Naturgasutsläpp från en gasklocka.

901222 MARS 1990_22

En gasklocka som användes för att täcka dygnsvariationer i naturgasförbrukning läckte gas genom ett vattenlås. Läckan uppstod på grund av ett svetsfel. En spricka uppstod i en svetsfog och vattennivån i ett vattenlås sjönk så att gas kunde läcka ut. Gas läckte ut i 1 timme och 45 minuter. Då läckan upptäckts stoppades inflödet till klockan och tömning på naturlig väg sattes igång. Gasen skingrades utan att antändas.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
naturgas huvudsakligen metan	74-82-8	38 100 kg

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:** 1990_022_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 1990-12-22 **start:** 01:00:00

finish: finish:

Establishment:

name:

address:

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

Gas Service Station (Natural Gas Storage for Peak Variation)

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:** 1990_022_01

Accident Types:

release: Yes **explosion:** No

water contamination: No **other:** No

fire: No

description:

Grid control had taken gas out of the holder on December 21 and were aware that it required filling to satisfy the next days demands. The recorded stock level when filling commenced at 23:30 was 967,300 ft3. The filling rate was about 450,0... 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 = 38,110 Kg.

Immediate Sources of Accident:

storage: Yes **transfer:** No

process: No **other:** No

description:

The accident occurred in a Gas Service Centre for the gas distribution. The release of gas occurred during the filling of a four lift spirally guided water sealed gas holder. The gas holder was used to cover diurnal variations in consumptio... see Appendix Short Report / description of immediate sources

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: No

human deaths: No

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

other: Yes

ecological harm: No

national heritage loss: No

description:

OTHER:... see Appendix Short Report / description of immediate effects

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:** 1990_022_01

1 Type of Accident

remarks: A natural gas release occurred from a four lift spirally guided water sealed gas holder (used to cover diurnal variations in consumption) of a gas service station (code 1101). The gas cloud dispersed safely without igniting.

2 Dangerous Substances

remarks: The total establishment inventory and the potential directly involved inventories of natural ags refer to the volumetric capacity of the gas holder under the hypotheses that it was isolated (no inlet gas flow and no gas to town booster).

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred in a Gas Service Centre for the gas distribution (codes 2005 and 3202), during the filling of a four lift spirally guided water sealed gas holder (code 4003). The gas holder was used to cover

diurnal variations in cons... see Appendix Full Report A / source of

accident - remarks

4 Meteorological Conditions

precipitation none: fog: rain: hail: snow:

Yes No No No No

wind speed (m/s):

direction (from): SW

stability (Pasquill):

ambient temperature (∞C):

remarks: Slight wind from South West. Ambient temperature. No rain.

5 Causes of Major Occurrence

main causes

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

5501 other: not identified

- not applicable -

- not applicable -

- not applicable -

human / organizational 5305 organization: supervision (none, inadequate, inappropriate)

- not applicable -

- not applicable -

- not applicable -

- not applicable -

remarks: The accident occurred because of a welding failure (code 5102). A cup channel was wasted

(due to not fully identified causes [5501]) along weld and this caused the loose of water

from the dip cup and, consequently, the gas escaping. However... see Appendix Full Report

A / causes of major occurrence

6 Discussion about the Occurrence

- not applicable -

Type of Accident **country:** FA **ident key:** 1990_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:** 1990_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): 76,7

use of substance as: NORMAL FINISHED PRODUCT

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 38,11 **potential quantity:** 76,7

c) substance belongs to relevant inventory indirectly involved: No

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

Source of Accident - Situation **country:** FA **ident key:** 1990_022_01

situation

industry

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

associated event - not applicable -

activity/unit

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

inititating 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.)

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

associated event - not applicable -

B Consequences Full Report

country: FA **ident key:** 1990_022_01

1 Area concerned

affected

extent of effects installation: Yes

establishment: Yes

off-site; local: Yes

off-site; regional: No

off-site; transboundary: No

illustration of effects - not applicable -

remarks The location of the gas holder and of the point of the reported "gas escapes" ar... 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. 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 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 No Yes No

- media interest No No No

- political interest No No No

remarks The natural gas escape was reported by members of the public that detected a sme... see Appendix

7 Discussion of Consequences

C Response Full Report

country: FA **ident key:** 1990_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 examin... 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 / 1990_022_01 report

Appendix Short Report / description of accident types:

Grid control had taken gas out of the holder on December 21 and were aware that it required filling to satisfy the next days demands. The recorded stock level when filling commenced at 23:30 was 967,300 ft3. The filling rate was about 450,000 ft3/hr (max permissible fill rate 700,000 ft3/hr on volumetric governor). At 02:45 the holder station depot phoned grid to advise them of the leak. The volumetric governor was immediately shut-down by Grid control and the booster operated. Natural gas dispersed safely without igniting. The holder was emptied and filled without apparent problems four times during the five days preceeding the accident (on December 16, 18, 19 and 20). The holder water cup levels were checked on a weekly basis and no abnormal readings were found prior to the release.

