

# Early Pool Fire Report

## Workspace: 72438-1RiempFSRU-4R

### Study: Riempimento FSRU-ME4

#### Equipment Item: 4R Linee di caricamento taniche FSRU durante riempimento

72438-1RiempFSRU-4R\Riempimento FSRU-ME4\4R Linee di caricamento taniche FSRU durante riempimento

Material	<b>GAS NATURALE</b>	
East	0	m
North	0	m

#### Scenario (Leak) : 80mm

72438-1RiempFSRU-4R\Riempimento FSRU-ME4\4R Linee di caricamento taniche FSRU durante riempimento\80mm

#### Weather: Category 2/F

<b>Wind speed [m/s]</b>	<b>2</b>
<b>Pasquill stability</b>	<b>F stable - night with moderate clouds and light/moderate wind</b>
<b>Atmospheric temperature [degC]</b>	<b>25</b>
<b>Relative humidity [fraction]</b>	<b>0,75</b>
<b>Solar radiation flux [kW/m2]</b>	<b>0,5</b>

#### Pool fire model results

Early pool fires are assumed to occur at a time when the initial PVAP rainout rate equals the pool fire burn rate, unless the thus calculated pool fire radius exceeds the maximum PVAP pool radius. For the latter case the early pool fire radius is assumed to be the maximum PVAP pool radius. The pool fire centre is located at the rainout point.

#### INPUT DATA

Correlation Type: Thomas / Johnson

Surface type	Land
Pool fire elevation	0 m
Maximum exposure duration	20 s



Downwind distance of liquid rainout	0	m
Use two zone pool fire model	No	

## OUTPUT DATA

Pool fire diameter	14,0091	m
Downwind distance of pool fire centre	0	m
Pool fire flame length	26,1024	m
Angle between pool fire axis and vertical	32,089	deg
Flame emissive power	189,05	kW/m <sup>2</sup>
Total burn rate	12,8339	kg/s
Radiative fraction	0,389223	fraction

## Radiation Intensity Ellipse Results

### INPUT DATA

For ellipses 'observer direction' refers to whether inclination is 'fixed' or 'variable'. Orientation is always variable.

Observer direction	Variable	
Exposure duration	20	s
Height of interest	<b>1,7</b>	m

### OUTPUT DATA

#### Radiation intensity

Incident radiation [kW/m <sup>2</sup> ]	Lethality [%]	View factor	Probability	Dose [(W/m <sup>2</sup> ) <sup>Pr</sup> obitN.s]	Hazard information	Ellipse half-length [m]	Ellipse half-width [m]	Ellipse centre downwind distance [m]	Effect downwind distance [m]	Ellipse area [m <sup>2</sup> ]
3	0	0,0158688	-1,38321	865.119	-	68,8312	70,7344	9,49743	78,3287	15295,6

5	0,00017 4704	0,026 448	0,360 367	1.709.491	-	53,8 697	55,2 849	9,3031 6	63,172 8	9356 ,22
7	0,02405	0,037 0272	1,508 83	2.677.313	-	45,6 688	46,8 025	9,0767 2	54,745 6	6714 ,89
12,5	6,52536	0,066 12	3,487 89	5.800.162	-	34,4 671	34,6 631	8,8958 1	43,362 9	3753 ,38
37,5	98,7381	0,198 36	7,237 73	25.094.924	-	19,1 594	17,9 56	6,6030 1	25,762 4	1080 ,79

## Radiation v Distance Results

### INPUT DATA

Maximum distance	78,3287	m
Angle from wind direction	0	deg
Observer direction	Variable	
Height of interest	<b>1,7</b>	m

### OUTPUT DATA

Downwind distance [m]	Maximum incident radiation [kW/m <sup>2</sup> ]	Lethality level [fraction]
0	189,05	1
1,59854	189,05	1
3,19709	189,05	1
4,79563	189,05	1
6,39418	189,05	1
7,99272	189,05	1
9,59127	133,991	1
11,1898	107,945	1
12,7884	90,8215	1
14,3869	78,4849	0,999999
15,9854	69,2696	0,999993
17,584	61,9722	0,999961
19,1825	56,0217	0,999846
20,7811	51,0966	0,999506
22,3796	46,4543	0,998504
23,9782	42,0253	0,995688



25,5767	37,9492	0,988648
27,1753	34,2318	0,972979
28,7738	30,8606	0,942097
30,3723	27,8179	0,88845
31,9709	25,0833	0,806515
33,5694	22,6346	0,696551
35,168	20,4485	0,566638
36,7665	18,5011	0,431026
38,3651	16,769	0,305277
39,9636	15,2294	0,201016
41,5622	13,861	0,123156
43,1607	12,6441	0,0703772
44,7592	11,5609	0,0376459
46,3578	10,5954	0,018931
47,9563	9,7334	0,00899114
49,5549	8,96235	0,00405235
51,1534	8,27125	0,00174136
52,752	7,65048	0,00071668
54,3505	7,11874	0,000297687
55,9491	6,65398	0,000124086
57,5476	6,22946	5,03021E-05
59,1461	5,84112	1,98863E-05
60,7447	5,48533	7,68671E-06
62,3432	5,15883	2,91188E-06
63,9418	4,85874	1,08343E-06
65,5403	4,58247	3,9672E-07
67,1389	4,32773	1,43225E-07
68,7374	4,09246	5,10659E-08
70,3359	3,87484	1,80085E-08
71,9345	3,67324	0
73,533	3,48619	0
75,1316	3,31239	0
76,7301	3,15068	0
78,3287	2,99999	0



