PHAST SUMMARY TRONCO

Gasoduto do Pará - Phast

Eventos Iniciadores

Fissura 45

Base Case

CASE Name: **Data**

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura 45

User-Defined Data

Material

Material Identifier	METHANE	
Type of Vessel	Pressurized Gas	
Pressure Specification	Pressure specified	
Discharge Pressure - gauge	100	bar
Discharge Temperature	15	degC
Mass Inventory of material to discharge	1E8	kg

Scenario

Type of Event	Leak	
Phase	Vapor	
HoleDiameter	25,4	mm
Building Wake Option	None	

Location

[Release elevation	1	m]
Use ERPG averaging time	ERPG not selected	
Use IDLH averaging time	IDLH not selected	
Use STEL averaging time	STEL not selected	
Supply a user defined averaging time	Not supplied	

Bund

Status of Bund	No bund present	
[Surface type	Concrete]	
[Height	0	m]
[Modelling of bund failure	Bund cannot fail]	

Indoor/Outdoor

Location of release	Open air release	
Outdoor Release Angle	45	deg
Outdoor Release Direction	Angled from Horizontal	

Flammable

Method to use for explosions	Multi-Energy	
Jet Fire Method	Cone Model	

Dispersion

Late Ignition Location	No ignition location	
Mass Inventory of material to Disperse	1E8	kg

Fireball Parameters

Reporting Level 1 (Radiation Intensity)	5	kW/m2
[Mass modification factor	3]	

[Calculation method for fireball	DNV Recommended]	
[TNO model flame temperature	1727	degC]

Pool Fire Parameters

Reporting Level 1 (Radiation Intensity)	5	kW/m2

Toxic Parameters

[Indoor calculations	Unselected]	
[Ventilation specification	Case Specified]	
[Building exchange rate	4	/hr]
[Tail time	1800	s]
[Method of setting time	Use a fixed averaging time]	
[Cut-off fraction of toxic load	0,05	fraction]
[Cut-off concentration	0	fraction]

Multi Energy Explosion

Use Unconfined Volumes	No
Use Fractions	No
Source 1 (Source in Use)	No
Source 2 (Source in Use)	No
Source 3 (Source in Use)	No
Source 4 (Source in Use)	No
Source 5 (Source in Use)	No
Source 6 (Source in Use)	No
Source 7 (Source in Use)	No

Geometry

Geometry shape	Point	
Coordinates	Absolute	
East(1)	0	m
North(1)	0	m

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura 45

Discharge Data

User-Defined Quantities

Material	METHANE	
Temperature	15,00	degC
Pressure	101,01	bar
Inventory	100.000.000,00	kg
Scenario	Leak	
Fixed Duration	n/a	s

Calculated Quantities

Weather: Eventos Iniciadores\Dia

Mass Flow of Air (Vent from Vapor Space Only)	n/a	

Average Values for Segment Number **1**

Liquid Fraction	0,00	fraction
FinalTemperature	-96,18	degC

Final Velocity	500,00	m/s
Droplet Diameter	0,00	um
Continuous Release Data:		
Mass Flowrate	8.73029E+000	kg/s
Release Duration	3.600,00	s
Orifice Velocity	382,13	m/s
Exit Pressure	52,88	bar
Exit Temperature	-30,74	degC
Discharge Coefficient	0,86	
Expanded Radius	0,07	m

Weather: Eventos Iniciadores\Noite

Mass Flow of Air (Vent from Vapor Space Only)	n/a	
Average Values for Segment Number **1**		
Liquid Fraction	0,00	fraction
FinalTemperature	-96,18	degC
Final Velocity	500,00	m/s
Droplet Diameter	0,00	um
Continuous Release Data:		
Mass Flowrate	8.73029E+000	kg/s
Release Duration	3.600,00	s
Orifice Velocity	382,13	m/s
Exit Pressure	52,88	bar
Exit Temperature	-30,74	degC
Discharge Coefficient	0,86	
Expanded Radius	0,07	m

Consequence Results

Distance to Concentration Results

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura 45

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 (165000)	18,75	s	4,10966	4,34758
LFL (44000)	18,75	s	14,2084	14,7587
LFL Frac (22000)	18,75	s	22,9106	25,9396

Concentration(ppm)	Averaging Time		Heights (m) for above distances	
			Dia	Noite
UFL (165000)	18,75	s	4,97145	5,24136
LFL (44000)	18,75	s	13,44	14,5234
LFL Frac (22000)	18,75	s	19,2578	22,6496

Jet Fire Hazard

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura 45

Jet fire method used: DNV recommended

	Dia	Noite
Jet Fire Status	Hazard	Hazard
Flame Direction	Angled	Angled

Radiation Effects: Jet Fire Ellipse

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura 45

This table gives the distances to the specified radiation levels
for each jet fire listed in the above hazard table

