

Brand på ett oljeraffinaderi.

880123 MARS 1988_01

Ungefär 5 ton av en propan/butangasblandning släpptes ut från en rörkoppling pga en defekt fläns. Utsläppet varade i 1 timme och 45 minuter. Femtio meter från läckpunkten antändes det bildade gasmolnet och brand utbröt och rörledningen skadades. Ett försök att isolera rörledningen med fjärreglage misslyckades och ventiler fick istället stängas för hand. Jetflamman släcktes inte då man föredrog att bränna av den utsläppta gasen. När gastillflödet strypts dog branden ut.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
propan/butan blandning		5 ton
propan	74-98-6	
butan		

Skador:

Människor: Inga.
Materiella: Inga.
Miljö/ekologi: Inga effekter rapporterade.
Infrastruktur: Inga.

Erfarenheter redovisade (Ja/Nej): Ja

Mycket kortfattat anges förebyggande åtgärder.

Report Profile

Identification of Report:

country: FA ident key: 1988_001_01

reported under Seveso I directive as major accident reports: SHORT+FULL

Date of Major Occurrence: Time of Major Occurrence

start: 1988-01-23 start:

finish: finish:

Establishment:

name:

address:

industry: 2002 petrochemical, refining, processing

Petroleum Refinery (Propane/Butane Separation)

Seveso II status: not applicable: Yes art. 6 (notification): No

art. 7 (MAPP): No

art. 9 (safety report): No

Date of Report:

short: full:

Authority Reporting:

name:

address:

Authority Contact:**rep_cont_name:****rep_cont_phone:****rep_cont_fax:****Additional Comments:**

a) - not applicable -

b) - not applicable -

c) - not applicable -

d) - not applicable -

e) - not applicable -

Short Report**country:** FA **ident key:** 1988_001_01**Accident Types:****release:** Yes **explosion:** No**water contamination:** No **other:** No**fire:** Yes**description:**

ACCIDENT CASE HISTORY DESCRIPTION:... see Appendix Short Report / description of accident types

Substance(s) Directly Involved:**toxic:** No **explosive:** Yes**ecotoxic:** No **other:** No**flammable:** Yes**description:**

- Flammable Substances: amount involved = about 5 tonnes released over a period of 1 hour and 45 minutes.

Immediate Sources of Accident:**storage:** No **transfer:** No**process:** Yes **other:** No**description:**

The accident occurred during the separation of a propane/butane mixture produced in a petroleum refinery. The component involved was a flange connection on the suction line of a pump. The accident occurred during normal operation.

Suspected Causes:**plant or equipment:** Yes **environmental:** No**human:** No **other:** No**description:**

INITIATING EVENT AND CONSEQUENCES:... see Appendix Short Report / description of suspected causes

Immediate Effects:**material loss:** Yes

human deaths: No

human injuries: No **community disruption:** No

other: No

ecological harm: No

national heritage loss: No

description:

MATERIAL LOSS:

The fire caused damages to the installation area but no data are available about the cost of the material losses.

Emergency Measures taken:

on-site systems: Yes **decontamination:** No

external services: No **restoration:** No

sheltering: No **other:** No

evacuation: No

description:

INTERNAL TO THE ESTABLISHMENT:... see Appendix Short Report / description of emergency measures taken

Immediate Lessons Learned:

prevention: Yes **other:** No

mitigation: No

description:

MEASURES TO PREVENT ANY RECURRENCE OF SIMILAR ACCIDENTS:... see Appendix Short Report / description of immediate lessons learned

A Occurrence Full Report

country: FA **ident key:** 1988_001_01

1 Type of Accident

remarks: Owing to a defective connection on the suction line of a pump, about 5 tonnes of gaseous hydrocarbons were released over a period of 1 hour and 45 minutes, resulting in a gas cloud (code 1101). The cloud, at a distance of about 50 metres fr... see Appendix Full Report A / type of accident

2 Dangerous Substances

remarks: The total establishment and the potential directly involved inventories of flammable substances refer to the amount released through the flange connection over a period of 1 hour and 45 minutes. No data are available about the amount of fla... see Appendix Full Report A / dangerous substances

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred during the separation of a propane/butane mixture produced in a petroleum refinery (codes 3102 and 2002). The component involved was a flange connection on the suction line of a pump (code 4011).

The accident occurred ... see Appendix Full Report A / source of accident -

remarks

4 Meteorological Conditions

precipitation none: fog: rain: hail: snow:

No No No No No

wind speed (m/s):

direction (from):

stability (Pasquill):

ambient temperature (°C):

remarks: - not applicable -

5 Causes of Major Occurrence

main causes

technical / physical 5102 operation: component/machinery failure/malfunction

- not applicable -

- not applicable -

- not applicable -

- not applicable -

human / organizational 5303 organization: organized procedures (none, inadequate, inappropriate, unclear)

5304 organization: training/instruction (none, inadequate, inappropriate)

- not applicable -

- not applicable -

- not applicable -

remarks: The release was caused by a defective flange connection (due to, both, insufficient personnel training [code 5304] and maintenance procedures [code 5303]) on the suction line of a pump (code 5102).

