,95	459.238,50	1,18	2,05	45,49	0,04	0,69	45,49	0,33	1,19
0,31	0,90	290.214,38	1,27	2,07	35,65	0,03	1,12	35,65	0,40	1,19
0,61	0,81	149.639,39	1,50	2,21	25,01	0,00	1,85		0,48	1,20
0,69	0,78	133.982,85	1,55	2,25	25,01	0,00	2,01		0,49	1,20
0,76	0,75	123.416,24	1,59	2,26	25,01	0,00	2,17		0,50	1,19

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Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Downwind Distance m	C/Line Height m	C/Line Conc ppm	Plume Half-width m	Plume Total Depth m	Vapor Temperature degC	Liquid Fraction fraction	Time s	Liquid Temperature degC	Centroid Velocity m/s	Cloud Density kg/m3
0,91	0,69	105.686,90	1,87	2,09	25,01	0,00	2,49		0,52	1,19
1,06	0,64	91.972,80	2,10	1,99	25,01	0,00	2,80		0,53	1,19
1,21	0,58	82.999,61	2,43	1,90	25,01	0,00	3,10		0,54	1,19
1,36	0,52	77.329,29	2,75	1,82	25,01	0,00	3,39		0,55	1,19
1,66	0,41	71.289,43	3,42	1,69	25,01	0,00	3,96		0,57	1,18
1,96	0,30	68.547,19	4,16	1,59	25,01	0,00	4,52		0,58	1,18
2,26	0,20	67.200,35	4,61	1,55	25,00	0,00	5,07		0,60	1,18
2,57	0,10	66.087,72	4,62	1,58	25,00	0,00	5,60		0,61	1,18
3,18	0,00	64.134,47	4,62	1,60	25,00	0,00	6,64		0,62	1,18
3,82	0,00	62.267,05	4,63	1,74	25,00	0,00	7,71		0,58	1,18
4,46	0,00	60.468,76	4,63	1,80	25,00	0,00	8,84		0,56	1,18
5,74	0,00	57.078,94	4,63	1,90	25,00	0,00	11,15		0,55	1,18
8,30	0,00	51.078,22	4,63	2,03	25,00	0,00	15,91		0,53	1,18
13,42	0,00	41.631,45	4,59	2,19	25,00	0,00	25,66		0,52	1,18
15,98	0,00	37.745,55	4,54	2,12	25,00	0,00	30,43		0,55	1,18
21,10	0,00	31.481,08	4,40	2,18	25,00	0,00	39,66		0,55	1,18
31,34	0,00	22.672,99	3,88	2,04	25,00	0,00	57,49		0,59	1,18
41,58	0,00	16.936,69	2,87	1,58	25,00	0,00	74,01		0,65	1,18
62,06	0,00	10.401,05	0,00	0,00	25,00	0,00	104,71		0,69	1,17
82,54	0,00	6.853,39	0,00	0,00	25,00	0,00	132,30		0,80	1,17
86,64	0,00	6.348,83	0,00	0,00	25,00	0,00	137,25		0,86	1,17
94,83	0,00	5.504,79	0,00	0,00	25,00	0,00	146,85		0,85	1,17
103,02	0,00	4.819,49	0,00	0,00	25,00	0,00	156,22		0,90	1,17
111,21	0,00	4.344,36	0,00	0,00	25,00	0,00	165,25		0,91	1,17
127,60	0,00	3.589,02	0,00	0,00	25,00	0,00	182,94		0,94	1,17
160,36	0,00	2.579,38	0,00	0,00	25,00	0,00	217,05		0,98	1,17
225,90	0,00	1.530,61	0,00	0,00	25,00	0,00	281,06		1,06	1,17
325,90	0,00	846,30	0,00	0,00	25,00	0,00	369,42		1,20	1,17
425,90	0,00	538,49	0,00	0,00	25,00	0,00	447,91		1,35	1,17

DETAILED DISPERSION REPORT

Unique Audit Number: 180.757



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Downwind Distance m	C/Line Height m	C/Line Conc ppm	Plume Half-width m	Plume Total Depth m	Vapor Temperature degC	Liquid Fraction fraction	Time s	Liquid Temperature degC	Centroid Velocity m/s	Cloud Density kg/m3
525,90	0,00	374,80	0,00	0,00	25,00	0,00	519,31		1,45	1,17



Weather: Global Weathers/Category 5/D

Speed: 5,00 m/s

Stability: D

\70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

Material: METHANOL

Note: C/Line Concentration is calculated at an averaging time of: 18,75 s
 Plume Width and Height are calculated at an averaging time of: 600,00 s
 and a Concentration of Interest of: 6.700,00 ppm
 Concentration at Height calculated at a Height of: 0,00 m

For Instantaneous releases (and if present in this report) the Mass Flowrate is the Mass of Released Material in the cloud, and the C/Line Distance is the same as the Time.

Downwind Distance m	C/Line Height m	C/Line Conc ppm	Plume Half-width m	Plume Total Depth m	Vapor Temperature degC	Liquid Fraction fraction	Time s	Liquid Temperature degC	Centroid Velocity m/s	Cloud Density kg/m3
Segment Number: 1			Start Time: 0,00 s							
0,00	1,00	947.144,48	1,11	2,11	63,09	0,05	0,00	63,09	0,22	1,23
0,01	1,00	947.144,48	1,11	2,11	63,09	0,05	0,00	63,09	0,22	1,23
0,02	1,00	840.435,12	0,80	1,60	59,99	0,05	0,04	59,99	0,46	1,22
0,03	1,00	771.708,30	0,71	1,43	57,82	0,05	0,06	57,82	0,62	1,21
0,05	1,00	675.656,78	0,64	1,28	54,53	0,04	0,09	54,53	0,85	1,20
0,09	1,00	552.785,80	0,60	1,19	49,74	0,04	0,13	49,74	1,14	1,19
0,17	1,00	411.262,13	0,58	1,16	43,03	0,04	0,19	43,03	1,49	1,19
0,25	1,00	326.396,78	0,59	1,18	38,08	0,03	0,24	38,08	1,71	1,19
0,41	0,99	225.646,23	0,62	1,24	30,67	0,02	0,33	30,67	1,97	1,19
0,73	0,99	128.887,03	0,71	1,41	24,99	0,00	0,48		2,23	1,19

