

COMMENTARY REPORT

Study Folder: TOP EVENT 23

Unique Audit Number:

534

PHAST v6.00



TOP EVENT 23



Propane spill out

LPG tanks

Base Case

Data



Weather:

Category 2/F

Speed:

2,00 m/s

Stability:

F

TOP EVENT 23\Propane spill out\LPG tanks

Dispersion Commentary

----- Dispersion Results

Quasi-Instantaneous transitions enabled (duration adjustment not applied)

Start of new release segment

Expansion zone is 0.009246 m

Dispersion starts as dense plume/cloud

Release segment of duration 5.833 s

The release duration 5.833 s is less than the flammable averaging time 18.75 s.

If the concentration was averaged at a specific location, it could be lower than the reported concentration.

Rainout: 0.6057 of cloud rained out at distance 0.1092 m and time since release of 0.003252 s with cloud located at 0.1092 m (no bund is present)

Liquid pool gives significant vaporization

Cloud center did not reach the user-specified distance of interest 10 m

Cloud center did not reach the user-specified distance of interest 25 m

Cloud center did not reach the user-specified distance of interest 50 m

Start of new cloud segment

Cloud segment of duration 5.833 s

Pool vapor flow rate 0.5097 kg/s

Release vapor flow rate 63.53 kg/s

Total vapor flow rate 64.04 kg/s

Pool radius 2.963 m

Release vapor temperature -41.76 C

Pool vapor temperature -54.47 C

Cloud center has reached the user-specified distance of interest 10 m at time 0.3256 s and concentration 0.4309 fraction

Cloud center has reached the user-specified distance of interest 25 m at time 1.641 s and concentration 0.2456 fraction

Cloud center has reached the user-specified distance of interest 50 m at time 7.255 s and concentration 0.1444 fraction

Cloud center has reached the UFL concentration 0.095 fraction at distance 83.18 m and time 23.89 s

Cloud center has reached the LFL concentration 0.021 fraction at distance 282.9 m and time 262.1 s

Dispersion modeled as passive plume/cloud at distance 319.9 m and time 305 s

Cloud center has reached the LFL fractional concentration 0.0105 fraction at distance 365.2 m and time 352.2 s

Cloud center did not reach the user-specified concentration 1E-5 fraction

Start of new cloud segment

Pool has been left behind by dispersing cloud

Cloud segment of duration 980.1 s

Pool vapor flow rate 0.5097 kg/s

Pool radius 2.963 m

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Dispersion Commentary

Pool vapor temperature -54.47 C
Dispersion modeled as passive plume/cloud at distance 4.809 m and time 5.811 s
Cloud center has reached the user-specified distance of interest 10 m at time 19.25 s and concentration 0.0118 fraction
Cloud center has reached the LFL fractional concentration 0.0105 fraction at distance 15.93 m and time 28.18 s
Cloud center has reached the user-specified distance of interest 25 m at time 41.37 s and concentration 0.008959 fraction
Cloud center has reached the user-specified distance of interest 50 m at time 75.59 s and concentration 0.006054 fraction
Cloud center has reached the user-specified concentration 1E-5 fraction at distance 6219 m and time 2893 s
Cloud center was always below the UFL concentration 0.095 fraction
Cloud center was always below the LFL concentration 0.021 fraction

Information

----- Discharge Category 2/F Results
Running model Time Varying ...
----- Dispersion Category 2/F Results
Dispersion will end at either a concentration of 10 ppm or a distance of 50 m
Cloud calculations will use concentration 10 ppm and Averaging Time 18.75 s (Flammable)
UDM results file read. 624 records, 3 segment headers, 618 dispersion results
Dispersion results post-processing completed OK
----- Jet Fire Category 2/F Results
JetFire preprocessor returned a mass rate of 161.108 kg/s
SHELL JetFire calculation selected
----- Linked Radiation Category 2/F Results
Radiation ellipses for jet fire moved to release point because jet impinges
----- Early Pool Fire Category 2/F Results
Defaults assumed for combustion in new pool fire model
----- Early Explosion Category 2/F Results
Early Explosion flammable mass calculated as 939.735 kg/s
Early Explosion Liquid Fraction calculated to be 0.605682
----- Late Pool Fire Category 2/F Results
Defaults assumed for combustion in new pool fire model

