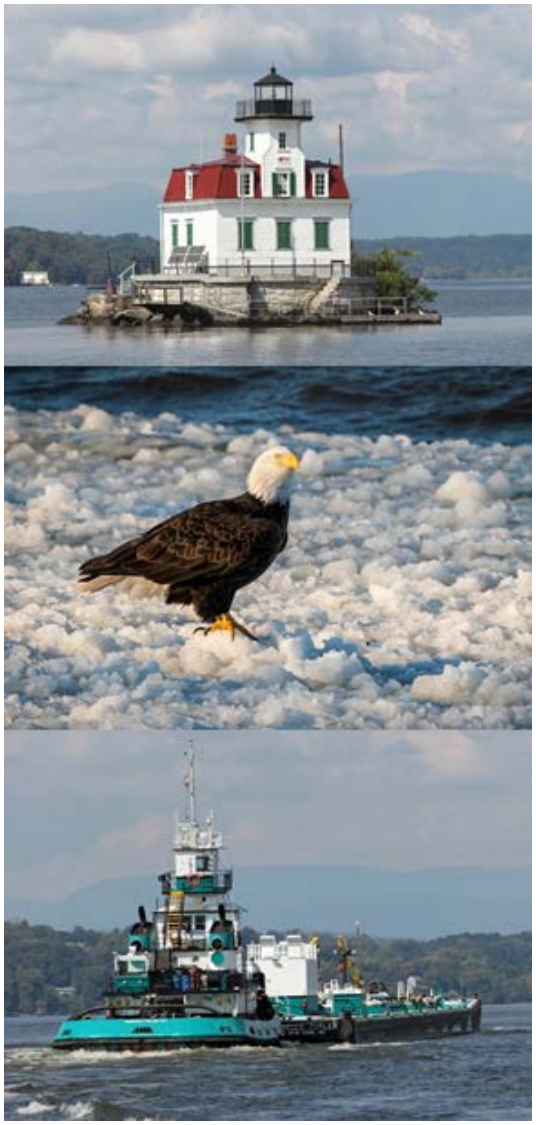

Hudson River Oil Spill Risk Assessment

Volume 5 Appendix: Fire and Explosion Consequence Summary Reports

Prepared for
Scenic Hudson, Inc.
One Civic Center Plaza
Suite 200
Poughkeepsie, NY 12601-3157

Prepared by
Andy Wolford, PhD
Risknology, Inc.
3218 Quiet Lake Drive
Katy, TX 77450-5721

In collaboration with
Dagmar Schmidt Etkin, PhD
Environmental Research Consulting
41 Croft Lane
Cortlandt Manor, NY 10567-1160

May 2018

Cover Photograph Credits
The photographs on the report cover were taken by Dagmar Schmidt Etkin (Esopus Meadows Lighthouse and articulated tank barge) and Steve Kardian (bald eagle) on the Hudson River.

Consequence Summary Report

Workspace: 1091 SHUD 0404

Study: Albany Tanker Loading Accident at Dock

Summary Basis

These tables will only report global values set in the parameters. Values that are modified in the study tree will not be reported.

The report is context sensitive, and filters up to the study level. You willl need to generate multiple summary reports if you have multiple studies in your workspace.

Discharge Results (after atmospheric expansion)

Path	Scenario	Weather	Mass flow rate [kg/s]	Temperature [degC]	Liquid mass fraction in material [fraction]	Droplet diameter [um]	Expanded diameter [m]	Velocity [m/s]	Release duration [s]
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-21	Leak	ALB-2F-27-95	1471.11	21.4863	1	983.129	0.418282	15.1936	3600
		ALB-2D-27-95	1471.11	21.4863	1	983.129	0.418282	15.1936	3600
		ALB-2F--7-34	1471.11	21.4863	1	862.88	0.418282	15.1936	3600

		ALB-2D--7-34	1471.11	21.4863	1	862.88	0.418282	15.1936	3600
		ALB-5F-27-95	1471.11	21.4863	1	983.129	0.418282	15.1936	3600
		ALB-5D-27-95	1471.11	21.4863	1	983.129	0.418282	15.1936	3600
		ALB-5F--7-34	1471.11	21.4863	1	862.88	0.418282	15.1936	3600
		ALB-5D--7-34	1471.11	21.4863	1	862.88	0.418282	15.1936	3600
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-13		ALB-2F-27-95	1274.2	12.7646	1	1023.42	0.387298	15.1973	3600
		ALB-2D-27-95	1274.2	12.7646	1	1023.42	0.387298	15.1973	3600
		ALB-2F--7-34	1274.2	12.7646	1	898.245	0.387298	15.1973	3600
		ALB-2D--7-34	1274.2	12.7646	1	898.245	0.387298	15.1973	3600
		ALB-5F-27-95	1274.2	12.7646	1	1023.42	0.387298	15.1973	3600
		ALB-5D-27-95	1274.2	12.7646	1	1023.42	0.387298	15.1973	3600

		ALB-5F--7-34	1274.2	12.7646	1	898.245	0.387298	15.1973	3600	
		ALB-5D--7-34	1274.2	12.7646	1	898.245	0.387298	15.1973	3600	

Dispersion Results

Input dispersion parameters

Core averaging time	18.75	s
Flammable averaging time	18.75	s
Height of interest	0	m

Distance downwind to defined concentrations

The reported concentration of interest is defined at the scenario

Path	Scenario	Weather	Material	Material to track	Concentration of interest [ppm]	Averaging time selected	Distance downwind to concentration of interest [m]
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-21	Leak	ALB-2F-27-95	**Fake Bakken**	Fake Bakken	55000	Flammable	621.433
		ALB-2D-27-95	**Fake Bakken**	Fake Bakken	55000	Flammable	510.297
		ALB-2F--7-34	**Fake Bakken**	Fake Bakken	55000	Flammable	288.8
		ALB-2D--7-34	**Fake Bakken**	Fake Bakken	55000	Flammable	252.123
		ALB-5F-27-95	**Fake Bakken**	Fake Bakken	55000	Flammable	203.286
		ALB-5D-	**Fake**	Fake	55000	Flammable	133.764

		27-95	**Bakken**	Bakken			
		ALB-5F--7-34	**Fake Bakken**	Fake Bakken	55000	Flammable	92.3141
		ALB-5D--7-34	**Fake Bakken**	Fake Bakken	55000	Flammable	77.5832
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-13		ALB-2F-27-95	**Fake Bakken**	Fake Bakken	55000	Flammable	540.871
		ALB-2D-27-95	**Fake Bakken**	Fake Bakken	55000	Flammable	450.273
		ALB-2F--7-34	**Fake Bakken**	Fake Bakken	55000	Flammable	256.246
		ALB-2D--7-34	**Fake Bakken**	Fake Bakken	55000	Flammable	200.659
		ALB-5F-27-95	**Fake Bakken**	Fake Bakken	55000	Flammable	172.187
		ALB-5D-27-95	**Fake Bakken**	Fake Bakken	55000	Flammable	77.3813
		ALB-5F--7-34	**Fake Bakken**	Fake Bakken	55000	Flammable	74.4759
		ALB-5D--7-34	**Fake Bakken**	Fake Bakken	55000	Flammable	65.4851

Path	Scenario	Weather	Distance to UFL [m]	Distance to LFL [m]	Distance to LFL fraction [m]
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-21	Leak	ALB-2F-27-95	595.222	1578.48	1981.16
		ALB-2D-27-95	487.817	1201.63	1496.19
		ALB-2F--7-34	273.241	919.075	1174.98
		ALB-2D--7-34	226.421	785.486	983.495
		ALB-5F-27-95	191.238	638.439	914.971
		ALB-5D-27-95	111.126	592.144	871.861
		ALB-5F--7-34	92.5413	515.37	744.996
		ALB-5D--7-34	76.9059	453.667	659.629
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-13		ALB-2F-27-95	515.739	1434.32	1804.44
		ALB-2D-27-95	428.924	1109.49	1404.65
		ALB-2F--7-34	241.397	851.205	1091.36
		ALB-2D--7-34	181.887	715.716	899.2
		ALB-5F-27-95	159.912	596.222	861.426
		ALB-5D-27-95	76.1572	583.091	840.263
		ALB-5F--7-34	76.8443	483.518	707.087
		ALB-5D--7-34	63.7963	422.665	622.751

Jet Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Flame length [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-21	Leak	ALB-2F-27-95	179.805	442.32	323.225	248.323
		ALB-2D-27-95	181.082	445.304	325.436	250.037
		ALB-2F--7-34	183.25	502.359	356.515	268.652
		ALB-2D--7-34	184.561	505.855	359.014	270.545
		ALB-5F-27-95	142.896	341.901	251.648	195.171
		ALB-5D-27-95	143.993	344.405	253.515	196.631
		ALB-5F--7-34	145.138	383.998	274.512	209.075
		ALB-5D--7-34	146.233	386.821	276.544	210.631
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-13		ALB-2F-27-95	151.247	374.208	272.945	209.434

		ALB-2D-27-95	152.754	378.21	275.852	211.659
		ALB-2F--7-34	155.37	427.815	303.269	228.338
		ALB-2D--7-34	156.871	431.839	306.141	230.512
		ALB-5F-27-95	122.016	294.035	216.003	167.311
		ALB-5D-27-95	123.337	297.075	218.264	169.077
		ALB-5F--7-34	124.622	330.984	236.37	179.894
		ALB-5D--7-34	125.926	334.36	238.798	181.75

Early Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-21	Leak	ALB-2F-27-95	108.6	135.835	65.5363	n/a
		ALB-2D-27-95	108.468	135.884	65.6425	n/a
		ALB-2F--7-34	120.334	169.016	71.6664	n/a
		ALB-2D--7-34	120.18	169.034	71.777	n/a
		ALB-5F-27-95	107.993	168.407	65.804	n/a
		ALB-5D-27-95	107.838	168.444	65.9348	n/a
		ALB-5F--7-34	119.704	197.049	76.9844	n/a
		ALB-5D--7-34	119.529	197.079	77.1372	n/a
1091 SHUD 0404\Albany Tanker		ALB-2F-27-95	102.757	130.296	62.476	n/a

Loading Accident at Dock\Pressure vessel ALB-13						
		ALB-2D-27-95	102.629	130.342	62.5786	n/a
		ALB-2F--7-34	113.842	161.828	68.3564	n/a
		ALB-2D--7-34	113.695	161.851	68.4688	n/a
		ALB-5F-27-95	102.126	161.703	62.9113	n/a
		ALB-5D-27-95	101.969	161.703	63.007	n/a
		ALB-5F--7-34	113.188	188.766	73.527	n/a
		ALB-5D--7-34	113.01	188.763	73.6523	n/a

Late Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-21	Leak	ALB-2F-27-95	359.001	331.45	183.039	n/a
		ALB-2D-27-95	359.086	331.515	183.082	n/a
		ALB-2F--7-34	359.017	395.889	182.384	n/a
		ALB-2D--7-34	359.028	395.9	182.39	n/a
		ALB-5F-27-95	359.027	400.483	183.465	n/a
		ALB-5D-27-95	358.998	400.458	183.45	n/a
		ALB-5F--7-34	359.004	454.662	186.574	n/a
		ALB-5D--7-34	359.001	454.659	186.572	n/a
1091 SHUD 0404\Albany Tanker		ALB-2F-27-95	359.001	331.45	183.039	n/a

