

Annex D

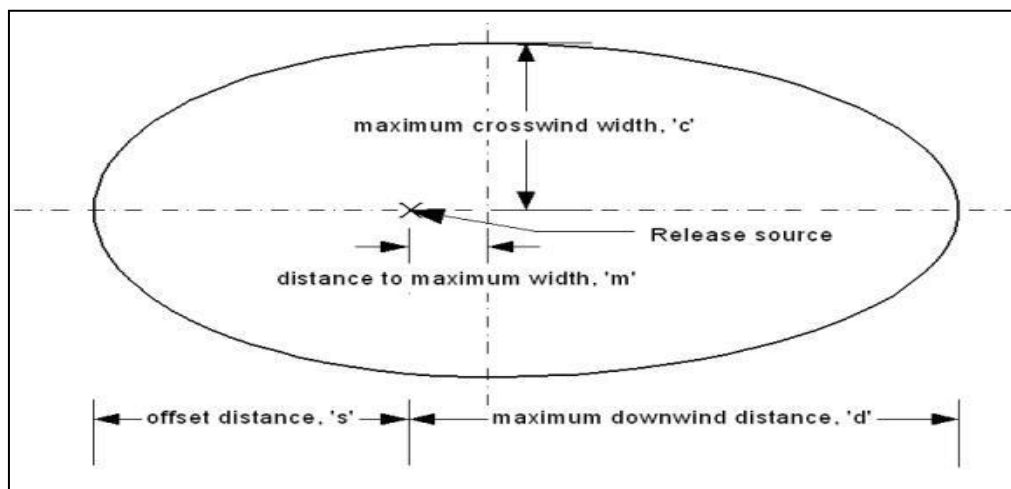
Consequence Modelling Results

D1 CONSEQUENCE ISO-PLETH CALCULATION

Modelling of pool fires, jet fires, flash fires and explosions resulting from the ignition of released material have been performed using models within DNV Phast v6.7.

Figure D.1 illustrates the various consequence zones. Each consequence is described according to the elliptical shape described in Figure D.1.

Figure D.1 Consequence Zone Representation



The following tables described the modelled results:

- Acetone Pool Fires: *Table D1*
- Acetone Explosions: *Table D2*
- Acetylene Jet Fires: *Table D3*
- Acetylene Explosions: *Table D4*
- Acetylene Flash Fires: *Table D5*

Table D1 Acetone Pool Fire Consequence Results

Scenario	Weather	37.5 kW/m2				12.5 kW/m2				6.3 kW/m2			
		d (m)	c (m)	s (m)	m (m)	d (m)	c (m)	s (m)	m (m)	d (m)	c (m)	s (m)	m (m)
Acetone Vessel Rupture	B3	15	10	-7	4	23	18	-13	5	30	26	-19	5
	D5	16	11	-7	5	24	18	-12	6	30	25	-18	6
	F2	14	10	-7	4	22	18	-14	4	30	26	-21	5
Acetone Vessel 100 mm Hole	B3	15	10	-7	4	23	18	-13	5	30	26	-19	5
	D5	16	11	-7	5	24	18	-12	6	30	25	-18	6
	F2	14	10	-7	4	22	18	-14	4	30	26	-21	5
Acetone Vessel 10 mm Hole	B3	15	10	-7	4	23	18	-13	5	30	26	-19	5
	D5	16	11	-7	5	24	18	-12	6	30	25	-18	6
	F2	14	10	-7	4	22	18	-14	4	30	26	-21	5
Acetone Road Tanker Rupture	B3	20	14	-9	6	31	25	-18	6	40	35	-27	7
	D5	22	15	-9	6	32	25	-17	7	40	35	-25	8
	F2	19	14	-10	5	30	25	-19	5	40	35	-28	6
Acetone Road Tanker 100 mm Hole	B3	20	14	-9	6	31	25	-18	6	40	35	-27	7
	D5	22	15	-9	6	32	25	-17	7	40	35	-25	8
	F2	19	14	-10	5	30	25	-19	5	40	35	-28	6
Acetone Road Tanker Tow Away	B3	20	14	-9	6	31	25	-18	6	40	35	-27	7
	D5	22	15	-9	6	32	25	-17	7	40	35	-25	8
	F2	19	14	-10	5	30	25	-19	5	40	35	-28	6
Acetone Road Tanker Hose Misalignment	B3	20	14	-9	6	31	25	-18	6	40	35	-27	7
	D5	22	15	-9	6	32	25	-17	7	40	35	-25	8
	F2	19	14	-10	5	30	25	-19	5	40	35	-28	6

