

Gasutsläpp från en naturgasdepå.

910710 MARS 1800_022_01

Efter inspektion fylldes inte en gasklocka med naturgas (huvudsakligen metan) korrekt. Det var själva vattenlåset som inte fylldes enligt berstämmelserna. Under natten kom gas att läcka ut genom vattenlåset och spridas utan att antändas.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
Naturgas, huvudskaligen metan		
Metan	74-82-8	37 ton

Skador:

Människor: Inga personskador.
Materiella: Inga materiella skador.
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_022_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 10/07/1991 start: 07:02:00

finish: 10/07/1991 finish:

Establishment:

name:

address:

industry: 2008 wholesale and retail storage and distribution (incl. LPG bottling & bulk

distrib., more: F1!)

Natural Gas Storage Plant

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_022_01

Accident Types:

release: Yes **explosion:** No

water contamination: No **other:** No

fire: No

description:

On June 28, N^o 4 LP Holder was inflated to allow cup seal cleaning and, at the end of the operation, it was left partially inflated. On July 4, a recorded check was made on the holder. It included the check of the cup seals, too. The gas ho... 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: 601-001-00-4): amount involved = 37,000 kg.

Immediate Sources of Accident:

storage: Yes **transfer:** No

process: No **other:** No

description:

The accident occurred in a natural gas storage plant. The release of natural gas occurred from a low pressure 4 lift water sealed holder. The capacity of the gas holder was about 41,000 kg. The gas holder was about 27 metres high with a dia... see Appendix Short Report / description of immediate sources

Suspected Causes:

plant or equipment: No **environmental:** No

human: Yes **other:** No

description:

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

Immediate Effects:

material loss: No

human deaths: No

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

other: Yes

ecological harm: No

national heritage loss: No

description:

OTHER:

No material losses occurred except the escaped natural gas.

Emergency Measures taken:

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

external services: No **restoration:** No

sheltering: No **other:** Yes

evacuation: No

description:

The safety systems were not activated during the accident and therefore the operators did not intervene. A member of public alerted British Gas but no emergency measures were necessary, neither on-site nor off-site, because the gas holder ... 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:** 1800_022_01

1 Type of Accident

remarks: Due to an operator error (the seal of a gas holder was not refilled correctly after an inspection) a large amount of natural gas was released into the atmosphere (code 1101). The gas cloud dispersed without igniting.

2 Dangerous Substances

remarks: The total establishment and the potential directly involved inventories of natural gas refer to the capacity of the gas holder. Methane is the main component of the natural gas.

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred in a natural gas storage plant (codes 3202 and 2008). The release of natural gas occurred from a low pressure 4 lift water sealed

holder (code 4003). The capacity of the gas holder was about 41,000 kg

(about 2.1 millio... 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 5401 person: operator error

- not applicable -

- not applicable -

- not applicable -

- not applicable -

human / organizational 5307 organization: process analysis (inadequate, incorrect)

5401 person: operator error

- not applicable -

- not applicable -

- not applicable -

remarks: The accident occurred because, after the visual inspection of the cup below the water

line, the seal was not refilled according to the required recommendations (code 5401).

Besides, the process analysis was inadequate because the system to ... see Appendix Full

Report A / causes of major occurrence

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1800_022_01

event:

major occurrence 1101 release: gas/vapour/mist/etc release to air

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

associated event - not applicable -

Dangerous substances

country: FA ident key: 1800_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): 41

use of substance as: NORMAL FINISHED PRODUCT

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 37 **potential quantity:** 41

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_022_01

situation

industry

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

associated event - not applicable -

activity/unit

major occurrence 3202 storage: distribution-associated (not on-site of manufacture)

initiating event 3202 storage: distribution-associated (not 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_022_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 i... see Appendix

Full Report B / area concerned - remarks

2 People

establishment popul. emergency personnel off-site population

total at risk -1 -1 -1

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 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 preventing human access or activities)** Suspected
- **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** 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 0 0 0 0

response, clean up, restoration 0 0 0 0

remarks No material losses occurred except the escaped natural gas.... 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 Yes No No

