



# SUMMARY REPORT

Unique Audit Number: 51.335

Study Folder: PMLX1\_UTGCA

PHAST 6.4



PMLX1\_UTGCA



C5+

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Base Case

## User-Defined Data

### Material

Material Identifier N-HEXANE

### Vessel/Tank

Release Type Continuous  
Building Wake Option None

### Location

Elevation 0,1 m  
ERPG selection ERPG is not set  
IDLH selection IDLH is not set  
STEL selection STEL is not set  
User Defined Averaging No user defined averaging time supplied

### Bund

Status of Bund Bund present  
Area of Dike 2512 m2  
Type of Bund Surface Dry Soil  
Bund Height 0,3 m  
[Bund Failure Modeling Bund cannot fail]

### Indoor/Outdoor

Outdoor Release Direction Horizontal

### Flammable

Method to use for explosions Multi-Energy  
Jet Fire Method Shell

### Dispersion

Number of Release Segments 1  
Fluid Phase(1) Liquid  
Discharge Velocity(1) 92 m/s  
Droplet Diameter(1) 1 mm  
Duration of Discharge(1) 1,44E4 s  
Final Temperature(1) 25 degC  
Release Rate(1) 745,2 kg/s  
Pre-Dilution Air Rates(1) 0 kg/s  
Ignition Location No ignition location  
Inventory of material to Disperse 1E5 kg

### Multi Energy Explosion

Use Unconfined Volumes No  
Use Fractions No  
Use 1st Confined Source Yes  
Use 2nd Confined Source No  
Use 3rd Confined Source No  
Use 4th Confined Source No  
Use 5th Confined Source No  
Use 6th Confined Source No  
Use 7th Confined Source No  
Confined Strength 1 6  
Confined Volume 1 1350 m3

CASE Name: Data



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## Consequence Results

### Pool Vaporization Results

N.B. Pool vaporization segments begin when the cloud has left the pool

		Dia	Noite
Liquid Rainout	fraction	0,960338	0,955345
Initial Vapor Cloud			
Time Pool Left Behind			
Cloud Segment 1			
Cloud Segment Duration	s	67,24	67,24
Pool Vaporization Rate	kg/s	3,44896	2,90236
Cloud Segment 2			
Cloud Segment Duration	s	28,3106	28,8
Pool Vaporization Rate	kg/s	8,13931	6,80903
Cloud Segment 3			
Cloud Segment Duration	s	2304,45	2303,96
Pool Vaporization Rate	kg/s	10,7181	9,21658
Maximum Pool Radius	m	28,2754	28,2754

### Distance to Concentration Results

The height for user defined concentrations is the user defined height 0 m

All toxic results are reported at the toxic effect height 0 m

All flammable results are reported at the cloud centreline height

Concentration(ppm) Averaging Time				Distance (m)	
				Dia	Noite
UFL	(76800)	18,75	s	22,7615	30,1067
LFL	(10500)	18,75	s	53,1352	70,6614
LFL Frac	(5250)	18,75	s	75,4478	98,6399
Concentration(ppm) Averaging Time				Heights (m) for above distances	
				Dia	Noite
UFL	(76800)	18,75	s	0	0
LFL	(10500)	18,75	s	0	0
LFL Frac	(5250)	18,75	s	0	0

### Late Pool Fire Hazard

	Dia	Noite
Late Pool Fire Status	Hazard	Hazard

### Radiation Effects: Late Pool Fire Ellipse

			Distance (m)	
			Dia	Noite
Radiation Level	3	kW/m2	118,802	117,399
Radiation Level	18,3	kW/m2	41,6564	42,5365
Radiation Level	36	kW/m2	Not Reached	Not Reached
Radiation Level	71,2	kW/m2	Not Reached	Not Reached

### Flash Fire Envelope

All flammable results are reported at the cloud centreline height

Distance (m)



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			Dia	Noite
Furthest Extent	5250	ppm	75,4478	98,6399
Furthest Extent	10500	ppm	53,1352	70,6614

## Explosion Effects: Late Ignition

Explosion Model Used : Multi Energy

Explosion Location Criterion: Cloud Front (LFL Fraction)

All distances are measured from the Source

All flammable results are reported at the cloud centreline height

			Maximum Distance (m) at Overpressure Level	
			Dia	Noite
Overpressure	0,4	bar	98,9505	119,033
Overpressure	0,3	bar	110,285	130,404
Overpressure	0,1	bar	174,239	194,55
Overpressure	0,05	bar	257,381	277,93

			Supplementary Data at 0,4 bar	
			Dia	Noite
Supplied Flammable Mass		kg	229,968	413,126
Used Flammable Mass				
Overpressure Radius		m	28,9505	29,0329
Distance to:				
- Ignition Source		m	70	90
- Cloud Front/Centre		m	70	90
- Explosion Centre		m	70	90

