

# Jet Fire

## Workspace: 72341-1RiempimFSRU

### Study: Riempimento FSRU-ME4

### Equipment Item: 2R Compressore BOG HD

72341-1RiempimFSRU\Riempimento FSRU-ME4\2R Compressore BOG HD

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

### Scenario (Leak) : 75mm

72341-1RiempimFSRU\Riempimento FSRU-ME4\2R Compressore BOG HD\75mm

### 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

### Jet fire model results

#### INPUT DATA

##### Scenario

Elevation	12,5	m
Release angle from horizontal	0	deg

#### Jet Fire Parameters

Jet fire method	Cone model	
Crosswind angle	0	deg
Rate modification factor	3	

#### Calculated inputs

Mass flow rate	1,32626	kg/s
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Temperature after atmospheric expansion	-133,705	degC
Liquid fraction	0	fraction
Velocity after atmospheric expansion (input)	<b>300</b>	m/s
Rainout fraction time averaged	<b>0</b>	fraction

## OUTPUT DATA

Flame emissive power	124,75	kW/m2
Fraction of emissivity	0,149653	fraction
Jet velocity	300	m/s
Flame length	15,5429	m
Frustum length	12,5882	m
Frustum base width	0,777961	m
Frustum tip width	2,85805	m
Frustum lift-off distance	3,04671	m
Flame length in still air	18,9772	m
Hole to flame angle	15,7129	deg
Expanded diameter	0,0609752	m
Plane angular rotation	0	deg

## 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	Lethality [%]	View factor	Probability	Dose [(W/m2)^ProbitN.s]	Ellipse half-	Ellipse half-	Ellipse centre downw	Effect downwind	Ellipse area
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Downwind distance [m]	Maximum incident radiation [kW/m <sup>2</sup> ]	Observer type radiation modelling flag	Observer direction	Height of interest [m]	Length [m]	Width [m]	Incident radiation [kW/m <sup>2</sup> ]	Distance [m]	Area [m <sup>2</sup> ]
3	0	0,0240481	-	1,38321	865.119	6,69811	8,22183	10,8939	17,59201
5	0,000174704	0,0400802	0,360367	1.709.491	Not reached	Not reached		n/a	n/a
7	0,02405	0,0561123	1,50883	2.677.313	Not reached	Not reached		n/a	n/a
12,5	6,52536	0,100201	3,48789	5.800.162	Not reached	Not reached		n/a	n/a
37,5	98,7381	0,300602	7,23773	25.094.924	Not reached	Not reached		n/a	n/a

## Radiation v Distance Results

### INPUT DATA

Maximum distance	30,3289	m
Observer type radiation modelling flag	Planar	
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	1,96871	0
0,618957	2,10686	0
1,23791	2,24647	0
1,85687	2,38576	0
2,47583	2,52284	0
3,09479	2,65579	0
3,71374	2,78276	0

4,3327	2,90208	0
4,95166	3,01529	0
5,57062	3,17434	0
6,18957	3,35681	0
6,80853	3,5261	0
7,42749	3,68278	0
8,04645	3,81988	1,36372E-08
8,6654	3,93517	2,42633E-08
9,28436	4,02682	3,76442E-08
9,90332	4,09342	5,12905E-08
10,5223	4,13404	6,16964E-08
11,1412	4,1482	6,5755E-08
11,7602	4,13591	6,22204E-08
12,3791	4,0977	5,23066E-08
12,9981	4,03459	3,90453E-08
13,6171	3,94985	2,60601E-08
14,236	3,84196	1,52603E-08
14,855	3,71486	7,87362E-09
15,4739	3,57043	0
16,0929	3,41419	0
16,7118	3,24784	0
17,3308	3,0745	0
17,9498	2,89719	0
18,5687	2,75298	0
19,1877	2,6154	0
19,8066	2,51347	0
20,4256	2,41028	0
21,0446	2,30683	0
21,6635	2,20401	0
22,2825	2,10262	0
22,9014	2,00329	0
23,5204	1,90535	0
24,1393	1,81188	0
24,7583	1,72175	0
25,3773	1,6352	0