			Distance (m)	
			Dia	Noite
Radiation Level	4	kW/m2	42,9535	43,9131
Radiation Level	12,5	kW/m2	22,9841	Not Reached
Radiation Level	37,5	kW/m2	Not Reached	Not Reached
Radiation Level	3	kW/m2	48,5347	48,9801

Radiation Effects: Jet Fire Distance

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura 45

		Radiation Level (kW/m2)	
		Dia	Noite

Flash Fire Envelope

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura 45

All flammable results are reported at the cloud centreline height

				Distance (m)
			Dia	Noite
Furthest Extent	22000	ppm	22,9106	25,9396
Furthest Extent	44000	ppm	14,2084	14,7587

				Heights (m) for above distances
			Dia	Noite
Furthest Extent	22000	ppm	19,2578	22,6496
Furthest Extent	44000	ppm	13,44	14,5234

Explosion Effects: Late Ignition

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura 45

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	0,1	bar	No Hazard	No Hazard
Overpressure	0,3	bar	No Hazard	No Hazard
Overpressure	0,5	bar	No Hazard	No Hazard
Overpressure	0,05	bar	No Hazard	No Hazard

		Supplementary Data at 0,1 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,3 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,5 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,05 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard

- Explosion Centre	m	0	0

Weather Conditions

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura 45

		Dia	Noite
Wind Speed	m/s	2,8	1,9
Pasquill Stability		C	C
Surface Roughness Length	mm	100	100
Surface Roughness Parameter		0,0868589	0,0868589
Atmospheric Temperature	degC	25	24
Surface Temperature	degC	30	29
Relative Humidity	fraction	0,8	0,8

Fissura vert

Base Case

CASE Name: **Data**

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura vert

User-Defined Data

Material			
	Material Identifier	METHANE	
	Type of Vessel	Pressurized Gas	
	Pressure Specification	Pressure specified	
	Discharge Pressure - gauge	100	bar
	Discharge Temperature	15	degC
	Mass Inventory of material to discharge	1E8	kg
Scenario			
	Type of Event	Leak	
	Phase	Vapor	
	HoleDiameter	25,4	mm
	Building Wake Option	None	
Location			
	[Release elevation	1	m]
	Use ERPG averaging time	ERPG not selected	
	Use IDLH averaging time	IDLH not selected	
	Use STEL averaging time	STEL not selected	
	Supply a user defined averaging time	Not supplied	
Bund			
	Status of Bund	No bund present	
	[Surface type	Concrete]	
	[Height	0	m]
	[Modelling of bund failure	Bund cannot fail]	
Indoor/Outdoor			
	Location of release	Open air release	
	Outdoor Release Direction	Vertical	
Flammable			
	Method to use for explosions	Multi-Energy	
	Jet Fire Method	Cone Model	
Dispersion			
	Late Ignition Location	No ignition location	
	Mass Inventory of material to Disperse	1E8	kg
Fireball Parameters			
	Reporting Level 1 (Radiation Intensity)	5	kW/m2
	[Mass modification factor	3]	
	[Calculation method for fireball	DNV Recommended]	
	[TNO model flame temperature	1727	degC]
Pool Fire Parameters			
	Reporting Level 1 (Radiation Intensity)	5	kW/m2

Toxic Parameters

[Indoor calculations	Unselected]	
[Ventilation specification	Case Specified]	
[Building exchange rate	4	/hr]
[Tail time	1800	s]
[Method of setting time	Use a fixed averaging time]	
[Cut-off fraction of toxic load	0,05	fraction]
[Cut-off concentration	0	fraction]

Multi Energy Explosion

Use Unconfined Volumes	No
Use Fractions	No
Source 1 (Source in Use)	No
Source 2 (Source in Use)	No
Source 3 (Source in Use)	No
Source 4 (Source in Use)	No
Source 5 (Source in Use)	No
Source 6 (Source in Use)	No
Source 7 (Source in Use)	No

Geometry

Geometry shape	Point	
Coordinates	Absolute	
East(1)	0	m
North(1)	0	m

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura vert

Discharge Data

User-Defined Quantities

Material	METHANE	
Temperature	15,00	degC
Pressure	101,01	bar
Inventory	100.000.000,00	kg
Scenario	Leak	
Fixed Duration	n/a	s

Calculated Quantities

Weather: Eventos Iniciadores\Dia

Mass Flow of Air (Vent from Vapor Space Only)	n/a	
Average Values for Segment Number	**1**	
Liquid Fraction	0,00	fraction
FinalTemperature	-96,18	degC
Final Velocity	500,00	m/s
Droplet Diameter	0,00	um
Continuous Release Data:		
Mass Flowrate	8.73029E+000	kg/s
Release Duration	3.600,00	s
Orifice Velocity	382,13	m/s

