

	PROGETTISTA  Tecnologia Ricerca Rischi	COMMESSA NQ/R21300/L01	UNITA' -
	LOCALITA' PORTO TORRES (SS) (SARDEGNA)	001-CI-E-60001	
	PROGETTO / IMPIANTO FSRU Porto Torres e Opere Connesse	Allegato C.4.2_1	Rev. 00

Rif. TRR: 72556

FSRU di PORTO TORRES e OPERE CONNESSE

Rapporto Preliminare di Sicurezza ai sensi del D.Lgs. 105/15

ALLEGATO C.4.2_1

ELABORATI DI CALCOLO 5R

0	Emissione per permessi	A.VISIGOTI	V.ROMANO	G.ROMANO	AGOSTO 2024
Rev.	Descrizione	Elaborato	Verificato	Approvato	Data

Input Report

Workspace: 1RiempFSRU-5R

Riempimento FSRU-ME4

Study

1RiempFSRU-5R

Tab	Group	Field	Value
Context of calculations	Selection of context	Weathers to use for this study	Weather folder
		Parameters to use for this study	Parameter set ME4
		Obstructions to use for this study	Multi-Energy obstruction set
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Default terrain
		Type of pool substrate and bunds	No bund
Toxic parameters	Indoor toxic calculations	Specify the downwind building type	Unselected
		Building type (downwind building type)	Buildings\Building type

5R Linee mandata pompe LNG Feed e collettore GNL

Pressure vessel

1RiempFSRU-5R\RIEMPIMENTO FSRU-ME4

Tab	Group	Field	Value	Units
Material	Material	Material	GAS NATURALE	
		Specify volume inventory?	Yes	
		Mass inventory	9412,32	kg
		Volume inventory	20,7	m3
		Material to track	GAS NATURALE	
	Phase	Specified condition	Pressure/temperature	
		Temperature	-160	degC
		Pressure (gauge)	14,5	bar
		Fluid state	Liquid	
		Liquid mole fraction	1	fraction
Scenario	Pipe dimensions	Pipe length		m
	Release location	Elevation	17	m
		Tank head	0	m
	Direction	Outdoor release direction	Horizontal	
		Outdoor release angle	0	deg
Discharge parameters	Model settings	Atmospheric expansion method	DNV recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - instantaneous	Use flashing correlation	
		Droplet break-up mechanism - continuous	Do not force correlation	
Short pipe	Pipe	Pipe roughness	0,045	mm

	characteristics			
	Frequencies	Frequency of bends in pipe	0	/m
		Frequency of couplings in pipe	0	/m
		Frequency of junctions in pipe	0	/m
	Frequencies of valves	Frequency of excess flow valves	0	/m
		Frequency of non-return valves	0	/m
		Frequency of shut-off valves	0	/m
	Velocity head losses	Excess flow valve velocity head losses	0	
		Non-return valve velocity head losses	0	
		Shut-off valve velocity head losses	0	
Time varying releases	Modelling of time-varying leaks and line ruptures	Vacuum relief valve	Operating	
		Vacuum relief valve set point	0	bar
	Inventory data for time-varying releases	Tank volume	20,7	m ³
		Tank vapour volume	0	m ³
		Tank liquid volume	20,7	m ³
		Tank liquid level	0	m
		Maximum vapour release height	0	m

		Minimum mass inventory	0,1	kg
		Maximum mass inventory	1E+09	kg
	Safety system modelling for time-varying releases	Safety system modelling (isolation and blowdown)	No	
Dispersion	User-defined dispersion scope (N.B Based on the material to track)	Concentrations of interest		ppm
		Distances of interest		m
		Averaging time for concentrations and distances of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Default terrain	
		Type of pool substrate and bunds	No bund	
	Building definition	Release building		
		In-building release?	Outdoor	
		Building wake effect	None	
		Wind or release angle from North	0	deg
		Handling of	Trapped	

		droplets		
		Indoor mass modification factor	3	
Explosion parameters	Explosion method (Consequence calculations only)	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	3	
		Intensity levels	4; 12,5; 37,5	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	
		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Selection for jet fire method	Automatic selection / DNV recommended	

	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	3; 5; 7; 12,5; 37,5	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Rate modification factor	3	
		Jet fire maximum exposure duration	20	s
	Cone model data	Horizontal options	Use standard method	
		Correlation	Recommended	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	3; 5; 7; 12,5; 37,5	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	



		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s
Geometry	Geometry	East	0	m
		North	0	m

50mm

Leak

1RiempFSRU-5R\RIEMPIMENTO FSRU-ME4\5R Linee mandata pompe LNG Feed e collettore GNL