			Supplementary Data at 0,3 bar	
			Dia	Noite
Supplied Flammable Mass		kg	229,968	413,126
Used Flammable Mass				
Overpressure Radius		m	40,2847	40,4037
Distance to:				
- Ignition Source		m	70	90
- Cloud Front/Centre		m	70	90
- Explosion Centre		m	70	90

			Supplementary Data at 0,1 bar	
			Dia	Noite
Supplied Flammable Mass		kg	229,968	413,126
Used Flammable Mass				
Overpressure Radius		m	104,239	104,55
Distance to:				
- Ignition Source		m	70	90
- Cloud Front/Centre		m	70	90
- Explosion Centre		m	70	90

## Weather Conditions

			Dia	Noite
Wind Speed		m/s	5,1	4,5
Pasquill Stability			B	E
Surface Roughness Parameter			0,33	0,33
Atmospheric Temperature		degC	24,3	22,1
Surface Temperature		degC	24,3	22,1
Relative Humidity		fraction	0,784	0,854



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Base Case

## User-Defined Data

<b>Material</b>	Material Identifier	N-HEXANE
<b>Vessel/Tank</b>	Release Type	Continuous
	Building Wake Option	None
<b>Location</b>	Elevation	0,1 m
	ERPG selection	ERPG is not set
	IDLH selection	IDLH is not set
	STEL selection	STEL is not set
	User Defined Averaging	No user defined averaging time supplied
<b>Bund</b>	Status of Bund	Bund present
	Area of Dike	517,8 m <sup>2</sup>
	Type of Bund Surface	Dry Soil
	Bund Height	0,3 m
	[Bund Failure Modeling	Bund cannot fail]
<b>Indoor/Outdoor</b>	Outdoor Release Direction	Horizontal
<b>Flammable</b>	Method to use for explosions	Multi-Energy
	Jet Fire Method	Shell
<b>Dispersion</b>	Number of Release Segments	1
	Fluid Phase(1)	Liquid
	Discharge Velocity(1)	25 m/s
	Droplet Diameter(1)	1 mm
	Duration of Discharge(1)	1,44E4 s
	Final Temperature(1)	25 degC
	Release Rate(1)	202,2 kg/s
	Pre-Dilution Air Rates(1)	0 kg/s
	Ignition Location	No ignition location
	Inventory of material to Disperse	1E5 kg
<b>Multi Energy Explosion</b>	Use Unconfined Volumes	No
	Use Fractions	No
	Use 1st Confined Source	Yes
	Use 2nd Confined Source	No
	Use 3rd Confined Source	No
	Use 4th Confined Source	No
	Use 5th Confined Source	No
	Use 6th Confined Source	No
	Use 7th Confined Source	No
	Confined Strength 1	6
	Confined Volume 1	1350 m <sup>3</sup>
<b>CASE Name:</b>	<b>Data</b>	

## Consequence Results

### Distance to Concentration Results

All toxic results are reported at the toxic effect height 0 m



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All flammable results are reported at the cloud centreline height

Concentration(ppm) Averaging Time				Distance (m)	
				Dia	Noite
UFL	(76800)	18,75	s	8,32947	10,5163
LFL	(10500)	18,75	s	18,1873	23,7404
LFL Frac	(5250)	18,75	s	26,3454	33,9601

  

Concentration(ppm) Averaging Time				Heights (m) for above distances	
				Dia	Noite
UFL	(76800)	18,75	s	0	0
LFL	(10500)	18,75	s	0	0
LFL Frac	(5250)	18,75	s	0	0

### Late Pool Fire Hazard

Late Pool Fire Status	Dia	Noite
	Hazard	Hazard

### Radiation Effects: Late Pool Fire Ellipse

			Distance (m)	
			Dia	Noite
Radiation Level	3	kW/m2	68,2941	67,3081
Radiation Level	18,3	kW/m2	18,8293	18,9518
Radiation Level	36	kW/m2	Not Reached	Not Reached
Radiation Level	71,2	kW/m2	Not Reached	Not Reached

### Flash Fire Envelope

All flammable results are reported at the cloud centreline height

			Distance (m)	
			Dia	Noite
Furthest Extent	5250	ppm	26,3454	33,9601
Furthest Extent	10500	ppm	18,1873	23,7404

### Explosion Effects: Late Ignition

Explosion Model Used : Multi Energy

Explosion Location Criterion: Cloud Front (LFL Fraction)

All distances are measured from the Source

All flammable results are reported at the cloud centreline height

			Maximum Distance (m) at Overpressure Level	
			Dia	Noite
Overpressure	0,4	bar	34,4253	48,388
Overpressure	0,3	bar	40,0756	57,3758
Overpressure	0,1	bar	71,944	96,2018
Overpressure	0,05	bar	113,375	149,003

			Supplementary Data at 0,4 bar	
			Dia	Noite
Supplied Flammable Mass		kg	13,5823	28,117
Used Flammable Mass				
Overpressure Radius		m	14,4253	18,388
Distance to:				



