

# Early Pool Fire Report

**Workspace: 72341-1RiempimFSRU**

**Study: Riempimento FSRU-ME4**

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

72341-1RiempimFSRU\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

72341-1RiempimFSRU\Riempimento FSRU-ME4\4R Linee di caricamento taniche FSRU durante riempimento\80mm

**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	13,8024	m
Downwind distance of pool fire centre	0	m
Pool fire flame length	25,7337	m
Angle between pool fire axis and vertical	32,1844	deg
Flame emissive power	190,098	kW/m2
Total burn rate	12,3787	kg/s
Radiative fraction	0,391225	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]	Ellipse centre downwind distance [m]	Effect downwind distance [m]	Ellipse area [m2]
3	0	0,0157814	-1,38321	865.119	-	68,0581	69,9503	9,3822	77,4403	14956,1

5	0,00017 4704	0,026 3023	0,360 367	1.709.491	-	53,2 717	54,6 783	9,1925 2	62,464 3	9150 ,85
7	0,02405 8232	0,036 83	1,508	2.677.313	-	45,1 694	46,2 953	8,9713 8	54,140 8	6569 ,49
12,5	6,52536 7557	0,065 7557	3,487 89	5.800.162	-	34,0 923	34,3 012	8,7860 3	42,878 3	3673 ,8
37,5	98,7381 267	0,197 267	7,237 73	25.094.924	-	18,9 85	17,7 963	6,5542 6	25,539 3	1061 ,43

## Radiation v Distance Results

### INPUT DATA

Maximum distance	77,4403	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 <sup>2</sup> ]	Lethality level [fraction]
0	190,098	1
1,58042	190,098	1
3,16083	190,098	1
4,74125	190,098	1
6,32166	190,098	1
7,90208	190,098	1
9,48249	134,961	1
11,0629	108,567	1
12,6433	91,3643	1
14,2237	78,9278	0,999999
15,8042	69,6732	0,999993
17,3846	62,3388	0,999964
18,965	56,3613	0,999857
20,5454	51,3892	0,999539
22,1258	46,7053	0,998591
23,7062	42,2357	0,995899

25,2866	38,1229	0,989104
26,8671	34,373	0,973843
28,4475	30,9737	0,943529
30,0279	27,9071	0,890511
31,6083	25,1525	0,809087
33,1887	22,6875	0,699332
34,7691	20,4882	0,569244
36,3495	18,5304	0,433145
37,93	16,7899	0,30677
39,5104	15,2438	0,201926
41,0908	13,8704	0,123629
42,6712	12,6496	0,0705793
44,2516	11,5635	0,0377089
45,832	10,5958	0,0189366
47,4125	9,73211	0,00898017
48,9929	8,95983	0,00404087
50,5733	8,26784	0,00173352
52,1537	7,64645	0,000712232
53,7341	7,12373	0,000300328
55,3145	6,65802	0,000125096
56,8949	6,23273	5,06745E-05
58,4754	5,84376	2,00191E-05
60,0558	5,48744	7,73261E-06
61,6362	5,16052	2,92727E-06
63,2166	4,86007	1,08844E-06
64,797	4,58352	3,98303E-07
66,3774	4,32854	1,4371E-07
67,9578	4,09307	5,12094E-08
69,5383	3,87529	1,80493E-08
71,1187	3,67356	0
72,6991	3,4864	0
74,2795	3,31252	0
75,8599	3,15073	0
77,4403	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	13,8024	m
Downwind distance of pool fire centre	0	m
Pool fire flame length	25,7337	m
Angle between pool fire axis and vertical	49,4754	deg
Flame emissive power	190,098	kW/m2
Total burn rate	12,3787	kg/s
Radiative fraction	0,391225	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	0,0157814	-1,38321	865.119	-	64,234	68,4813	13,0819	77,3158	13819,3
5	0,000174704	0,0263023	0,360367	1.709.491	-	50,9241	53,8903	12,9114	63,8355	8621,53
7	0,024058232	0,0368232	1,50883	2.677.313	-	43,7392	45,9143	12,7043	56,4434	6309,11
12,5	6,525367557	0,0657557	3,48789	5.800.162	-	33,685	34,5609	12,0491	45,7342	3657,4
37,5	98,7381	0,197267	7,23773	25.094.924	-	21,0384	18,9173	9,79293	30,8313	1250,32

### Radiation v Distance Results

#### INPUT DATA

Maximum distance	77,3158	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	190,098	1
1,57787	190,098	1
3,15575	190,098	1
4,73362	190,098	1
6,3115	190,098	1
7,88937	190,098	1
9,46724	147,496	1
11,0451	121,53	1
12,623	105,531	1
14,2009	93,3631	1
15,7787	83,9298	1
17,3566	76,4771	0,999998
18,9345	70,3261	0,999994
20,5124	64,9327	0,99998
22,0902	60,3354	0,999944
23,6681	56,3285	0,999856
25,246	52,6864	0,999661
26,8239	49,3945	0,999259
28,4017	44,8552	0,997807
29,9796	40,0379	0,993077
31,5575	35,3949	0,979352
33,1354	31,1102	0,945214
34,7132	27,2634	0,874847
36,2911	23,8741	0,75694
37,869	20,9255	0,597369
39,4468	18,4298	0,425854
41,0247	16,6871	0,299445
42,6026	15,1222	0,194313
44,1805	13,7251	0,116441
45,7583	12,482	0,0646317
47,3362	11,3775	0,0333824
48,9141	10,3963	0,0161325
50,492	9,52376	0,00733755



52,0698	8,74685	0,00315954
53,6477	8,05372	0,00129539
55,2256	7,43397	0,000508413
56,8035	6,8785	0,000191972
58,3813	6,37938	7,00567E-05
59,9592	5,92976	2,48112E-05
61,5371	5,52369	8,55963E-06
63,115	5,15601	2,88623E-06
64,6928	4,82227	9,54075E-07
66,2707	4,5186	3,10011E-07
67,8486	4,24163	9,92564E-08
69,4265	3,98843	3,13804E-08
71,0043	3,75646	9,81536E-09
72,5822	3,54347	0
74,1601	3,34751	0
75,7379	3,16686	0
77,3158	3,00001	0