Tab	Group	Field	Value	Units
Scenario	Hole	Orifice diameter	50	mm
		Use specified discharge coefficient?	Yes	
		Discharge coefficient	0,62	fraction
	Release location	Elevation	17	m
		Tank head	0	m
	Direction	Outdoor release direction	Down - impinging on the ground	
		Outdoor release angle	0	deg
Material	Material	Material characteristics	Flammable only	
		Material to track	GAS NATURALE	
		Type of risk effects to model	Flammable only	
	Phase	Phase to be released	Liquid	
Discharge parameters	Model settings	Atmospheric expansion method	DNV recommended	
		Phase change upstream of orifice?	Disallow liquid phase change only (metastable liquid)	
	Droplet break-up mechanism	Droplet break-up mechanism - continuous	Do not force correlation	
Dispersion	User-defined dispersion scope (N.B Based on the material to track)	Concentrations of interest		ppm
		Distances of interest		m

		Averaging time for concentrations and distances of interest		
		Specify user-defined averaging time	No	
		User defined averaging time		s
Bund, building and terrain	Terrain and bund definition	Type of terrain for dispersion	Default terrain	
		Type of pool substrate and bunds	No bund	
Explosion parameters	Explosion method	Explosion method	Multi-Energy: Uniform confined	
	Ignition	Supply late ignition location	No ignition location	
		Location of late ignition		m
	Vapour liquid method	Use explosion mass modification factor	Yes	
		Explosion mass modification factor	3	
Fireball	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	3	
		Intensity levels	4; 12,5; 37,5	kW/m ²
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Mass modification factor	3	
		Fireball maximum exposure duration	20	s
	Calculation method	Fireball model	Martinsen time varying	

		TNO model flame temperature	1726,85	degC
Jet fire	Jet fire method	Selection for jet fire method	Automatic selection / DNV recommended	
	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input radiation levels	5	
		Intensity levels	3; 5; 7; 12,5; 37,5	kW/m2
		Probit levels	2,73; 3,72; 7,5	
	Parameters	Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
		Rate modification factor	3	
	Cone model data	Jet fire maximum exposure duration	20	s
		Correlation	Recommended	
		Horizontal options	Use standard method	
		Flame-shape adjustment if grounded	Yes	
	Surface emissive power	Calculation method for surface emissive power	Calculate SEP	
		Flame emissive power		kW/m2
		Emissivity fraction		fraction
Pool fire	Result types to calculate	Calculate probit	No	
		Calculate dose	No	
		Calculate lethality	No	
	Radiation levels	Number of input	5	

		radiation levels		
		Intensity levels	3; 5; 7; 12,5; 37,5	kW/m2
		Probit levels	2,73; 3,72; 7,5	
		Dose levels	1,27E+06; 5,8E+06; 2,51E+07	
		Lethality levels	0,01; 0,1; 0,99	fraction
	Parameters	Radiative fraction for general fires	0,4	fraction
		Pool fire maximum exposure duration	20	s



Discharge Report

Workspace: 1RiempFSRU-5R

Study: Riempimento FSRU-ME4

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

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

Material	GAS NATURALE	
East	0	m
North	0	m

Scenario (Leak) : 50mm

1RiempFSRU-5R\Riempimento FSRU-ME4\5R Linee mandata pompe LNG Feed e collettore GNL\50mm

Weather: Category 2/F

INPUT DATA

Inventory data

Mass in vessel	9412,32	kg
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Stagnation Data (upstream end for long pipe)

Initial pressure (gauge)	14,5	bar
Initial temperature	-160	degC
Fluid state	Non-saturated liquid	

Scenario data

Phase to be released	Liquid	
Tank head	0	m
Hole diameter	50	mm
Discharge coefficient	0,62	fraction

OUTPUT DATA

Mass flow rate	44,2031	kg/s
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Release duration 212,933 s

Orifice or pipe exit data (before atmospheric expansion)

Pressure	1,01325	bar
Temperature	-160,346	degC
Liquid mass fraction	1	fraction
Velocity at vena contracta (at exit for pipe releases)	79,7648	m/s
Discharge coefficient	0,62	

Final Data (after atmospheric expansion)

Temperature	-160,347	degC
Liquid mass fraction	1	fraction
Droplet diameter	24,762	um
Expanded diameter	0,03937	m
Velocity	79,7648	m/s



Weather: Category 5/D

INPUT DATA

Inventory data

Mass in vessel	9412,32	kg
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Stagnation Data (upstream end for long pipe)

Initial pressure (gauge)	14,5	bar
Initial temperature	-160	degC
Fluid state	Non-saturated liquid	

Scenario data

Phase to be released	Liquid	
Tank head	0	m
Hole diameter	50	mm
Discharge coefficient	0,62	fraction

OUTPUT DATA

Mass flow rate	44,2031	kg/s
Release duration	212,933	s

Orifice or pipe exit data (before atmospheric expansion)