Table D2 Acetone Explosion Consequence Results

Scenario	Weather	350 mbar				200 mbar				50 mbar			
		d (m)	c (m)	s (m)	m (m)	d (m)	c (m)	s (m)	m (m)	d (m)	c (m)	s (m)	m (m)
Acetone Vessel Rupture	B3	13	3	7	10	15	5	5	10	21	11	-1	10
	D5	13	3	7	10	14	4	6	10	20	10	0	10
	F2	19	4	11	15	21	6	9	15	35	15	5	20
Acetone Vessel 100 mm Hole	B3	13	3	7	10	15	5	5	10	21	11	-1	10
	D5	13	3	7	10	14	4	6	10	20	10	0	10
	F2	19	4	11	15	21	6	9	15	35	15	5	20

Scenario	Weather	350 mbar				200 mbar				50 mbar			
		d (m)	c (m)	s (m)	m (m)	d (m)	c (m)	s (m)	m (m)	d (m)	c (m)	s (m)	m (m)
Acetone Vessel 10 mm Hole	B3	-	-	-	-	-	-	-	-	-	-	-	-
	D5	-	-	-	-	-	-	-	-	-	-	-	-
	F2	6	1	4	5	7	2	4	5	9	4	1	5
Acetone Road Tanker Rupture	B3	20	5	10	15	22	7	8	15	33	18	-3	15
	D5	20	5	10	15	21	6	9	15	31	16	-1	15
	F2	31	6	19	25	34	9	16	25	48	23	2	25
Acetone Road Tanker 100 mm Hole	B3	13	3	7	10	15	5	5	10	22	12	-2	10
	D5	13	3	7	10	14	4	6	10	21	11	-1	10
	F2	20	5	10	15	27	7	13	20	37	17	3	20
Acetone Road Tanker Tow Away	B3	13	3	7	10	15	5	5	10	22	12	-2	10
	D5	13	3	7	10	14	4	6	10	19	9	1	10
	F2	20	5	10	15	22	7	8	15	32	17	-2	15
Acetone Road Tanker Hose Misalignment	B3	6	1	4	5	6	1	4	5	9	4	1	5
	D5	6	1	4	5	6	1	4	5	8	3	2	5
	F2	12	2	8	10	13	3	7	10	17	7	3	10

Table D3 Acetylene Jet Fire Consequence Results

Scenario	Weather	37.5 kW/m ²				12.5 kW/m ²				6.3 kW/m ²			
		d (m)	c (m)	s (m)	m (m)	d (m)	c (m)	s (m)	m (m)	d (m)	c (m)	s (m)	m (m)
Acetylene Generator 100 mm Hole	B3	21	4	4	12	25	10	2	14	28	14	1	15
	D5	23	4	4	13	26	9	3	14	29	14	1	15
	F2	20	4	4	12	25	10	2	13	28	14	1	14
Acetylene Generator 10 mm Hole	B3	-	-	-	-	-	-	-	-	-	-	-	-
	D5	-	-	-	-	-	-	-	-	-	-	-	-
	F2	-	-	-	-	-	-	-	-	-	-	-	-
Acetylene Compressor Rupture	B3	15	3	2	8	17	7	0	9	19	10	0	10
	D5	13	3	1	7	16	7	0	8	18	10	0	9
	F2	16	3	2	9	19	7	1	10	21	10	0	10
Acetylene Compressor 25 mm Hole	B3	15	3	2	8	17	7	0	9	19	10	0	10
	D5	13	3	1	7	16	7	0	8	18	10	0	9
	F2	16	3	2	9	19	7	1	10	21	10	0	10
Acetylene Fill Hall Line Rupture	B3	11	1	4	7	11	3	2	7	12	4	2	7
	D5	11	1	4	7	11	2	2	7	12	4	2	7
	F2	11	1	4	7	11	3	2	7	12	4	2	7