DETAILED DISPERSION REPORT

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Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Downwind Distance m	C/Line Height m	C/Line Conc ppm	Plume Half-width m	Plume Total Depth m	Vapor Temperature degC	Liquid Fraction fraction	Time s	Liquid Temperature degC	Centroid Velocity m/s	Cloud Density kg/m3
1,05	0,98	82.756,82	0,79	1,58	24,99	0,00	0,62		2,36	1,19
1,69	0,97	47.126,30	1,15	1,70	24,99	0,00	0,88		2,45	1,18
2,01	0,96	40.992,27	1,33	1,65	24,99	0,00	1,01		2,47	1,18
2,17	0,96	39.216,33	1,39	1,61	24,99	0,00	1,08		2,48	1,18
2,33	0,96	37.645,64	1,38	1,62	24,99	0,00	1,14		2,49	1,18
2,65	0,95	34.797,51	1,36	1,66	24,99	0,00	1,27		2,50	1,18
3,29	0,94	30.062,42	1,32	1,71	24,99	0,00	1,53		2,52	1,18
3,93	0,93	26.298,54	1,27	1,73	24,99	0,00	1,78		2,55	1,18
4,57	0,92	23.248,95	1,20	1,71	24,99	0,00	2,03		2,58	1,18
5,85	0,90	18.648,73	1,02	1,57	24,99	0,00	2,52		2,62	1,18
7,13	0,89	15.346,70	0,71	1,15	24,99	0,00	3,00		2,69	1,18
9,69	0,87	11.010,72	0,00	0,00	24,99	0,00	3,94		2,76	1,17
14,81	0,85	6.536,53	0,00	0,00	24,99	0,00	5,76		2,89	1,17
19,93	0,84	4.329,46	0,00	0,00	24,99	0,00	7,47		3,10	1,17
30,17	0,82	2.319,45	0,00	0,00	24,99	0,00	10,69		3,25	1,17
40,41	0,81	1.433,16	0,00	0,00	24,99	0,00	13,71		3,54	1,17
50,65	0,81	970,64	0,00	0,00	24,99	0,00	16,53		3,73	1,17
60,89	0,80	698,64	0,00	0,00	24,99	0,00	19,21		3,91	1,17
81,37	0,80	410,92	0,00	0,00	24,99	0,00	24,35		4,06	1,17
91,61	0,79	327,75	0,00	0,00	24,99	0,00	26,78		4,37	1,17
101,85	0,79	268,41	0,00	0,00	24,99	0,00	29,11		4,43	1,17
112,09	0,79	227,30	0,00	0,00	24,99	0,00	31,38		4,56	1,17
132,57	0,79	169,69	0,00	0,00	24,99	0,00	35,84		4,63	1,17
153,05	0,78	131,70	0,00	0,00	24,99	0,00	40,18		4,81	1,17
173,53	0,78	105,38	0,00	0,00	24,99	0,00	44,39		4,93	1,17
214,49	0,78	72,27	0,00	0,00	24,99	0,00	52,59		5,06	1,17
255,45	0,78	52,76	0,00	0,00	24,99	0,00	60,50		5,30	1,17
296,41	0,78	40,33	0,00	0,00	24,99	0,00	68,10		5,47	1,17
337,37	0,77	31,89	0,00	0,00	24,99	0,00	75,48		5,64	1,17

DETAILED DISPERSION REPORT

Unique Audit Number: 180.757

Study Folder: 70977-Fase 1-Metanolo

Phast 6.6



Downwind Distance m	C/Line Height m	C/Line Conc ppm	Plume Half-width m	Plume Total Depth m	Vapor Temperature degC	Liquid Fraction fraction	Time s	Liquid Temperature degC	Centroid Velocity m/s	Cloud Density kg/m3
378,33	0,77	25,90	0,00	0,00	24,99	0,00	82,66		5,78	1,17
419,29	0,77	21,48	0,00	0,00	24,99	0,00	89,66		5,91	1,17
460,25	0,77	18,13	0,00	0,00	24,99	0,00	96,52		6,03	1,17
501,21	0,77	15,52	0,00	0,00	24,99	0,00	103,25		6,15	1,17

DETAILED DISPERSION REPORT

Unique Audit Number: 182.992



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

70977-Fase 1-Metanolo

Pompa

User Defined Source-F2

Base Case

Data

Weather: Global Weathers\Category 2/F

Speed: 2,00 m/s Stability: F

\70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

Material: METHANOL

Note: C/Line Concentration is calculated at an averaging time of: 18,75 s
 Plume Width and Height are calculated at an averaging time of: 600,00 s
 and a Concentration of Interest of: 6.700,00 ppm
 Concentration at Height calculated at a Height of: 0,00 m

For Instantaneous releases (and if present in this report) the Mass Flowrate is the Mass of Released Material in the cloud, and the C/Line Distance is the same as the Time.

Downwind Distance m	C/Line Height m	C/Line Conc ppm	Plume Half-width m	Plume Total Depth m	Vapor Temperature degC	Liquid Fraction fraction	Time s	Liquid Temperature degC	Centroid Velocity m/s	Cloud Density kg/m3
Segment Number: 1			Start Time: 0,00 s							
0,00	1,00	934.791,30	1,32	2,15	62,75	0,05	0,00	62,75	0,12	1,23
0,01	1,00	934.791,30	1,32	2,15	62,75	0,05	0,00	62,75	0,12	1,23
0,02	1,00	866.958,69	1,22	2,08	60,79	0,05	0,13	60,79	0,15	1,22
0,04	0,99	757.649,19	1,12	1,96	57,36	0,05	0,24	57,36	0,20	1,21
0,08	0,98	609.898,54	1,06	1,86	52,06	0,04	0,41	52,06	0,27	1,20
0,15	0,96	439.596,21	1,06	1,87	44,51	0,04	0,68	44,51	0,34	1,19
0,31	0,91	273.323,50	1,15	1,97	34,44	0,03	1,10	34,44	0,41	1,19
0,62	0,82	137.779,73	1,36	2,10	25,01	0,00	1,82		0,48	1,20
0,69	0,79	119.304,22	1,42	2,14	25,01	0,00	1,98		0,49	1,19
0,77	0,77	107.436,73	1,48	2,17	25,01	0,00	2,15		0,50	1,19