Pressure	1,01325	bar
Temperature	-160,346	degC
Liquid mass fraction	1	fraction
Velocity at vena contracta (at exit for pipe releases)	79,7648	m/s
Discharge coefficient	0,62	

Final Data (after atmospheric expansion)

Temperature	-160,347	degC
Liquid mass fraction	1	fraction
Droplet diameter	24,762	um
Expanded diameter	0,03937	m



Velocity	79,7648	m/s
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Dispersion Report

Workspace: 1RiempFSRU-5R

Study: Riempimento FSRU-ME4

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

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

Material	GAS NATURALE	
East	0	m
North	0	m

Scenario (Leak) : 50mm

1RiempFSRU-5R\Riempimento FSRU-ME4\5R Linee mandata pompe LNG Feed e collettore GNL\50mm

Material to track	GAS NATURALE	
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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
Mixing layer height [m]	100

Observer Release Data and Observer Mass Data

Observer number	Release type	Start time [s]	Start downwind distance [m]	Unit	Masses or mass rates		
					Release	Rainout	Final
1	Continuous	0,22	-0,331072	kg/s	0	0	14,0066



2	Continuous	41,2438	-10,517	kg/s	0	0	33,867
3	Continuous	71,9329	-12,4889	kg/s	0	0	35,6133
4	Continuous	101,19	-13,8721	kg/s	0	0	36,7214
5	Continuous	129,529	-14,9418	kg/s	0	0	37,498
6	Continuous	157,275	-15,8271	kg/s	0	0	36,8576
7	Continuous	184,534	-16,5719	kg/s	0	0	28,3619
8	Continuous	211,476	-17,226	kg/s	0	0	17,5749
9	Continuous	260,472	-17,2561	kg/s	0	0	8,71401
10	Continuous	495,513	-17,2561	kg/s	0	0	0,775674

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
Mixing layer height [m]	800

Observer Release Data and Observer Mass Data

Observer number	Release type	Start time [s]	Start downwind distance [m]	Unit	Masses or mass rates		
					Release	Rainout	Final
1	Continuous	0,22	-0,331007	kg/s	0	0	1,84691
2	Continuous	40,8505	-10,3928	kg/s	0	0	33,4053
3	Continuous	71,2197	-12,2978	kg/s	0	0	35,1052
4	Continuous	100,145	-13,6192	kg/s	0	0	36,5218
5	Continuous	128,159	-14,633	kg/s	0	0	37,4016
6	Continuous	155,58	-15,4654	kg/s	0	0	38,1337
7	Continuous	182,53	-16,1636	kg/s	0	0	38,5998
8	Continuous	209,167	-16,776	kg/s	0	0	32,4706
9	Continuous	252,803	-16,8521	kg/s	0	0	13,5518
10	Continuous	454,783	-16,8521	kg/s	0	0	1,09607





Early Pool Fire Report

Workspace: 1RiempFSRU-5R

Study: Riempimento FSRU-ME4

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

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

Material	GAS NATURALE	
East	0	m
North	0	m

Scenario (Leak) : 50mm

1RiempFSRU-5R\Riempimento FSRU-ME4\5R Linee mandata pompe LNG Feed e collettore GNL\50mm

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	24,1835	m
Downwind distance of pool fire centre	0	m
Pool fire flame length	40,8659	m
Angle between pool fire axis and vertical	28,6257	deg
Flame emissive power	205,178	kW/m ²
Total burn rate	42,8131	kg/s
Radiative fraction	0,346389	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	Probit	Dose [(W/m ²) ^{Probit} N.s]	Ellipse half-length [m]	Ellipse half-width [m]	Ellipse centre downwind distance [m]	Effect downwind distance [m]	Ellipse area [m ²]
3	0	0,0146214	-1,38321	865.119	115,467	118,124	13,7477	129,215	42849,7
5	0,000174704	0,0243691	0,360367	1.709.491	90,415	92,4673	13,5026	103,918	26265,1



7	0,02405	0,0341 167	1,508 83	2.677.313	76,78 9	78,35 93	13,3653	90,1543	1890 3,4
12,5	6,52536	0,0609 227	3,487 89	5.800.162	57,79 51	58,11 69	13,2246	71,0197	1055 2,2
37,5	98,7381	0,1827 68	7,237 73	25.094.924	31,58 97	30,00 89	9,96182	41,5515	2978, 15

Radiation v Distance Results

INPUT DATA

Maximum distance	129,215	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	205,178	1
2,63704	205,178	1
5,27408	205,178	1
7,91111	205,178	1
10,5482	205,178	1
13,1852	205,178	1
15,8222	133,04	1
18,4593	105,609	1
21,0963	88,6786	1
23,7333	77,0161	0,999999
26,3704	68,0189	0,99999
29,0074	60,9218	0,999951
31,6445	55,155	0,999811
34,2815	49,8833	0,99934
36,9185	44,9953	0,99788
39,5556	40,5642	0,993892
42,1926	36,5621	0,984273
44,8296	32,9555	0,963816