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- Ignition Source	m	20	30
- Cloud Front/Centre	m	20	30
- Explosion Centre	m	20	30

### Supplementary Data at 0,3 bar

		Dia	Noite
Supplied Flammable Mass	kg	13,5823	28,117
Used Flammable Mass			
Overpressure Radius	m	20,0756	27,3758
Distance to:			
- Ignition Source	m	20	30
- Cloud Front/Centre	m	20	30
- Explosion Centre	m	20	30

### Supplementary Data at 0,1 bar

		Dia	Noite
Supplied Flammable Mass	kg	13,5823	28,117
Used Flammable Mass			
Overpressure Radius	m	51,944	66,2018
Distance to:			
- Ignition Source	m	20	30
- Cloud Front/Centre	m	20	30
- Explosion Centre	m	20	30

### Weather Conditions

		Dia	Noite
Wind Speed	m/s	5,1	4,5
Pasquill Stability		B	E
Surface Roughness Parameter		0,33	0,33
Atmospheric Temperature	degC	24,3	22,1
Surface Temperature	degC	24,3	22,1
Relative Humidity	fraction	0,784	0,854

### Pool Vaporization Results

N.B. Pool vaporization segments begin when the cloud has left the pool

		Dia	Noite
Liquid Rainout	fraction	0,982405	0,980646
Initial Vapor Cloud			
Time Pool Left Behind			
Cloud Segment 1			
Cloud Segment Duration	s	60,84	60,84
Pool Vaporization Rate	kg/s	1,0748	0,933861
Cloud Segment 2			
Cloud Segment Duration	s	2339,16	26,1156
Pool Vaporization Rate	kg/s	2,73245	2,154
Cloud Segment 3			
Cloud Segment Duration	s		2313,04
Pool Vaporization Rate	kg/s		2,42935
Maximum Pool Radius	m	12,8383	12,8383

### Distance to Concentration Results

The height for user defined concentrations is the user defined height 0 m



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Base Case

## User-Defined Data

<b>Material</b>	Material Identifier	N-HEXANE
<b>Vessel/Tank</b>	Release Type	Continuous
	Building Wake Option	None
<b>Location</b>	Elevation	0,1 m
	ERPG selection	ERPG is not set
	IDLH selection	IDLH is not set
	STEL selection	STEL is not set
	User Defined Averaging	No user defined averaging time supplied
<b>Bund</b>	Status of Bund	Bund present
	Area of Dike	597,5 m <sup>2</sup>
	Type of Bund Surface	Dry Soil
	Bund Height	0,3 m
	[Bund Failure Modeling	Bund cannot fail]
<b>Indoor/Outdoor</b>	Outdoor Release Direction	Horizontal
<b>Flammable</b>	Method to use for explosions	Multi-Energy
	Jet Fire Method	Shell
<b>Dispersion</b>	Number of Release Segments	1
	Fluid Phase(1)	Liquid
	Discharge Velocity(1)	92 m/s
	Droplet Diameter(1)	1 mm
	Duration of Discharge(1)	1,44E4 s
	Final Temperature(1)	25 degC
	Release Rate(1)	28,8 kg/s
	Pre-Dilution Air Rates(1)	0 kg/s
	Ignition Location	No ignition location
	Inventory of material to Disperse	1E5 kg
<b>Multi Energy Explosion</b>	Use Unconfined Volumes	No
	Use Fractions	No
	Use 1st Confined Source	Yes
	Use 2nd Confined Source	No
	Use 3rd Confined Source	No
	Use 4th Confined Source	No
	Use 5th Confined Source	No
	Use 6th Confined Source	No
	Use 7th Confined Source	No
	Confined Strength 1	6
	Confined Volume 1	1350 m <sup>3</sup>
<b>CASE Name:</b>	<b>Data</b>	

## Consequence Results

### Pool Vaporization Results

N.B. Pool vaporization segments begin when the cloud has left the pool

Dia Noite



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Liquid Rainout	fraction	0,919048	0,921435
Initial Vapor Cloud			
Time Pool Left Behind			
Cloud Segment 1			
Cloud Segment Duration	s	262,44	255,201
Pool Vaporization Rate	kg/s	0,477476	0,385129
Cloud Segment 2			
Cloud Segment Duration	s	108,123	107,702
Pool Vaporization Rate	kg/s	1,1561	0,91512
Cloud Segment 3			
Cloud Segment Duration	s	84,1931	83,3631
Pool Vaporization Rate	kg/s	1,50337	1,1857
Cloud Segment 4			
Cloud Segment Duration	s	70,8	71,2969
Pool Vaporization Rate	kg/s	1,77895	1,4008
Cloud Segment 5			
Cloud Segment Duration	s	62,5069	62,0431
Pool Vaporization Rate	kg/s	2,01249	1,58356
Cloud Segment 6			
Cloud Segment Duration	s	110,218	109,457
Pool Vaporization Rate	kg/s	2,30939	1,81491
Cloud Segment 7			
Cloud Segment Duration	s	91,3294	1710,94
Pool Vaporization Rate	kg/s	2,63933	1,92561
Cloud Segment 8			
Cloud Segment Duration	s	1610,39	
Pool Vaporization Rate	kg/s	2,26069	
Maximum Pool Radius	m	13,7909	13,7909