Loading Accident at Dock\Pressure vessel ALB-13						
		ALB-2D-27-95	359.006	331.454	183.041	n/a
		ALB-2F--7-34	359.023	395.895	182.387	n/a
		ALB-2D--7-34	359.009	395.882	182.38	n/a
		ALB-5F-27-95	359.108	400.553	183.506	n/a
		ALB-5D-27-95	359.034	400.489	183.468	n/a
		ALB-5F--7-34	359.011	454.669	186.578	n/a
		ALB-5D--7-34	359.07	454.73	186.603	n/a

Flash Fire Results

Distance downwind to defined concentrations

The reported LFL and LFL fraction are defined in the respective material property

Path	Scenario	Weather	Distance downwind to LFL [m]	Distance downwind to LFL Fraction [m]
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-21	Leak	ALB-2F-27-95	1578.48	1981.16
		ALB-2D-27-95	1201.63	1496.19
		ALB-2F--7-34	919.075	1174.98
		ALB-2D--7-34	785.486	983.495
		ALB-5F-27-95	638.439	914.971
		ALB-5D-27-95	592.144	871.861
		ALB-5F--7-34	515.37	744.996
		ALB-5D--7-34	453.667	659.629
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-13		ALB-2F-27-95	1434.32	1804.44
		ALB-2D-27-95	1109.49	1404.65
		ALB-2F--7-34	851.205	1091.36
		ALB-2D--7-34	715.716	899.2
		ALB-5F-27-95	596.222	861.426
		ALB-5D-27-95	583.091	840.263
		ALB-5F--7-34	483.518	707.087

		ALB-5D--7-34	422.665	622.751

Maximum distance to LFL fraction at any height

Path	Scenario	Weather	Max flash fire distance [m]	Height of the max flash fire distance [m]	Time [s]
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-21	Leak	ALB-2F-27-95	1936.89	0	4382.27
		ALB-2D-27-95	1488.51	0	3882.4
		ALB-2F--7-34	1129.66	0	4137.63
		ALB-2D--7-34	957.97	0	3924.91
		ALB-5F-27-95	911.954	0	878.988
		ALB-5D-27-95	807.805	0	871.87
		ALB-5F--7-34	740.522	0	3304.33
		ALB-5D--7-34	659.737	0	2047.9
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-13		ALB-2F-27-95	1792.41	0	2925
		ALB-2D-27-95	1407.94	0	2475
		ALB-2F--7-34	1068.14	0	4102.57
		ALB-2D--7-34	886.747	0	3768.48
		ALB-5F-27-95	850.246	0	876.801

		ALB-5D-27-95	795.765	0	869.524
		ALB-5F--7-34	704.841	0	3296.28
		ALB-5D--7-34	621.605	0	2044.19

Explosion Results

Explosion scenarios for worst-case maximum downwind distance to defined overpressures.

The reported overpressures are defined in the explosion parameters

Path	Scenario	Weather	Overpressure level [bar]	Maximum distance [m]	Diameter [m]
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-21	Leak	ALB-2F-27-95	0.02068 0.1379 0.2068	5912.41 2663.73 2467.61	8064.81 1567.45 1175.21
		ALB-2D-27-95	0.02068 0.1379 0.2068	4905.17 2137.65 1970.58	6870.33 1335.3 1001.15
		ALB-2F--7-34	0.02068 0.1379 0.2068	4087.4 1666.21 1522.02	6014.8 1152.43 864.047
		ALB-2D--7-34	0.02068 0.1379 0.2068	3449.54 1419.69 1297.15	5039.08 979.379 734.301
		ALB-5F-27-95	0.02068 0.1379 0.2068	3518.11 1416.9 1290.06	5216.22 1013.81 760.115
		ALB-5D-27-95	0.02068 0.1379 0.2068	2915.95 1211.25 1108.34	4231.89 822.497 616.677
		ALB-5F--7-34	0.02068 0.1379 0.2068	2891.28 1158.12 1053.49	4302.56 836.232 626.975

		ALB-5D--7-34	0.02068 0.1379 0.2068	2402.48 990.606 905.373	3504.96 681.212 510.747
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-13		ALB-2F-27-95	0.02068 0.1379 0.2068	5758.84 2561.37 2368.34	7937.69 1542.74 1156.69
		ALB-2D-27-95	0.02068 0.1379 0.2068	4726.15 2046.46 1884.69	6652.29 1292.92 969.381
		ALB-2F--7-34	0.02068 0.1379 0.2068	3918.96 1567.32 1425.36	5837.93 1134.64 850.71
		ALB-2D--7-34	0.02068 0.1379 0.2068	3285.38 1331.39 1213.43	4850.76 942.777 706.858
		ALB-5F-27-95	0.02068 0.1379 0.2068	3306.53 1327.44 1207.97	4913.07 954.888 715.939
		ALB-5D-27-95	0.02068 0.1379 0.2068	2937.23 1207.33 1102.9	4294.45 834.656 625.793
		ALB-5F--7-34	0.02068 0.1379 0.2068	2726.37 1093.84 995.285	4052.74 787.677 590.57
		ALB-5D--7-34	0.02068 0.1379	2265.09 939.734	3290.17 639.468

		0.2068	859.724	479.448	

Supplementary data for worst-case explosion scenarios

Path	Scenario	Weather	Overpressure level [bar]	Total flammable mass [kg]	Explosion flammable mass [kg]	Ignition time [s]	Ignition source [m]	Cloud centre [m]	Explosion centre [m]
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-21	Leak	ALB-2F-27-95	0.02068 0.1379 0.2068	815560 815560 815560	n/a n/a n/a	3164.61 3164.61 3164.61	1880 1880 1880	688.063 688.063 688.063	1880 1880 1880
		ALB-2D-27-95	0.02068 0.1379 0.2068	504204 504204 504204	n/a n/a n/a	2092.42 2092.42 2092.42	1470 1470 1470	496.017 496.017 496.017	1470 1470 1470
		ALB-2F--7-34	0.02068 0.1379 0.2068	338327 324128 324128	n/a n/a n/a	1967.73 3504.24 3504.24	1080 1090 1090	366.57 380.417 380.417	1080 1090 1090
		ALB-2D--7-34	0.02068 0.1379 0.2068	198942 198942 198942	n/a n/a n/a	3393.88 3393.88 3393.88	930 930 930	314.528 314.528 314.528	930 930 930
		ALB-5F-27-95	0.02068 0.1379 0.2068	220669 220669 220669	n/a n/a n/a	875.305 875.305 875.305	910 910 910	272.072 272.072 272.072	910 910 910
		ALB-5D-27-95	0.02068 0.1379	117836 117836	n/a n/a	847.958 847.958	800 800	250.484 250.484	800 800

			0.2068	117836	n/a	847.958	800	250.484	800
		ALB-5F--7-34	0.02068 0.1379 0.2068	123838 123838 123838	n/a n/a n/a	3217.28 3217.28 3217.28	740 740 740	223.623 223.623 223.623	740 740 740
		ALB-5D--7-34	0.02068 0.1379 0.2068	66945.5 66945.5 66945.5	n/a n/a n/a	852.596 852.596 852.596	650 650 650	215.131 215.131 215.131	650 650 650
1091 SHUD 0404\Albany Tanker Loading Accident at Dock\Pressure vessel ALB-13		ALB-2F-27-95	0.02068 0.1379 0.2068	777598 777598 777598	n/a n/a n/a	2783.85 2783.85 2783.85	1790 1790 1790	652.028 652.028 652.028	1790 1790 1790
		ALB-2D-27-95	0.02068 0.1379 0.2068	457707 457707 457707	n/a n/a n/a	2004.92 2004.92 2004.92	1400 1400 1400	458.419 458.419 458.419	1400 1400 1400
		ALB-2F--7-34	0.02068 0.1379 0.2068	309349 309349 309349	n/a n/a n/a	2044.32 2044.32 2044.32	1000 1000 1000	320.219 320.219 320.219	1000 1000 1000
		ALB-2D--7-34	0.02068 0.1379 0.2068	177461 177461 177461	n/a n/a n/a	3260.87 3260.87 3260.87	860 860 860	283.727 283.727 283.727	860 860 860
		ALB-5F-27-95	0.02068 0.1379 0.2068	184388 184388 184388	n/a n/a n/a	876.298 876.298 876.298	850 850 850	257.147 257.147 257.147	850 850 850
		ALB-5D-27-95	0.02068 0.1379	123139 123139	n/a n/a	853.4 853.4	790 790	229.473 229.473	790 790

			0.2068	123139	n/a	853.4	790	229.473	790
		ALB-5F--7-34	0.02068	103495	n/a	1639.75	700	213.568	700
			0.1379	103495	n/a	1639.75	700	213.568	700
			0.2068	103495	n/a	1639.75	700	213.568	700
		ALB-5D--7-34	0.02068	55377.1	n/a	1910.68	620	201.735	620
			0.1379	55377.1	n/a	1910.68	620	201.735	620
			0.2068	55377.1	n/a	1910.68	620	201.735	620

Consequence Summary Report

Workspace: 1091 SHUD 0404

Study: ACP off Roundoff Tank Barge Spill

Summary Basis

These tables will only report global values set in the parameters. Values that are modified in the study tree will not be reported.

The report is context sensitive, and filters up to the study level. You willl need to generate multiple summary reports if you have multiple studies in your workspace.

Discharge Results (after atmospheric expansion)

Path	Scenario	Weather	Mass flow rate [kg/s]	Temperature [degC]	Liquid mass fraction in material [fraction]	Droplet diameter [um]	Expanded diameter [m]	Velocity [m/s]	Release duration [s]
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-21	Leak	ACP-2F-26-97	719.93	21.0946	1	2461.06	0.367933	9.60529	3600
		ACP-2D-26-97	719.93	21.0946	1	2461.06	0.367933	9.60529	3600
		ACP-2F--7-39	719.93	21.0946	1	2167.25	0.367933	9.60529	3600
		ACP-2D--	719.93	21.0946	1	2167.25	0.367933	9.60529	3600

		7-39							
		ACP-6F-26-97	719.93	21.0946	1	2461.06	0.367933	9.60529	3600
		ACP-6D-26-97	719.93	21.0946	1	2461.06	0.367933	9.60529	3600
		ACP-6F--7-39	719.93	21.0946	1	2167.25	0.367933	9.60529	3600
		ACP-6D--7-39	719.93	21.0946	1	2167.25	0.367933	9.60529	3600
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-4		ACP-2F-26-97	732.674	3.49507	1	2679.92	0.367933	9.58367	3600
		ACP-2D-26-97	732.674	3.49507	1	2679.92	0.367933	9.58367	3600
		ACP-2F--7-39	732.674	3.49507	1	2359.98	0.367933	9.58367	3600
		ACP-2D--7-39	732.674	3.49507	1	2359.98	0.367933	9.58367	3600
		ACP-6F-26-97	732.674	3.49507	1	2679.92	0.367933	9.58367	3600
		ACP-6D-26-97	732.674	3.49507	1	2679.92	0.367933	9.58367	3600
		ACP-6F--7-39	732.674	3.49507	1	2359.98	0.367933	9.58367	3600

