

Brand i en naftadepå på ett oljeraffinaderi.

910226 MARS 1800_057_01

På grund av ett felaktigt operatörsingrepp i en matarledning till en naftatank kom locket på tanken att kärva och sjunka. Därmed började nafta att förångas. För att förhindra spridning av de lättantändliga ångorna avsåg man att täcka ytan med skum. Olyckligtvis anbringades skummet på mitten av tankens yta, istället för längs sidorna. Därmed uppstod en statisk urladdning som antände ångorna. Elden spred sig över ytan. Anläggningens katastrofplan trädde genast i kraft. Den interna brandkåren assisterades av räddningsverket och branden hade släckts efter 3 timmar.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
Nafta	8030-30-6	7000 ton

Skador:

Människor: Inga personskador.
Materiella: Skador på anläggningen.
Miljö/ekologi: Inga effekter rapporterade.
Infrastruktur: Inga effekter rapporterade.

Erfarenheter redovisade (Ja/Nej): Ja

Mycket kortfattat anges förebyggande åtgärder.

Report Profile

Identification of Report:

country: FA ident key: 1800_057_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 26/02/1991 start: 10:00:00

finish: 26/02/1991 finish:

Establishment:

name:

address:

industry: 2002 petrochemical, refining, processing

Crude Oil Refinery (Naphta Storage Installation)

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:** 1800_057_01

Accident Types:

release: No **explosion:** No

water contamination: No **other:** No

fire: Yes

description:

Due to a maloperation in the naphtha feeding line (snow loading may also has been a cause), a floating roof on a naphtha tank had sunk when it jammed and floats were flooded. To reduce the effects of the naphtha evaporation, that was cooling... see Appendix Short Report / description of accident types

Substance(s) Directly Involved:

toxic: No **explosive:** Yes

ecotoxic: No **other:** No

flammable: Yes

description:

- Naphta (C.A.S. CODE: 8030-30-6): amount involved = 7,000 tonnes.

Immediate Sources of Accident:

storage: Yes **transfer:** No

process: Yes **other:** No

description:

The accident occurred in a storage plant of a crude oil refinery. The fire developed in a refinery bulk storage tank for naphtha. The capacity of the floating roof tank was about 7,000 tonnes.

Suspected Causes:

plant or equipment: Yes **environmental:** Yes

human: Yes **other:** No

description:

CAUSES:... 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 floating roof of the storage tank was destroyed.

Emergency Measures taken:

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

external services: Yes **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 ACCIDENT:... see Appendix Short Report / description of

immediate lessons learned

A Occurrence Full Report

country: FA **ident key:** 1800_057_01

1 Type of Accident

remarks: Due to a maloperation in the naphtha feeding line, a floating roof on a

naphtha tank sunk when it jammed and floats were flooded. To reduce the

effect of the evaporation, foam was applied into the middle of the tank

surface (instead than on... see Appendix Full Report A / type of accident

2 Dangerous Substances

remarks: The total establishment and the potential directly involved inventories of

naphtha refer to the capacity of the floating roof storage tank. From the

Original Report is not fully clear if naphtha is a starting material or a

finished product... see Appendix Full Report A / dangerous substances

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred in a process-associated storage plant (code 3201) of a

crude oil refinery (code 2002). The fire developed in a refinery bulk

floating roof storage tank for naphtha (code 4003). The capacity of the

naphtha storage tank... 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): 0

remarks: The ambient temperature was low (about 0°C). Snow loading may also have been a cause for tank's sinking.

5 Causes of Major Occurrence

main causes

technical / physical 5101 operation: vessel/container/containment-equipment failure

5109 operation: electrostatic accumulation

5201 environment: natural event (weather, temperature, earthquake, etc.)

5501 other: not identified

- not applicable -

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

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

5401 person: operator error

- not applicable -

- not applicable -

remarks: Due to a maloperation in the feeding line (code 5501), the floating roof of a storage tank sunk when it jammed (snow loading may also has been a factor) [code 5101 and 5201]. In order to reduce the naphtha evaporation, foam was applied but,... see Appendix Full Report
A / causes of major occurrence

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1800_057_01

event:

major occurrence 1202 fire: pool fire (burning pool of liquid, contained or uncontained)

initiating event 1202 fire: pool fire (burning pool of liquid, contained or uncontained)

associated event - not applicable -

Dangerous substances

country: FA ident key: 1800_057_01

a) total establishment inventory

CAS number: 8030-30-6 **identity:** Naphtha

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): 7000

use of substance as: STARTING MATERIAL

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 7000 **potential quantity:** 7000

c) substance belongs to relevant inventory indirectly involved: No

actual quantity: -1 **indir_pot_quant:** -1

Source of Accident - Situation **country:** FA **ident key:** 1800_057_01

situation

industry

initiating event 2002 petrochemical, refining, processing

associated event - not applicable -

activity/unit

major occurrence 3201 storage: process-associated (stockholding, etc. on-site of manufacture)

initiating event 3201 storage: process-associated (stockholding, etc. on-site of manufacture)

associated event - not applicable -

component

major occurrence 4003 container; non-pressurised (hopper, tank, drum, bag, etc.)

initiating event 4003 container; non-pressurised (hopper, tank, drum, bag, etc.)

associated event - not applicable -

B Consequences Full Report

country: FA **ident key:** 1800_057_01

1 Area concerned

affected

extent of effects installation: Yes

establishment: No

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 100 50 0

immediate fatalities 0 0 0

subsequent fatalities 0 0 0

hospitalizing injuries 0 0 0

other serious injuries 0 0 0

health monitoring 0 0 0

remarks Between 1 and 50 rescue personnel were mobilized. No people were affected by the... see Appendix

Full Report B / people

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 None - historic monuments None

- historic buildings None - art treasures None

remarks No data available.

