

Early Pool Fire Report

Workspace: 72438-1RiempFSRU-3R

Study: Riempimento FSRU-ME4

Equipment Item: 3R Collettore GNL riempimento FSRU

72438-1RiempFSRU-3R\Riempimento FSRU-ME4\3R Collettore GNL riempimento FSRU

Material	GAS NATURALE	
East	0	m
North	0	m

Scenario (Leak) : 120mm

72438-1RiempFSRU-3R\Riempimento FSRU-ME4\3R Collettore GNL riempimento FSRU\120mm

Weather: Category 2/F

Wind speed [m/s]	2
Pasquill stability	F stable - night with moderate clouds and light/moderate wind
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
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OUTPUT DATA

Pool fire diameter	44,4451	m
Downwind distance of pool fire centre	0	m
Pool fire flame length	63,5416	m
Angle between pool fire axis and vertical	24,9119	deg
Flame emissive power	208,599	kW/m2
Total burn rate	149,042	kg/s
Radiative fraction	0,295857	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	1,7 m

OUTPUT DATA

Radiation intensity

Incident radiation [kW/m2]	Lethality [%]	View factor	Probability	Dose [(W/m2)^Pr obitN.s]	Hazard information	Ellipse half-length [m]	Ellipse half-width [m]	Ellips e centre down wind distance [m]	Effect down wind distance [m]	Ellips e area [m2]
3	0	0,0143816	-1,38321	865.119	-	192,948	196,458	19,13	212,078	119086
5	0,00017	0,023	0,360	1.709.491	-	151,	154,	18,846	170,32	7342



	4704	9694	367			479	297	9	6	7,7
7	0,02405	0,033	1,508	2.677.313	-	129,	131,	19,078	148,27	5319
		5572	83			191	061	5		3,1
12,5	6,52536	0,059	3,487	5.800.162	-	97,2	97,6	18,950	116,21	2983
		9235	89			663	312	2	6	3,3
37,5	98,7381	0,179	7,237	25.094.924	-	52,8	50,7	14,556	67,362	8422
		771	73			062	722	4	5	,88

Radiation v Distance Results

INPUT DATA

Maximum distance	212,078	m
Angle from wind direction	0	deg
Observer direction	Variable	
Height of interest	1,7	m

OUTPUT DATA

Downwind distance [m]	Maximum incident radiation [kW/m2]	Lethality level [fraction]
0	208,599	1
4,32812	208,599	1
8,65623	208,599	1
12,9843	208,599	1
17,3125	208,599	1
21,6406	208,599	1
25,9687	140,742	1
30,2968	106,945	1
34,6249	88,7992	1
38,953	76,7259	0,999999
43,2812	67,7187	0,99999
47,6093	60,6538	0,999948
51,9374	54,6179	0,999785
56,2655	49,1156	0,999208
60,5936	44,1907	0,99743
64,9217	39,7813	0,992642
69,2498	35,8301	0,98134



73,578	32,29	0,957931
77,9061	29,1216	0,915381
82,2342	26,2902	0,847445
86,5623	23,7639	0,751969
90,8904	21,5128	0,63345
95,2185	19,5086	0,502883
99,5467	17,7252	0,374482
103,875	16,138	0,26102
108,203	14,7247	0,170289
112,531	13,4651	0,104151
116,859	12,3411	0,059882
121,187	11,3366	0,0324776
125,515	10,4372	0,0166808
129,843	9,63039	0,00814622
134,172	8,90523	0,00379822
138,5	8,25206	0,00169755
142,828	7,66246	0,000730032
147,156	7,1291	0,000303187
151,484	6,64557	0,000122011
155,812	6,20626	4,77272E-05
160,14	5,80628	1,82002E-05
164,468	5,44135	6,78397E-06
168,796	5,10773	2,47771E-06
173,125	4,81472	9,29079E-07
177,453	4,54659	3,45636E-07
181,781	4,29892	1,26852E-07
186,109	4,06978	4,59993E-08
190,437	3,85746	1,65036E-08
194,765	3,66044	0
199,093	3,47734	0
203,421	3,30696	0
207,75	3,14817	0
212,078	3	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.

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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	44,4451	m
Downwind distance of pool fire centre	0	m
Pool fire flame length	63,5416	m
Angle between pool fire axis and vertical	42,4517	deg
Flame emissive power	208,599	kW/m2
Total burn rate	149,042	kg/s
Radiative fraction	0,295857	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	1,7	m

OUTPUT DATA

Radiation intensity

Incident radiation [kW/m ²]	Lethality [%]	View factor	Probability	Dose [(W/m ²) ^{Pr} obitN.s]	Hazard information	Ellipse half-length [m]	Ellipse half-width [m]	Ellipse centre downwind distance [m]	Effect downwind distance [m]	Ellipse area [m ²]
3	0	0,014 3816	- 1,383 21	865.119	-	183, 813	193, 47	30,394 8	214,20 7	1117 22
5	0,00017 4704	0,023 9694	0,360 367	1.709.491	-	145, 513	152, 929	30,136 2	175,65	6991 0,7
7	0,02405	0,033 5572	1,508 83	2.677.313	-	124, 602	130, 695	29,778 4	154,38 1	5116 0,5
12,5	6,52536	0,059 9235	3,487 89	5.800.162	-	94,8 91	98,8 816	28,486 4	123,37 7	2947 7,5
37,5	98,7381	0,179 771	7,237 73	25.094.924	-	57,1 47	54,4 811	23,779 9	80,927	9781 ,15

Radiation v Distance Results

INPUT DATA

Maximum distance	214,207	m
Angle from wind direction	0	deg
Observer direction	Variable	
Height of interest	1,7	m

OUTPUT DATA

Downwind distance [m]	Maximum incident radiation [kW/m ²]	Lethality level [fraction]
0	208,599	1
4,37158	208,599	1
8,74316	208,599	1
13,1147	208,599	1
17,4863	208,599	1
21,8579	208,599	1
26,2295	147,142	1
30,6011	118,217	1
34,9726	101,518	1
39,3442	89,7337	1
43,7158	81,1771	0,999999
48,0874	73,9631	0,999997
52,459	67,9817	0,99999
56,8306	62,217	0,999963
61,2021	58,15	0,999906
65,5737	54,2346	0,999765
69,9453	49,5093	0,999279
74,3169	44,5707	0,997653
78,6885	39,8133	0,992698
83,06	35,3872	0,979315
87,4316	31,3615	0,948193
91,8032	27,759	0,887071
96,1748	24,5733	0,786697
100,546	21,7792	0,649146
104,918	19,3417	0,491185
109,29	17,222	0,337862
113,661	15,3807	0,210626
118,033	13,969	0,128638
122,404	12,753	0,0744096
126,776	11,6665	0,0402628
131,147	10,6958	0,020469
135,519	9,82791	0,0098241
139,891	9,05101	0,00447344

144,262	8,35441	0,00194205
148,634	7,72863	0,000807569
153,005	7,16531	0,000323083
157,377	6,6571	0,000124866
161,748	6,19759	4,67954E-05
166,12	5,78117	1,70645E-05
170,492	5,40294	6,074E-06
174,863	5,05864	2,11633E-06
179,235	4,74454	7,23665E-07
183,606	4,45737	2,43414E-07
187,978	4,19427	8,07077E-08
192,35	3,95274	2,64282E-08
196,721	3,73058	8,56135E-09
201,093	3,52584	0
205,464	3,33681	0
209,836	3,16197	0
214,207	2,99999	0

