

Explosion och brand på en naturgasdepå på grund av en terroristhandling

930226 MARS 1993_22

Olyckan inträffade på en obemannad naturgasdepå där en bomb rev loss taket på en gasklocka. Ungefär 33 ton naturgas släpptes omedelbart ut och antändes. Resultatet blev en luftburen eldboll. De två angränsande gasklockorna skadades. Den större av dem brann med en jetflamma genom ett hål på en halv kvadratmeter där tanken punkterats. 200 människor i närheten evakuerades från sina hem.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
naturgas, huvudsakligen metan	74-82-8	33 000 kg

Skador:

Människor: Inga.
Materiella: En gasklocka totalförstördes och två skadades lindrigt.
Miljö/ekologi: Inga effekter rapporterade.
Infrastruktur: 200 människor i närheten evakuerades från sina hem.

Erfarenheter redovisade (Ja/Nej): Nej

Report Profile

Identification of Report:

country: FA ident key: 1993_022_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 1993-02-26 start: 04:00:00

finish: finish:

Establishment:

name:

address:

industry: 2008 wholesale and retail storage and distribution (incl. LPG bottling & bulk distrib., more: F1!)

Gas Processing (Natural Gas Storage and Transmission during Peak Demand)

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:** 1993_022_01**Accident Types:****release:** Yes **explosion:** No**water contamination:** No **other:** No**fire:** Yes**description:**

A terrorist explosive device was placed on a side of the middle lift of a gas holder, it was supposed earlier in the night when it was not inflated. When the device went off, the roof of the gasholder peeled partly off, the upper lifts coll... see Appendix Short Report / description of accident types

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

- Natural Gas [mainly Methane] (C.A.S. CODE: 74-82-8, E.E.C. CODE: 001-001-00-4): amount involved = about 33,000 kg.

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

The accident occurred in an unmanned natural gas storage plant. The plant stored natural gas (mainly methane) at low pressure. The gas holders were filled and emptied on a diurnal basis to feed the gas transmission system during peak demand... see Appendix Short Report / description of immediate sources

Suspected Causes:**plant or equipment:** No **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:** Yes

other: No

ecological harm: No

national heritage loss: No

description:

MATERIAL LOSS:... see Appendix Short Report / description of immediate effects

Emergency Measures taken:

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

external services: Yes **restoration:** No

sheltering: No **other:** No

evacuation: Yes

description:

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

Immediate Lessons Learned:

prevention: Yes **other:** No

mitigation: No

description:

The incident was not covered by Health & Safety at work legislation. When the Original Report was prepared, home office was investigating about the site security.

A Occurrence Full Report

country: FA **ident key:** 1993_022_01

1 Type of Accident

remarks: A terrorist explosive device, placed on the middle lift of a gas holder, caused damages to it with the consequent release of approximately 33 tons of natural gas (code 1101). The gas was immediately ignited resulting in an airborne fire-bal... see Appendix Full Report A / type of accident

2 Dangerous Substances

remarks: The total establishment inventory of natural gas (mainly methane) refers to the capacity of the damaged gas holder. The actual inventory on natural gas directly involved refers to the hypothesis the gas holder was approximately 70% full. Th... see Appendix Full Report A / dangerous substances

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred in a natural gas storage plant (codes 2008 and 3201).

The storage plant operated at low pressure. The gas holders were filled and emptied on a diurnal basis to feed the gas transmission system during peak demand. The c... 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): 0

direction (from):

stability (Pasquill):

ambient temperature (°C): 2

remarks: During the accident there was absence of wind. The ambient temperature was between 2 and 3°C.

5 Causes of Major Occurrence

main causes

technical / physical - not applicable -

- not applicable -

- not applicable -

- not applicable -

- not applicable -

human / organizational 5206 environment: establishment safeguarding/security deficiency

5404 person: malicious intervention

- not applicable -

- not applicable -

- not applicable -

remarks: The accident was caused by a terrorist explosive device (sabotage) placed on the side of the gasholder (code 5404). The establishment security (the site was unmanned) was probably deficient (code 5206).

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1993_022_01

event:

major occurrence 1205 fire: fireball (burning mass rising in air, often after BLEVE)

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: 1993_022_01

a) total establishment inventory

CAS number: 74-82-8 **identity:** Methane (natural Gas)

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): 46,35

use of substance as: NORMAL FINISHED PRODUCT

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 33 **potential quantity:** 46,35

c) substance belongs to relevant inventory indirectly involved: No

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

Source of Accident - Situation **country:** FA **ident key:** 1993_022_01

situation

industry

initiating event 2008 wholesale and retail storage and distribution (incl. LPG bottling & bulk distrib., more: F1!)

associated event 2008 wholesale and retail storage and distribution (incl. LPG bottling & bulk distrib., more: F1!)