### Distance to Concentration Results

The height for user defined concentrations is the user defined height 0 m

All toxic results are reported at the toxic effect height 0 m

All flammable results are reported at the cloud centreline height

Concentration(ppm) Averaging Time				Distance (m)	
				Dia	Noite
UFL	(76800)	18,75	s	6,96687	7,97384
LFL	(10500)	18,75	s	16,7346	21,8601
LFL Frac	(5250)	18,75	s	24,7202	30,7087

Concentration(ppm) Averaging Time				Heights (m) for above distances	
				Dia	Noite
UFL	(76800)	18,75	s	0	0,0031661
LFL	(10500)	18,75	s	0	0
LFL Frac	(5250)	18,75	s	0	0

### Late Pool Fire Hazard

	Dia	Noite
Late Pool Fire Status	Hazard	Hazard

### Radiation Effects: Late Pool Fire Ellipse

				Distance (m)	
				Dia	Noite
Radiation Level	3	kW/m2		71,4672	71,3904





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Radiation Level	18,3	kW/m2	20,439	21,5666
Radiation Level	36	kW/m2	Not Reached	Not Reached
Radiation Level	71,2	kW/m2	Not Reached	Not Reached

## Flash Fire Envelope

All flammable results are reported at the cloud centreline height

				Distance (m)	
				Dia	Noite
Furthest Extent	5250	ppm	24,7202	30,7087	
Furthest Extent	10500	ppm	16,7346	21,8601	

## Explosion Effects: Late Ignition

Explosion Model Used : Multi Energy

Explosion Location Criterion: Cloud Front (LFL Fraction)

All distances are measured from the Source

All flammable results are reported at the cloud centreline height

				Maximum Distance (m) at Overpressure Level	
				Dia	Noite
Overpressure	0,4	bar	31,2139	45,958	
Overpressure	0,3	bar	36,7004	52,2065	
Overpressure	0,1	bar	60,3854	87,4615	
Overpressure	0,05	bar	92,6044	133,287	

				Supplementary Data at 0,4 bar	
				Dia	Noite
Supplied Flammable Mass		kg	6,38435	18,3837	
Used Flammable Mass					
Overpressure Radius		m	11,2139	15,958	
Distance to:					
- Ignition Source		m	20	30	
- Cloud Front/Centre		m	20	30	
- Explosion Centre		m	20	30	

				Supplementary Data at 0,3 bar	
				Dia	Noite
Supplied Flammable Mass		kg	6,38435	18,3837	
Used Flammable Mass					
Overpressure Radius		m	16,7004	22,2065	
Distance to:					
- Ignition Source		m	20	30	
- Cloud Front/Centre		m	20	30	
- Explosion Centre		m	20	30	

				Supplementary Data at 0,1 bar	
				Dia	Noite
Supplied Flammable Mass		kg	6,38435	18,3837	
Used Flammable Mass					
Overpressure Radius		m	40,3854	57,4615	
Distance to:					
- Ignition Source		m	20	30	
- Cloud Front/Centre		m	20	30	



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- Explosion Centre	m	20	30
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## Weather Conditions

		Dia	Noite
Wind Speed	m/s	5,1	4,5
Pasquill Stability		B	E
Surface Roughness Parameter		0,33	0,33
Atmospheric Temperature	degC	24,3	22,1
Surface Temperature	degC	24,3	22,1
Relative Humidity	fraction	0,784	0,854



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Base Case

## User-Defined Data

<b>Material</b>	Material Identifier	N-HEXANE
<b>Vessel/Tank</b>	Release Type	Continuous
	Building Wake Option	None
<b>Location</b>	Elevation	0,1 m
	ERPG selection	ERPG is not set
	IDLH selection	IDLH is not set
	STEL selection	STEL is not set
	User Defined Averaging	No user defined averaging time supplied
<b>Bund</b>	Status of Bund	Bund present
	Area of Dike	517,8 m <sup>2</sup>
	Type of Bund Surface	Dry Soil
	Bund Height	0,3 m
	[Bund Failure Modeling	Bund cannot fail]
<b>Indoor/Outdoor</b>	Outdoor Release Direction	Horizontal
<b>Flammable</b>	Method to use for explosions	Multi-Energy
	Jet Fire Method	Shell
<b>Dispersion</b>	Number of Release Segments	1
	Fluid Phase(1)	Liquid
	Discharge Velocity(1)	97,1 m/s
	Droplet Diameter(1)	1 mm
	Duration of Discharge(1)	1,44E4 s
	Final Temperature(1)	25 degC
	Release Rate(1)	31,5 kg/s
	Pre-Dilution Air Rates(1)	0 kg/s
	Ignition Location	No ignition location
	Inventory of material to Disperse	1E5 kg
<b>Multi Energy Explosion</b>	Use Unconfined Volumes	No
	Use Fractions	No
	Use 1st Confined Source	Yes
	Use 2nd Confined Source	No
	Use 3rd Confined Source	No
	Use 4th Confined Source	No
	Use 5th Confined Source	No
	Use 6th Confined Source	No
	Use 7th Confined Source	No
	Confined Strength 1	6
	Confined Volume 1	1350 m <sup>3</sup>
<b>CASE Name:</b>	<b>Data</b>	