DETAILED DISPERSION REPORT

Unique Audit Number: 182.992



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Downwind Distance m	C/Line Height m	C/Line Conc ppm	Plume Half-width m	Plume Total Depth m	Vapor Temperature degC	Liquid Fraction fraction	Time s	Liquid Temperature degC	Centroid Velocity m/s	Cloud Density kg/m3
0,84	0,74	98.439,61	1,61	2,10	25,01	0,00	2,31		0,51	1,19
0,99	0,69	84.929,90	1,95	1,99	25,01	0,00	2,62		0,52	1,19
1,14	0,63	76.800,86	2,28	1,90	25,01	0,00	2,92		0,53	1,19
1,29	0,58	71.996,49	2,61	1,82	25,01	0,00	3,22		0,54	1,19
1,44	0,52	69.181,82	2,97	1,74	25,01	0,00	3,52		0,55	1,18
1,75	0,42	66.728,72	3,61	1,62	25,01	0,00	4,09		0,57	1,18
2,05	0,31	65.367,22	3,61	1,61	25,01	0,00	4,65		0,58	1,18
2,65	0,11	63.051,96	3,62	1,64	25,00	0,00	5,73		0,61	1,18
3,27	0,00	61.106,28	3,63	1,66	25,00	0,00	6,77		0,62	1,18
3,91	0,00	59.245,11	3,64	1,80	25,00	0,00	7,84		0,58	1,18
5,19	0,00	55.730,31	3,66	1,91	25,00	0,00	10,11		0,55	1,18
7,75	0,00	49.512,57	3,68	2,05	25,00	0,00	14,83		0,53	1,18
12,87	0,00	39.805,67	3,68	2,20	25,00	0,00	24,54		0,52	1,18
15,43	0,00	35.841,89	3,65	2,09	25,00	0,00	29,27		0,56	1,18
20,55	0,00	29.549,58	3,54	2,14	25,00	0,00	38,42		0,56	1,18
30,79	0,00	20.872,17	3,04	1,91	25,00	0,00	56,13		0,60	1,18
41,03	0,00	15.365,08	1,90	1,26	25,00	0,00	72,54		0,65	1,18
61,51	0,00	9.232,96	0,00	0,00	25,00	0,00	103,06		0,69	1,17
81,99	0,00	5.994,28	0,00	0,00	25,00	0,00	130,51		0,80	1,17
86,08	0,00	5.539,39	0,00	0,00	25,00	0,00	135,44		0,86	1,17
94,27	0,00	4.781,29	0,00	0,00	25,00	0,00	145,00		0,85	1,17
110,66	0,00	3.791,81	0,00	0,00	25,00	0,00	163,68		0,90	1,17
127,04	0,00	3.107,34	0,00	0,00	25,00	0,00	181,43		0,94	1,17
159,81	0,00	2.208,74	0,00	0,00	25,00	0,00	215,53		0,98	1,17
225,35	0,00	1.290,55	0,00	0,00	25,00	0,00	279,65		1,06	1,17
325,35	0,00	704,46	0,00	0,00	25,00	0,00	368,04		1,20	1,17
425,35	0,00	444,74	0,00	0,00	25,00	0,00	446,58		1,35	1,17
525,35	0,00	307,97	0,00	0,00	25,00	0,00	518,00		1,45	1,17

DETAILED DISPERSION REPORT

Unique Audit Number: 182.992



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6



Weather: Global Weathers/Category 5/D

Speed: 5,00 m/s

Stability: D

\70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

Material: METHANOL

Note: C/Line Concentration is calculated at an averaging time of: 18,75 s
 Plume Width and Height are calculated at an averaging time of: 600,00 s
 and a Concentration of Interest of: 6.700,00 ppm
 Concentration at Height calculated at a Height of: 0,00 m

For Instantaneous releases (and if present in this report) the Mass Flowrate is the Mass of Released Material in the cloud, and the C/Line Distance is the same as the Time.

Downwind Distance m	C/Line Height m	C/Line Conc ppm	Plume Half-width m	Plume Total Depth m	Vapor Temperature degC	Liquid Fraction fraction	Time s	Liquid Temperature degC	Centroid Velocity m/s	Cloud Density kg/m3
Segment Number:	1		Start Time:	0,00	s					
0,00	1,00	934.792,24	0,94	1,88	62,75	0,05	0,00	62,75	0,25	1,23
0,01	1,00	934.792,24	0,94	1,88	62,75	0,05	0,00	62,75	0,25	1,23
0,02	1,00	827.531,05	0,70	1,40	59,59	0,05	0,04	59,59	0,49	1,22
0,03	1,00	757.787,72	0,62	1,25	57,37	0,05	0,06	57,37	0,65	1,21
0,05	1,00	660.258,33	0,57	1,13	53,97	0,04	0,08	53,97	0,88	1,20
0,09	1,00	536.030,85	0,53	1,06	49,02	0,04	0,12	49,02	1,18	1,19
0,17	1,00	394.262,86	0,52	1,04	42,11	0,04	0,18	42,11	1,54	1,19
0,33	0,99	253.071,13	0,55	1,09	32,91	0,03	0,27	32,91	1,90	1,19
0,49	0,99	179.824,38	0,58	1,17	26,43	0,01	0,35	26,43	2,09	1,20
0,81	0,99	104.619,93	0,67	1,33	24,99	0,00	0,50		2,30	1,19
1,13	0,98	67.611,24	0,75	1,49	24,99	0,00	0,64		2,40	1,18
1,77	0,97	38.274,17	1,04	1,59	24,99	0,00	0,90		2,48	1,18
2,09	0,97	32.956,67	1,16	1,53	24,99	0,00	1,03		2,49	1,18
2,41	0,96	30.154,78	1,21	1,44	24,99	0,00	1,16		2,51	1,18
2,73	0,96	27.879,54	1,19	1,45	24,99	0,00	1,28		2,52	1,18
3,37	0,95	24.091,71	1,12	1,45	24,99	0,00	1,54		2,54	1,18

