

Naturgasutsläpp från ett kraftverk.

970124

Till följd av ett materialfel kom ett vattenlås att falla och naturgas att släppas ut i atmosfären. Gasen skingrades utan att antändas.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
metan	74-82-8	ca 18 ton

Skador:

Människor:	Inga personskador.
Materiella:	Förlust av gasen.
Miljö/ekologi:	Ekologisk påverkan noterad, men inte specificerad.
Infrastruktur:	Inga effekter.

Erfarenheter redovisade (Ja/Nej): Ja

Kortfattat anges förebyggande åtgärder. Se även referens:

i) British Gas have an internal computer model for the dispersion of low pressure natural gas from a cup/ grip seal failure. ii) The Institution of Gas Engineers IGE/SR/4 " Low pressure Gas Holders Storing Water then Air Cover 2nd Edition.

Report Profile

Identification of Report:

country: FA ident key: 1800_070_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 24/01/1997 start: 10:10:00

finish: 24/01/1997 finish: 10:25:00

Establishment:

name:

address:

industry: 2005 power supply and distribution (electric, gas, etc.)

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_070_01

Accident Types:

release: Yes explosion: No

water contamination: No other: No

fire: No

description:

18.2 tonnes of LNG were lost to atmosphere without ignition

Substance(s) Directly Involved:

toxic: No explosive: No

ecotoxic: No other: No

flammable: Yes

description:

Low pressure natural gas (18.2 tonnes) escaped

Immediate Sources of Accident:

storage: Yes transfer: No

process: No other: No

description:

Approximately two thirds of the contents of No 4 water sealed gas holder was lost due to apparent seal failure

Suspected Causes:

plant or equipment: Yes environmental: No

human: No other: No

description:

Damage to a steam injector resulted in its being displaced, instead of being horizontal to and 150 mm (max) below the cup water surface it was near the bottom. The angle caused a simple flap type NRV to fall open and further upstream 'anti-... 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: Yes

national heritage loss: No

description:

There were no injuries to either those on or off site. As methane is a greenhouse gas there are environmental consequences.

Emergency Measures taken:

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

external services: No **restoration:** No

sheltering: No **other:** No

evacuation: No

description:

The incident was managed jointly from the district office at Brentwood and Network Control at Dorking. No external services were used. There were no local evacuations and the holder remains out of service.

Immediate Lessons Learned:

prevention: Yes **other:** No

mitigation: No

description:

(1) Inadequate records of maintenance for the steam injectors are kept (inadequate maintenance documentation).... see Appendix Short Report / description of immediate lessons learned

A Occurrence Full Report

country: FA **ident key:** 1800_070_01

1 Type of Accident

remarks: Release of 18.2 tonnes of low pressure natural gas.

2 Dangerous Substances

remarks: The gas stored in a water sealed, spiral guided holder; this release did not effect the other 3 holders on-site.

3 Source of Accident

illustration: See: attached map. sketch of typical water sealed gasholder.

remarks: The site consists of 4 spiralguided water sealed, low pressure gas holders.

1 of the 4 was involved in this incident, the others remain unaffected.

4 Meteorological Conditions

precipitation none: fog: rain: hail: snow:

No No No No No

wind speed (m/s):

direction (from): SE

stability (Pasquill):

ambient temperature (°C):

remarks: The weather was mild with a slight breeze, weather did not have an influence on this

incident.

5 Causes of Major Occurrence

main causes

technical / physical 5202 environment: domino-effect from other accident

5999 other: other

5999 other: other

5999 other: other

- not applicable -

human / organizational 5314 organization: testing/inspecting/recording (none, inadequate, inappropriate)

- not applicable -

- not applicable -

- not applicable -

- not applicable -

remarks: The company relied on periodic inspection and maintenance to ensure that an anti-freeze system worked. This procedure was not properly monitored nor was the inherent weakness of the hardware recognised.