- political interest Yes No No

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

7 Discussion of Consequences

C Response Full Report

country: FA ident key: 1800_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

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_022_01 report

Appendix Short Report / description of accident types:

On June 28, N^o 4 LP Holder was inflated to allow cup seal cleaning and, at the end of the operation, it was left partially inflated. On July 4, a recorded check was made on the holder. It included the check of the cup seals, too. The gas holder was deflated on July 9 to the top cup seal level to allow visual inspection of the cup below the water line. This inspection involved reduction of water in the seal by pumping water from the cup. The examination was completed and water pumped back into the seal to the original level. The holder was then inflated normally overnight to allow physical measurements in preparation for fitting low cup water alarms. Soon after full inflation, at approximately 7:00 am on July 10, the top seal failed and gas escaped. The holder rapidly lost height until the top cup seal entered the holder watertank. The gas cloud had dispersed without igniting. The last operator intervention was on the afternoon of July 9 and the seal failure occurred at approximately 6:55 am on July 10.

Appendix Short Report / description of immediate sources:

The accident occurred in a natural gas storage plant. The release of natural gas occurred from a low pressure 4 lift water sealed holder. The capacity of the gas holder was about 41,000 kg. The gas holder was about 27 metres high with a diameter of 47 metres. The location of the storage plant is shown on two maps attached to the Original Report.

Appendix Short Report / description of suspected causes:

INITIATING EVENT AND CONSEQUENCES:

Due to an operator error (the seal of a gas holder was not refilled correctly after an inspection), a large amount of natural gas was released into the atmosphere. The gas cloud dispersed without igniting.

CAUSES:

The accident occurred because, after the visual inspection of the cup below the water line, the seal was not refilled according to the required recommendations. Besides, the process analysis was inadequate because the system to load the water into the seals did not operate automatically.

Appendix Short Report / description of emergency measures taken:

The safety systems were not activated during the accident and therefore the operators did not intervene. A member of public alerted British Gas but no emergency measures were necessary, neither on-site nor off-site, because the gas holder re-sealed itself after the lift descended into the tank.

Appendix Short Report / description of immediate lessons learned:

MEASURES TO PREVENT ANY RECURRENCE OF SIMILAR ACCIDENTS:

After the accident, the following measures were adopted:

1. the operating procedures have been reissued to reinforce need to double dip seal in tank to ensure cup is full of water;
2. a pumping system has been installed together with low level switches in cups. The water seal is now pumped into the cups. Monthly checks are carried out in order to ensure the system correctly works.

Appendix Full Report A / source of accident - remarks:

The accident occurred in a natural gas storage plant (codes 3202 and 2008). The release of natural gas occurred from a low pressure 4 lift water sealed holder (code 4003). The capacity of the gas holder was about 41,000 kg (about 2.1 millions cubic feet). The gas holder was about 27 metres high with a diameter of 47 metres. The location of the storage plant is shown on two maps attached to the Original Report.

Appendix Full Report A / causes of major occurrence:

The accident occurred because, after the visual inspection of the cup below the water line, the seal was not refilled according to the required recommendations (code 5401). Besides, the process analysis was inadequate because the system to load the water into the seals did not operate automatically (code 5307).

Appendix Full Report B / area concerned - remarks:

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

Appendix Full Report B / ecological harm:

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

Appendix Full Report B / material loss:

No material losses occurred except the escaped natural gas.

Appendix Full Report B / disruption of community life:

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

Appendix Full Report C / lesson learned - prevent:

After the accident, the following measures were adopted:

1. the operating procedures have been reissued to reinforce need to double dip seal in tank to ensure cup is full of water;
2. a pumping system has been installed together with low level switches in cups. The water seal is now pumped into the cups. Monthly checks are carried out in order to ensure the system correctly works.