		ACP-6D--7-39	732.674	3.49507	1	2359.98	0.367933	9.58367	3600

Dispersion Results

Input dispersion parameters

Core averaging time	18.75	s
Flammable averaging time	18.75	s
Height of interest	0	m

Distance downwind to defined concentrations

The reported concentration of interest is defined at the scenario

Path	Scenario	Weather	Material	Material to track	Concentration of interest [ppm]	Averaging time selected	Distance downwind to concentration of interest [m]
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-21	Leak	ACP-2F-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	760.655
		ACP-2D-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	598.376
		ACP-2F--7-39	**Fake Bakken**	Fake Bakken	55000	Flammable	673.36
		ACP-2D--7-39	**Fake Bakken**	Fake Bakken	55000	Flammable	557.944
		ACP-6F-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	260.658
		ACP-6D-	**Fake**	Fake	55000	Flammable	208.1

		26-97	**Bakken**	Bakken			
		ACP-6F--7-39	**Fake Bakken**	Fake Bakken	55000	Flammable	248.048
		ACP-6D--7-39	**Fake Bakken**	Fake Bakken	55000	Flammable	85.4546
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-4		ACP-2F-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	767.6
		ACP-2D-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	633.4
		ACP-2F--7-39	**Fake Bakken**	Fake Bakken	55000	Flammable	666.431
		ACP-2D--7-39	**Fake Bakken**	Fake Bakken	55000	Flammable	568.73
		ACP-6F-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	254.214
		ACP-6D-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	203.348
		ACP-6F--7-39	**Fake Bakken**	Fake Bakken	55000	Flammable	240.818
		ACP-6D--7-39	**Fake Bakken**	Fake Bakken	55000	Flammable	61.4481

Path	Scenario	Weather	Distance to UFL [m]	Distance to LFL [m]	Distance to LFL fraction [m]
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-21	Leak	ACP-2F-26-97	717.559	2240.32	2820.1
		ACP-2D-26-97	532.923	1817.07	2299.94
		ACP-2F--7-39	634.219	2125.72	2679.16
		ACP-2D--7-39	510.141	1800.9	2331.32
		ACP-6F-26-97	250.42	664.701	899.834
		ACP-6D-26-97	193.318	695.574	964.683
		ACP-6F--7-39	235.33	701.183	955.328
		ACP-6D--7-39	86.4881	698.885	996.223
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-4		ACP-2F-26-97	727.252	2192.84	2754.87
		ACP-2D-26-97	566.002	1801.9	2279.85
		ACP-2F--7-39	629.57	2088.28	2638.53
		ACP-2D--7-39	522.862	1809.7	2336.49
		ACP-6F-26-97	244.268	651.09	884.832
		ACP-6D-26-97	188.621	694.113	979.282
		ACP-6F--7-39	227.771	695.439	948.871
		ACP-6D--7-39	63.0975	689.738	1005.67

Jet Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Flame length [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-21	Leak	ACP-2F-26-97	120.447	286.194	210.004	161.926
		ACP-2D-26-97	121.316	288.42	211.629	163.181
		ACP-2F--7-39	123.821	323.104	231.279	175.433
		ACP-2D--7-39	124.629	325.445	232.929	176.675
		ACP-6F-26-97	96.318	225.066	166.679	130.415
		ACP-6D-26-97	97.2864	227.236	168.305	131.697
		ACP-6F--7-39	98.538	251.027	180.942	139.367
		ACP-6D--7-39	99.477	253.362	182.636	140.678
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-4		ACP-2F-26-97	85.2596	197.115	144.965	111.882

		ACP-2D-26-97	86.5293	200.289	147.284	113.667
		ACP-2F--7-39	89.6115	225.794	162.422	123.518
		ACP-2D--7-39	90.833	229.201	164.843	125.346
		ACP-6F-26-97	71.3403	168.663	124.51	97.2152
		ACP-6D-26-97	72.9262	172.266	127.199	99.3303
		ACP-6F--7-39	74.5055	191.013	137.429	105.726
		ACP-6D--7-39	75.6306	193.831	139.47	107.303

Early Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-21	Leak	ACP-2F-26-97	77.5095	101.308	45.0707	n/a
		ACP-2D-26-97	77.4426	101.254	45.0498	n/a
		ACP-2F--7-39	85.6325	124.741	49.6726	n/a
		ACP-2D--7-39	85.5606	124.68	49.6571	n/a
		ACP-6F-26-97	77.0082	129.128	45.5779	n/a
		ACP-6D-26-97	76.9018	129.009	45.5389	n/a
		ACP-6F--7-39	85.0959	148.327	53.9848	n/a
		ACP-6D--7-39	84.9774	148.2	53.9531	n/a
1091 SHUD		ACP-2F-26-	80.3577	104.243	46.6275	n/a

0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-4		97				
		ACP-2D-26-97	80.3003	104.202	46.6145	n/a
		ACP-2F--7-39	88.8579	128.536	50.869	n/a
		ACP-2D--7-39	88.7919	128.475	50.8498	n/a
		ACP-6F-26-97	79.9424	132.809	47.234	n/a
		ACP-6D-26-97	79.8327	132.708	47.2044	n/a
		ACP-6F--7-39	88.375	152.785	56.1279	n/a
		ACP-6D--7-39	88.2834	152.678	56.0933	n/a

Late Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-21	Leak	ACP-2F-26-97	350.836	330.579	184.208	n/a
		ACP-2D-26-97	350.606	330.417	184.104	n/a
		ACP-2F--7-39	555.536	573.979	286.97	n/a
		ACP-2D--7-39	555.071	573.596	286.756	n/a
		ACP-6F-26-97	267.473	327.965	142.216	n/a
		ACP-6D-26-97	267.181	327.706	142.08	n/a
		ACP-6F--7-39	382.446	485.231	203.952	n/a
		ACP-6D--7-39	381.916	484.721	204.63	n/a
1091 SHUD		ACP-2F-26-	368.05	343.72	193.058	n/a

0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-4		97				
		ACP-2D-26-97	367.901	343.624	192.999	n/a
		ACP-2F--7-39	579.647	594.958	299.25	n/a
		ACP-2D--7-39	579.271	594.647	299.074	n/a
		ACP-6F-26-97	281.256	340.832	149.346	n/a
		ACP-6D-26-97	280.985	340.614	149.236	n/a
		ACP-6F--7-39	400.38	503.56	213.567	n/a
		ACP-6D--7-39	400.053	503.243	213.42	n/a

Flash Fire Results

Distance downwind to defined concentrations

The reported LFL and LFL fraction are defined in the respective material property

Path	Scenario	Weather	Distance downwind to LFL [m]	Distance downwind to LFL Fraction [m]
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-21	Leak	ACP-2F-26-97	2240.32	2820.1
		ACP-2D-26-97	1817.07	2299.94
		ACP-2F--7-39	2125.72	2679.16
		ACP-2D--7-39	1800.9	2331.32
		ACP-6F-26-97	664.701	899.834
		ACP-6D-26-97	695.574	964.683
		ACP-6F--7-39	701.183	955.328
		ACP-6D--7-39	698.885	996.223
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-4		ACP-2F-26-97	2192.84	2754.87
		ACP-2D-26-97	1801.9	2279.85
		ACP-2F--7-39	2088.28	2638.53
		ACP-2D--7-39	1809.7	2336.49
		ACP-6F-26-97	651.09	884.832
		ACP-6D-26-97	694.113	979.282
		ACP-6F--7-39	695.439	948.871
		ACP-6D--7-39	689.738	1005.67

Maximum distance to LFL fraction at any height

Path	Scenario	Weather	Max flash fire distance [m]	Height of the max flash fire distance [m]	Time [s]
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-21	Leak	ACP-2F-26-97	2811.46	0	4289.41
		ACP-2D-26-97	2280.93	0	2025
		ACP-2F--7-39	2695.94	0	3375
		ACP-2D--7-39	2267.78	0	2700
		ACP-6F-26-97	898.587	0	3385.19
		ACP-6D-26-97	963.31	0	808.992
		ACP-6F--7-39	903.961	0	886.297
		ACP-6D--7-39	1002.37	0	876.661
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-4		ACP-2F-26-97	2721.64	0	4280.03
		ACP-2D-26-97	2269.19	0	2025
		ACP-2F--7-39	2654.2	0	3600
		ACP-2D--7-39	2282.61	0	2925
		ACP-6F-26-97	884.509	0	3378.59
		ACP-6D-26-97	950.191	0	879.901
		ACP-6F--7-39	887.741	0	885.413

		ACP-6D--7-39	976.121	0	874.35

Explosion Results

Explosion scenarios for worst-case maximum downwind distance to defined overpressures.

The reported overpressures are defined in the explosion parameters

Path	Scenario	Weather	Overpressure level [bar]	Maximum distance [m]	Diameter [m]
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-21	Leak	ACP-2F-26-97	0.02068 0.1379 0.2068	6576.75 3523.83 3340.2	7673.49 1467.66 1100.39
		ACP-2D-26-97	0.02068 0.1379 0.2068	5433.33 2886.34 2734.61	6346.66 1212.67 909.216
		ACP-2F--7-39	0.02068 0.1379 0.2068	6921.07 3511.98 3306.29	8542.14 1643.97 1232.58
		ACP-2D--7-39	0.02068 0.1379 0.2068	5636.27 2906.47 2744.7	6972.53 1292.95 969.403
		ACP-6F-26-97	0.02068 0.1379 0.2068	2924.73 1285.46 1186.5	4069.46 790.928 593.008
		ACP-6D-26-97	0.02068 0.1379 0.2068	2752.74 1308.43 1221.24	3585.48 696.862 522.48
		ACP-6F--7-39	0.02068 0.1379 0.2068	3263.27 1359.32 1244.38	4726.54 918.636 688.758
		ACP-6D--7-39	0.02068	2866.65	3733.29

			0.1379 0.2068	1362.8 1272.01	725.591 544.021
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-4		ACP-2F-26-97	0.02068 0.1379 0.2068	6450.74 3414.12 3232.92	7601.47 1448.25 1085.84
		ACP-2D-26-97	0.02068 0.1379 0.2068	5405.48 2867.04 2715.14	6330.95 1214.08 910.272
		ACP-2F--7-39	0.02068 0.1379 0.2068	6900.91 3468.14 3260.91	8521.82 1656.27 1241.81
		ACP-2D--7-39	0.02068 0.1379 0.2068	5651.26 2906.96 2750.07	7062.53 1253.92 940.142
		ACP-6F-26-97	0.02068 0.1379 0.2068	2914.55 1275.02 1176.17	4089.09 790.033 592.336
		ACP-6D-26-97	0.02068 0.1379 0.2068	2718.06 1293.63 1207.64	3536.12 687.269 515.288
		ACP-6F--7-39	0.02068 0.1379 0.2068	3255.05 1341.61 1226.1	4750.1 923.214 692.191
		ACP-6D--7-39	0.02068 0.1379 0.2068	2858.12 1336.97 1245.14	3776.24 733.937 550.278