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1800_070_01

event:

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

initiating event - not applicable -

associated event - not applicable -

Dangerous substances

country: FA ident key: 1800_070_01

a) total establishment inventory

CAS number: 000074-82-8 **identity:** 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): 225

use of substance as: normal finished product

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 182 **potential quantity:** 273

c) substance belongs to relevant inventory indirectly involved: No

actual quantity: 0 **indir_pot_quant:** 0

Source of Accident - Situation country: FA ident key: 1800_070_01

situation

industry

initiating event 2005 power supply and distribution (electric, gas, etc.)

associated event - not applicable -

activity/unit

major occurrence - not applicable -

initiating event - not applicable -

associated event - not applicable -

component

major occurrence - not applicable -

initiating event - not applicable -

associated event - not applicable -

B Consequences Full Report

country: FA ident key: 1800_070_01

1 Area concerned

affected

extent of effects installation: No

establishment: No

off-site; local: No

off-site; regional: No

off-site; transboundary: No

illustration of effects see attached map

remarks The incident had neither on nor off-site consequence. The map illustrates report... see Appendix

Full Report B / area concerned - remarks

2 People

establishment popul. emergency personnel off-site population

total at risk 0 0 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 This site is normally un-manned as it was at the time of the incident. Methane b... see Appendix

Full Report B / people

3 Ecological Harm

pollution/contamination/damage of:

- residential area (covered by toxic cloud) No
- common wild flora/fauna (death or elimination) No
- rare or protected flora/fauna (death or elimination) No
- water catchment areas and supplies for consumption or recreation No
- land (with known potential for long term ecological harm or preventing human access or activities) No
- marine or fresh water habitat No
- areas of high conservation value or given special protection No

remarks No ecological harm would be expected from this incident because methane (Natura... 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 None present and also the statement at 3c) above applies.... see Appendix Full Report B / national heritage loss

5 Material Loss

establishment losses off site losses

costs (direct costs to operator) (social costs)

in ECU UKL ECU UKL

material losses 0 147998 0 0

response, clean up, restoration 0 2019 0 0

remarks - not applicable -

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 There was no disruption to community life covered by this incident.... see Appendix Full Report B

7 Discussion of Consequences

Ecological Components involved

country: FA ident key: 1800_070_01

type: 6104 inland: parkland/commonland

threatened: Yes affected: No

type: 6101 inland: metropolitan development

threatened: Yes affected: No

C Response Full Report

country: FA ident key: 1800_070_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

Modification to the steam injec... see Appendix Full Report C / lesson learned - prevent

measures to mitigate consequences:

The installation of cup-scale ... see Appendix Full Report C / lesson learned - mitigate

useful references:

i) BG have an internal compute... see Appendix Full Report C / lesson learned - references

5 Discussion about Response

- not applicable -

Appendices for the FA / 1800_070_01 report

Appendix Short Report / description of suspected causes:

Damage to a steam injector resulted in its being displaced, instead of being horizontal to and 150 mm (max) below the cup water surface it was near the bottom. The angle caused a simple flap type NRV to fall open and further upstream 'anti-vac' device, installed to prevent syphoning failed. A syphon was initiated draining water from the seal.

Appendix Short Report / description of immediate lessons learned:

(1) Inadequate records of maintenance for the steam injectors are kept (inadequate maintenance documentation).

(2) The precautions against syphoning are rudimentary. There is no automatic monitoring of the water levels in cup seals (no automatisation).

Appendix Full Report B / area concerned - remarks:

The incident had neither on nor off-site consequence. The map illustrates report from the public of smelling gas; this is thought to be primarily the stenching agent used, methane being a lighter than air gas.

Appendix Full Report B / people:

This site is normally un-manned as it was at the time of the incident. Methane being lighter than air disperses too quickly to prevent an off-site hazard.

Appendix Full Report B / ecological harm:

No ecological harm would be expected from this incident because methane (Natural gas) was the only substance involved.

Appendix Full Report B / national heritage loss:

None present and also the statement at 3c) above applies.

Appendix Full Report B / disruption of community life:

There was no disruption to community life covered by this incident.

Appendix Full Report C / lesson learned - prevent:

Modification to the steam injectors and the holder's superstructure to prevent the equipment ability to siphon and to stop steam lines fouling leading either to loss of anti-freeze capability and/or misalignment of injection equipment.

Appendix Full Report C / lesson learned - mitigate:

The installation of cup-scale monitoring to set an alarm if low water level are identified. The development of appropriate monitoring and review procedures for the business.

Appendix Full Report C / lesson learned - references:

i) BG have an internal computer model for the dispersion of low pressure natural gas from a cup/ grip seal failure. ii) The Institution of Gas Engineers IGE/SR/4 " Low pressure Gas Holders Storing Water then Air Cover 2nd Edition.