Exit Pressure	52,88	bar
Exit Temperature	-30,74	degC
Discharge Coefficient	0,86	
Expanded Radius	0,07	m

Weather: Eventos Iniciadores\Noite

Mass Flow of Air (Vent from Vapor Space Only)	n/a	
Average Values for Segment Number	**1**	
Liquid Fraction	0,00	fraction
FinalTemperature	-96,18	degC
Final Velocity	500,00	m/s
Droplet Diameter	0,00	um
Continuous Release Data:		
Mass Flowrate	8.73029E+000	kg/s
Release Duration	3.600,00	s
Orifice Velocity	382,13	m/s
Exit Pressure	52,88	bar
Exit Temperature	-30,74	degC
Discharge Coefficient	0,86	
Expanded Radius	0,07	m

Consequence Results

Distance to Concentration Results

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura vert

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 (165000)	18,75	s	0,115966	0,10029
LFL (44000)	18,75	s	2,02986	1,39001
LFL Frac (22000)	18,75	s	4,64899	3,8196

Concentration(ppm)	Averaging Time		Heights (m) for above distances	
			Dia	Noite
UFL (165000)	18,75	s	6,20096	6,7142
LFL (44000)	18,75	s	17,7918	19,5522
LFL Frac (22000)	18,75	s	24,2234	28,5982

Jet Fire Hazard

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura vert

Jet fire method used: DNV recommended

	Dia	Noite
Jet Fire Status	Hazard	Hazard
Flame Direction	Vertical	Vertical

Radiation Effects: Jet Fire Ellipse

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura vert

This table gives the distances to the specified radiation levels
for each jet fire listed in the above hazard table

			Distance (m)	
			Dia	Noite
Radiation Level	4	kW/m2	28,296	24,5591
Radiation Level	12,5	kW/m2	Not Reached	Not Reached
Radiation Level	37,5	kW/m2	Not Reached	Not Reached
Radiation Level	3	kW/m2	34,8065	31,8597

Radiation Effects: Jet Fire Distance

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura vert

		Radiation Level (kW/m2)
	Dia	Noite

Flash Fire Envelope

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura vert

All flammable results are reported at the cloud centreline height

				Distance (m)
			Dia	Noite
Furthest Extent	22000	ppm	4,64899	3,8196
Furthest Extent	44000	ppm	2,02986	1,39001

				Heights (m) for above distances
			Dia	Noite
Furthest Extent	22000	ppm	24,2234	28,5982
Furthest Extent	44000	ppm	17,7918	19,5522

Weather Conditions

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Fissura vert

		Dia	Noite
Wind Speed	m/s	2,8	1,9
Pasquill Stability		C	C
Surface Roughness Length	mm	100	100
Surface Roughness Parameter		0,0868589	0,0868589
Atmospheric Temperature	degC	25	24
Surface Temperature	degC	30	29
Relative Humidity	fraction	0,8	0,8

Furo 45

Base Case

CASE Name: **Data**

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo 45

User-Defined Data

Material

Material Identifier	METHANE	
Type of Vessel	Pressurized Gas	
Pressure Specification	Pressure specified	
Discharge Pressure - gauge	100	bar
Discharge Temperature	15	degC
Mass Inventory of material to discharge	1E8	kg

Scenario

Type of Event	Leak	
Phase	Vapor	
HoleDiameter	101,6	mm
Building Wake Option	None	

Location

[Release elevation	1	m]
Use ERPG averaging time	ERPG not selected	
Use IDLH averaging time	IDLH not selected	
Use STEL averaging time	STEL not selected	
Supply a user defined averaging time	Not supplied	

Bund

Status of Bund	No bund present	
[Surface type	Concrete]	
[Height	0	m]
[Modelling of bund failure	Bund cannot fail]	

Indoor/Outdoor

Location of release	Open air release	
Outdoor Release Angle	45	deg
Outdoor Release Direction	Angled from Horizontal	

Flammable

Method to use for explosions	Multi-Energy	
Jet Fire Method	Cone Model	

Dispersion

Late Ignition Location	No ignition location	
Mass Inventory of material to Disperse	1E8	kg

Fireball Parameters

Reporting Level 1 (Radiation Intensity)	5	kW/m2
[Mass modification factor	3]	
[Calculation method for fireball	DNV Recommended]	
[TNO model flame temperature	1727	degC]

Pool Fire Parameters

Reporting Level 1 (Radiation Intensity)	5	kW/m2

Toxic Parameters

[Indoor calculations	Unselected]	
[Ventilation specification	Case Specified]	
[Building exchange rate	4	/hr]
[Tail time	1800	s]
[Method of setting time	Use a fixed averaging time]	
[Cut-off fraction of toxic load	0,05	fraction]
[Cut-off concentration	0	fraction]