47,4667	29,7132	0,925533
50,1037	26,8059	0,862548
52,7408	24,2054	0,771418
55,3778	21,8842	0,655216
58,0148	19,8159	0,524148
60,6519	17,9748	0,392705
63,2889	16,3367	0,274777
65,9259	14,8791	0,179465
68,563	13,5815	0,10956
71,2	12,4251	0,0626837
73,8371	11,3931	0,0337311
76,4741	10,4708	0,017141
79,1111	9,64487	0,00826113
81,7482	8,90391	0,0037925
84,3852	8,23777	0,00166551
87,0222	7,6376	0,000702557
89,6593	7,0957	0,000285766
92,2963	6,60533	0,000112489
94,9334	6,1678	4,37124E-05
97,5704	5,78906	1,74146E-05
100,207	5,44165	6,78976E-06
102,844	5,12246	2,59649E-06
105,482	4,82872	9,75886E-07
108,119	4,55798	3,61164E-07
110,756	4,30804	1,3184E-07
113,393	4,07693	4,75457E-08
116,03	3,86292	1,69637E-08
118,667	3,66444	0
121,304	3,4801	0
123,941	3,30864	0
126,578	3,14893	0
129,215	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

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	24,1835	m
Downwind distance of pool fire centre	0	m
Pool fire flame length	40,8659	m
Angle between pool fire axis and vertical	46,1854	deg
Flame emissive power	205,178	kW/m2
Total burn rate	42,8131	kg/s
Radiative fraction	0,346389	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	Probit	Dose [(W/m ²) ^{Probit} N.s]	Ellipse half-length [m]	Ellipse half-width [m]	Ellipse centre downwind distance [m]	Effect downwind distance [m]	Ellipse area [m ²]
3	0	0,0146 214	- 1,383 21	865.119	109,4 09	115,9 65	20,4049	129,814	3985 9,2
5	0,00017 4704	0,0243 691	0,360 367	1.709.491	86,57 56	91,40 12	20,1815	106,757	2485 9,8
7	0,02405	0,0341 167	1,508 83	2.677.313	74,17 49	77,94 85	19,898	94,073	1816 4,1
12,5	6,52536	0,0609 227	3,487 89	5.800.162	56,68 04	58,74 78	18,9432	75,6236	1046 1
37,5	98,7381	0,1827 68	7,237 73	25.094.924	34,63 23	32,11 87	15,5116	50,1439	3494, 54

Radiation v Distance Results

INPUT DATA

Maximum distance	129,814	m
Angle from wind direction	0	deg
Observer direction	Variable	
Height of interest	1,7	m

OUTPUT DATA

Downwind distance [m]	Maximum incident	Lethality level [fraction]
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	radiation [kW/m2]	
0	205,178	1
2,64926	205,178	1
5,29852	205,178	1
7,94779	205,178	1
10,597	205,178	1
13,2463	205,178	1
15,8956	141,347	1
18,5448	117,889	1
21,1941	102,52	1
23,8434	91,1269	1
26,4926	82,2248	1
29,1419	75,0991	0,999998
31,7911	68,7502	0,999992
34,4404	63,5998	0,999973
37,0897	58,9718	0,999922
39,7389	55,0311	0,999805
42,3882	51,3829	0,999538
45,0375	46,6789	0,998582
47,6867	41,824	0,995476
50,336	37,172	0,986369
52,9852	32,8723	0,963126
55,6345	28,9911	0,912977
58,2838	25,5454	0,823153
60,933	22,5222	0,690589
63,5823	19,8902	0,529236
66,2315	17,6099	0,36607
68,8808	15,8712	0,242873
71,5301	14,4301	0,153391
74,1793	13,1424	0,0899539
76,8286	11,994	0,04915
79,4779	10,9703	0,0251342
82,1271	10,0574	0,0120908
84,7764	9,24237	0,00550052
87,4256	8,51368	0,00237905



90,0749	7,86089	0,000983244
92,7242	7,27486	0,000390175
95,3734	6,74757	0,000149324
98,0227	6,27201	5,53411E-05
100,672	5,8421	1,99357E-05
103,321	5,45253	7,00404E-06
105,97	5,09869	2,40727E-06
108,62	4,77654	8,11627E-07
111,269	4,4826	2,69102E-07
113,918	4,21381	8,79368E-08
116,568	3,96747	2,83783E-08
119,217	3,74127	9,06022E-09
121,866	3,53312	0
124,515	3,34123	0
127,165	3,164	0
129,814	3	0