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1988_001_01

event:

major occurrence 1204 fire: flash fire (burning vapour cloud, subsonic flame front)

initiating event 1101 release: gas/vapour/mist/etc release to air

associated event 1203 fire: jet flame (burning jet of fluid from orifice)

Dangerous substances

country: FA ident key: 1988_001_01

a) total establishment inventory

CAS number: identity: Flammable Substances

name from Seveso I Directive: - not applicable -

name from Seveso II Directive: - not applicable -

category from Seveso II: - not applicable -

other hazards (1): - not applicable -

other hazards (2): - not applicable -

maximum quantity (tonnes): 5

use of substance as: NORMAL FINISHED PRODUCT

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 5 potential quantity: 5

c) substance belongs to relevant inventory indirectly involved: Yes

actual quantity: -1 indir_pot_quant: -1

Source of Accident - Situation country: FA ident key: 1988_001_01

situation

industry

initiating event 2002 petrochemical, refining, processing

associated event 2002 petrochemical, refining, processing

activity/unit

major occurrence 3102 process: chemical continuous reaction

initiating event 3102 process: chemical continuous reaction

associated event 3102 process: chemical continuous reaction

component

major occurrence 4011 general pipework/flanges

initiating event 4011 general pipework/flanges

associated event 4011 general pipework/flanges

B Consequences Full Report

country: FA ident key: 1988_001_01

1 Area concerned

affected

extent of effects installation: Yes

establishment: Yes

off-site; local: No

off-site; regional: No

off-site; transboundary: No

illustration of effects - not applicable -

remarks In the Original Report there is no evidence of significant effects outside the e... see Appendix

Full Report B / area concerned - remarks

2 People

establishment popul. emergency personnel off-site population

total at risk

immediate fatalities

subsequent fatalities

hospitalizing injuries

other serious injuries

health monitoring

remarks No people were injured during the accident.

3 Ecological Harm

pollution/contamination/damage of:

- **residential area (covered by toxic cloud)** Suspected

- **common wild flora/fauna (death or elimination)** Suspected

- **rare or protected flora/fauna (death or elimination)** Suspected

- **water catchment areas and supplies for consumption or recreation** Suspected

- **land (with known potential for long term ecological harm or** Suspected

preventing human access or activities)

- **marine or fresh water habitat** Suspected

- **areas of high conservation value or given special protection** Suspected

remarks In the Original Report there is no evidence of significant ecological harms.... see Appendix

Full Report B / ecological harm

4 National Heritage Loss

effects on:

- **historical sites** not applicable - **historic monuments** not applicable

- **historic buildings** not applicable - **art treasures** not applicable

remarks No data available.

5 Material Loss

establishment losses off site losses

costs (direct costs to operator) (social costs)

in ECU ECU

material losses

response, clean up, restoration

remarks The fire caused damages to the installation area but no data are available about... see Appendix

Full Report B / material loss

6 Disruption of Community Life

establishment/plant evacuated disabled/unoccupiable destroyed

- **nearby residences/hotels** No No No

- **nearby factories/offices/small shops** No No No

- **schools, hospitals, institutions** No No No

- **other places of public assembly** No No No

interruption of utilities etc. no / yes duration

- **gas** No

- **electricity** No

- **water** No

- **sewage treatment works** No

- **telecommunications** No

- **main roads** No

- **railways** No

- **waterways** No

- **air transport** No

significant public concern none local level national level

- **off site populations** Yes No No

- **media interest** No No No

- **political interest** No No No

remarks In the Original Report there is no evidence of significant effects outside the e... see Appendix

7 Discussion of Consequences

C Response Full Report

country: FA **ident key:** 1988_001_01

1 Emergency Measures

taken - on site - not applicable - - not applicable -

- not applicable - - not applicable -

- not applicable - - not applicable -

- **off site** - not applicable - - not applicable -

- not applicable - - not applicable -

- not applicable - - not applicable -

still - on site - not applicable - - not applicable -

required

- not applicable - - not applicable -

- not applicable - - not applicable -

- **off site** - not applicable - - not applicable -

- not applicable - - not applicable -

- not applicable - - not applicable -

continuing contamination or danger

-**on site** not applicable

-**off site** not applicable

remarks - not applicable -

2 Seveso II Duties

pre-accident evaluation

Article item not due yet not done done/submitted evaluated

6 notification No No No No

7 policy (MAPP) No No No No

9 safety report No No No No

9, 10, 11 update No No No No

11 internal plan No No No No

11 external plan No No No No

13 informing public No No No No

9, 12 siting policy No No No No

post-accident evaluation

Seveso II duty was actual were actual compared with actual

contingency consequences consequences, the

addressed? addressed? predicted extent was?