Multi Energy Explosion

Use Unconfined Volumes	No
Use Fractions	No
Source 1 (Source in Use)	No
Source 2 (Source in Use)	No
Source 3 (Source in Use)	No
Source 4 (Source in Use)	No
Source 5 (Source in Use)	No
Source 6 (Source in Use)	No
Source 7 (Source in Use)	No

Geometry

Geometry shape	Point	
Coordinates	Absolute	
East(1)	0	m
North(1)	0	m

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo 45

Discharge Data

User-Defined Quantities

Material	METHANE	
Temperature	15,00	degC
Pressure	101,01	bar
Inventory	100.000.000,00	kg
Scenario	Leak	
Fixed Duration	n/a	s

Calculated Quantities

Weather: Eventos Iniciadores\Dia

Mass Flow of Air (Vent from Vapor Space Only)	n/a	
Average Values for Segment Number	**1**	
Liquid Fraction	0,00	fraction
FinalTemperature	-96,18	degC
Final Velocity	500,00	m/s
Droplet Diameter	0,00	um
Continuous Release Data:		
Mass Flowrate	1.39685E+002	kg/s

Release Duration	3.600,00	s
Orifice Velocity	382,13	m/s
Exit Pressure	52,88	bar
Exit Temperature	-30,74	degC
Discharge Coefficient	0,86	
Expanded Radius	0,28	m

Weather: Eventos Iniciadores\Noite

Mass Flow of Air (Vent from Vapor Space Only) n/a

Average Values for Segment Number **1**

Liquid Fraction	0,00	fraction
FinalTemperature	-96,18	degC
Final Velocity	500,00	m/s
Droplet Diameter	0,00	um
Continuous Release Data:		
Mass Flowrate	1.39685E+002	kg/s
Release Duration	3.600,00	s
Orifice Velocity	382,13	m/s
Exit Pressure	52,88	bar
Exit Temperature	-30,74	degC
Discharge Coefficient	0,86	
Expanded Radius	0,28	m

Consequence Results

Distance to Concentration Results

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo 45

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 (165000)	18,75	s	15,9961	17,0703
LFL (44000)	18,75	s	55,6567	58,0242
LFL Frac (22000)	18,75	s	88,4856	94,2436

Concentration(ppm)	Averaging Time		Heights (m) for above distances	
			Dia	Noite
UFL (165000)	18,75	s	16,4103	17,6097
LFL (44000)	18,75	s	48,8023	53,5661
LFL Frac (22000)	18,75	s	69,4872	80,1455

Jet Fire Hazard

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo 45

Jet fire method used: DNV recommended

	Dia	Noite
Jet Fire Status	Hazard	Hazard
Flame Direction	Angled	Angled

Radiation Effects: Jet Fire Ellipse

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo 45

This table gives the distances to the specified radiation levels
for each jet fire listed in the above hazard table

			Distance (m)	
			Dia	Noite
Radiation Level	4	kW/m2	155,573	159,273
Radiation Level	12,5	kW/m2	95,5873	88,0078
Radiation Level	37,5	kW/m2	Not Reached	Not Reached
Radiation Level	3	kW/m2	176,868	178,627

Radiation Effects: Jet Fire Distance

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo 45

		Radiation Level (kW/m2)	
		Dia	Noite

Flash Fire Envelope

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo 45

All flammable results are reported at the cloud centreline height

				Distance (m)
			Dia	Noite
Furthest Extent	22000	ppm	88,4856	94,2436
Furthest Extent	44000	ppm	55,6567	58,0242

				Heights (m) for above distances
			Dia	Noite
Furthest Extent	22000	ppm	69,4872	80,1455
Furthest Extent	44000	ppm	48,8023	53,5661

Explosion Effects: Late Ignition

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo 45

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	0,1	bar	No Hazard	No Hazard
Overpressure	0,3	bar	No Hazard	No Hazard
Overpressure	0,5	bar	No Hazard	No Hazard
Overpressure	0,05	bar	No Hazard	No Hazard

		Supplementary Data at 0,1 bar	
		Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,3 bar	
		Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,5 bar	
		Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,05 bar	
		Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard

- Explosion Centre	m	0	0

Weather Conditions

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo 45

		Dia	Noite
Wind Speed	m/s	2,8	1,9
Pasquill Stability		C	C
Surface Roughness Length	mm	100	100
Surface Roughness Parameter		0,0868589	0,0868589
Atmospheric Temperature	degC	25	24
Surface Temperature	degC	30	29
Relative Humidity	fraction	0,8	0,8