Supplementary data for worst-case explosion scenarios

Path	Scenario	Weather	Overpressure level [bar]	Total flammable mass [kg]	Explosion flammable mass [kg]	Ignition time [s]	Ignition source [m]	Cloud centre [m]	Explosion centre [m]
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-21	Leak	ACP-2F-26-97	0.02068 0.1379 0.2068	702511 669498 669498	n/a n/a n/a	2466.41 3451.3 3451.3	2740 2790 2790	1066.1 1024.24 1024.24	2740 2790 2790
		ACP-2D-26-97	0.02068 0.1379 0.2068	397474 377664 377664	n/a n/a n/a	1796.97 2013.21 2013.21	2260 2280 2280	750.939 695.929 695.929	2260 2280 2280
		ACP-2F--7-39	0.02068 0.1379 0.2068	969111 940923 940923	n/a n/a n/a	3179.77 3349.76 3349.76	2650 2690 2690	903.346 906.999 906.999	2650 2690 2690
		ACP-2D--7-39	0.02068 0.1379 0.2068	527042 457739 457739	n/a n/a n/a	2466.96 2684.46 2684.46	2150 2260 2260	751.166 670.597 670.597	2150 2260 2260
		ACP-6F-26-97	0.02068 0.1379 0.2068	104782 104782 104782	n/a n/a n/a	1404.78 1404.78 1404.78	890 890 890	298.013 298.013 298.013	890 890 890
		ACP-6D-26-97	0.02068 0.1379 0.2068	71666.1 71666.1 71666.1	n/a n/a n/a	803.486 803.486 803.486	960 960 960	290.964 290.964 290.964	960 960 960
		ACP-6F--7-39	0.02068 0.1379	164174 164174	n/a n/a	879.548 879.548	900 900	295.034 295.034	900 900

			0.2068	164174	n/a	879.548	900	295.034	900
		ACP-6D--7-39	0.02068 0.1379 0.2068	80900.4 80900.4 80900.4	n/a n/a n/a	873.392 873.392 873.392	1000 1000 1000	296.545 296.545 296.545	1000 1000 1000
1091 SHUD 0404\ACP off Roundoff Tank Barge Spill\Pressure vessel ACP-4		ACP-2F-26-97	0.02068 0.1379 0.2068	682916 643282 643282	n/a n/a n/a	2468.43 3432.71 3432.71	2650 2690 2690	1031.52 988.279 988.279	2650 2690 2690
		ACP-2D-26-97	0.02068 0.1379 0.2068	394531 378982 378982	n/a n/a n/a	1797.77 1948.13 1948.13	2240 2260 2260	744.572 700.703 700.703	2240 2260 2260
		ACP-2F--7-39	0.02068 0.1379 0.2068	962212 962212 962212	n/a n/a n/a	3354.94 3354.94 3354.94	2640 2640 2640	891.107 891.107 891.107	2640 2640 2640
		ACP-2D--7-39	0.02068 0.1379 0.2068	547714 417527 417527	n/a n/a n/a	2473.18 2906.97 2906.97	2120 2280 2280	759.399 599.521 599.521	2120 2280 2280
		ACP-6F-26-97	0.02068 0.1379 0.2068	106305 104426 104426	n/a n/a n/a	883.429 3025.12 3025.12	870 880 880	289.695 286.814 286.814	870 880 880
		ACP-6D-26-97	0.02068 0.1379 0.2068	68747.2 68747.2 68747.2	n/a n/a n/a	879.469 879.469 879.469	950 950 950	277.571 277.571 277.571	950 950 950
		ACP-6F--7-39	0.02068 0.1379 0.2068	166641 166641 166641	n/a n/a n/a	872.497 872.497 872.497	880 880 880	284.146 284.146 284.146	880 880 880

		ACP-6D--7-39	0.02068 0.1379 0.2068	83724.2 83724.2 83724.2	n/a n/a n/a	865.971 865.971 865.971	970 970 970	286.878 286.878 286.878	970 970 970

Consequence Summary Report

Workspace: 1091 SHUD 0404

Study: Newburgh Waterfront CBR Train Spill

Summary Basis

These tables will only report global values set in the parameters. Values that are modified in the study tree will not be reported.

The report is context sensitive, and filters up to the study level. You willl need to generate multiple summary reports if you have multiple studies in your workspace.

Discharge Results (after atmospheric expansion)

Path	Scenario	Weather	Mass flow rate [kg/s]	Temperature [degC]	Liquid mass fraction in material [fraction]	Droplet diameter [um]	Expanded diameter [m]	Velocity [m/s]	Release duration [s]
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-21	Leak	NBG-2F-26-97	103.879	20.8918	1	1640.19	0.126259	11.7668	3600
		NBG-2D-26-97	103.879	20.8918	1	1640.19	0.126259	11.7668	3600
		NBG-2F--8-35	103.879	20.8918	1	1438.36	0.126259	11.7668	3600
		NBG-2D-	103.879	20.8918	1	1438.36	0.126259	11.7668	3600

		-8-35							
		NBG-6F-26-97	103.879	20.8918	1	1640.19	0.126259	11.7668	3600
		NBG-6D-26-97	103.879	20.8918	1	1640.19	0.126259	11.7668	3600
		NBG-6F--8-35	103.879	20.8918	1	1438.36	0.126259	11.7668	3600
		NBG-6D--8-35	103.879	20.8918	1	1438.36	0.126259	11.7668	3600
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-2		NBG-2F-26-97	106.012	2.19263	1	1788.97	0.126259	11.759	3600
		NBG-2D-26-97	106.012	2.19263	1	1788.97	0.126259	11.759	3600
		NBG-2F--8-35	106.012	2.19263	1	1568.83	0.126259	11.759	3600
		NBG-2D--8-35	106.012	2.19263	1	1568.83	0.126259	11.759	3600
		NBG-6F-26-97	106.012	2.19263	1	1788.97	0.126259	11.759	3600
		NBG-6D-26-97	106.012	2.19263	1	1788.97	0.126259	11.759	3600
		NBG-6F--8-35	106.012	2.19263	1	1568.83	0.126259	11.759	3600

		NBG-6D--8-35	106.012	2.19263	1	1568.83	0.126259	11.759	3600

Dispersion Results

Input dispersion parameters

Core averaging time	18.75	s
Flammable averaging time	18.75	s
Height of interest	0	m

Distance downwind to defined concentrations

The reported concentration of interest is defined at the scenario

Path	Scenario	Weather	Material	Material to track	Concentration of interest [ppm]	Averaging time selected	Distance downwind to concentration of interest [m]
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-21	Leak	NBG-2F-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	105.509
		NBG-2D-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	73.1299
		NBG-2F--8-35	**Fake Bakken**	Fake Bakken	55000	Flammable	59.4177
		NBG-2D--8-35	**Fake Bakken**	Fake Bakken	55000	Flammable	41.5842
		NBG-6F-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	26.1091
		NBG-6D-	**Fake**	Fake	55000	Flammable	25.7782

		26-97	**Bakken**	Bakken			
		NBG-6F--8-35	**Fake Bakken**	Fake Bakken	55000	Flammable	23.7641
		NBG-6D--8-35	**Fake Bakken**	Fake Bakken	55000	Flammable	23.6837
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-2		NBG-2F-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	91.817
		NBG-2D-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	67.0448
		NBG-2F--8-35	**Fake Bakken**	Fake Bakken	55000	Flammable	43.6479
		NBG-2D--8-35	**Fake Bakken**	Fake Bakken	55000	Flammable	32.1707
		NBG-6F-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	21.4757
		NBG-6D-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	21.6687
		NBG-6F--8-35	**Fake Bakken**	Fake Bakken	55000	Flammable	19.5977
		NBG-6D--8-35	**Fake Bakken**	Fake Bakken	55000	Flammable	19.9601

Path	Scenario	Weather	Distance to UFL [m]	Distance to LFL [m]	Distance to LFL fraction [m]
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-21	Leak	NBG-2F-26-97	99.6178	302.096	387.285
		NBG-2D-26-97	69.2602	209.509	275.159
		NBG-2F--8-35	57.2011	254.834	349.298
		NBG-2D--8-35	40.1549	207.697	286.168
		NBG-6F-26-97	25.478	111.58	165.12
		NBG-6D-26-97	25.0294	108.785	166.582
		NBG-6F--8-35	23.1924	108.699	171.894
		NBG-6D--8-35	23.0094	99.0421	160.998
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-2		NBG-2F-26-97	86.2001	287.275	371.536
		NBG-2D-26-97	62.3787	201.186	271.176
		NBG-2F--8-35	42.4858	238.435	332.599
		NBG-2D--8-35	31.1036	205.632	286.508
		NBG-6F-26-97	21.0889	110.008	164.74
		NBG-6D-26-97	21.1524	104.789	163.1
		NBG-6F--8-35	19.2798	105.803	171.914
		NBG-6D--8-35	19.4483	95.5956	161.801

Jet Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Flame length [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-21	Leak	NBG-2F-26-97	72.1355	166.348	122.158	94.0775
		NBG-2D-26-97	72.8788	168.201	123.51	95.1168
		NBG-2F--8-35	72.8179	182.267	130.983	99.422
		NBG-2D--8-35	73.5258	184.23	132.376	100.477
		NBG-6F-26-97	57.7524	139.522	102.402	79.5261
		NBG-6D-26-97	58.6826	141.684	104.005	80.7802
		NBG-6F--8-35	58.0624	152.342	108.976	83.3519
		NBG-6D--8-35	58.9076	154.512	110.538	84.5518

1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-2		NBG-2F-26-97	59.0446	133.942	98.5109	75.8986
		NBG-2D-26-97	59.9576	136.185	100.146	77.1582
		NBG-2F--8-35	60.0005	147.105	105.993	80.5598
		NBG-2D--8-35	60.845	149.398	107.625	81.7928
		NBG-6F-26-97	48.659	118.307	86.6863	67.2452
		NBG-6D-26-97	49.7261	120.793	88.5252	68.6815
		NBG-6F--8-35	49.1024	129.272	92.3837	70.6147
		NBG-6D--8-35	50.1643	132.01	94.3522	72.1255

Early Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-21	Leak	NBG-2F-26-97	27.9314	54.3153	22.2607	n/a
		NBG-2D-26-97	27.8535	54.2893	22.2622	n/a
		NBG-2F--8-35	30.9774	62.0035	25.0833	n/a
		NBG-2D--8-35	30.8935	61.9512	25.0833	n/a
		NBG-6F-26-97	27.4078	68.7953	24.2033	n/a
		NBG-6D-26-97	27.2619	68.6785	24.1875	n/a
		NBG-6F--8-35	30.4211	72.696	27.9168	n/a
		NBG-6D--8-35	30.2725	72.5531	27.9045	n/a

1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-2		NBG-2F-26-97	29.4303	55.5215	22.8615	n/a
		NBG-2D-26-97	29.3618	55.4899	22.8514	n/a
		NBG-2F--8-35	32.6438	63.8576	25.8114	n/a
		NBG-2D--8-35	32.5717	63.806	25.814	n/a
		NBG-6F-26-97	28.9714	70.6815	24.5445	n/a
		NBG-6D-26-97	28.8471	70.5776	24.6368	n/a
		NBG-6F--8-35	32.1564	75.2239	28.5277	n/a
		NBG-6D--8-35	32.0168	75.0702	28.4998	n/a