DETAILED DISPERSION REPORT

Unique Audit Number: 182.992



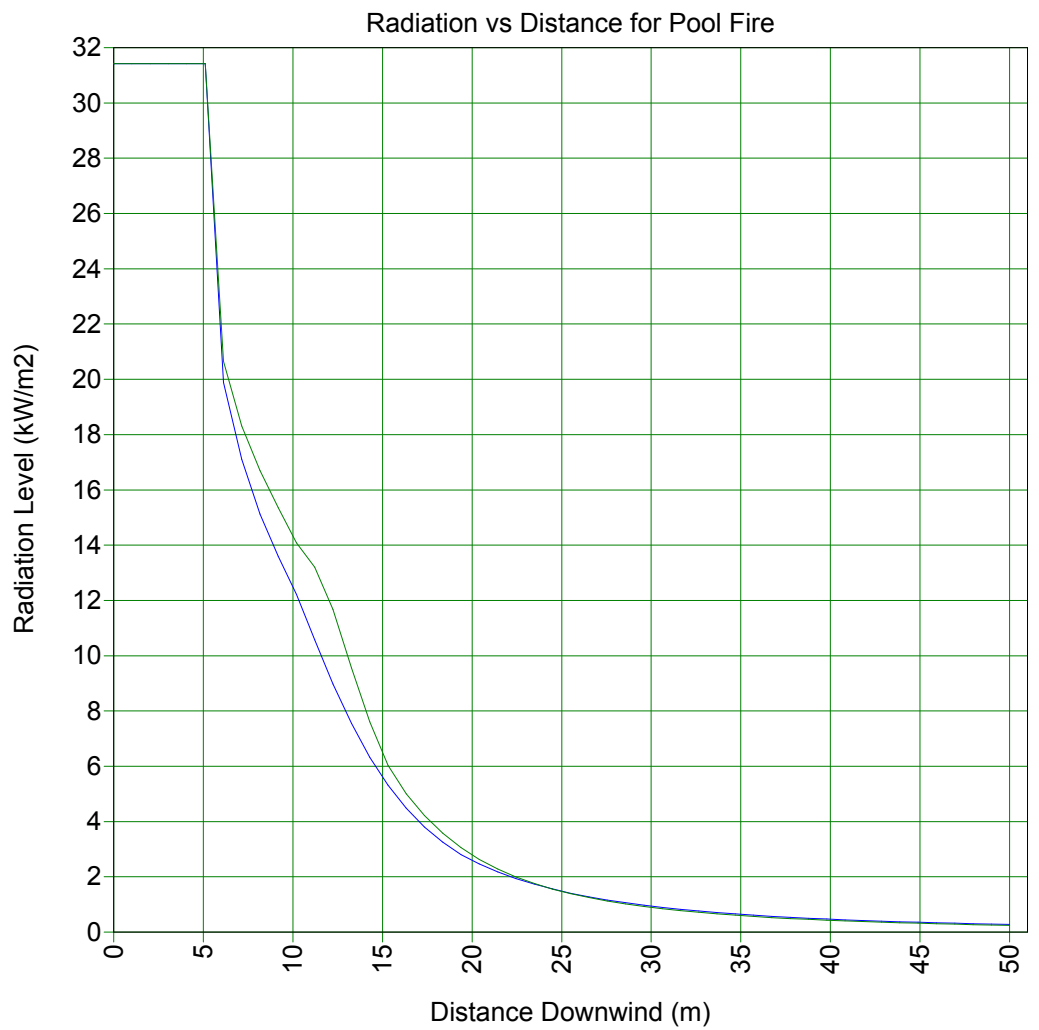
Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Downwind Distance m	C/Line Height m	C/Line Conc ppm	Plume Half-width m	Plume Total Depth m	Vapor Temperature degC	Liquid Fraction fraction	Time s	Liquid Temperature degC	Centroid Velocity m/s	Cloud Density kg/m3
4,65	0,93	18.643,59	0,92	1,33	24,99	0,00	2,04		2,57	1,18
5,93	0,91	14.942,03	0,58	0,90	24,99	0,00	2,53		2,64	1,18
7,21	0,90	12.288,90	0,00	0,00	24,99	0,00	3,01		2,70	1,18
9,77	0,89	8.805,95	0,00	0,00	24,99	0,00	3,95		2,77	1,17
14,89	0,87	5.218,82	0,00	0,00	24,99	0,00	5,76		2,89	1,17
20,01	0,86	3.452,98	0,00	0,00	24,99	0,00	7,46		3,10	1,17
30,25	0,85	1.847,89	0,00	0,00	24,99	0,00	10,68		3,25	1,17
40,49	0,84	1.141,24	0,00	0,00	24,99	0,00	13,70		3,54	1,17
50,73	0,84	772,78	0,00	0,00	24,99	0,00	16,51		3,73	1,17
60,97	0,84	556,20	0,00	0,00	24,99	0,00	19,19		3,91	1,17
81,45	0,83	327,16	0,00	0,00	24,99	0,00	24,33		4,07	1,17
91,69	0,83	260,96	0,00	0,00	24,99	0,00	26,75		4,37	1,17
101,93	0,83	213,73	0,00	0,00	24,99	0,00	29,08		4,44	1,17
112,17	0,83	181,01	0,00	0,00	24,99	0,00	31,35		4,56	1,17
132,65	0,82	135,16	0,00	0,00	24,99	0,00	35,81		4,64	1,17
153,13	0,82	104,91	0,00	0,00	24,99	0,00	40,14		4,81	1,17
173,61	0,82	83,96	0,00	0,00	24,99	0,00	44,34		4,94	1,17
214,57	0,82	57,59	0,00	0,00	24,99	0,00	52,54		5,06	1,17
255,53	0,82	42,05	0,00	0,00	24,99	0,00	60,44		5,30	1,17
296,49	0,81	32,15	0,00	0,00	24,99	0,00	68,04		5,48	1,17
337,45	0,81	25,43	0,00	0,00	24,99	0,00	75,41		5,64	1,17
378,41	0,81	20,65	0,00	0,00	24,99	0,00	82,58		5,78	1,17
419,37	0,81	17,13	0,00	0,00	24,99	0,00	89,59		5,92	1,17
460,33	0,81	14,46	0,00	0,00	24,99	0,00	96,44		6,04	1,17
501,29	0,81	12,38	0,00	0,00	24,99	0,00	103,16		6,15	1,17