## Consequence Results

### Radiation Effects: Late Pool Fire Ellipse

Radiation Level	71,2	kW/m <sup>2</sup>	Not Reached	Not Reached
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## Flash Fire Envelope

All flammable results are reported at the cloud centreline height

				Distance (m)	
				Dia	Noite
Furthest Extent	5250	ppm	24,9656	30,8334	
Furthest Extent	10500	ppm	17,1085	22,1556	

## Explosion Effects: Late Ignition

Explosion Model Used : Multi Energy

Explosion Location Criterion: Cloud Front (LFL Fraction)

All distances are measured from the Source

All flammable results are reported at the cloud centreline height

				Maximum Distance (m) at Overpressure Level	
				Dia	Noite
Overpressure	0,4	bar	30,9621	44,9433	
Overpressure	0,3	bar	35,2531	52,2492	
Overpressure	0,1	bar	59,4699	83,8116	
Overpressure	0,05	bar	90,9503	126,725	

Supplementary Data at 0,4 bar

Dia Noite

## Pool Vaporization Results

N.B. Pool vaporization segments begin when the cloud has left the pool

				Dia	Noite
Liquid Rainout		fraction	0,926279	0,925167	
Initial Vapor Cloud					
Time Pool Left Behind					
Cloud Segment 1					
Cloud Segment Duration		s	203,776	199,516	
Pool Vaporization Rate		kg/s	0,417146	0,336323	
Cloud Segment 2					
Cloud Segment Duration		s	84,375	84,4069	
Pool Vaporization Rate		kg/s	1,00467	0,797248	
Cloud Segment 3					
Cloud Segment Duration		s	65,2894	65,7675	
Pool Vaporization Rate		kg/s	1,30553	1,03386	
Cloud Segment 4					
Cloud Segment Duration		s	55,6106	55,3256	
Pool Vaporization Rate		kg/s	1,54521	1,22152	
Cloud Segment 5					
Cloud Segment Duration		s	48,9094	48,6744	
Pool Vaporization Rate		kg/s	1,74979	1,38053	
Cloud Segment 6					
Cloud Segment Duration		s	84,93	85,7106	
Pool Vaporization Rate		kg/s	2,00786	1,58301	
Cloud Segment 7					
Cloud Segment Duration		s	70,9106	1860,6	
Pool Vaporization Rate		kg/s	2,29851	1,69312	
Cloud Segment 8					



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Cloud Segment Duration	s	1786,2	
Pool Vaporization Rate	kg/s	1,99518	
Maximum Pool Radius	m	12,8383	12,8383

### Distance to Concentration Results

The height for user defined concentrations is the user defined height 0 m

All toxic results are reported at the toxic effect height 0 m

All flammable results are reported at the cloud centreline height

Concentration(ppm) Averaging Time				Distance (m)	
				Dia	Noite
UFL	(76800)	18,75	s	7,17326	7,4621
LFL	(10500)	18,75	s	17,1085	22,1556
LFL Frac	(5250)	18,75	s	24,9656	30,8334

  

Concentration(ppm) Averaging Time				Heights (m) for above distances	
				Dia	Noite
UFL	(76800)	18,75	s	0	0,0380766
LFL	(10500)	18,75	s	0	0
LFL Frac	(5250)	18,75	s	0	0

### Late Pool Fire Hazard

	Dia	Noite
Late Pool Fire Status	Hazard	Hazard

### Radiation Effects: Late Pool Fire Ellipse

			Distance (m)	
			Dia	Noite
Radiation Level	3	kW/m2	69,36	68,9743
Radiation Level	18,3	kW/m2	19,8952	20,618
Radiation Level	36	kW/m2	Not Reached	Not Reached

### Explosion Effects: Late Ignition

Supplied Flammable Mass	kg	5,95822	15,0972
Used Flammable Mass			
Overpressure Radius	m	10,9621	14,9433
Distance to:			
- Ignition Source	m	20	30
- Cloud Front/Centre	m	20	30
- Explosion Centre	m	20	30