Late Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-21	Leak	NBG-2F-26-97	119.197	141.082	66.3104	n/a
		NBG-2D-26-97	118.931	140.863	66.2017	n/a
		NBG-2F--8-35	185.992	233.666	100.247	n/a
		NBG-2D--8-35	185.509	233.202	100.033	n/a
		NBG-6F-26-97	89.1036	145.596	51.7636	n/a
		NBG-6D-26-97	88.7695	145.232	51.6333	n/a
		NBG-6F--8-35	127.183	204.483	76.2012	n/a
		NBG-6D--8-35	126.648	203.865	75.9677	n/a

1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-2		NBG-2F-26-97	126.996	148.367	70.4859	n/a
		NBG-2D-26-97	126.756	148.167	70.3817	n/a
		NBG-2F--8-35	197.576	245.655	106.309	n/a
		NBG-2D--8-35	197.186	245.281	106.134	n/a
		NBG-6F-26-97	95.2392	153.141	55.085	n/a
		NBG-6D-26-97	94.9633	152.844	54.9758	n/a
		NBG-6F--8-35	135.639	215.246	80.9663	n/a
		NBG-6D--8-35	135.133	214.652	80.7299	n/a

Flash Fire Results

Distance downwind to defined concentrations

The reported LFL and LFL fraction are defined in the respective material property

Path	Scenario	Weather	Distance downwind to LFL [m]	Distance downwind to LFL Fraction [m]
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-21	Leak	NBG-2F-26-97	302.096	387.285
		NBG-2D-26-97	209.509	275.159
		NBG-2F--8-35	254.834	349.298
		NBG-2D--8-35	207.697	286.168
		NBG-6F-26-97	111.58	165.12
		NBG-6D-26-97	108.785	166.582
		NBG-6F--8-35	108.699	171.894
		NBG-6D--8-35	99.0421	160.998
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-2		NBG-2F-26-97	287.275	371.536
		NBG-2D-26-97	201.186	271.176
		NBG-2F--8-35	238.435	332.599
		NBG-2D--8-35	205.632	286.508
		NBG-6F-26-97	110.008	164.74
		NBG-6D-26-97	104.789	163.1
		NBG-6F--8-35	105.803	171.914
		NBG-6D--8-35	95.5956	161.801

Maximum distance to LFL fraction at any height

Path	Scenario	Weather	Max flash fire distance [m]	Height of the max flash fire distance [m]	Time [s]
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-21	Leak	NBG-2F-26-97	377.295	0	3799.1
		NBG-2D-26-97	274.829	0	3525.37
		NBG-2F--8-35	345.71	0	3763.21
		NBG-2D--8-35	284.19	0	873.997
		NBG-6F-26-97	164.647	0	787.336
		NBG-6D-26-97	166.518	0	785.478
		NBG-6F--8-35	167.383	0	786.361
		NBG-6D--8-35	157.904	0	784.589
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-2		NBG-2F-26-97	367.217	0	3795.23
		NBG-2D-26-97	270.526	0	877.783
		NBG-2F--8-35	327.486	0	3755.76
		NBG-2D--8-35	280.462	0	872.946
		NBG-6F-26-97	165.434	0	787.07
		NBG-6D-26-97	163.033	0	785.329
		NBG-6F--8-35	165.409	0	786.157
		NBG-6D--8-35	153.001	0	784.253

Explosion Results

Explosion scenarios for worst-case maximum downwind distance to defined overpressures.

The reported overpressures are defined in the explosion parameters

Path	Scenario	Weather	Overpressure level [bar]	Maximum distance [m]	Diameter [m]
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-21	Leak	NBG-2F-26-97	0.02068 0.1379 0.2068	1443.67 539.306 489.604	2247.35 418.613 279.207
		NBG-2D-26-97	0.02068 0.1379 0.2068	1179.39 446.746 402.517	1818.78 353.491 265.034
		NBG-2F--8-35	0.02068 0.1379 0.2068	1589.87 550.696 487.962	2579.75 501.391 375.924
		NBG-2D--8-35	0.02068 0.1379 0.2068	1210.19 460.788 415.548	1860.37 361.576 271.096
		NBG-6F-26-97	0.02068 0.1379 0.2068	760.685 276.747 247.533	1201.37 233.494 175.065
		NBG-6D-26-97	0.02068 0.1379 0.2068	635.529 252.422 229.295	951.059 184.845 138.59
		NBG-6F--8-35	0.02068 0.1379 0.2068	685.29 262.094 236.546	1050.58 204.187 153.092

		NBG-6D--8-35	0.02068 0.1379 0.2068	549.664 227.677 208.24	799.328 155.355 116.479
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-2		NBG-2F-26-97	0.02068 0.1379 0.2068	1471.82 535.808 479.484	2323.64 451.615 318.968
		NBG-2D-26-97	0.02068 0.1379 0.2068	1192.3 449.255 404.398	1844.6 358.51 268.797
		NBG-2F--8-35	0.02068 0.1379 0.2068	1558.69 536.579 474.875	2537.38 493.157 369.751
		NBG-2D--8-35	0.02068 0.1379 0.2068	1210.65 460.877 415.615	1861.29 361.755 271.23
		NBG-6F-26-97	0.02068 0.1379 0.2068	746.818 274.052 245.512	1173.64 228.104 171.024
		NBG-6D-26-97	0.02068 0.1379 0.2068	620.958 249.59 227.171	921.916 179.181 134.343
		NBG-6F--8-35	0.02068 0.1379 0.2068	664.389 258.031 233.5	1008.78 196.063 147
		NBG-6D--8-35	0.02068 0.1379	537.854 225.382	775.708 150.764

			0.2068		206.519			113.037	

Supplementary data for worst-case explosion scenarios

Path	Scenario	Weather	Overpressure level [bar]	Total flammable mass [kg]	Explosion flammable mass [kg]	Ignition time [s]	Ignition source [m]	Cloud centre [m]	Explosion centre [m]
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-21	Leak	NBG-2F-26-97	0.02068 0.1379 0.2068	17647.5 15535 10936.6	n/a n/a n/a	3312.71 3479.56 3632.17	320 330 350	108.468 116.904 135.546	320 330 350
		NBG-2D-26-97	0.02068 0.1379 0.2068	9354.3 9354.3 9354.3	n/a n/a n/a	855.421 855.421 855.421	270 270 270	87.3919 87.3919 87.3919	270 270 270
		NBG-2F--8-35	0.02068 0.1379 0.2068	26693.5 26693.5 26693.5	n/a n/a n/a	887.354 887.354 887.354	300 300 300	97.0536 97.0536 97.0536	300 300 300
		NBG-2D--8-35	0.02068 0.1379 0.2068	10010.9 10010.9 10010.9	n/a n/a n/a	849.953 849.953 849.953	280 280 280	95.0471 95.0471 95.0471	280 280 280
		NBG-6F-26-97	0.02068 0.1379 0.2068	2695.9 2695.9 2695.9	n/a n/a n/a	692.438 692.438 692.438	160 160 160	49.3165 49.3165 49.3165	160 160 160
		NBG-6D-26-97	0.02068 0.1379 0.2068	1337.51 1337.51 1337.51	n/a n/a n/a	641.321 641.321 641.321	160 160 160	48.8085 48.8085 48.8085	160 160 160

		NBG-6F--8-35	0.02068 0.1379 0.2068	1802.85 1802.85 1802.85	n/a n/a n/a	664.902 664.902 664.902	160 160 160	53.5799 53.5799 53.5799	160 160 160
		NBG-6D--8-35	0.02068 0.1379 0.2068	794.052 794.052 794.052	n/a n/a n/a	623.493 623.493 623.493	150 150 150	46.3969 46.3969 46.3969	150 150 150
1091 SHUD 0404\Newburgh Waterfront CBR Train Spill\Pressure vessel NBG-2		NBG-2F-26-97	0.02068 0.1379 0.2068	19506.5 19506.5 16305.9	n/a n/a n/a	3227.29 3227.29 3490.2	310 310 320	96.206 96.206 106.55	310 310 320
		NBG-2D-26-97	0.02068 0.1379 0.2068	9758.37 9758.37 9758.37	n/a n/a n/a	873.327 873.327 873.327	270 270 270	84.5865 84.5865 84.5865	270 270 270
		NBG-2F--8-35	0.02068 0.1379 0.2068	25399.9 25399.9 25399.9	n/a n/a n/a	841.664 841.664 841.664	290 290 290	95.4408 95.4408 95.4408	290 290 290
		NBG-2D--8-35	0.02068 0.1379 0.2068	10025.8 10025.8 10025.8	n/a n/a n/a	870.465 870.465 870.465	280 280 280	95.8891 95.8891 95.8891	280 280 280
		NBG-6F-26-97	0.02068 0.1379 0.2068	2513.47 2513.47 2513.47	n/a n/a n/a	692.647 692.647 692.647	160 160 160	49.0051 49.0051 49.0051	160 160 160
		NBG-6D-26-97	0.02068 0.1379 0.2068	1218.28 1218.28 1218.28	n/a n/a n/a	726.492 726.492 726.492	160 160 160	48.204 48.204 48.204	160 160 160
		NBG-6F--	0.02068	1596.1	n/a	705.318	160	52.8914	160

		8-35	0.1379	1596.1	n/a	705.318	160	52.8914	160
			0.2068	1596.1	n/a	705.318	160	52.8914	160
		NBG-6D-	0.02068	725.719	n/a	729.114	150	40.2009	150
		-8-35	0.1379	725.719	n/a	729.114	150	40.2009	150
			0.2068	725.719	n/a	729.114	150	40.2009	150

Consequence Summary Report

Workspace: 1091 SHUD 0404

Study: Iona Island CBR Train Spill

Summary Basis

These tables will only report global values set in the parameters. Values that are modified in the study tree will not be reported.

The report is context sensitive, and filters up to the study level. You willl need to generate multiple summary reports if you have multiple studies in your workspace.