Scenario	Weather	350 mbar				200 mbar				50 mbar			
		d (m)	c (m)	s (m)	m (m)	d (m)	c (m)	s (m)	m (m)	d (m)	c (m)	s (m)	m (m)
Acetylene Fill Hall Line Rupture	F2	15	-	-	-	-	-	-	-	-	-	-	-
	B3	8	3	2	5	10	5	0	5	18	13	-8	5
	D5	8	3	2	5	9	4	1	5	18	13	-8	5
Acetylene Fill Hall Cylinder Rupture	F2	9	4	1	5	10	5	0	5	20	15	-10	5
	B3	-	-	-	-	-	-	-	-	-	-	-	-
	D5	13	7	-2	5	16	10	-5	5	35	30	-25	5
Acetylene Fill Hall Line Corrosion Rupture	F2	-	-	-	-	-	-	-	-	-	-	-	-
	B3	-	-	-	-	-	-	-	-	-	-	-	-
	D5	13	7	-2	5	16	10	-5	5	35	30	-25	5
Acetylene Storage Cylinder Rupture	F2	-	-	-	-	-	-	-	-	-	-	-	-
	B3	-	-	-	-	-	-	-	-	-	-	-	-
	D5	13	7	-2	5	16	10	-5	5	35	30	-25	5
Acetylene Storage Cylinder Corrosion Rupture	F2	-	-	-	-	-	-	-	-	-	-	-	-
	B3	-	-	-	-	-	-	-	-	-	-	-	-
	D5	13	7	-2	5	16	10	-5	5	35	30	-25	5
	F2	-	-	-	-	-	-	-	-	-	-	-	-

Table D5 Acetylene Flash Fire Consequence Results

Scenario	Weather	LFL				0.5 LFL			
		d (m)	c (m)	s (m)	m (m)	d (m)	c (m)	s (m)	m (m)
Acetylene Generator Rupture	B3	24	7	-6	3	40	10	-7	10
	D5	45	7	-6	5	81	10	-6	18
	F2	75	7	-6	7	169	10	-7	8
Acetylene Generator 100 mm Hole	B3	12	1	8	10	47	2	5	23
	D5	-	-	-	-	48	1	5	22
	F2	18	1	8	13	53	2	6	26
Acetylene Compressor Rupture	B3	-	-	-	-	15	1	7	11
	D5	-	-	-	-	13	1	8	10
	F2	-	-	-	-	23	1	8	15
Acetylene Compressor 25 mm Hole	B3	-	-	-	-	15	1	7	11
	D5	-	-	-	-	13	1	8	10
	F2	-	-	-	-	23	1	8	15
Acetylene Fill Hall Line Cylinder Rupture	B3	5	4	-3	1	8	5	-4	1
	D5	7	4	-3	1	12	5	-4	3
	F2	5	4	-3	0	7	5	-4	1
Acetylene Fill Hall Line Valve Shear	B3	0	1	0	0	0	1	0	0

Scenario	Weather	LFL				0.5 LFL			
		d (m)	c (m)	s (m)	m (m)	d (m)	c (m)	s (m)	m (m)
	D5	0	1	0	0	0	1	0	0
	F2	0	1	0	0	0	1	0	0
Acetylene Fill Hall Line Corrosion Rupture	B3	5	4	-3	1	8	5	-4	1
	D5	7	4	-3	1	12	5	-4	3
Acetylene Storage Cylinder Rupture	F2	5	4	-3	0	7	5	-4	1
	B3	5	4	-3	1	8	5	-4	1
Acetylene Storage Cylinder Valve Shear	D5	7	4	-3	1	12	5	-4	3
	F2	5	4	-3	0	7	5	-4	1
Acetylene Storage Cylinder Corrosion Rupture	B3	0	1	0	0	0	1	0	0
	D5	0	1	0	0	0	1	0	0
	F2	0	1	0	0	0	1	0	0
	B3	5	4	-3	1	8	5	-4	1
	D5	7	4	-3	1	12	5	-4	3
	F2	5	4	-3	0	7	5	-4	1