Furo vert

Base Case

CASE Name: **Data**

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo vert

User-Defined Data

Material			
	Material Identifier	METHANE	
	Type of Vessel	Pressurized Gas	
	Pressure Specification	Pressure specified	
	Discharge Pressure - gauge	100	bar
	Discharge Temperature	15	degC
	Mass Inventory of material to discharge	1E8	kg
Scenario			
	Type of Event	Leak	
	Phase	Vapor	
	HoleDiameter	101,6	mm
	Building Wake Option	None	
Location			
	[Release elevation	1	m]
	Use ERPG averaging time	ERPG not selected	
	Use IDLH averaging time	IDLH not selected	
	Use STEL averaging time	STEL not selected	
	Supply a user defined averaging time	Not supplied	
Bund			
	Status of Bund	No bund present	
	[Surface type	Concrete]	
	[Height	0	m]
	[Modelling of bund failure	Bund cannot fail]	
Indoor/Outdoor			
	Location of release	Open air release	
	Outdoor Release Direction	Vertical	
Flammable			
	Method to use for explosions	Multi-Energy	
	Jet Fire Method	Cone Model	
Dispersion			
	Late Ignition Location	No ignition location	
	Mass Inventory of material to Disperse	1E8	kg
Fireball Parameters			
	Reporting Level 1 (Radiation Intensity)	5	kW/m2
	[Mass modification factor	3]	
	[Calculation method for fireball	DNV Recommended]	
	[TNO model flame temperature	1727	degC]
Pool Fire Parameters			
	Reporting Level 1 (Radiation Intensity)	5	kW/m2

Toxic Parameters

[Indoor calculations	Unselected]	
[Ventilation specification	Case Specified]	
[Building exchange rate	4	/hr]
[Tail time	1800	s]
[Method of setting time	Use a fixed averaging time]	
[Cut-off fraction of toxic load	0,05	fraction]
[Cut-off concentration	0	fraction]

Multi Energy Explosion

Use Unconfined Volumes	No
Use Fractions	No
Source 1 (Source in Use)	No
Source 2 (Source in Use)	No
Source 3 (Source in Use)	No
Source 4 (Source in Use)	No
Source 5 (Source in Use)	No
Source 6 (Source in Use)	No
Source 7 (Source in Use)	No

Geometry

Geometry shape	Point	
Coordinates	Absolute	
East(1)	0	m
North(1)	0	m

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo vert

Discharge Data

User-Defined Quantities

Material	METHANE	
Temperature	15,00	degC
Pressure	101,01	bar
Inventory	100.000.000,00	kg
Scenario	Leak	
Fixed Duration	n/a	s

Calculated Quantities

Weather: Eventos Iniciadores\Dia

Mass Flow of Air (Vent from Vapor Space Only)	n/a	
Average Values for Segment Number	**1**	
Liquid Fraction	0,00	fraction
FinalTemperature	-96,18	degC
Final Velocity	500,00	m/s
Droplet Diameter	0,00	um
Continuous Release Data:		
Mass Flowrate	1.39685E+002	kg/s
Release Duration	3.600,00	s
Orifice Velocity	382,13	m/s

Exit Pressure	52,88	bar
Exit Temperature	-30,74	degC
Discharge Coefficient	0,86	
Expanded Radius	0,28	m

Weather: Eventos Iniciadores\Noite

Mass Flow of Air (Vent from Vapor Space Only)	n/a	

Average Values for Segment Number **1**

Liquid Fraction	0,00	fraction
FinalTemperature	-96,18	degC
Final Velocity	500,00	m/s
Droplet Diameter	0,00	um
Continuous Release Data:		
Mass Flowrate	1.39685E+002	kg/s
Release Duration	3.600,00	s
Orifice Velocity	382,13	m/s
Exit Pressure	52,88	bar
Exit Temperature	-30,74	degC
Discharge Coefficient	0,86	
Expanded Radius	0,28	m

Consequence Results

Distance to Concentration Results

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo vert

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 (165000)	18,75	s	0,507852	0,434513
LFL (44000)	18,75	s	9,27975	6,45401
LFL Frac (22000)	18,75	s	17,5186	16,8696

Concentration(ppm)	Averaging Time		Heights (m) for above distances	
			Dia	Noite
UFL (165000)	18,75	s	21,2761	23,1866
LFL (44000)	18,75	s	64,7256	72,57
LFL Frac (22000)	18,75	s	85,1858	104,422

Jet Fire Hazard

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo vert

Jet fire method used: DNV recommended

	Dia	Noite
Jet Fire Status	Hazard	Hazard
Flame Direction	Vertical	Vertical

Radiation Effects: Jet Fire Ellipse

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo vert

This table gives the distances to the specified radiation levels
for each jet fire listed in the above hazard table

			Distance (m)	
			Dia	Noite
Radiation Level	4	kW/m2	110,383	101,445
Radiation Level	12,5	kW/m2	32,3446	Not Reached
Radiation Level	37,5	kW/m2	Not Reached	Not Reached
Radiation Level	3	kW/m2	132,112	125,193

Radiation Effects: Jet Fire Distance

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo vert

	Radiation Level (kW/m2)	
	Dia	Noite

Flash Fire Envelope

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo vert

All flammable results are reported at the cloud centreline height

				Distance (m)
			Dia	Noite
Furthest Extent	22000	ppm	17,5186	16,8696
Furthest Extent	44000	ppm	9,27975	6,45401