Appendix Short Report / description of immediate sources:

The accident occurred in a Gas Service Centre for the gas distribution. The release of gas occurred during the filling of a four lift spirally guided water sealed gas holder. The gas holder was used to cover diurnal variations in consumption. It was emptied during the day and filled again during the night to satisfy the next days demands.

Appendix Short Report / description of suspected causes:

INITIATING EVENT AND CONSEQUENCES:

During a normal remote filling operation of a gas holder, a welding failure resulted in the loss of water seal and, consequently, the escape of about 38,100 kg of natural gas. The gas dispersed without igniting.

CAUSES:

The accident occurred because of a welding failure. A cup channel was wasted along weld in section between the dip plate and the cup skirting plate. The wasting was local to rest block and weld. As consequence, water from the dip cup was lost and, consequently, natural gas escaped (a diagram is attacched to the Original Report to show the position of the leak found in the inner lift cup). When the Original Report was prepared the causes for wasting were unknown. However, this was not considered to be due to excessive or cyclic pressure being exerted on the rest block during operation of the holder. Besides, an insufficient supervision delayed the isolation of the gas holder, allowing the release of natural gas for about one hour and forty five minutes after the first alert.

Appendix Short Report / description of immediate effects:

OTHER:

No material losses occurred except the escaped natural gas.

MAP OF THE ACCIDENT AREA:

The location of the Gas Service Centre and of the point of the reported "gas escapes" are shown on a map attached to the Original Report. More detailed informations on gas concentrations are not available.

Appendix Short Report / description of emergency measures taken:

INTERNAL TO THE ESTABLISHMENT:

The grid control (the remote operation centre) shut-down the gas inlet to the holder and started the town booster to allow the gas outlet from the holder.

EXTERNAL TO THE ESTABLISHMENT:

No measures were deemed necessary by company as natural gas dispersed safely without igniting.

Appendix Short Report / description of immediate lessons learned:

MEASURES TO PREVENT ANY RECURRENCE OF SIMILAR ACCIDENTS:

After the accident, the examination of further 36 rest blocks has been undertaken and modifications/repairs have been carried out if deemed necessary. The causes of the failure have been brought to the attention of other areas of operating companies to enable inspection requirements to be considered for further holders.

Appendix Full Report A / source of accident - remarks:

The accident occurred in a Gas Service Centre for the gas distribution (codes 2005 and 3202), during the filling of a four lift spirally guided water sealed gas holder (code 4003). The gas holder was used to cover diurnal variations in consumption. It was emptied during the day and filled again during the night to satisfy the next days demand. The gas holder was built in 1940. The location of the industry is shown on a map attached to the Original Report.

Appendix Full Report A / causes of major occurrence:

The accident occurred because of a welding failure (code 5102). A cup channel was wasted (due to not fully identified causes [5501]) along weld and this caused the loose of water from the dip cup and, consequently, the gas escaping. However, this was not considered to be due to excessive or cyclic pressure being exerted on the rest block during operation of the holder. Besides, an insufficient supervision (code 5305) delayed the isolation of the gas holder.

Appendix Full Report B / area concerned - remarks:

The location of the gas holder and of the point of the reported "gas escapes" are shown on a map attached to the Original Report. The position of the reported "gas escapes" was about 1 km far from the gas holder site. More detailed information about the gas concentrations are not available.

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:

No material losses occurred except the escaped natural gas.

Appendix Full Report B / disruption of community life:

The natural gas escape was reported by members of the public that detected a smell of gas up to 1 km far from the gas service station.

Appendix Full Report C / lesson learned - prevent:

After the accident, the examination of further 36 rest blocks has been undertaken and modifications/repairs have been carried out if deemed necessary. The causes of the failure have been brought to the attention of other areas of operating companies to enable inspection requirements to be considered for further holders.