 **Weather:** **Category 5/D**
Speed: **5.00 m/s** **Stability:** **D**

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Dispersion Commentary

----- Dispersion Results
Quasi-Instantaneous transitions enabled (duration adjustment not applied)
Start of new release segment
Expansion zone is 0.009246 m
Dispersion starts as dense plume/cloud
Release segment of duration 5.833 s
The release duration 5.833 s is less than the flammable averaging time 18.75 s.
If the concentration was averaged at a specific location, it could be lower than the reported concentration.
Rainout: 0.6057 of cloud rained out at distance 0.1092 m and time since release of 0.003245 s

**Dispersion Commentary**

with cloud located at 0.1092 m (no bund is present)
Liquid pool gives significant vaporization
Cloud center did not reach the user-specified distance of interest 10 m
Cloud center did not reach the user-specified distance of interest 25 m
Cloud center did not reach the user-specified distance of interest 50 m
Start of new cloud segment
Cloud segment of duration 5.833 s
Pool vapor flow rate 0.5725 kg/s
Release vapor flow rate 63.53 kg/s
Total vapor flow rate 64.1 kg/s
Pool radius 2.793 m
Release vapor temperature -41.77 C
Pool vapor temperature -57.06 C
Cloud center has reached the user-specified distance of interest 10 m at time 0.2665 s and concentration 0.4371 fraction
Cloud center has reached the user-specified distance of interest 25 m at time 1.037 s and concentration 0.2299 fraction
Cloud center has reached the user-specified distance of interest 50 m at time 3.414 s and concentration 0.1354 fraction
Cloud center has reached the UFL concentration 0.095 fraction at distance 78.16 m and time 7.647 s
Cloud center has reached the LFL concentration 0.021 fraction at distance 200.6 m and time 36.92 s
Dispersion modeled as passive plume/cloud at distance 217.5 m and time 41.24 s
Cloud center has reached the LFL fractional concentration 0.0105 fraction at distance 272.4 m and time 54.85 s
Cloud center has reached the user-specified concentration 1E-5 fraction at distance 1.867E4 m and time 2434 s
Start of new cloud segment
Pool has been left behind by dispersing cloud
Cloud segment of duration 900.1 s
Pool vapor flow rate 0.5725 kg/s
Pool radius 2.793 m
Pool vapor temperature -57.06 C
Dispersion modeled as passive plume/cloud at distance 0.2092 m and time 0.02665 s
Cloud center has reached the user-specified distance of interest 10 m at time 8.241 s and concentration 0.001754 fraction
Cloud center has reached the user-specified distance of interest 25 m at time 11.83 s and concentration 0.001188 fraction
Cloud center has reached the user-specified distance of interest 50 m at time 17.68 s and concentration 0.0007147 fraction
Cloud center has reached the user-specified concentration 1E-5 fraction at distance 1035 m and time 197 s
Cloud center was always below the UFL concentration 0.095 fraction
Cloud center was always below the LFL concentration 0.021 fraction
Cloud center was always below the LFL fractional concentration 0.0105 fraction

Information

----- Discharge Category 5/D Results

Running model Time Varying ...

----- Dispersion Category 5/D Results

Dispersion will end at either a concentration of 10 ppm or a distance of 50 m

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Information

Cloud calculations will use concentration 10 ppm and Averaging Time 18.75 s (Flammable)

UDM results file read. 244 records, 3 segment headers, 238 dispersion results

Dispersion results post-processing completed OK

----- Jet Fire Category 5/D Results

JetFire preprocessor returned a mass rate of 161.108 kg/s

SHELL JetFire calculation selected

----- Linked Radiation Category 5/D Results

Radiation ellipses for jet fire moved to release point because jet impinges

----- Early Pool Fire Category 5/D Results

Defaults assumed for combustion in new pool fire model

----- Early Explosion Category 5/D Results

Early Explosion flammable mass calculated as 939.735 kg/s

Early Explosion Liquid Fraction calculated to be 0.605682

----- Late Pool Fire Category 5/D Results

Defaults assumed for combustion in new pool fire model