				Heights (m) for above distances
			Dia	Noite
Furthest Extent	22000	ppm	85,1858	104,422
Furthest Extent	44000	ppm	64,7256	72,57

Explosion Effects: Late Ignition

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo vert

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	0,1	bar	No Hazard	No Hazard
Overpressure	0,3	bar	No Hazard	No Hazard
Overpressure	0,5	bar	No Hazard	No Hazard
Overpressure	0,05	bar	No Hazard	No Hazard

		Supplementary Data at 0,1 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,3 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,5 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,05 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard

- Explosion Centre	m	0	0

Weather Conditions

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Furo vert

		Dia	Noite
Wind Speed	m/s	2,8	1,9
Pasquill Stability		C	C
Surface Roughness Length	mm	100	100
Surface Roughness Parameter		0,0868589	0,0868589
Atmospheric Temperature	degC	25	24
Surface Temperature	degC	30	29
Relative Humidity	fraction	0,8	0,8

Ruptura 45

Base Case

CASE Name: **Data**

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura 45

User-Defined Data

Material

Material Identifier	METHANE	
Type of Vessel	Pressurized Gas	
Pressure Specification	Pressure specified	
Discharge Pressure - gauge	100	bar
Discharge Temperature	15	degC
Mass Inventory of material to discharge	1E8	kg

Scenario

Type of Event	Leak	
Phase	Vapor	
HoleDiameter	508	mm
Building Wake Option	None	

Location

[Release elevation	1	m]
Use ERPG averaging time	ERPG not selected	
Use IDLH averaging time	IDLH not selected	
Use STEL averaging time	STEL not selected	
Supply a user defined averaging time	Not supplied	

Bund

Status of Bund	No bund present	
[Surface type	Concrete]	
[Height	0	m]
[Modelling of bund failure	Bund cannot fail]	

Indoor/Outdoor

Location of release	Open air release	
Outdoor Release Angle	45	deg
Outdoor Release Direction	Angled from Horizontal	

Flammable

Method to use for explosions	Multi-Energy	
Jet Fire Method	Cone Model	

Dispersion

Late Ignition Location	No ignition location	
Mass Inventory of material to Disperse	1E8	kg

Fireball Parameters

Reporting Level 1 (Radiation Intensity)	5	kW/m2
[Mass modification factor	3]	
[Calculation method for fireball	DNV Recommended]	
[TNO model flame temperature	1727	degC]

Jet Fire Parameters

Reporting Level 1 (Radiation Intensity)	3	kW/m2
Calculate Lethality	Selected	
Reporting Level 3 (Radiation Lethality)	0,5	fraction

Pool Fire Parameters

Reporting Level 1 (Radiation Intensity)	5	kW/m2

Toxic Parameters

[Indoor calculations	Unselected]	
[Ventilation specification	Case Specified]	
[Building exchange rate	4	/hr]
[Tail time	1800	s]
[Method of setting time	Use a fixed averaging time]	
[Cut-off fraction of toxic load	0,05	fraction]
[Cut-off concentration	0	fraction]

Multi Energy Explosion

Use Unconfined Volumes	No
Use Fractions	No
Source 1 (Source in Use)	No
Source 2 (Source in Use)	No
Source 3 (Source in Use)	No
Source 4 (Source in Use)	No
Source 5 (Source in Use)	No
Source 6 (Source in Use)	No
Source 7 (Source in Use)	No

Geometry

Geometry shape	Point	
Coordinates	Absolute	
East(1)	0	m
North(1)	0	m

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura 45

Discharge Data

User-Defined Quantities

Material	METHANE	
Temperature	15,00	degC
Pressure	101,01	bar
Inventory	100.000.000,00	kg
Scenario	Leak	
Fixed Duration	n/a	s

Calculated Quantities

Weather: Eventos Iniciadores\Dia

Mass Flow of Air (Vent from Vapor Space Only)	n/a	
Average Values for Segment Number	**1**	
Liquid Fraction	0,00	fraction

FinalTemperature	-96,18	degC
Final Velocity	500,00	m/s
Droplet Diameter	0,00	um
Continuous Release Data:		
Mass Flowrate	3.49211E+003	kg/s
Release Duration	3.600,00	s
Orifice Velocity	382,13	m/s
Exit Pressure	52,88	bar
Exit Temperature	-30,74	degC
Discharge Coefficient	0,86	
Expanded Radius	1,41	m