25,9962	1,55238	0
26,6152	1,47335	0
27,2341	1,39814	0
27,8531	1,32672	0
28,472	1,25903	0
29,091	1,19497	0
29,71	1,13442	0
30,3289	1,07724	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

## Jet fire model results

### INPUT DATA

#### Scenario

Elevation	12,5	m
Release angle from horizontal	0	deg

### Jet Fire Parameters

Jet fire method	Cone model	
Crosswind angle	0	deg
Rate modification factor	3	

### Calculated inputs

Mass flow rate	1,32626	kg/s
Temperature after atmospheric expansion	-133,705	degC
Liquid fraction	0	fraction
Velocity after atmospheric expansion (input)	300	m/s
Rainout fraction time averaged	0	fraction

### OUTPUT DATA

Flame emissive power	115,27	kW/m2
Fraction of emissivity	0,139973	fraction
Jet velocity	300	m/s
Flame length	17,3055	m
Frustum length	14,2876	m

Frustum base width	0,777961	m
Frustum tip width	2,53439	m
Frustum lift-off distance	3,04671	m
Flame length in still air	18,9772	m
Hole to flame angle	8,69391	deg
Expanded diameter	0,0609752	m
Plane angular rotation	0	deg

## 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>ProbitN.s</sup> ]	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	0,0260259	-1,38321	865.119	6,86711	8,28398	11,6058	18,4729	178,716
5	0,000174704	0,0433764	0,360367	1.709.491	Not reached	Not reached		n/a	n/a
7	0,02405	0,060727	1,50883	2.677.313	Not reached	Not reached		n/a	n/a
12,5	6,52536	0,108441	3,48789	5.800.162	Not reached	Not reached		n/a	n/a

37,5	98,7381	0,3253	7,237	25.094.924	Not reach ed	Not reach ed	n/a	n/a
		23	73					

## Radiation v Distance Results

### INPUT DATA

Maximum distance	34,3404	m
Observer type radiation modelling flag	Planar	
Observer direction	Variable	
Height of interest	1,7	m

### OUTPUT DATA

Downwind distance [m]	Maximum incident radiation [kW/m2]	Lethality level [fraction]
0	1,8703	0
0,700824	2,01178	0
1,40165	2,15442	0
2,10247	2,29596	0
2,80329	2,43406	0
3,50412	2,56646	0
4,20494	2,71322	0
4,90577	2,93428	0
5,60659	3,16147	0
6,30741	3,37133	0
7,00824	3,55913	0
7,70906	3,73629	8,82453E-09
8,40988	3,89225	1,96406E-08
9,11071	4,02415	3,71754E-08
9,81153	4,1295	6,04434E-08
10,5124	4,2061	8,50178E-08
11,2132	4,25218	1,03884E-07
11,914	4,26637	1,1042E-07
12,6148	4,24785	1,0196E-07
13,3156	4,20049	8,29478E-08



14,0165	4,11815	5,74168E-08
14,7173	3,99816	3,28708E-08
15,4181	3,85513	1,63108E-08
16,1189	3,6869	0
16,8198	3,49756	0
17,5206	3,29184	0
18,2214	3,07481	0
18,9222	2,89652	0
19,6231	2,76162	0
20,3239	2,63627	0
21,0247	2,50716	0
21,7255	2,3763	0
22,4264	2,24554	0
23,1272	2,11651	0
23,828	1,98812	0
24,5288	1,8669	0
25,2297	1,75055	0
25,9305	1,63964	0
26,6313	1,53454	0
27,3321	1,43542	0
28,0329	1,34234	0
28,7338	1,25521	0
29,4346	1,17389	0
30,1354	1,09815	0
30,8362	1,02774	0
31,5371	0,962355	0
32,2379	0,901702	0
32,9387	0,845472	0
33,6395	0,793361	0
34,3404	0,745074	0