Discharge Results (after atmospheric expansion)

Path	Scenario	Weather	Mass flow rate [kg/s]	Temperature [degC]	Liquid mass fraction in material [fraction]	Droplet diameter [um]	Expanded diameter [m]	Velocity [m/s]	Release duration [s]
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-21	Leak	ION-2F-26-96	103.867	20.9918	1	1639.85	0.126259	11.7668	3600
		ION-2D-26-97	103.867	20.9918	1	1639.85	0.126259	11.7668	3600
		ION-2F-00-47	103.867	20.9918	1	1480.9	0.126259	11.7668	3600
		ION-2D-00-47	103.867	20.9918	1	1480.9	0.126259	11.7668	3600

		ION-8F-26-96	103.867	20.9918	1	1639.85	0.126259	11.7668	3600
		ION-8D-26-96	103.867	20.9918	1	1639.85	0.126259	11.7668	3600
		ION-8F-00-47	103.867	20.9918	1	1480.9	0.126259	11.7668	3600
		ION-8D-00-47	103.867	20.9918	1	1480.9	0.126259	11.7668	3600
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-10		ION-2F-26-96	105.087	10.3923	1	1723.83	0.126259	11.7622	3600
		ION-2D-26-97	105.087	10.3923	1	1723.83	0.126259	11.7622	3600
		ION-2F-00-47	105.087	10.3923	1	1556.73	0.126259	11.7622	3600
		ION-2D-00-47	105.087	10.3923	1	1556.73	0.126259	11.7622	3600
		ION-8F-26-96	105.087	10.3923	1	1723.83	0.126259	11.7622	3600
		ION-8D-26-96	105.087	10.3923	1	1723.83	0.126259	11.7622	3600
		ION-8F-00-47	105.087	10.3923	1	1556.73	0.126259	11.7622	3600
		ION-8D-	105.087	10.3923	1	1556.73	0.126259	11.7622	3600

		00-47							

Dispersion Results

Input dispersion parameters

Core averaging time	18.75	s
Flammable averaging time	18.75	s
Height of interest	0	m

Distance downwind to defined concentrations

The reported concentration of interest is defined at the scenario

Path	Scenario	Weather	Material	Material to track	Concentration of interest [ppm]	Averaging time selected	Distance downwind to concentration of interest [m]
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-21	Leak	ION-2F-26-96	**Fake Bakken**	Fake Bakken	55000	Flammable	199.399
		ION-2D-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	86.639
		ION-2F-00-47	**Fake Bakken**	Fake Bakken	55000	Flammable	183.4
		ION-2D-00-47	**Fake Bakken**	Fake Bakken	55000	Flammable	81.4413
		ION-8F-26-96	**Fake Bakken**	Fake Bakken	55000	Flammable	64.313
		ION-8D-	**Fake**	Fake	55000	Flammable	45.5587

		26-96	**Bakken**	Bakken			
		ION-8F-00-47	**Fake Bakken**	Fake Bakken	55000	Flammable	36.9701
		ION-8D-00-47	**Fake Bakken**	Fake Bakken	55000	Flammable	42.4027
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-10		ION-2F-26-96	**Fake Bakken**	Fake Bakken	55000	Flammable	205.683
		ION-2D-26-97	**Fake Bakken**	Fake Bakken	55000	Flammable	87.483
		ION-2F-00-47	**Fake Bakken**	Fake Bakken	55000	Flammable	194.913
		ION-2D-00-47	**Fake Bakken**	Fake Bakken	55000	Flammable	80.194
		ION-8F-26-96	**Fake Bakken**	Fake Bakken	55000	Flammable	61.2823
		ION-8D-26-96	**Fake Bakken**	Fake Bakken	55000	Flammable	40.5724
		ION-8F-00-47	**Fake Bakken**	Fake Bakken	55000	Flammable	32.7182
		ION-8D-00-47	**Fake Bakken**	Fake Bakken	55000	Flammable	37.7404

Path	Scenario	Weather	Distance to UFL [m]	Distance to LFL [m]	Distance to LFL fraction [m]
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-21	Leak	ION-2F-26-96	175.035	826.556	1057.83
		ION-2D-26-97	79.6375	589.321	786.01
		ION-2F-00-47	165.929	800.278	1023.72
		ION-2D-00-47	70.5427	622.485	830.105
		ION-8F-26-96	60.7758	210.253	300.901
		ION-8D-26-96	43.7461	229.748	339.178
		ION-8F-00-47	35.1428	201.482	299.02
		ION-8D-00-47	40.629	210.788	323.559
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-10		ION-2F-26-96	180.435	819.805	1048.68
		ION-2D-26-97	80.0716	591.234	786.585
		ION-2F-00-47	174.212	798.267	1022.58
		ION-2D-00-47	68.4731	622.834	831.145
		ION-8F-26-96	57.67	207.723	298.698
		ION-8D-26-96	38.7696	225.099	334.931
		ION-8F-00-47	31.4107	199.872	298.967
		ION-8D-00-47	35.9976	205.383	319.091

Jet Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Flame length [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-21	Leak	ION-2F-26-96	70.8729	163.229	119.878	92.3221
		ION-2D-26-97	71.2555	164.182	120.573	92.8566
		ION-2F-00-47	71.3642	175.095	126.479	96.3376
		ION-2D-00-47	71.7573	176.157	127.238	96.9123
		ION-8F-26-96	53.8515	127.071	93.8459	73.4018
		ION-8D-26-96	54.4293	128.38	94.8224	74.1708
		ION-8F-00-47	54.0248	135.623	98.1906	75.934
		ION-8D-00-47	54.5959	137.017	99.2066	76.7233
1091 SHUD 0404\Iona Island CBR Train		ION-2F-26-96	63.353	144.578	106.269	81.8625

Spill\Pressure vessel ION-10						
		ION-2D-26-97	63.8216	145.735	107.113	82.5122
		ION-2F-00-47	63.9739	155.238	112.283	85.5814
		ION-2D-00-47	64.4187	156.426	113.134	86.226
		ION-8F-26-96	48.9303	115.893	85.5129	66.843
		ION-8D-26-96	49.5702	117.349	86.5976	67.6966
		ION-8F-00-47	49.168	123.743	89.5386	69.2151
		ION-8D-00-47	49.8133	125.322	90.6887	70.1081

Early Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-21	Leak	ION-2F-26-96	28.049	54.5003	22.3837	n/a
		ION-2D-26-97	28.0103	54.4876	22.3847	n/a
		ION-2F-00-47	30.4465	60.6885	24.637	n/a
		ION-2D-00-47	30.4026	60.6711	24.656	n/a
		ION-8F-26-96	27.5487	72.6197	24.793	n/a
		ION-8D-26-96	27.4565	72.5882	24.8373	n/a
		ION-8F-00-47	29.9268	74.7535	27.887	n/a
		ION-8D-00-47	29.8271	74.7047	27.9339	n/a

1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-10		ION-2F-26-96	28.9362	55.2044	22.7099	n/a
		ION-2D-26-97	28.8969	55.1963	22.7178	n/a
		ION-2F-00-47	31.4087	61.6925	24.9101	n/a
		ION-2D-00-47	31.3676	61.6793	24.9227	n/a
		ION-8F-26-96	28.4638	73.8695	25.2706	n/a
		ION-8D-26-96	28.3776	73.8286	25.2869	n/a
		ION-8F-00-47	30.9171	76.2649	27.79	n/a
		ION-8D-00-47	30.8218	76.207	27.9895	n/a

Late Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-21	Leak	ION-2F-26-96	119.37	141.388	66.4902	n/a
		ION-2D-26-97	119.248	141.289	66.4371	n/a
		ION-2F-00-47	186.159	227.333	100.518	n/a
		ION-2D-00-47	185.916	227.117	100.419	n/a
		ION-8F-26-96	85.3362	150.396	50.2933	n/a
		ION-8D-26-96	85.1286	150.209	50.1812	n/a
		ION-8F-00-47	119.05	200.361	71.9142	n/a
		ION-8D-00-47	118.724	200.028	71.8308	n/a

1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-10		ION-2F-26-96	123.901	145.629	68.9091	n/a
		ION-2D-26-97	123.798	145.554	68.8762	n/a
		ION-2F-00-47	192.941	234.116	104.058	n/a
		ION-2D-00-47	192.737	233.941	103.981	n/a
		ION-8F-26-96	88.7276	154.891	52.0425	n/a
		ION-8D-26-96	88.5444	154.721	52.0146	n/a
		ION-8F-00-47	123.63	206.402	74.4439	n/a
		ION-8D-00-47	123.319	206.078	74.3559	n/a

Flash Fire Results

Distance downwind to defined concentrations

The reported LFL and LFL fraction are defined in the respective material property

Path	Scenario	Weather	Distance downwind to LFL [m]	Distance downwind to LFL Fraction [m]
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-21	Leak	ION-2F-26-96	826.556	1057.83
		ION-2D-26-97	589.321	786.01
		ION-2F-00-47	800.278	1023.72
		ION-2D-00-47	622.485	830.105
		ION-8F-26-96	210.253	300.901
		ION-8D-26-96	229.748	339.178
		ION-8F-00-47	201.482	299.02
		ION-8D-00-47	210.788	323.559
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-10		ION-2F-26-96	819.805	1048.68
		ION-2D-26-97	591.234	786.585
		ION-2F-00-47	798.267	1022.58
		ION-2D-00-47	622.834	831.145
		ION-8F-26-96	207.723	298.698
		ION-8D-26-96	225.099	334.931
		ION-8F-00-47	199.872	298.967

		ION-8D-00-47	205.383	319.091

Maximum distance to LFL fraction at any height

Path	Scenario	Weather	Max flash fire distance [m]	Height of the max flash fire distance [m]	Time [s]
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-21	Leak	ION-2F-26-96	1056.93	0	3600
		ION-2D-26-97	787.396	0	2925
		ION-2F-00-47	995.616	0	1800
		ION-2D-00-47	757.46	0	1800
		ION-8F-26-96	300.757	0	3447.63
		ION-8D-26-96	339.45	0	3228.39
		ION-8F-00-47	294.412	0	790.149
		ION-8D-00-47	315.991	0	786.996
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-10		ION-2F-26-96	1046.41	0	3600
		ION-2D-26-97	787.965	0	2925
		ION-2F-00-47	996.75	0	1800
		ION-2D-00-47	757.271	0	1800
		ION-8F-26-96	298.503	0	3447.18

		ION-8D-26-96	335.477	0	3228.42
		ION-8F-00-47	293.072	0	789.966
		ION-8D-00-47	309.049	0	786.839

Explosion Results

Explosion scenarios for worst-case maximum downwind distance to defined overpressures.

The reported overpressures are defined in the explosion parameters

Path	Scenario	Weather	Overpressure level [bar]	Maximum distance [m]	Diameter [m]
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-21	Leak	ION-2F-26-96	0.02068 0.1379 0.2068	2579.09 1347.19 1272.82	3058.18 594.379 445.642
		ION-2D-26-97	0.02068 0.1379 0.2068	1959.09 1009.16 951.819	2358.18 458.329 343.637
		ION-2F-00-47	0.02068 0.1379 0.2068	2552.87 1293.76 1217.74	3125.75 607.51 455.488
		ION-2D-00-47	0.02068 0.1379 0.2068	1926.11 978.586 921.385	2352.23 457.172 342.77
		ION-8F-26-96	0.02068 0.1379 0.2068	990.827 434.267 400.668	1381.65 268.534 201.336
		ION-8D-26-96	0.02068 0.1379 0.2068	870.789 435.106 408.805	1081.58 210.212 157.609
		ION-8F-00-47	0.02068 0.1379 0.2068	961.485 420.508 387.85	1342.97 261.015 195.699
		ION-8D-00-47	0.02068	796.217	972.434

			0.1379 0.2068	404.5 380.852	188.999 141.704
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-10		ION-2F-26-96	0.02068 0.1379 0.2068	2575.47 1338.43 1263.75	3070.95 596.86 447.503
		ION-2D-26-97	0.02068 0.1379 0.2068	1966.33 1010.57 952.873	2372.66 461.142 345.747
		ION-2F-00-47	0.02068 0.1379 0.2068	2569.49 1296.98 1220.16	3158.97 613.967 460.329
		ION-2D-00-47	0.02068 0.1379 0.2068	1929.19 979.184 921.834	2358.39 458.368 343.667
		ION-8F-26-96	0.02068 0.1379 0.2068	972.27 422.604 389.421	1364.54 265.208 198.843
		ION-8D-26-96	0.02068 0.1379 0.2068	874.455 435.818 409.339	1088.91 211.637 158.677
		ION-8F-00-47	0.02068 0.1379 0.2068	957.587 419.75 387.282	1335.17 259.5 194.563
		ION-8D-00-47	0.02068 0.1379 0.2068	772.317 391.798 368.827	944.634 183.596 137.653