Weather: Eventos Iniciadores\Noite

Mass Flow of Air (Vent from Vapor Space Only) n/a

Average Values for Segment Number **1**

Liquid Fraction	0,00	fraction
FinalTemperature	-96,18	degC
Final Velocity	500,00	m/s
Droplet Diameter	0,00	um
Continuous Release Data:		
Mass Flowrate	3.49211E+003	kg/s
Release Duration	3.600,00	s
Orifice Velocity	382,13	m/s
Exit Pressure	52,88	bar
Exit Temperature	-30,74	degC
Discharge Coefficient	0,86	
Expanded Radius	1,41	m

Consequence Results

Distance to Concentration Results

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura 45

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 (165000)	18,75	s	83,141	87,106
LFL (44000)	18,75	s	242,76	262,207
LFL Frac (22000)	18,75	s	388,952	430,016

Concentration(ppm)	Averaging Time			Heights (m) for above distances
			Dia	Noite
UFL (165000)	18,75	s	80,2621	85,4033
LFL (44000)	18,75	s	211,487	240,058
LFL Frac (22000)	18,75	s	303,848	363,839

Jet Fire Hazard

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura 45

Jet fire method used: DNV recommended

	Dia	Noite
Jet Fire Status	Hazard	Hazard
Flame Direction	Angled	Angled

Radiation Effects: Jet Fire Ellipse

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura 45

This table gives the distances to the specified radiation levels
for each jet fire listed in the above hazard table

			Distance (m)	
			Dia	Noite
Radiation Level	3	kW/m2	771,157	784,783
Radiation Level	12,5	kW/m2	438,847	435,589
Radiation Level	37,5	kW/m2	Not Reached	Not Reached
Radiation Level	3	kW/m2	771,157	784,783

Radiation Effects: Jet Fire Distance

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura 45

		Radiation Level (kW/m2)
	Dia	Noite

Flash Fire Envelope

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura 45

All flammable results are reported at the cloud centreline height

			Distance (m)	
			Dia	Noite
Furthest Extent	22000	ppm	388,952	430,016
Furthest Extent	44000	ppm	242,76	262,207

			Heights (m) for above distances	
			Dia	Noite
Furthest Extent	22000	ppm	303,848	363,839
Furthest Extent	44000	ppm	211,487	240,058

Explosion Effects: Late Ignition

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura 45

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	0,1	bar	No Hazard	No Hazard
Overpressure	0,3	bar	No Hazard	No Hazard
Overpressure	0,5	bar	No Hazard	No Hazard
Overpressure	0,05	bar	No Hazard	No Hazard

		Supplementary Data at 0,1 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,3 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,5 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,05 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard

- Explosion Centre	m	0	0

Weather Conditions

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura 45

		Dia	Noite
Wind Speed	m/s	2,8	1,9
Pasquill Stability		C	C
Surface Roughness Length	mm	100	100
Surface Roughness Parameter		0,0868589	0,0868589
Atmospheric Temperature	degC	25	24
Surface Temperature	degC	30	29
Relative Humidity	fraction	0,8	0,8

Ruptura vert

Base Case

CASE Name: **Data**

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura vert

User-Defined Data

Material			
	Material Identifier	METHANE	
	Type of Vessel	Pressurized Gas	
	Pressure Specification	Pressure specified	
	Discharge Pressure - gauge	100	bar
	Discharge Temperature	15	degC
	Mass Inventory of material to discharge	1E8	kg
Scenario			
	Type of Event	Leak	
	Phase	Vapor	
	HoleDiameter	508	mm
	Building Wake Option	None	
Location			
	[Release elevation	1	m]
	Use ERPG averaging time	ERPG not selected	
	Use IDLH averaging time	IDLH not selected	
	Use STEL averaging time	STEL not selected	
	Supply a user defined averaging time	Not supplied	
Bund			
	Status of Bund	No bund present	
	[Surface type	Concrete]	
	[Height	0	m]
	[Modelling of bund failure	Bund cannot fail]	
Indoor/Outdoor			
	Location of release	Open air release	
	Outdoor Release Direction	Vertical	
Flammable			
	Method to use for explosions	Multi-Energy	
	Jet Fire Method	Cone Model	
Dispersion			
	Late Ignition Location	No ignition location	
	Mass Inventory of material to Disperse	1E8	kg
Fireball Parameters			
	Reporting Level 1 (Radiation Intensity)	5	kW/m2
	[Mass modification factor	3]	
	[Calculation method for fireball	DNV Recommended]	
	[TNO model flame temperature	1727	degC]
Pool Fire Parameters			
	Reporting Level 1 (Radiation Intensity)	5	kW/m2

Toxic Parameters

[Indoor calculations	Unselected]	
[Ventilation specification	Case Specified]	
[Building exchange rate	4	/hr]
[Tail time	1800	s]
[Method of setting time	Use a fixed averaging time]	
[Cut-off fraction of toxic load	0,05	fraction]
[Cut-off concentration	0	fraction]