#### Supplementary Data at 0,3 bar

			Dia	Noite
Supplied Flammable Mass	kg	5,95822	15,0972	
Used Flammable Mass				
Overpressure Radius	m	15,2531	22,2492	
Distance to:				
- Ignition Source	m	20	30	
- Cloud Front/Centre	m	20	30	
- Explosion Centre	m	20	30	

#### Supplementary Data at 0,1 bar

			Dia	Noite
Supplied Flammable Mass	kg	5,95822	15,0972	
Used Flammable Mass				



# SUMMARY REPORT

Study Folder: PMLX1\_UTGCA

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Overpressure Radius	m	39,4699	53,8116
Distance to:			
- Ignition Source	m	20	30
- Cloud Front/Centre	m	20	30
- Explosion Centre	m	20	30

## Weather Conditions

		Dia	Noite
Wind Speed	m/s	5,1	4,5
Pasquill Stability		B	E
Surface Roughness Parameter		0,33	0,33
Atmospheric Temperature	degC	24,3	22,1
Surface Temperature	degC	24,3	22,1
Relative Humidity	fraction	0,784	0,854



# SUMMARY REPORT

Study Folder: PMLX1\_UTGCA

Unique Audit Number: 51.335

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Base Case

## User-Defined Data

<b>Material</b>	Material Identifier	N-HEXANE
<b>Vessel/Tank</b>	Release Type	Continuous
	Building Wake Option	None
<b>Location</b>	Elevation	0,1 m
	ERPG selection	ERPG is not set
	IDLH selection	IDLH is not set
	STEL selection	STEL is not set
	User Defined Averaging	No user defined averaging time supplied
<b>Bund</b>	Status of Bund	Bund present
	Area of Dike	522,8 m <sup>2</sup>
	Type of Bund Surface	Dry Soil
	Bund Height	0,3 m
	[Bund Failure Modeling	Bund cannot fail]
<b>Indoor/Outdoor</b>	Outdoor Release Direction	Horizontal
<b>Flammable</b>	Method to use for explosions	Multi-Energy
	Jet Fire Method	Shell
<b>Dispersion</b>	Number of Release Segments	1
	Fluid Phase(1)	Liquid
	Discharge Velocity(1)	92 m/s
	Droplet Diameter(1)	1 mm
	Duration of Discharge(1)	1,44E4 s
	Final Temperature(1)	25 degC
	Release Rate(1)	1,9 kg/s
	Pre-Dilution Air Rates(1)	0 kg/s
	Ignition Location	No ignition location
	Inventory of material to Disperse	1E5 kg
<b>Multi Energy Explosion</b>	Use Unconfined Volumes	No
	Use Fractions	No
	Use 1st Confined Source	Yes
	Use 2nd Confined Source	No
	Use 3rd Confined Source	No
	Use 4th Confined Source	No
	Use 5th Confined Source	No
	Use 6th Confined Source	No
	Use 7th Confined Source	No
	Confined Strength 1	6
	Confined Volume 1	1350 m <sup>3</sup>

CASE Name: Data

## Consequence Results

### Pool Vaporization Results

N.B. Pool vaporization segments begin when the cloud has left the pool



# SUMMARY REPORT

Study Folder: PMLX1\_UTGCA

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		Dia	Noite
Liquid Rainout	fraction	0,928799	0,88569
Initial Vapor Cloud			
Time Pool Left Behind			
Cloud Segment 1			
Cloud Segment Duration	s	712,89	730,351
Pool Vaporization Rate	kg/s	0,122099	0,0831202
Cloud Segment 2			
Cloud Segment Duration	s	306,316	308,1
Pool Vaporization Rate	kg/s	0,285038	0,197546
Cloud Segment 3			
Cloud Segment Duration	s	241,044	239,612
Pool Vaporization Rate	kg/s	0,362544	0,252948
Cloud Segment 4			
Cloud Segment Duration	s	206,64	206,113
Pool Vaporization Rate	kg/s	0,421846	0,295933
Cloud Segment 5			
Cloud Segment Duration	s	356,4	349,805
Pool Vaporization Rate	kg/s	0,491743	0,347071
Cloud Segment 6			
Cloud Segment Duration	s	449,616	438,925
Pool Vaporization Rate	kg/s	0,584417	0,415682
Cloud Segment 7			
Cloud Segment Duration	s	127,094	127,094
Pool Vaporization Rate	kg/s	0,646373	0,462534
Maximum Pool Radius	m	5,70959	5,74497

### Distance to Concentration Results

The height for user defined concentrations is the user defined height 0 m  
 All toxic results are reported at the toxic effect height 0 m  
 All flammable results are reported at the cloud centreline height

Concentration(ppm)	Averaging Time		Dia	Noite
UFL (76800)	18,75	s	2,72977	4,33565
LFL (10500)	18,75	s	7,16008	9,77241
LFL Frac (5250)	18,75	s	10,3878	13,8713