Supplementary data for worst-case explosion scenarios

Path	Scenario	Weather	Overpressure level [bar]	Total flammable mass [kg]	Explosion flammable mass [kg]	Ignition time [s]	Ignition source [m]	Cloud centre [m]	Explosion centre [m]
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-21	Leak	ION-2F-26-96	0.02068 0.1379 0.2068	44469.7 44469.7 44469.7	n/a n/a n/a	1847.99 1847.99 1847.99	1050 1050 1050	374.35 374.35 374.35	1050 1050 1050
		ION-2D-26-97	0.02068 0.1379 0.2068	20389.5 20389.5 20389.5	n/a n/a n/a	1787.44 1787.44 1787.44	780 780 780	259.904 259.904 259.904	780 780 780
		ION-2F-00-47	0.02068 0.1379 0.2068	47482.7 47482.7 47482.7	n/a n/a n/a	1784.37 1784.37 1784.37	990 990 990	312.95 312.95 312.95	990 990 990
		ION-2D-00-47	0.02068 0.1379 0.2068	20235.4 20235.4 20235.4	n/a n/a n/a	1735.85 1735.85 1735.85	750 750 750	231.93 231.93 231.93	750 750 750
		ION-8F-26-96	0.02068 0.1379 0.2068	4100.82 4100.82 4100.82	n/a n/a n/a	786.699 786.699 786.699	300 300 300	94.3601 94.3601 94.3601	300 300 300
		ION-8D-26-96	0.02068 0.1379 0.2068	1967.2 1967.2 1967.2	n/a n/a n/a	698.515 698.515 698.515	330 330 330	96.9313 96.9313 96.9313	330 330 330
		ION-8F-00-47	0.02068 0.1379	3765.93 3765.93	n/a n/a	748.264 748.264	290 290	87.7994 87.7994	290 290

			0.2068	3765.93	n/a	748.264	290	87.7994	290
		ION-8D-00-47	0.02068 0.1379 0.2068	1429.73 1429.73 1429.73	n/a n/a n/a	723.832 723.832 723.832	310 310 310	88.203 88.203 88.203	310 310 310
1091 SHUD 0404\Iona Island CBR Train Spill\Pressure vessel ION-10		ION-2F-26-96	0.02068 0.1379 0.2068	45028.9 45028.9 45028.9	n/a n/a n/a	1821.26 1821.26 1821.26	1040 1040 1040	366.753 366.753 366.753	1040 1040 1040
		ION-2D-26-97	0.02068 0.1379 0.2068	20767.3 20767.3 20767.3	n/a n/a n/a	1782.69 1782.69 1782.69	780 780 780	258.327 258.327 258.327	780 780 780
		ION-2F-00-47	0.02068 0.1379 0.2068	49012.9 49012.9 49012.9	n/a n/a n/a	1781.76 1781.76 1781.76	990 990 990	307.444 307.444 307.444	990 990 990
		ION-2D-00-47	0.02068 0.1379 0.2068	20394.8 20394.8 20394.8	n/a n/a n/a	1739.43 1739.43 1739.43	750 750 750	230.493 230.493 230.493	750 750 750
		ION-8F-26-96	0.02068 0.1379 0.2068	3950.32 3950.32 3950.32	n/a n/a n/a	712.911 712.911 712.911	290 290 290	91.5134 91.5134 91.5134	290 290 290
		ION-8D-26-96	0.02068 0.1379 0.2068	2007.47 2007.47 2007.47	n/a n/a n/a	744.254 744.254 744.254	330 330 330	92.6125 92.6125 92.6125	330 330 330
		ION-8F-00-47	0.02068 0.1379	3700.73 3700.73	n/a n/a	762.503 762.503	290 290	86.7431 86.7431	290 290

			0.2068	3700.73	n/a	762.503	290	86.7431	290
		ION-8D-00-47	0.02068	1310.58	n/a	692.22	300	87.2303	300
			0.1379	1310.58	n/a	692.22	300	87.2303	300
			0.2068	1310.58	n/a	692.22	300	87.2303	300

Consequence Summary Report

Workspace: 1091 SHUD 0404

Study: Yonkers Collision with Tanker at Anchorage

Summary Basis

These tables will only report global values set in the parameters. Values that are modified in the study tree will not be reported.

The report is context sensitive, and filters up to the study level. You willl need to generate multiple summary reports if you have multiple studies in your workspace.

Discharge Results (after atmospheric expansion)

Path	Scenario	Weather	Mass flow rate [kg/s]	Temperature [degC]	Liquid mass fraction in material [fraction]	Droplet diameter [um]	Expanded diameter [m]	Velocity [m/s]	Release duration [s]
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-21	Leak	YON-2F-26-96	489.222	21.4811	1	882.289	0.251744	14.9105	3600
		YON-2D-26-97	489.222	21.4811	1	882.289	0.251744	14.9105	3600
		YON-2F-00-47	489.222	21.4811	1	796.767	0.251744	14.9105	3600

		YON-2D-00-47	489.222	21.4811	1	796.767	0.251744	14.9105	3600
		YON-8F-26-96	489.222	21.4811	1	882.289	0.251744	14.9105	3600
		YON-8D-26-96	489.222	21.4811	1	882.289	0.251744	14.9105	3600
		YON-8F-00-47	489.222	21.4811	1	796.767	0.251744	14.9105	3600
		YON-8D-00-47	489.222	21.4811	1	796.767	0.251744	14.9105	3600
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-10		YON-2F-26-96	494.542	12.7822	1	929.703	0.251744	14.8986	3600
		YON-2D-26-97	494.542	12.7822	1	929.703	0.251744	14.8986	3600
		YON-2F-00-47	494.542	12.7822	1	839.585	0.251744	14.8986	3600
		YON-2D-00-47	494.542	12.7822	1	839.585	0.251744	14.8986	3600
		YON-8F-26-96	494.542	12.7822	1	929.703	0.251744	14.8986	3600
		YON-8D-26-96	494.542	12.7822	1	929.703	0.251744	14.8986	3600
		YON-8F-	494.54	12.7822	1	839.585	0.251744	14.8986	3600

		00-47	2						
		YON-8D-00-47	494.542	12.7822	1	839.585	0.251744	14.8986	3600

Dispersion Results

Input dispersion parameters

Core averaging time	18.75	s
Flammable averaging time	18.75	s
Height of interest	0	m

Distance downwind to defined concentrations

The reported concentration of interest is defined at the scenario

Path	Scenario	Weather	Material	Material to track	Concentration of interest [ppm]	Averaging time selected	Distance downwind to concentration of interest [m]
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-21	Leak	YON-2F-26-96	**Sample Gasoline**	Sample Gasoline	55000	Flammable	37.2358
		YON-2D-26-97	**Sample Gasoline**	Sample Gasoline	55000	Flammable	30.8315
		YON-2F-00-47	**Sample Gasoline**	Sample Gasoline	55000	Flammable	33.1918
		YON-2D-00-47	**Sample Gasoline**	Sample Gasoline	55000	Flammable	29.519
		YON-8F-26-96	**Sample Gasoline**	Sample Gasoline	55000	Flammable	20.4687
		YON-8D-	**Sample**	Sample	55000	Flammable	22.1113

		26-96	**Gasoline**	Gasoline			
		YON-8F-00-47	**Sample Gasoline**	Sample Gasoline	55000	Flammable	19.8694
		YON-8D-00-47	**Sample Gasoline**	Sample Gasoline	55000	Flammable	21.5014
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-10		YON-2F-26-96	**Sample Gasoline**	Sample Gasoline	55000	Flammable	22.165
		YON-2D-26-97	**Sample Gasoline**	Sample Gasoline	55000	Flammable	19.0822
		YON-2F-00-47	**Sample Gasoline**	Sample Gasoline	55000	Flammable	20.0288
		YON-2D-00-47	**Sample Gasoline**	Sample Gasoline	55000	Flammable	17.825
		YON-8F-26-96	**Sample Gasoline**	Sample Gasoline	55000	Flammable	16.7444
		YON-8D-26-96	**Sample Gasoline**	Sample Gasoline	55000	Flammable	16.4259
		YON-8F-00-47	**Sample Gasoline**	Sample Gasoline	55000	Flammable	16.515
		YON-8D-00-47	**Sample Gasoline**	Sample Gasoline	55000	Flammable	15.254

Path	Scenario	Weather	Distance to UFL [m]	Distance to LFL [m]	Distance to LFL fraction [m]
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-21	Leak	YON-2F-26-96	35.6139	619.292	914.349
		YON-2D-26-97	n/a	448.612	753.616
		YON-2F-00-47	24.4227	213.498	398.343
		YON-2D-00-47	18.3778	177.715	320.674
		YON-8F-26-96	20.4725	123.713	310.826
		YON-8D-26-96	16.3499	71.6208	250.939
		YON-8F-00-47	16.1451	53.6178	144.695
		YON-8D-00-47	15.481	59.3159	90.1669
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-10		YON-2F-26-96	40.3685	610.878	906.092
		YON-2D-26-97	n/a	434.15	743.032
		YON-2F-00-47	18.7903	181.444	359.636
		YON-2D-00-47	13.1545	141.387	283.484
		YON-8F-26-96	18.4081	111.774	297.531
		YON-8D-26-96	14.5825	48.8658	240.629
		YON-8F-00-47	15.106	45.3935	119.507
		YON-8D-00-47	12.329	49.8299	72.5648

Jet Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Flame length [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-21	Leak	YON-2F-26-96	69.8744	139.426	104.368	80.7536
		YON-2D-26-97	71.118	142.1	106.359	82.1984
		YON-2F-00-47	72.3573	152.982	112.857	86.2727
		YON-2D-00-47	73.6008	155.862	114.961	87.7646
		YON-8F-26-96	57.9093	139.164	102.274	79.543
		YON-8D-26-96	59.59	143.049	105.159	81.8033
		YON-8F-00-47	59.1802	151.396	109.188	83.9431
		YON-8D-00-47	60.7763	155.374	112.079	86.1764
1091 SHUD 0404\Yonkers		YON-2F-26-	58.3153	114.737	85.9802	66.5878

Collision with Tanker at Anchorage\Pressure vessel YON-10		96				
		YON-2D-26-97	59.6246	117.516	88.051	68.1987
		YON-2F-00-47	60.4105	125.561	92.8021	71.1911
		YON-2D-00-47	61.5878	128.241	94.7643	72.6982
		YON-8F-26-96	49.0712	118.622	87.0469	67.6305
		YON-8D-26-96	50.6711	122.391	89.8323	69.8057
		YON-8F-00-47	50.0942	128.707	92.7223	71.2313
		YON-8D-00-47	51.5617	132.371	95.3787	73.2815