Article item

7 policy (MAPP) not applicable not applicable not applicable

9 current safety report not applicable not applicable not applicable

11 internal plan not applicable not applicable not applicable

11 external plan not applicable not applicable not applicable

13 informing public not applicable not applicable not applicable

9, 12 siting policy not applicable not applicable not applicable

evaluation of safety organisation

organisational element element existed did element relate to actual circumstances of

yes / no no / partly / yes adequate?

- written policy objectives No

- specified management No

structure

- specified responsibilities No

- specified working procedures No

- specified procedures for No

assessment/auditing of

management system

- specified procedures for No

review and update of

management policy

- specified general training No

procedures

- specified emergency No

training procedures

evaluation of ecological impact control

organisational element element existed did element relate to actual circumstances of

yes / no no / partly / yes adequate?

- ecological status review No

before incident

- potential ecological No

consequences assessment

- ecological impact review No

after incident

- ecological restoration No

procedures

- subsequent review of No

restoration success

remarks - not applicable -

3 Official Action Taken

legal action

- not applicable -

other official action

- not applicable -

4 Lessons Learned

measures to prevent recurrence

After this accident, the follo... see Appendix Full Report C / lesson learned - prevent

measures to mitigate consequences:

- not applicable -

useful references:

- not applicable -

5 Discussion about Response

- not applicable -

Appendices for the FA / 1988_001_01 report

Appendix Short Report / description of accident types:

ACCIDENT CASE HISTORY DESCRIPTION:

Owing to a defective connection on the suction line of a pump, about 5 tonnes of gaseous hydrocarbons were released over a period of 1 hour and 45 minutes, resulting in a gas cloud. The cloud, at a distance of about 50 metres from the leakage source, ignited on a process equipment resulting in a flash-fire. The pipeline between the valve and the gas column separator was damaged by the fire. In order to avoid the spread of fire propagation to other installations, an attempt to remotely isolate the pipeline was carried out but failed. Therefore, the isolation of the pipeline was manually carried out but the jet-fire was not extinguished in order to avoid the formation of an explosive cloud.

Appendix Short Report / description of suspected causes:

INITIATING EVENT AND CONSEQUENCES:

A pump connection flange failed on the suction side. In 1 hour and 45 minutes about 5 tonnes of gaseous hydrocarbons were released and caught fire on a process equipment at about 50 m of distance.

CAUSES:

The release was caused by a defective flange connection (due to, both, insufficient personnel training and maintenance procedures) on the suction line of a pump.

Appendix Short Report / description of emergency measures taken:

INTERNAL TO THE ESTABLISHMENT:

As the pipeline between the valve and the gas column separator was damaged by the fire, an attempt to remotely isolate the pipeline (in order to avoid the spread of fire propagation to other installations) was carried out but failed. Therefore, the isolation of the pipeline was manually carried out but the jet-fire was not extinguished in order to avoid the formation of an explosive cloud.

Appendix Short Report / description of immediate lessons learned:

MEASURES TO PREVENT ANY RECURRENCE OF SIMILAR ACCIDENTS:

After this accident, the following measures were established:

- 1- periodic leak test of critical flanges;
- 2- training of maintenance personnel in assembling these flanges.

Appendix Full Report A / type of accident:

Owing to a defective connection on the suction line of a pump, about 5 tonnes of gaseous hydrocarbons were released over a period of 1 hour and 45 minutes, resulting in a gas cloud (code 1101). The cloud, at a distance of about 50 metres from the leakage source, ignited on a process equipment resulting in a flash-fire (code 1204). The pipeline was isolated but the jet-fire (code 1203) was not extinguished in order to avoid the formation of an explosive cloud.

Appendix Full Report A / dangerous substances:

The total establishment and the potential directly involved inventories of flammable substances refer to the amount released through the flange connection over a period of 1 hour and 45 minutes. No data are available about the amount of flammable substances involved in the jet-fire that followed the flash-fire.

Appendix Full Report A / source of accident - remarks:

The accident occurred during the separation of a propane/butane mixture produced in a petroleum refinery (codes 3102 and 2002). The component involved was a flange connection on the suction line of a pump (code 4011). The accident occurred during normal operation.

Appendix Full Report B / area concerned - remarks:

In the Original Report there is no evidence of significant effects outside the establishment.

Appendix Full Report B / ecological harm:

In the Original Report there is no evidence of significant ecological harms.

Appendix Full Report B / material loss:

The fire caused damages to the installation area but no data are available about the cost of the material losses.

Appendix Full Report B / disruption of community life:

In the Original Report there is no evidence of significant effects outside the establishment.

Appendix Full Report C / lesson learned - prevent:

After this accident, the following measures were established:

- 1- periodic leak test of critical flanges;
- 2- training of maintenance personnel in assembling these flanges.