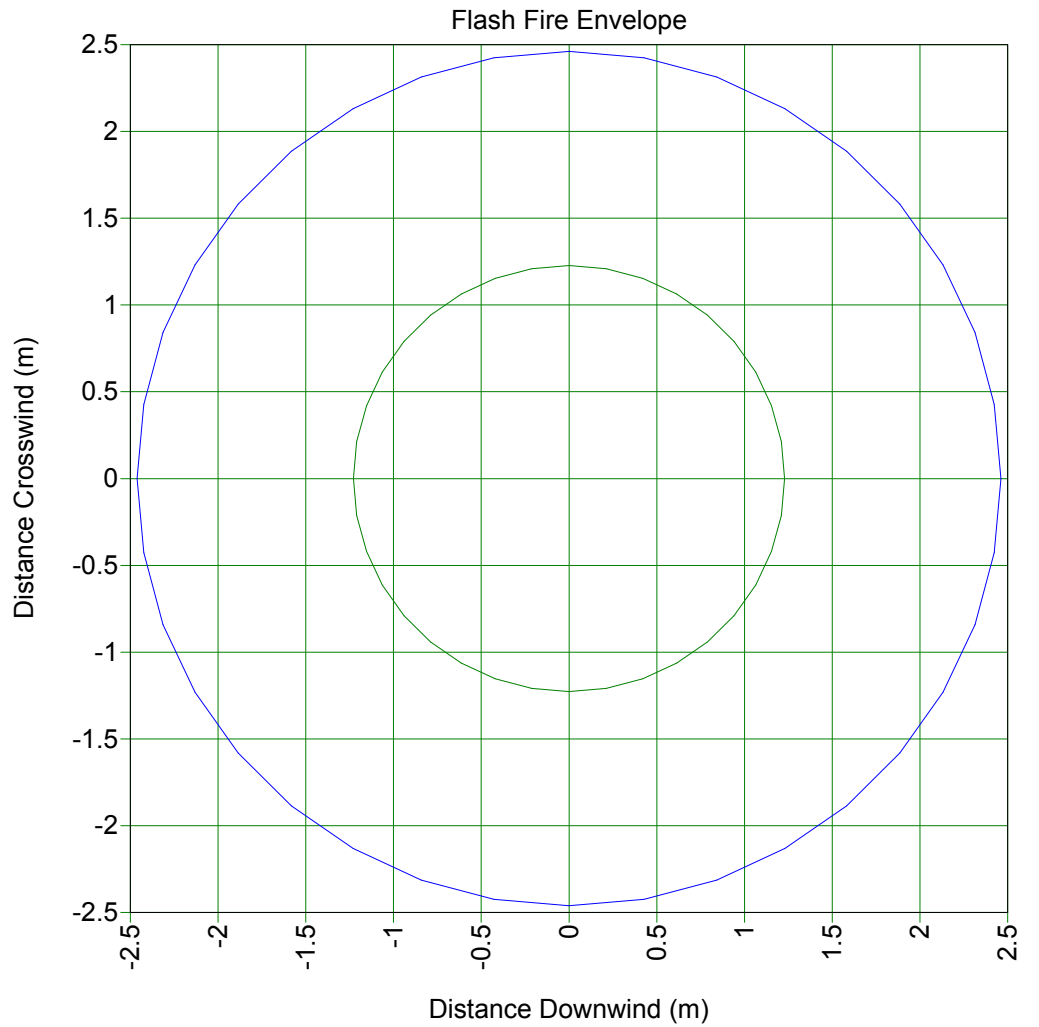
Study Folder: 70977-Fase
1-Metanolo
Audit No: 180714
Model: Pool Fire
Material: METHANOL
Weathers

— Category 2/F
— Category 5/D



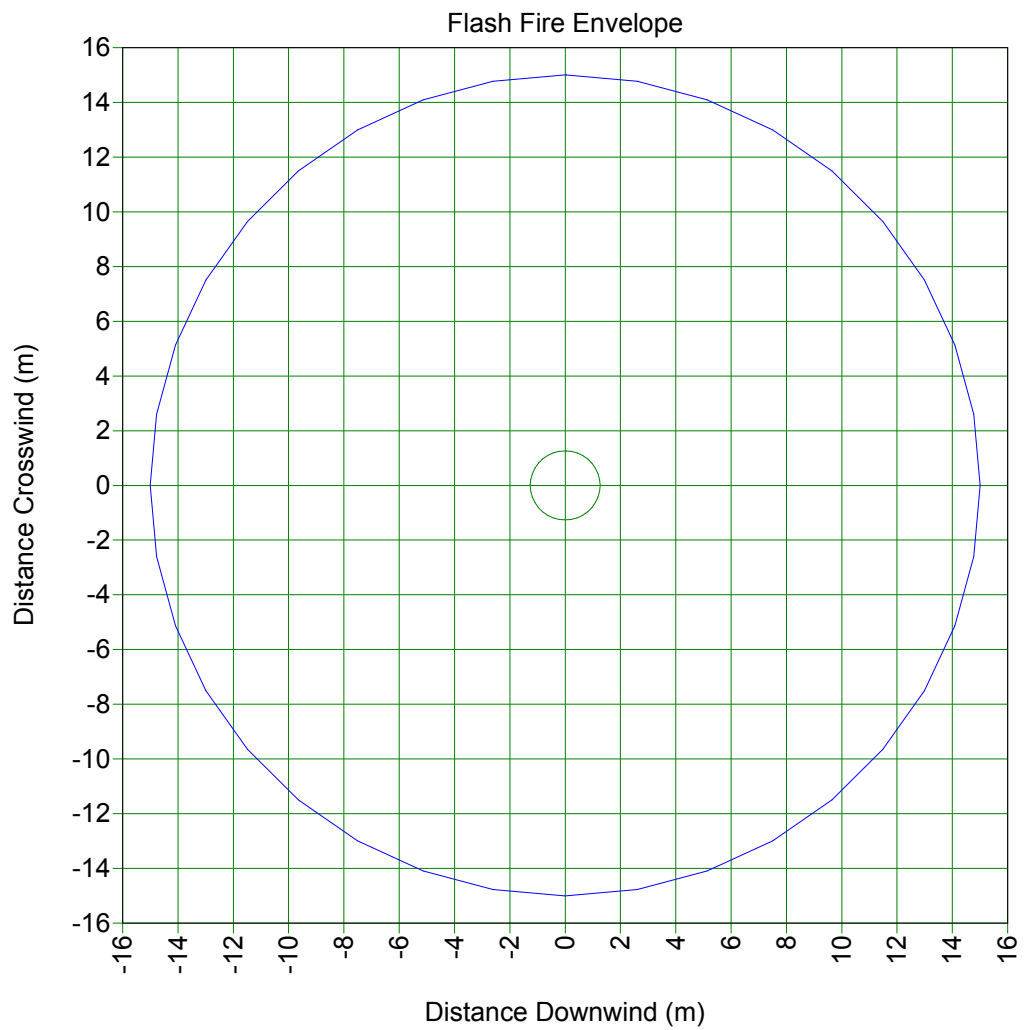
Study Folder: 70977-Fase
1-Metanolo
Audit No: 180757
Model: User Defined
Source-D5
Weather: Category 5/D
Material: METHANOL
Concentration