Multi Energy Explosion

Use Unconfined Volumes	No
Use Fractions	No
Source 1 (Source in Use)	No
Source 2 (Source in Use)	No
Source 3 (Source in Use)	No
Source 4 (Source in Use)	No
Source 5 (Source in Use)	No
Source 6 (Source in Use)	No
Source 7 (Source in Use)	No

Geometry

Geometry shape	Point	
Coordinates	Absolute	
East(1)	0	m
North(1)	0	m

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura vert

Discharge Data

User-Defined Quantities

Material	METHANE	
Temperature	15,00	degC
Pressure	101,01	bar
Inventory	100.000.000,00	kg
Scenario	Leak	
Fixed Duration	n/a	s

Calculated Quantities

Weather: Eventos Iniciadores\Dia

Mass Flow of Air (Vent from Vapor Space Only)	n/a	
Average Values for Segment Number	**1**	
Liquid Fraction	0,00	fraction
FinalTemperature	-96,18	degC
Final Velocity	500,00	m/s
Droplet Diameter	0,00	um
Continuous Release Data:		
Mass Flowrate	3.49211E+003	kg/s
Release Duration	3.600,00	s
Orifice Velocity	382,13	m/s

Exit Pressure	52,88	bar
Exit Temperature	-30,74	degC
Discharge Coefficient	0,86	
Expanded Radius	1,41	m

Weather: Eventos Iniciadores\Noite

Mass Flow of Air (Vent from Vapor Space Only)	n/a	
Average Values for Segment Number **1**		
Liquid Fraction	0,00	fraction
FinalTemperature	-96,18	degC
Final Velocity	500,00	m/s
Droplet Diameter	0,00	um
Continuous Release Data:		
Mass Flowrate	3.49211E+003	kg/s
Release Duration	3.600,00	s
Orifice Velocity	382,13	m/s
Exit Pressure	52,88	bar
Exit Temperature	-30,74	degC
Discharge Coefficient	0,86	
Expanded Radius	1,41	m

Consequence Results

Distance to Concentration Results

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura vert

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 (165000)	18,75	s	4,12577	3,10335
LFL (44000)	18,75	s	32,9113	28,1286
LFL Frac (22000)	18,75	s	82,7853	71,8077

Concentration(ppm)	Averaging Time		Heights (m) for above distances	
			Dia	Noite
UFL (165000)	18,75	s	106,436	115,618
LFL (44000)	18,75	s	266,39	313,81
LFL Frac (22000)	18,75	s	375,542	455,975

Jet Fire Hazard

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura vert

Jet fire method used: DNV recommended

	Dia	Noite
Jet Fire Status	Hazard	Hazard
Flame Direction	Vertical	Vertical

Radiation Effects: Jet Fire Ellipse

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura vert

This table gives the distances to the specified radiation levels
for each jet fire listed in the above hazard table

			Distance (m)	
			Dia	Noite
Radiation Level	4	kW/m2	502,918	478,035
Radiation Level	12,5	kW/m2	204,128	163,91
Radiation Level	37,5	kW/m2	Not Reached	Not Reached
Radiation Level	3	kW/m2	591,544	572,218

Radiation Effects: Jet Fire Distance

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura vert

	Radiation Level (kW/m2)	
	Dia	Noite

Flash Fire Envelope

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura vert

All flammable results are reported at the cloud centreline height

				Distance (m)
			Dia	Noite
Furthest Extent	22000	ppm	82,7853	71,8077
Furthest Extent	44000	ppm	32,9113	28,1286

				Heights (m) for above distances
			Dia	Noite
Furthest Extent	22000	ppm	375,542	455,975
Furthest Extent	44000	ppm	266,39	313,81

Explosion Effects: Late Ignition

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura vert

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	0,1	bar	No Hazard	No Hazard
Overpressure	0,3	bar	No Hazard	No Hazard
Overpressure	0,5	bar	No Hazard	No Hazard
Overpressure	0,05	bar	No Hazard	No Hazard

		Supplementary Data at 0,1 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,3 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,5 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard
- Explosion Centre	m	0	0

		Supplementary Data at 0,05 bar Dia	Noite
Supplied Flammable Mass	kg	No Hazard	No Hazard
Used Flammable Mass			
Overpressure Radius	m	0	0
Distance to:			
- Ignition Source	m	No Hazard	No Hazard
- Cloud Front/Centre	m	No Hazard	No Hazard

- Explosion Centre	m	0	0

Weather Conditions

Path: \Gasoduto do Pará - Phast\Eventos Iniciadores\Tronco\Ruptura vert

		Dia	Noite
Wind Speed	m/s	2,8	1,9
Pasquill Stability		C	C
Surface Roughness Length	mm	100	100
Surface Roughness Parameter		0,0868589	0,0868589
Atmospheric Temperature	degC	25	24
Surface Temperature	degC	30	29
Relative Humidity	fraction	0,8	0,8