

Early Pool Fire Report

Workspace: 72438-1RiempFSRU-5R

Study: Riempimento FSRU-ME4

Equipment Item: 5R Linee mandata pompe LNG Feed e collettore GNL durante riempimento

72438-1RiempFSRU-5R\Riempimento FSRU-ME4\5R Linee mandata pompe LNG Feed e collettore GNL durante riempimento

Material	GAS NATURALE	
East	0	m
North	0	m

Scenario (Leak) : 70mm

72438-1RiempFSRU-5R\Riempimento FSRU-ME4\5R Linee mandata pompe LNG Feed e collettore GNL durante riempimento\70mm

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	

OUTPUT DATA

Pool fire diameter	30,0391	m
Downwind distance of pool fire centre	0	m
Pool fire flame length	48,0445	m
Angle between pool fire axis and vertical	27,2805	deg
Flame emissive power	207,397	kW/m ²
Total burn rate	67,2728	kg/s
Radiative fraction	0,327776	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	0,014465	-1,38321	865.119	-	139,287	142,245	15,5728	154,86	62243,9

5	0,00017 4704	0,024 1083	0,360 367	1.709.491	-	109, 144	111, 459	15,310 8	124,45 5	3821 7,9
7	0,02405	0,033 7516	1,508 83	2.677.313	-	92,8 3	94,5 209	15,280 3	108,11	2756 5,5
12,5	6,52536	0,060 2707	3,487 89	5.800.162	-	69,8 421	70,1 936	15,138 7	84,980 8	1540 1,6
37,5	98,7381	0,180 812	7,237 73	25.094.924	-	38,0 271	36,2 956	11,474 9	49,502	4336 ,08

Radiation v Distance Results

INPUT DATA

Maximum distance	154,86	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	207,397	1
3,16041	207,397	1
6,32081	207,397	1
9,48122	207,397	1
12,6416	207,397	1
15,802	207,397	1
18,9624	134,464	1
22,1228	105,581	1
25,2833	88,3716	1
28,4437	76,6955	0,999999
31,6041	67,7529	0,99999
34,7645	60,7182	0,999948
37,9249	54,8988	0,999799
41,0853	49,5007	0,999277
44,2457	44,6006	0,99767
47,4061	40,1841	0,993314



50,5665	36,209	0,982919
53,7269	32,6358	0,961094
56,8873	29,4296	0,920813
60,0477	26,5587	0,855476
63,2081	23,9934	0,762231
66,3685	21,7052	0,644831
69,529	19,6669	0,513885
72,6894	17,8527	0,383793
75,8498	16,2383	0,267941
79,0102	14,8013	0,174812
82,1706	13,5213	0,106742
85,331	12,3799	0,0611648
88,4914	11,3606	0,0330062
91,6518	10,4489	0,0168402
94,8122	9,63187	0,00815789
97,9726	8,89827	0,00376814
101,133	8,23819	0,00166646
104,293	7,643	0,000708447
107,454	7,10514	0,000290603
110,614	6,61804	0,000115425
113,775	6,17595	4,45379E-05
116,935	5,77675	1,68714E-05
120,095	5,43133	6,5919E-06
123,256	5,11387	2,52664E-06
126,416	4,82164	9,51966E-07
129,577	4,55221	3,53219E-07
132,737	4,3034	1,29284E-07
135,898	4,07328	4,67516E-08
139,058	3,86013	1,67267E-08
142,218	3,66238	0
145,379	3,47867	0
148,539	3,30776	0
151,7	3,14852	0
154,86	2,99998	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

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Downwind distance of pool fire centre	0	m
Pool fire flame length	48,0445	m
Angle between pool fire axis and vertical	44,8728	deg
Flame emissive power	207,397	kW/m2
Total burn rate	67,2728	kg/s
Radiative fraction	0,327776	fraction

Radiation Intensity Ellipse Results

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

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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	0,014 465	- 1,383 21	865.119	-	132, 217	139, 799	23,681 4	155,89 8	5806 8,3
5	0,00017 4704	0,024 1083	0,360 367	1.709.491	-	104, 613	110, 288	23,442 3	128,05 5	3624 6,4
7	0,02405	0,033 7516	1,508 83	2.677.313	-	89,5 911	94,1 174	23,130 6	112,72 2	2649 0,2
12,5	6,52536	0,060 2707	3,487 89	5.800.162	-	68,3 437	71,0 166	22,059 3	90,403	1524 7,8
37,5	98,7381	0,180 812	7,237 73	25.094.924	-	41,5 008	38,9 044	18,169 5	59,670 2	5072 ,3

Radiation v Distance Results

INPUT DATA

Maximum distance	155,898	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	207,397	1
3,18159	207,397	1
6,36318	207,397	1
9,54477	207,397	1
12,7264	207,397	1
15,908	207,397	1
19,0895	144,054	1
22,2711	117,842	1
25,4527	102,068	1
28,6343	90,5668	1
31,8159	81,5661	0,999999
34,9975	74,3221	0,999998
38,1791	68,2465	0,999991
41,3607	63,1331	0,99997
44,5423	58,6146	0,999916
47,7239	54,8908	0,999799
50,9054	50,6683	0,999453
54,087	45,8143	0,998257
57,2686	40,9818	0,99447
60,4502	36,4152	0,983723
63,6318	32,2257	0,957317
66,8134	28,4592	0,902532
69,995	25,1217	0,807948
73,1766	22,1946	0,672746
76,3582	19,6446	0,512338
79,5398	17,432	0,353116
82,7213	15,646	0,22787
85,9029	14,2388	0,142859
89,0845	12,9809	0,0832938
92,2661	11,8582	0,0453221
95,4477	10,8565	0,0231174
98,6293	9,96233	0,0111086
101,811	9,16315	0,00505496



104,992	8,44777	0,00218943
108,174	7,80617	0,000907057
111,356	7,22954	0,000361112
114,537	6,71014	0,000138747
117,719	6,24122	5,16527E-05
120,9	5,81688	1,86992E-05
124,082	5,43199	6,60447E-06
127,264	5,08209	2,28258E-06
130,445	4,76326	7,74015E-07
133,627	4,47212	2,58141E-07
136,808	4,20567	8,48577E-08
139,99	3,96132	2,75486E-08
143,172	3,73679	8,84795E-09
146,353	3,53005	0
149,535	3,33934	0
152,716	3,1631	0
155,898	2,99994	0