— 3.65e+004 ppm
— 7.3e+004 ppm



Study Folder: 70977-Fase
1-Metanolo
Audit No: 180738
Model: User Defined
Source-F2
Weather: Category 2/F
Material: METHANOL
Concentration

— 3.65e+004 ppm
— 7.3e+004 ppm



POOL VAPORIZATION REPORT

Unique Audit Number: 180.719



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6




 70977-Fase 1-Metanolo

 **Pompa**

Pool Vaporization

Base Case

Data

 Weather: Global Weathers\Category 2/F

Speed: 2,00 m/s

Stability: F

\\70977-Fase 1-Metanolo\Pompa\Pool Vaporization

User-Defined Quantities

Material	METHANOL
Type of Spill	Instantaneous
Surface Type	Concrete
Bund Diameter	11,00 m
Ambient Temperature	25,00 degC
Bund Surface Temperature	25,00 degC
Ambient Wind Speed	2,00 m/s
Solar Flux	1,20 kW/m2

Calculated Quantities

Status of Bund:	The Bund was hit
Maximum Pool Radius	5,50 m

Averages for Release Segment: 1

Number of Cloud Segments	1
Rainout Fraction	1,00 fraction
Spill Rate	500.000,00 kg/s
Spill Duration	0,00 s
Spill Mass	500,00 kg
Spill Temperature	25,00 degC
Mass Remaining	452,86 kg

Cloud Segments for this Release Segment

Cloud Segment	Rate	Duration	Temperature	Total Mass	Radius	Mass Air Entrained
	kg/s	s	degC	kg	m	kg/s
1	0,16	300,00	19,74	47,14	5,45	0,99

POOL VAPORIZATION REPORT

Unique Audit Number: 180.719



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6



Weather: Global Weathers\Category 5/D

Speed: 5,00 m/s

Stability: D

\70977-Fase 1-Metanolo\Pompa\Pool Vaporization

User-Defined Quantities

Material	METHANOL
Type of Spill	Instantaneous
Surface Type	Concrete
Bund Diameter	11,00 m
Ambient Temperature	25,00 degC
Bund Surface Temperature	25,00 degC
Ambient Wind Speed	5,00 m/s
Solar Flux	1,20 kW/m2

Calculated Quantities

Status of Bund:	The Bund was hit
Maximum Pool Radius	5,50 m

Averages for Release Segment: 1

Number of Cloud Segments	1
Rainout Fraction	1,00 fraction
Spill Rate	500.000,00 kg/s
Spill Duration	0,00 s
Spill Mass	500,00 kg
Spill Temperature	25,00 degC
Mass Remaining	440,40 kg

Cloud Segments for this Release Segment

Cloud Segment	Rate kg/s	Duration s	Temperature degC	Total Mass kg	Radius m	Mass Air Entrained kg/s
1	0,20	300,00	16,87	59,60	5,45	1,50

SUMMARY REPORT

Unique Audit Number: 184.410



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

70977-Fase 1-Metanolo

Pompa

User Defined Source-D5

Base Case

CASE Name: Data

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

User-Defined Data

Material

Material Identifier METHANOL

Scenario

Building Wake Effect None

Vessel/Tank

Release Type Pool Source (Radius given)

Location

[Elevation 1 m]
Concentration of Interest 6700 ppm
Averaging time associated with Concentration Toxic
Distances for Radiation Modeling and Dispersion Scope(1) 50 m
Distances for Radiation Modeling and Dispersion Scope(2) 250 m
Distances for Radiation Modeling and Dispersion Scope(3) 500 m
Use ERPG averaging time ERPG not selected
Use IDLH averaging time IDLH not selected
Use STEL averaging time STEL not selected
Supply a user defined averaging time Not 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

Location of release Open air release
Outdoor Release Direction Horizontal

Flammable

Explosion Method TNT
Jet Fire Method API Model

Dispersion

Number of Release Segments 1
Fluid Phase(1) Vapor
Duration of Discharge(1) 2500 s
Final Temperature(1) 25 degC
Release Rate(1) 0.2 kg/s
Pool Radii(1) 11 m
Pre-Dilution Air Rates(1) 0.01 kg/s

SUMMARY REPORT

Unique Audit Number: 184.410



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Late Ignition Location
Mass Inventory of material to Disperse

No ignition location
500 kg

Fireball Parameters

[Mass Modification Factor 3]
[Calculation method for fireball DNV Recommended]
[TNO model flame temperature 1727 degC]

Toxic Parameters

[Indoor Calculations Unselected]
[Wind Dependent Exchange Rate Case Specified]
[Building Exchange Rate 4 /hr]
[Tail Time 1800 s]
[Set averaging time equal to exposure time Use a fixed averaging time]
[Cut-off fraction of toxic load for exposure time calculation 0.05 fraction]
[Cut-off concentration for exposure time calculations 0 fraction]

Geometry

Shape Point
Dimension 2D
System Absolute
East(1) 0 m
North(1) 0 m

SUMMARY REPORT

Unique Audit Number: 184.410



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Consequence Results

Distance to Concentration Results

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

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 (6700)	600	s		52.6628	0.0132669
UFL (360000)	18.75	s		0.24447	0.221544
LFL (73000)	18.75	s		1.57449	1.22833
LFL Frac (36500)	18.75	s		16.9983	2.4616

Concentration(ppm) Averaging Time				Heights (m) for above distances	
				Category 2/F	Category 5/D
User Conc (6700)	600	s		0	0
UFL (360000)	18.75	s		0.923329	0.995689
LFL (73000)	18.75	s		0.440869	0.978464
LFL Frac (36500)	18.75	s		0	0.956586

SUMMARY REPORT

Unique Audit Number: 184.410



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Concentration At Distance Results

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

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
50	m	14249.8	1000.1
250	m	1365.69	55.3559
500	m	417.196	15.6021

Distance		Heights (m) for above concentrations	
		Category 2/F	Category 5/D
50	m	0	0.80776
250	m	0	0.777905
500	m	0	0.770899

Distance		Conc.(ppm) at Toxic Avg.Time of 600 s	
		Category 2/F	Category 5/D
50	m	7124.88	493.199
250	m	682.847	27.6473
500	m	208.598	7.79784

Distance		Heights (m) for above concentrations	
		Category 2/F	Category 5/D
50	m	0	0
250	m	0	0
500	m	0	0

Distance		Conc.(ppm) at Core Avg.Time of 18.75 s	
		Category 2/F	Category 5/D
50	m	14249.8	986.399
250	m	1365.69	55.2946
500	m	417.196	15.5957