### Weather: Category 5/D

Wind speed [m/s]	5
Pasquill stability	D neutral - little sun and high wind or overcast/windy night
Atmospheric temperature [degC]	25
Relative humidity [fraction]	0,75
Solar radiation flux [kW/m2]	0,5

### Pool fire model results

Early pool fires are assumed to occur at a time when the initial PVAP rainout rate equals the pool fire burn rate, unless the thus calculated pool fire radius exceeds the maximum PVAP pool radius. For the latter case the early pool fire radius is assumed to be the maximum PVAP pool radius. The pool fire centre is located at the rainout point.

#### INPUT DATA

Correlation Type: Thomas / Johnson

Surface type	Land	
Pool fire elevation	0	m
Maximum exposure duration	20	s
Downwind distance of liquid rainout	0	m
Use two zone pool fire model	No	

#### OUTPUT DATA

Pool fire diameter	14,0091	m
Downwind distance of pool fire centre	0	m
Pool fire flame length	26,1024	m
Angle between pool fire axis and vertical	49,3903	deg
Flame emissive power	189,05	kW/m2
Total burn rate	12,8339	kg/s
Radiative fraction	0,389223	fraction

### Radiation Intensity Ellipse Results

#### INPUT DATA

For ellipses 'observer direction' refers to whether inclination is 'fixed' or 'variable'. Orientation is always variable.

Observer direction	Variable	
Exposure duration	20	s
Height of interest	<b>1,7</b>	m

## OUTPUT DATA

### Radiation intensity

Incident radiation [kW/m <sup>2</sup> ]	Lethality [%]	View factor	Probability	Dose [(W/m <sup>2</sup> ) <sup>Pr</sup> obitN.s]	Hazard information	Ellipse half-length [m]	Ellipse half-width [m]	Ellipse centre downwind distance [m]	Effect downwind distance [m]	Ellipse area [m <sup>2</sup> ]
3	0	0,015 8688	- 1,383 21	865.119	-	64,9 815	69,2 609	13,266 2	78,247 8	1413 9,3
5	0,00017 4704	0,026 448	0,360 367	1.709.491	-	51,5 132	54,5 01	13,091 2	64,604 4	8820 ,09
7	0,02405	0,037 0272	1,508 83	2.677.313	-	44,2 411	46,4 312	12,879 1	57,120 1	6453 ,36
12,5	6,52536	0,066 12	3,487 89	5.800.162	-	34,0 612	34,9 41	12,207 2	46,268 2	3738 ,91
37,5	98,7381	0,198 36	7,237 73	25.094.924	-	21,2 583	19,1 006	9,9000 1	31,158 3	1275 ,63

### Radiation v Distance Results

#### INPUT DATA

Maximum distance	78,2478	m
Angle from wind direction	0	deg
Observer direction	Variable	
Height of interest	<b>1,7</b>	m

#### OUTPUT DATA

Downwind distance [m]	Maximum incident radiation [kW/m <sup>2</sup> ]	Lethality level [fraction]
0	189,05	1
1,59689	189,05	1
3,19379	189,05	1
4,79068	189,05	1
6,38757	189,05	1
7,98446	189,05	1
9,58136	145,687	1
11,1783	120,559	1
12,7751	104,769	1
14,372	92,8289	1
15,9689	83,0653	1
17,5658	75,7637	0,999998
19,1627	69,883	0,999994
20,7596	64,5055	0,999978
22,3565	59,9643	0,999938
23,9534	55,9552	0,999843
25,5503	52,3487	0,999633
27,1472	49,0989	0,999205
28,7441	44,6376	0,99769
30,341	39,882	0,992816
31,9379	35,2894	0,97884
33,5348	31,0442	0,944406
35,1316	27,227	0,873904
36,7285	23,8588	0,756253
38,3254	20,9247	0,597315
39,9223	18,3897	0,422941
41,5192	16,6554	0,297194
43,1161	15,0988	0,192862
44,713	13,7079	0,115605
46,3099	12,4695	0,0641981
47,9068	11,3684	0,0331783
49,5037	10,3896	0,0160447
51,1006	9,51898	0,00730278



52,6975	8,74344	0,00314679
54,2944	8,05132	0,00129104
55,8913	7,4323	0,000507029
57,4881	6,87736	0,000191562
59,085	6,37863	6,99434E-05
60,6819	5,92929	2,47824E-05
62,2788	5,52341	8,55305E-06
63,8757	5,15587	2,88496E-06
65,4726	4,82222	9,53903E-07
67,0695	4,51861	3,10018E-07
68,6664	4,24167	9,92727E-08
70,2633	3,98849	3,13883E-08
71,8602	3,75651	9,8182E-09
73,4571	3,54352	0
75,054	3,34754	0
76,6509	3,16688	0
78,2478	3,00001	0