Early Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-21	Leak	YON-2F-26-96	77.5439	103.281	48.8807	n/a
		YON-2D-26-97	77.5072	103.346	48.9635	n/a
		YON-2F-00-47	82.9203	118.882	51.8431	n/a
		YON-2D-00-47	82.8791	118.947	51.9326	n/a
		YON-8F-26-96	77.1723	134.262	49.7305	n/a
		YON-8D-26-96	77.0849	134.316	49.8244	n/a
		YON-8F-00-47	82.5316	143.561	55.9492	n/a
		YON-8D-00-47	82.44	143.664	56.1227	n/a
1091 SHUD 0404\Yonkers		YON-2F-26-	78.2688	104.039	49.2992	n/a

Collision with Tanker at Anchorage\Pressure vessel YON-10		96				
		YON-2D-26-97	78.2392	104.157	49.4316	n/a
		YON-2F-00-47	83.7244	119.781	52.2809	n/a
		YON-2D-00-47	83.6945	119.873	52.3898	n/a
		YON-8F-26-96	78.0027	135.34	50.1724	n/a
		YON-8D-26-96	77.9376	135.419	50.299	n/a
		YON-8F-00-47	83.4466	144.789	56.4807	n/a
		YON-8D-00-47	83.3809	144.873	56.6133	n/a

Late Pool Fire Results

Distance downwind to defined radiation levels

The reported radiations are defined in the parameters

Path	Scenario	Weather	Pool diameter [m]	Distance downwind to intensity level 1 (4 kW/m2) [m]	Distance downwind to intensity level 2 (12.5 kW/m2) [m]	Distance downwind to intensity level 3 (37.5 kW/m2) [m]
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-21	Leak	YON-2F-26-96	868.862	689.613	448.843	n/a
		YON-2D-26-97	868.425	689.427	448.724	n/a
		YON-2F-00-47	840.797	771.462	433.983	n/a
		YON-2D-00-47	840.78	771.559	434.084	n/a
		YON-8F-26-96	517.394	561.796	271.95	n/a
		YON-8D-26-96	516.825	561.48	271.825	n/a
		YON-8F-00-47	838.019	893.976	435.861	n/a
		YON-8D-00-47	837.404	893.662	436.01	n/a
1091 SHUD 0404\Yonkers		YON-2F-26-	878.748	696.154	453.885	n/a

Collision with Tanker at Anchorage\Pressure vessel YON-10		96				
		YON-2D-26-97	878.36	696.047	453.837	n/a
		YON-2F-00-47	846.432	775.852	436.85	n/a
		YON-2D-00-47	846.282	775.86	436.899	n/a
		YON-8F-26-96	524.767	568.029	275.712	n/a
		YON-8D-26-96	524.328	567.82	275.65	n/a
		YON-8F-00-47	844.098	899.307	439.191	n/a
		YON-8D-00-47	843.745	899.171	439.184	n/a

Flash Fire Results

Distance downwind to defined concentrations

The reported LFL and LFL fraction are defined in the respective material property

Path	Scenario	Weather	Distance downwind to LFL [m]	Distance downwind to LFL Fraction [m]
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-21	Leak	YON-2F-26-96	619.292	914.349
		YON-2D-26-97	448.612	753.616
		YON-2F-00-47	213.498	398.343
		YON-2D-00-47	177.715	320.674
		YON-8F-26-96	123.713	310.826
		YON-8D-26-96	71.6208	250.939
		YON-8F-00-47	53.6178	144.695
		YON-8D-00-47	59.3159	90.1669
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-10		YON-2F-26-96	610.878	906.092
		YON-2D-26-97	434.15	743.032
		YON-2F-00-47	181.444	359.636
		YON-2D-00-47	141.387	283.484
		YON-8F-26-96	111.774	297.531
		YON-8D-26-96	48.8658	240.629
		YON-8F-00-47	45.3935	119.507
		YON-8D-00-47	49.8299	72.5648

Maximum distance to LFL fraction at any height

Path	Scenario	Weather	Max flash fire distance [m]	Height of the max flash fire distance [m]	Time [s]
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-21	Leak	YON-2F-26-96	909.807	0	3613.04
		YON-2D-26-97	753.032	0	3543.6
		YON-2F-00-47	396.413	0	2740.33
		YON-2D-00-47	319.297	0	2257.46
		YON-8F-26-96	258.355	0	784.298
		YON-8D-26-96	219.366	0	782.721
		YON-8F-00-47	110.5	0.427785	1796.7
		YON-8D-00-47	87.1406	0.35801	668.247
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-10		YON-2F-26-96	897.409	0	3612.98
		YON-2D-26-97	740.965	0	3544.79
		YON-2F-00-47	356.798	0	2510.06
		YON-2D-00-47	282.01	0	2027.43
		YON-8F-26-96	242.558	0	785.31
		YON-8D-26-96	204.912	0	782.768
		YON-8F-00-47	120.338	0.429199	1381.07

		YON-8D-00-47	71.0054	0	151.276

Explosion Results

Explosion scenarios for worst-case maximum downwind distance to defined overpressures.

The reported overpressures are defined in the explosion parameters

Path	Scenario	Weather	Overpressure level [bar]	Maximum distance [m]	Diameter [m]
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-21	Leak	YON-2F-26-96	0.02068 0.1379 0.2068	3278.67 1352.96 1239.48	4797.34 925.924 678.954
		YON-2D-26-97	0.02068 0.1379 0.2068	1983.74 973.672 912.696	2507.47 487.344 365.392
		YON-2F-00-47	0.02068 0.1379 0.2068	1086.98 502.196 469.902	1453.96 264.391 159.804
		YON-2D-00-47	0.02068 0.1379 0.2068	719.547 389.598 369.68	819.094 159.197 119.359
		YON-8F-26-96	0.02068 0.1379 0.2068	749.797 347.139 322.831	999.594 194.278 145.662
		YON-8D-26-96	0.02068 0.1379 0.2068	527.744 271.756 256.302	635.488 123.511 92.6042
		YON-8F-00-47	0.02068 0.1379 0.2068	348.517 156.357 144.757	477.034 92.7148 69.514
		YON-8D-00-	0.02068	272.032	384.063

		47	0.1379 0.2068	117.323 107.983	74.6453 55.9662
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-10		YON-2F-26-96	0.02068 0.1379 0.2068	3245.45 1333.65 1222.63	4750.91 887.292 665.258
		YON-2D-26-97	0.02068 0.1379 0.2068	1876.51 944.775 888.528	2313.02 449.551 337.056
		YON-2F-00-47	0.02068 0.1379 0.2068	905.374 440.169 412.6	1170.75 220.338 165.201
		YON-2D-00-47	0.02068 0.1379 0.2068	598.186 337.017 322.749	656.372 114.034 85.4983
		YON-8F-26-96	0.02068 0.1379 0.2068	680.8 325.672 304.234	881.6 171.345 128.468
		YON-8D-26-96	0.02068 0.1379 0.2068	312.899 217.927 213.441	305.797 35.8533 26.8815
		YON-8F-00-47	0.02068 0.1379 0.2068	352.825 154.169 143.116	505.65 88.3371 66.2318
		YON-8D-00-47	0.02068 0.1379 0.2068	226.496 100.416 92.8049	312.993 60.8323 45.6097

Supplementary data for worst-case explosion scenarios

Path	Scenario	Weather	Overpressure level [bar]	Total flammable mass [kg]	Explosion flammable mass [kg]	Ignition time [s]	Ignition source [m]	Cloud centre [m]	Explosion centre [m]
1091 SHUD 0404\Yonkers Collision with Tanker at Anchorage\Pressure vessel YON-21	Leak	YON-2F-26-96	0.02068 0.1379 0.2068	170389 166865 156096	n/a n/a n/a	3346.65 3425.07 3519.46	880 890 900	325.364 330.444 340.104	880 890 900
		YON-2D-26-97	0.02068 0.1379 0.2068	24330.2 24330.2 24330.2	n/a n/a n/a	3301.13 3301.13 3301.13	730 730 730	272.931 272.931 272.931	730 730 730
		YON-2F-00-47	0.02068 0.1379 0.2068	4743.44 3884.9 2035.33	n/a n/a n/a	1813.65 1947.39 2276.96	360 370 390	140.011 137.356 120.965	360 370 390
		YON-2D-00-47	0.02068 0.1379 0.2068	848.086 848.086 848.086	n/a n/a n/a	1792.46 1792.46 1792.46	310 310 310	92.8175 92.8175 92.817	310 310 310

								5	
		YON-8F-26-96	0.02068 0.1379 0.2068	1541.38 1541.38 1541.38	n/a n/a n/a	756.259 756.259 756.259	250 250 250	47.6557 47.6557 47.6557	250 250 250
		YON-8D-26-96	0.02068 0.1379 0.2068	396.06 396.06 396.06	n/a n/a n/a	743.822 743.822 743.822	210 210 210	9.66774 9.66774 9.66774	210 210 210
		YON-8F-00-47	0.02068 0.1379 0.2068	167.528 167.528 167.528	n/a n/a n/a	1714.52 1714.52 1714.52	110 110 110	7.69195 7.69195 7.69195	110 110 110
		YON-8D-00-47	0.02068 0.1379 0.2068	87.427 87.427 87.427	n/a n/a n/a	36.9099 36.9099 36.9099	80 80 80	29.5775 29.5775 29.5775	80 80 80
1091 SHUD 0404\Yonkers Collision with		YON-2F-26-96	0.02068 0.1379 0.2068	165489 146838 146838	n/a n/a n/a	3381.65 3547.29 3547.29	870 890 890	322.036 337.37	870 890 890

Tanker at Anchorage\Pressure vessel YON-10								4 337.374	
		YON-2D-26-97	0.02068 0.1379 0.2068	19097.4 19097.4 19097.4	n/a n/a n/a	3322.57 3322.57 3322.57	720 720 720	265.921 265.921 265.921	720 720 720
		YON-2F-00-47	0.02068 0.1379 0.2068	2476.44 2248.57 2248.57	n/a n/a n/a	1775.91 1881.09 1881.09	320 330 330	114.648 112.562 112.562	320 330 330
		YON-2D-00-47	0.02068 0.1379 0.2068	436.404 311.703 311.703	n/a n/a n/a	1728.39 1908.87 1908.87	270 280 280	64.9057 58.1759 58.1759	270 280 280
		YON-8F-26-96	0.02068 0.1379 0.2068	1057.43 1057.43 1057.43	n/a n/a n/a	776.892 776.892 776.892	240 240 240	47.2338 47.2338 47.2338	240 240 240
		YON-8D-	0.02068	44.1305	n/a	604.656	160	20.021	160

		26-96	0.1379 0.2068	9.68786 9.68786	n/a n/a	763.288 763.288	200 200	2 24.9012 24.9012	200 200
		YON-8F-00-47	0.02068 0.1379 0.2068	199.52 144.9 144.9	n/a n/a n/a	1075.65 1213.34 1213.34	100 110 110	12.1144 9.73454 9.73454	100 110 110
		YON-8D-00-47	0.02068 0.1379 0.2068	47.3196 47.3196 47.3196	n/a n/a n/a	26.921 26.921 26.921	70 70 70	24.9638 24.9638 24.9638	70 70 70