Concentration(ppm)	Averaging Time		Dia	Noite
UFL (76800)	18,75	s	0,0567323	0
LFL (10500)	18,75	s	0	0
LFL Frac (5250)	18,75	s	0	0

### Late Pool Fire Hazard

Late Pool Fire Status	Dia	Noite
	Hazard	Hazard

### Radiation Effects: Late Pool Fire Ellipse

			Dia	Noite
Radiation Level	3	kW/m2	44,7524	46,0036
Radiation Level	18,3	kW/m2	16,929	18,2756
Radiation Level	36	kW/m2	9,44319	11,1999
Radiation Level	71,2	kW/m2	Not Reached	Not Reached





# SUMMARY REPORT

Study Folder: PMLX1\_UTGCA

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PHAST 6.4

## Flash Fire Envelope

All flammable results are reported at the cloud centreline height

			Distance (m)	
			Dia	Noite
Furthest Extent	5250	ppm	10,3878	13,8713
Furthest Extent	10500	ppm	7,16008	9,77241

## Explosion Effects: Late Ignition

Explosion Model Used : Multi Energy

Explosion Location Criterion: Cloud Front (LFL Fraction)

All distances are measured from the Source

All flammable results are reported at the cloud centreline height

			Maximum Distance (m) at Overpressure Level	
			Dia	Noite
Overpressure	0,4	bar	15,499	14,5411
Overpressure	0,3	bar	17,649	16,3215
Overpressure	0,1	bar	29,8032	26,3532
Overpressure	0,05	bar	45,5972	39,3991

			Supplementary Data at 0,4 bar	
			Dia	Noite
Supplied Flammable Mass		kg	0,752368	0,423891
Used Flammable Mass				
Overpressure Radius		m	5,49898	4,54111
Distance to:				
- Ignition Source		m	10	10
- Cloud Front/Centre		m	10	10
- Explosion Centre		m	10	10

			Supplementary Data at 0,3 bar	
			Dia	Noite
Supplied Flammable Mass		kg	0,752368	0,423891
Used Flammable Mass				
Overpressure Radius		m	7,64904	6,32153
Distance to:				
- Ignition Source		m	10	10
- Cloud Front/Centre		m	10	10
- Explosion Centre		m	10	10

			Supplementary Data at 0,1 bar	
			Dia	Noite
Supplied Flammable Mass		kg	0,752368	0,423891
Used Flammable Mass				
Overpressure Radius		m	19,8032	16,3532
Distance to:				
- Ignition Source		m	10	10
- Cloud Front/Centre		m	10	10
- Explosion Centre		m	10	10

## Weather Conditions

			Dia	Noite
Wind Speed		m/s	5,1	4,5



# SUMMARY REPORT

Study Folder: PMLX1\_UTGCA

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Pasquill Stability		B	E
Surface Roughness Parameter		0,33	0,33
Atmospheric Temperature	degC	24,3	22,1
Surface Temperature	degC	24,3	22,1
Relative Humidity	fraction	0,784	0,854



# SUMMARY REPORT

Study Folder: PMLX1\_UTGCA

Unique Audit Number: 51.335

PHAST 6.4

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Base Case

## User-Defined Data

<b>Material</b>	Material Identifier	N-HEXANE
<b>Vessel/Tank</b>	Release Type	Continuous
	Building Wake Option	None
<b>Location</b>	Elevation	0,1 m
	ERPG selection	ERPG is not set
	IDLH selection	IDLH is not set
	STEL selection	STEL is not set
	User Defined Averaging	No user defined averaging time supplied
<b>Bund</b>	Status of Bund	Bund present
	Area of Dike	517,8 m <sup>2</sup>
	Type of Bund Surface	Dry Soil
	Bund Height	0,3 m
	[Bund Failure Modeling	Bund cannot fail]
<b>Indoor/Outdoor</b>	Outdoor Release Direction	Horizontal
<b>Flammable</b>	Method to use for explosions	Multi-Energy
	Jet Fire Method	Shell
<b>Dispersion</b>	Number of Release Segments	1
	Fluid Phase(1)	Liquid
	Discharge Velocity(1)	98,3 m/s
	Droplet Diameter(1)	1 mm
	Duration of Discharge(1)	1,44E4 s
	Final Temperature(1)	25 degC
	Release Rate(1)	2 kg/s
	Pre-Dilution Air Rates(1)	0 kg/s
	Ignition Location	No ignition location
	Inventory of material to Disperse	1E5 kg
<b>Multi Energy Explosion</b>	Use Unconfined Volumes	No
	Use Fractions	No
	Use 1st Confined Source	Yes
	Use 2nd Confined Source	No
	Use 3rd Confined Source	No
	Use 4th Confined Source	No
	Use 5th Confined Source	No
	Use 6th Confined Source	No
	Use 7th Confined Source	No
	Confined Strength 1	6
	Confined Volume 1	1350 m <sup>3</sup>