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

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

B Consequences Full Report

country: FA **ident key:** 1993_022_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 Though 200 people outside the storage plant were evacuated from their houses (60... see Appendix

Full Report B / area concerned - remarks

2 People

establishment popul. emergency personnel off-site population

total at risk 20 200

immediate fatalities

subsequent fatalities

hospitalizing injuries

other serious injuries

health monitoring

remarks The site was unmanned. 20 firemen were involved to fight the fire. 200 people we... 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. Thi... 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 One gasholder was largely destroyed, the adjacent two gas holders suffered minor... see Appendix

Full Report B / material loss

6 Disruption of Community Life

establishment/plant evacuated disabled/unoccupiable destroyed

- nearby residences/hotels Yes No No
- nearby factories/offices/small shops Yes No No

- schools, hospitals, institutions Yes No No

- other places of public assembly Yes 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 No Yes No

- media interest No No No

- political interest No No No

remarks 200 people were evacuated from nearby houses.

7 Discussion of Consequences

C Response Full Report

country: FA ident key: 1993_022_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

When the Original Report was p... 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 / 1993_022_01 report

Appendix Short Report / description of accident types:

A terrorist explosive device was placed on a side of the middle lift of a gas holder, it was supposed earlier in the night when it was not inflated. When the device went off, the roof of the gasholder peeled partly off, the upper lifts collapsed and approximately 33 tons of natural gas was released. The gas was immediately ignited resulting in an airborne fireball. The smaller adjacent gasholder experienced a seal fire and the larger gasholder, on the other side of the damaged one, was punctured in its third lift resulting in burning gas (jet-fire) from a hole with a release area of approximately 0.5 m².

Appendix Short Report / description of immediate sources:

The accident occurred in an unmanned natural gas storage plant. The plant stored natural gas (mainly methane) at low pressure. The gas holders were filled and emptied on a diurnal basis to feed the gas transmission system during peak demand. The location of the storage plant is shown on a map attached to the Original Report.

Appendix Short Report / description of suspected causes:

CAUSES:

The accident was caused by a terrorist explosive device (sabotage) placed on the side of the gasholder. The establishment security (the site was unmanned) was probably deficient.

Appendix Short Report / description of immediate effects:

MATERIAL LOSS:

One gasholder was largely destroyed, the adjacent two gas holders suffered minor damages. No data are available about the cost of the damages.

COMMUNITY DISRUPTION:

200 people were evacuated from nearby houses: 60 of whom were accommodated in a local school for two nights; the remainders stayed with their relatives.

Appendix Short Report / description of emergency measures taken:

INTERNAL TO THE ESTABLISHMENT:

The unmanned site was without an internal emergency plan. 20 firemen were involved to fight the fire.

EXTERNAL TO THE ESTABLISHMENT:

200 people were evacuated from nearby houses: 60 of whom were accommodated in a local school for two nights; the remainders stayed with their relatives.

Appendix Full Report A / type of accident:

A terrorist explosive device, placed on the middle lift of a gas holder, caused damages to it with the consequent release of approximately 33 tons of natural gas (code 1101). The gas was immediately ignited resulting in an airborne fire-ball (code 1205). The smaller adjacent gas holder experienced a seal fire and the larger gas holder, on the other side of that subjected to collapse, was punctured in its third lift resulting in burning gas (jet-fire) from a hole (code 1203).

Appendix Full Report A / dangerous substances:

The total establishment inventory of natural gas (mainly methane) refers to the capacity of the damaged gas holder. The actual inventory on natural gas directly involved refers to the hypothesis the gas holder was approximately 70% full. The potential inventory of natural gas directly involved refers to the capacity of the damaged gas holder. No data are available about the capacities of the nearby gas holders.

Appendix Full Report A / source of accident - remarks:

The accident occurred in a natural gas storage plant (codes 2008 and 3201). The storage plant operated at low pressure. The gas holders were filled and emptied on a diurnal basis to feed the gas transmission system during peak demand. The components involved were gas holders (code 4003). The accident occurred when the gas holder was approximately 70% full, at an operating pressure of 1.07 bar. The location of the storage plant is shown on a map attached to the Original Report.

Appendix Full Report B / area concerned - remarks:

Though 200 people outside the storage plant were evacuated from their houses (60 of whom were accommodated in a local school for two nights; the remainders stayed with their relatives) in the Original Report there is no evidence of significant effects outside the establishment.

Appendix Full Report B / people:

The site was unmanned. 20 firemen were involved to fight the fire. 200 people were evacuated from nearby houses: 60 of whom were accommodated in a local school for two nights while the remainder stayed with their relatives.

Appendix Full Report B / ecological harm:

In the Original Report there is no evidence of significant ecological harms. This is due to the low ecotoxic risks of natural gas.

Appendix Full Report B / material loss:

One gasholder was largely destroyed, the adjacent two gas holders suffered minor damages. No data are available about the cost of the damages.

Appendix Full Report C / lesson learned - prevent:

When the Original Report was prepared, home office was investigating about the site security.