5 Material Loss

establishment losses off site losses

costs (direct costs to operator) (social costs)

in ECU UKL ECU UKL

material losses -1 -1 0 0

response, clean up, restoration -1 -1 0 0

remarks No data are available about the cost of the destroyed floating roof tank.... 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: 1800_057_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 the accident, the follow... see Appendix Full Report C / lesson learned - prevent

measures to mitigate consequences:

not given

useful references:

not given

5 Discussion about Response

- not applicable -

Appendices for the FA / 1800_057_01 report

Appendix Short Report / description of accident types:

Due to a maloperation in the naphtha feeding line (snow loading may also has been a cause), a floating roof on a naphtha tank had sunk when it jammed and floats were flooded. To reduce the effects of the naphtha evaporation, that was cooling the tank to -4°C , foam was applied on the liquid surface. By mistake, the foam was applied into the middle of the tank surface (instead than on the border) and the static charges ignited the naphtha vapours. The ignition resulted in a progressive burning of vapours spreading over the surface of the tank. The fire was extinguished in 3 hours.

Appendix Short Report / description of suspected causes:

CAUSES:

Due to a maloperation in the naphtha feeding line, the floating roof of a tank sunk when it jammed (snow loading may also has been a cause) and floats were flooded. When the Original Report was prepared, the causes that led to a maloperation in the naphtha feeding line were not fully identified. In order to reduce the evaporation of the naphtha (that was cooling the tank to -4°C), foam was applied to the liquid surface. Due to training/istructions/emergency procedures inadequate, the operator made a mistake and the jet of foam was applied into the middle of the tank surface and the static charges ignited the vapours above the liquid surface.

Appendix Short Report / description of emergency measures taken:

INTERNAL TO THE ESTABLISHMENT:

The on-site emergency plan was activated and the fire was fought by the refinery and by the county fire services (between 1 and 50 rescue personnel were mobilized).

Foam was applied to the liquid surface to reduce the evaporation of the naphtha.

EXTERNAL TO THE ESTABLISHMENT:

The county fire services were called to extinguish the fire but the full off-site emergency plan was not activated.

Appendix Short Report / description of immediate lessons learned:

MEASURES TO PREVENT ANY RECURRENCE OF SIMILAR ACCIDENT:

After the accident, the following measures were established:

- 1- revision of procedures and training on static charges;
- 2- review of communication procedures.

Appendix Full Report A / type of accident:

Due to a maloperation in the naphtha feeding line, a floating roof on a naphtha tank sunk when it jammed and floats were flooded. To reduce the effect of the evaporation, foam was applied into the middle of the tank surface (instead than on the border) and the static charges ignited the vapours of naphtha. The ignition resulted in a progressive burning of vapours spreading over the tank surface (code 1202).

Appendix Full Report A / dangerous substances:

The total establishment and the potential directly involved inventories of naphtha refer to the capacity of the floating roof storage tank. From the Original Report is not fully clear if naphtha is a starting material or a finished product.

Appendix Full Report A / source of accident - remarks:

The accident occurred in a process-associated storage plant (code 3201) of a crude oil refinery (code 2002). The fire developed in a refinery bulk floating roof storage tank for naphtha (code 4003). The capacity of the naphtha storage tank was about 7,000 tonnes.

Appendix Full Report A / causes of major occurrence:

Due to a maloperation in the feeding line (code 5501), the floating roof of a storage tank sunk when it jammed (snow loading may also has been a factor) [code 5101 and 5201]. In order to reduce the naphtha evaporation, foam was applied but, due to training/instructions (code 5304) and emergency procedures inadequate (code 5303), the operator made a mistake (code 5401) and the jet of foam was applied in middle of tank and static charges (code 5109) ignited vapours above the liquid surface.

Appendix Full Report B / area concerned - remarks:

In the Original Report there is no evidence of significant effects outside the establishment (the thermal radiation produced by fire was confined on-site).

Appendix Full Report B / people:

Between 1 and 50 rescue personnel were mobilized. No people were affected by the fire.

Appendix Full Report B / ecological harm:

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

Appendix Full Report B / material loss:

No data are available about the cost of the destroyed floating roof tank.

Appendix Full Report B / disruption of community life:

In the Original Report there is no evidence of significant effects outside the establishment (the thermal radiation produced by fire was confined on-site).

Appendix Full Report C / lesson learned - prevent:

After the accident, the following measures were established:

- 1- revision of procedures and training on static charges;
- 2- review of communication procedures.