CASE Name: Data

## Consequence Results

### Pool Vaporization Results

N.B. Pool vaporization segments begin when the cloud has left the pool



# SUMMARY REPORT

Study Folder: PMLX1\_UTGCA

Unique Audit Number: 51.335

PHAST 6.4

		Dia	Noite
Liquid Rainout	fraction	0,879413	0,888966
Initial Vapor Cloud			
Time Pool Left Behind			
Cloud Segment 1			
Cloud Segment Duration	s	729	730,351
Pool Vaporization Rate	kg/s	0,115383	0,0874727
Cloud Segment 2			
Cloud Segment Duration	s	304,622	308,1
Pool Vaporization Rate	kg/s	0,276815	0,207773
Cloud Segment 3			
Cloud Segment Duration	s	239,083	239,612
Pool Vaporization Rate	kg/s	0,353107	0,266401
Cloud Segment 4			
Cloud Segment Duration	s	205,697	206,113
Pool Vaporization Rate	kg/s	0,411663	0,311764
Cloud Segment 5			
Cloud Segment Duration	s	353,437	349,805
Pool Vaporization Rate	kg/s	0,480808	0,365594
Cloud Segment 6			
Cloud Segment Duration	s	445,836	438,925
Pool Vaporization Rate	kg/s	0,57255	0,437781
Cloud Segment 7			
Cloud Segment Duration	s	122,324	127,094
Pool Vaporization Rate	kg/s	0,633598	0,487066
Maximum Pool Radius	m	5,72001	5,90677

### Distance to Concentration Results

The height for user defined concentrations is the user defined height 0 m  
 All toxic results are reported at the toxic effect height 0 m  
 All flammable results are reported at the cloud centreline height

Concentration(ppm) Averaging Time				Distance (m)	
				Dia	Noite
UFL	(76800)	18,75	s	3,48633	4,3324
LFL	(10500)	18,75	s	7,84637	9,94504
LFL Frac	(5250)	18,75	s	11,5078	14,1392
Concentration(ppm) Averaging Time				Heights (m) for above distances	
				Dia	Noite
UFL	(76800)	18,75	s	0	0,000754753
LFL	(10500)	18,75	s	0	0
LFL Frac	(5250)	18,75	s	0	0

### Late Pool Fire Hazard

	Dia	Noite
Late Pool Fire Status	Hazard	Hazard

### Radiation Effects: Late Pool Fire Ellipse

			Distance (m)	
			Dia	Noite
Radiation Level	3	kW/m2	45,6021	46,6166
Radiation Level	18,3	kW/m2	17,7293	18,0741
Radiation Level	36	kW/m2	10,2611	11,3555



# SUMMARY REPORT

Study Folder: PMLX1\_UTGCA

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Radiation Level	71,2	kW/m2	Not Reached	Not Reached
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### Flash Fire Envelope

All flammable results are reported at the cloud centreline height

			Dia	Distance (m) Noite
Furthest Extent	5250	ppm	11,5078	14,1392
Furthest Extent	10500	ppm	7,84637	9,94504

### Explosion Effects: Late Ignition

Explosion Model Used : Multi Energy

Explosion Location Criterion: Cloud Front (LFL Fraction)

All distances are measured from the Source

All flammable results are reported at the cloud centreline height

			Maximum Distance (m) at Overpressure Level	
			Dia	Noite
Overpressure	0,4	bar	15,4399	14,5588
Overpressure	0,3	bar	17,5689	16,3387
Overpressure	0,1	bar	29,5896	26,4066
Overpressure	0,05	bar	45,2127	39,4998

			Supplementary Data at 0,4 bar	
			Dia	Noite
Supplied Flammable Mass		kg	0,728209	0,428099
Used Flammable Mass				
Overpressure Radius		m	5,43985	4,55885
Distance to:				
- Ignition Source		m	10	10
- Cloud Front/Centre		m	10	10
- Explosion Centre		m	10	10

			Supplementary Data at 0,3 bar	
			Dia	Noite
Supplied Flammable Mass		kg	0,728209	0,428099
Used Flammable Mass				
Overpressure Radius		m	7,56893	6,33869
Distance to:				
- Ignition Source		m	10	10
- Cloud Front/Centre		m	10	10
- Explosion Centre		m	10	10

			Supplementary Data at 0,1 bar	
			Dia	Noite
Supplied Flammable Mass		kg	0,728209	0,428099
Used Flammable Mass				
Overpressure Radius		m	19,5896	16,4066
Distance to:				
- Ignition Source		m	10	10
- Cloud Front/Centre		m	10	10
- Explosion Centre		m	10	10

### Weather Conditions



# SUMMARY REPORT

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		Dia	Noite
Wind Speed	m/s	5,1	4,5
Pasquill Stability		B	E
Surface Roughness Parameter		0,33	0,33
Atmospheric Temperature	degC	24,3	22,1
Surface Temperature	degC	24,3	22,1
Relative Humidity	fraction	0,784	0,854