

Early Pool Fire Report

Workspace: 72341-1RiempimFSRU

Study: Riempimento FSRU-ME4

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

72341-1RiempimFSRU\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

72341-1RiempimFSRU\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	29,6048	m
Downwind distance of pool fire centre	0	m
Pool fire flame length	47,6481	m
Angle between pool fire axis and vertical	27,3702	deg
Flame emissive power	212,34	kW/m ²
Total burn rate	65,5387	kg/s
Radiative fraction	0,333939	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)^Prob x tN.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	0,0141283	-1,38321	865.119	-	139,28	142,252	15,4916	154,771	62243,9

5	0,00017 4704	0,023 5472	0,360 367	1.709.491	-	109, 16	111, 486	15,239 3	124,39 9	3823 2,6
7	0,02405 966	0,032 83	1,508	2.677.313	-	92,8 209	94,5 587	15,175 2	107,99 6	2757 3,9
12,5	6,52536 8679	0,058 89	3,487	5.800.162	-	69,8 7	70,2 674	15,060 7	84,930 7	1542 3,9
37,5	98,7381 604	0,176 73	7,237	25.094.924	-	38,1 4	36,4 299	11,538 3	49,678 3	4365 ,04

Radiation v Distance Results

INPUT DATA

Maximum distance	154,771	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	212,34	1
3,1586	212,34	1
6,3172	212,34	1
9,47581	212,34	1
12,6344	212,34	1
15,793	212,34	1
18,9516	134,774	1
22,1102	106,277	1
25,2688	89,421	1
28,4274	77,4457	0,999999
31,586	68,5215	0,999991
34,7446	61,3763	0,999956
37,9032	55,4761	0,999824
41,0618	49,9665	0,999353
44,2204	44,977	0,99787
47,379	40,4847	0,993775

50,5376	36,4455	0,983838
53,6962	32,819	0,962676
56,8548	29,569	0,923166
60,0134	26,6629	0,858496
63,172	24,0697	0,765573
66,3306	21,7598	0,648018
69,4892	19,7047	0,516496
72,6478	17,8777	0,385616
75,8064	16,2536	0,269003
78,965	14,8094	0,175297
82,1236	13,5242	0,106876
85,2822	12,3789	0,0611338
88,4408	11,3569	0,0329258
91,5995	10,4434	0,0167649
94,7581	9,62509	0,00810448
97,9167	8,8907	0,00373565
101,075	8,23017	0,00164869
104,234	7,63478	0,000699495
107,392	7,09691	0,000286381
110,551	6,60992	0,000113541
113,71	6,16802	4,37349E-05
116,868	5,77894	1,69668E-05
120,027	5,433	6,62356E-06
123,185	5,11513	2,53682E-06
126,344	4,82259	9,55134E-07
129,503	4,55291	3,54173E-07
132,661	4,30391	1,29562E-07
135,82	4,07364	4,68292E-08
138,978	3,86037	1,67475E-08
142,137	3,66254	0
145,296	3,47877	0
148,454	3,30781	0
151,613	3,14855	0
154,771	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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Use two zone pool fire model	No	

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Radiative fraction	0,333939	fraction

Radiation Intensity Ellipse Results

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Radiation intensity

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3	0	0,014 1283	- 1,383 21	865.119	-	132, 152	139, 764	23,514 8	155,66 7	5802 5,5
5	0,00017 4704	0,023 5472	0,360 367	1.709.491	-	104, 565	110, 264	23,283 9	127,84 9	3622 2,1
7	0,02405 966	0,032 966	1,508 83	2.677.313	-	89,5 55	94,1 056	22,982 3	112,53 7	2647 6,2
12,5	6,52536 8679	0,058 8679	3,487 89	5.800.162	-	68,3 361	71,0 334	21,95 1	90,286 1	1524 9,7
37,5	98,7381 604	0,176 604	7,237 73	25.094.924	-	41,5 026	38,9 94	18,175 6	59,678 2	5084 ,2

Radiation v Distance Results

INPUT DATA

Maximum distance	155,667	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	212,34	1
3,17688	212,34	1
6,35376	212,34	1
9,53064	212,34	1
12,7075	212,34	1
15,8844	212,34	1
19,0613	144,478	1
22,2382	119,412	1
25,415	103,448	1
28,5919	91,5934	1
31,7688	82,9659	1
34,9457	75,3867	0,999998
38,1226	69,2603	0,999993
41,2994	63,8709	0,999975
44,4763	59,5389	0,999932
47,6532	55,6226	0,99983
50,8301	51,1692	0,999514
54,007	46,1439	0,998389
57,1838	41,1881	0,994735
60,3607	36,5309	0,984158
63,5376	32,2767	0,957805
66,7145	28,4661	0,902674
69,8914	25,1001	0,807145
73,0683	22,1559	0,670591
76,2451	19,5967	0,509013
79,422	17,3803	0,34935
82,5989	15,6691	0,229398
85,7758	14,2529	0,143625
88,9527	12,9889	0,0836144
92,1295	11,862	0,0454256
95,3064	10,8575	0,0231348
98,4833	9,96157	0,0111011
101,66	9,16133	0,00504502

104,837	8,44534	0,00218269
108,014	7,80347	0,00090343
111,191	7,22678	0,000359405
114,368	6,70747	0,000138016
117,545	6,23871	5,13625E-05
120,721	5,8146	1,85908E-05
123,898	5,42996	6,56608E-06
127,075	5,08031	2,26962E-06
130,252	4,76175	7,69831E-07
133,429	4,47085	2,56849E-07
136,606	4,20465	8,44765E-08
139,783	3,96052	2,74419E-08
142,96	3,73619	8,81997E-09
146,137	3,52964	0
149,313	3,33911	0
152,49	3,16302	0
155,667	3	0