Distance		Heights (m) for above concentrations	
		Category 2/F	Category 5/D
50	m	0	0
250	m	0	0
500	m	0	0

Distance to Equivalent Toxic Dose

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

Toxic Calculation Method = Mixture Probit

Concentration(ppm)	Reference Time		Distance (m)	
			Category 2/F	Category 5/D
User Conc (6700)	600	s	139.703	24.8884

SUMMARY REPORT

Unique Audit Number: 184.410



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Time to Equivalent Toxic Dose

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

Toxic Calculation Method = Mixture Probit

At 50 m

Concentration(ppm)	Reference Time		Category 2/F	Time (s)	Category 5/D
User Conc (6700)	600	s	650.846	No Hazard	No Hazard

At 250 m

Concentration(ppm)	Reference Time		Category 2/F	Time (s)	Category 5/D
User Conc (6700)	600	s	No Hazard	No Hazard	No Hazard

At 500 m

Concentration(ppm)	Reference Time		Category 2/F	Time (s)	Category 5/D
User Conc (6700)	600	s	No Hazard	No Hazard	No Hazard

Late Pool Fire Hazard

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

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

Radiation Effects: Late Pool Fire Ellipse

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

Radiation Level			Category 2/F	Distance (m)	Category 5/D
4	kW/m2		31.9226	32.8968	
12.5	kW/m2		19.8206	22.512	
37.5	kW/m2		Not Reached	Not Reached	

Radiation Effects: Late Pool Fire Distance

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

Distance Of Interest			Category 2/F	Radiation Level (kW/m2)	Category 5/D
50	m		1.25595	1.22453	
250	m		0.0297453	0.0259814	
500	m		0.00635365	0.00550813	

SUMMARY REPORT

Unique Audit Number: 184.410



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Flash Fire Envelope

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

All flammable results are reported at the cloud centreline height

			Distance (m)	
			Category 2/F	Category 5/D
Furthest Extent	36500	ppm	16.9983	2.4616
Furthest Extent	73000	ppm	1.57449	1.22833
			Heights (m) for above distances	
			Category 2/F	Category 5/D
Furthest Extent	36500	ppm	0	0.956586
Furthest Extent	73000	ppm	0.440869	0.978464

SUMMARY REPORT

Study Folder: 70977-Fase 1-Metanolo

Unique Audit Number: 184.410

Phast 6.6



Explosion Effects: Late Ignition

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

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
Overpressure	0.02068	bar	27.1734
Overpressure	0.1379	bar	14.4466
Overpressure	0.2068	bar	13.4407

			Supplementary Data at 0.02068 bar Category 2/F
Supplied Flammable Mass	kg		0.326462
Used Flammable Mass	kg		0.326462
Overpressure Radius	m		17.1734
Distance to:			
- Ignition Source	m		10
- Cloud Front/Centre	m		10
- Explosion Centre	m		10

			Supplementary Data at 0.1379 bar Category 2/F
Supplied Flammable Mass	kg		0.326462
Used Flammable Mass	kg		0.326462
Overpressure Radius	m		4.44662
Distance to:			
- Ignition Source	m		10
- Cloud Front/Centre	m		10
- Explosion Centre	m		10

			Supplementary Data at 0.2068 bar Category 2/F
Supplied Flammable Mass	kg		0.326462
Used Flammable Mass	kg		0.326462
Overpressure Radius	m		3.4407
Distance to:			
- Ignition Source	m		10
- Cloud Front/Centre	m		10
- Explosion Centre	m		10

			Overpressures (bar gauge) at Distances Category 2/F
Distance	50	m	0.00773476
Distance	250	m	0.0016107
Distance	500	m	0.00104832

			Supplementary Data at 50 m Category 2/F
Supplied Flammable Mass	kg		0.326462

SUMMARY REPORT

Unique Audit Number: 184.410



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Used Flammable Mass	kg	0.326462	
			Supplementary Data at 250 m
			Category 2/F
Supplied Flammable Mass	kg	0.326462	
Used Flammable Mass	kg	0.326462	
			Supplementary Data at 500 m
			Category 2/F
Supplied Flammable Mass	kg	0.326462	
Used Flammable Mass	kg	0.326462	

Weather Conditions

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-D5

		Category 2/F	Category 5/D
Wind Speed	m/s	2	5
Pasquill Stability		F	D
Surface Roughness Length	mm	1000	1000
Surface Roughness Parameter		0.173718	0.173718
Atmospheric Temperature	degC	25	25
Surface Temperature	degC	25	25
Relative Humidity	fraction	0.75	0.75

SUMMARY REPORT

Unique Audit Number: 184.409



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

70977-Fase 1-Metanolo

Pompa

User Defined Source-F2

Base Case

CASE Name: Data

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

User-Defined Data

Material

Material Identifier METHANOL

Scenario

Building Wake Effect None

Vessel/Tank

Release Type Pool Source (Radius given)

Location

[Elevation 1 m]
Concentration of Interest 6700 ppm
Averaging time associated with Concentration Toxic
Distances for Radiation Modeling and Dispersion Scope(1) 50 m
Distances for Radiation Modeling and Dispersion Scope(2) 250 m
Distances for Radiation Modeling and Dispersion Scope(3) 500 m
Use ERPG averaging time ERPG not selected
Use IDLH averaging time IDLH not selected
Use STEL averaging time STEL not selected
Supply a user defined averaging time Not 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

Location of release Open air release
Outdoor Release Direction Horizontal

Flammable

Explosion Method TNT
Jet Fire Method API Model

Dispersion

Number of Release Segments 1
Fluid Phase(1) Vapor
Duration of Discharge(1) 3100 s
Final Temperature(1) 25 degC
Release Rate(1) 0.16 kg/s
Pool Radii(1) 11 m
Pre-Dilution Air Rates(1) 0.01 kg/s

SUMMARY REPORT

Unique Audit Number: 184.409



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Late Ignition Location
Mass Inventory of material to Disperse

No ignition location
500 kg

Fireball Parameters

[Mass Modification Factor 3]
[Calculation method for fireball DNV Recommended]
[TNO model flame temperature 1727 degC]

Toxic Parameters

[Indoor Calculations Unselected]
[Wind Dependent Exchange Rate Case Specified]
[Building Exchange Rate 4 /hr]
[Tail Time 1800 s]
[Set averaging time equal to exposure time Use a fixed averaging time]
[Cut-off fraction of toxic load for exposure time calculation 0.05 fraction]
[Cut-off concentration for exposure time calculations 0 fraction]

Geometry

Shape Point
Dimension 2D
System Absolute
East(1) 0 m
North(1) 0 m

SUMMARY REPORT

Unique Audit Number: 184.409



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Consequence Results

Distance to Concentration Results

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

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 (6700)	600	s		47.5887	No Hazard
UFL (360000)	18.75	s		0.228564	0.210663
LFL (73000)	18.75	s		1.2622	1.08514
LFL Frac (36500)	18.75	s		15.0007	1.87841

Concentration(ppm) Averaging Time				Heights (m) for above distances	
				Category 2/F	Category 5/D
User Conc (6700)	600	s		0	0
UFL (360000)	18.75	s		0.934735	0.996406
LFL (73000)	18.75	s		0.590187	0.982884
LFL Frac (36500)	18.75	s		0	0.971175

SUMMARY REPORT

Unique Audit Number: 184.409



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Concentration At Distance Results

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

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
50	m	12678	799.091
250	m	1146.05	44.1499
500	m	342.638	12.4495

Distance		Heights (m) for above concentrations	
		Category 2/F	Category 5/D
50	m	0	0.840022
250	m	0	0.816167
500	m	0	0.810572

Distance		Conc.(ppm) at Toxic Avg.Time of 600 s	
		Category 2/F	Category 5/D
50	m	6339	393.629
250	m	573.027	22.0481
500	m	171.319	6.22192

Distance		Heights (m) for above concentrations	
		Category 2/F	Category 5/D
50	m	0	0
250	m	0	0
500	m	0	0

Distance		Conc.(ppm) at Core Avg.Time of 18.75 s	
		Category 2/F	Category 5/D
50	m	12678	787.257
250	m	1146.05	44.0962
500	m	342.638	12.4438

Distance		Heights (m) for above concentrations	
		Category 2/F	Category 5/D
50	m	0	0
250	m	0	0
500	m	0	0

Distance to Equivalent Toxic Dose

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

Toxic Calculation Method = Mixture Probit

Concentration(ppm)	Reference Time		Distance (m)	
			Category 2/F	Category 5/D
User Conc (6700)	600	s	145.777	24.7073

SUMMARY REPORT

Unique Audit Number: 184.409



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Time to Equivalent Toxic Dose

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

Toxic Calculation Method = Mixture Probit

At 50 m

Concentration(ppm)	Reference Time		Category 2/F	Time (s)	Category 5/D
User Conc (6700)	600	s	720.084	No Hazard	No Hazard

At 250 m

Concentration(ppm)	Reference Time		Category 2/F	Time (s)	Category 5/D
User Conc (6700)	600	s	No Hazard	No Hazard	No Hazard

At 500 m

Concentration(ppm)	Reference Time		Category 2/F	Time (s)	Category 5/D
User Conc (6700)	600	s	No Hazard	No Hazard	No Hazard

Late Pool Fire Hazard

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

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

Radiation Effects: Late Pool Fire Ellipse

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

Radiation Level			Category 2/F	Distance (m)	Category 5/D
4	kW/m2		31.9226	32.8968	
12.5	kW/m2		19.8206	22.512	
37.5	kW/m2		Not Reached	Not Reached	

Radiation Effects: Late Pool Fire Distance

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

Distance Of Interest			Category 2/F	Radiation Level (kW/m2)	Category 5/D
50	m		1.25595	1.22453	
250	m		0.0297453	0.0259814	
500	m		0.00635365	0.00550813	

SUMMARY REPORT

Unique Audit Number: 184.409



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Flash Fire Envelope

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

All flammable results are reported at the cloud centreline height

			Distance (m)	
			Category 2/F	Category 5/D
Furthest Extent	36500	ppm	15.0007	1.87841
Furthest Extent	73000	ppm	1.2622	1.08514
			Heights (m) for above distances	
			Category 2/F	Category 5/D
Furthest Extent	36500	ppm	0	0.971175
Furthest Extent	73000	ppm	0.590187	0.982884

SUMMARY REPORT

Unique Audit Number: 184.409



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Explosion Effects: Late Ignition

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

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
Overpressure	0.02068	bar	25.1214
Overpressure	0.1379	bar	13.9153
Overpressure	0.2068	bar	13.0296

			Supplementary Data at 0.02068 bar
			Category 2/F
Supplied Flammable Mass	kg		0.222862
Used Flammable Mass	kg		0.222862
Overpressure Radius	m		15.1214
Distance to:			
- Ignition Source	m		10
- Cloud Front/Centre	m		10
- Explosion Centre	m		10

			Supplementary Data at 0.1379 bar
			Category 2/F
Supplied Flammable Mass	kg		0.222862
Used Flammable Mass	kg		0.222862
Overpressure Radius	m		3.9153
Distance to:			
- Ignition Source	m		10
- Cloud Front/Centre	m		10
- Explosion Centre	m		10

			Supplementary Data at 0.2068 bar
			Category 2/F
Supplied Flammable Mass	kg		0.222862
Used Flammable Mass	kg		0.222862
Overpressure Radius	m		3.02957
Distance to:			
- Ignition Source	m		10
- Cloud Front/Centre	m		10
- Explosion Centre	m		10

			Overpressures (bar gauge) at Distances
			Category 2/F
Distance	50	m	0.00676159
Distance	250	m	0.00147997
Distance	500	m	0.001

			Supplementary Data at 50 m
			Category 2/F
Supplied Flammable Mass	kg		0.222862

SUMMARY REPORT

Unique Audit Number: 184.409



Study Folder: 70977-Fase 1-Metanolo

Phast 6.6

Used Flammable Mass	kg	0.222862	
			Supplementary Data at 250 m
			Category 2/F
Supplied Flammable Mass	kg	0.222862	
Used Flammable Mass	kg	0.222862	
			Supplementary Data at 500 m
			Category 2/F
Supplied Flammable Mass	kg	0.222862	
Used Flammable Mass	kg	0.222862	

Weather Conditions

Path: \70977-Fase 1-Metanolo\Pompa\User Defined Source-F2

		Category 2/F	Category 5/D
Wind Speed	m/s	2	5
Pasquill Stability		F	D
Surface Roughness Length	mm	1000	1000
Surface Roughness Parameter		0.173718	0.173718
Atmospheric Temperature	degC	25	25
Surface Temperature	degC	25	25
Relative Humidity	fraction	0.75	0.75