Negev Natural Gas Ltd

Beer Tuvia Natural Gas Distribution Section

Quantitative Risk Assessment for:

Beer Tuvia City Gate

For Approval

Report: 415-17-001B
Version: P1
Date: March 2017

Approved
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Y. Weber
March 2017

P1	07/03/17	For Approval	Y. Weber	Ortal Golberg
P0	23/01/17	Draft For Comments	Y. Weber	Ortal Golberg
Version	**Date**	**Description**	**Prepared**	**Approval**

Executive Summary

A. General

A.1. Negev Natural Gas Ltd is installing Beer Tuvia City Gate, as part of Beer Tuvia Natural Gas Distribution Section.

A.2. Quantitative Risk Assessment examines various risk scenarios influence, and recommends measures to be taken accordingly, for the Beer Tuvia Natural Gas Distribution Section and mutual influence on plant valve station.

A.3. This report is written as an assessment of the risk from the Beer Tuvia City Gate to their surrounding and from nearby facilities and infrastructures. The Risk Assessment was carried out for the sake of external safety of the Natural gas installation that might influence land use around their location and pipeline route. Risk Assessment includes mutual influence between natural gas system to nearby units.

B. Conclusion

B.1. Safety distances for Beer Tuvia City Gate are in the vicinity of the installations. The Risk level are within the acceptable risk level.

B.2. No public or population density is at the Safety Distances, from the gas installation. There is neither sensitive population nor widespread people in these areas.

C. Quantitative Risk Assessment Levels

C.1. Beer Tuvia City Gate: Dia. = 6" Press. = 10.0 barg.

C.2. Building Distance:

C.2.1 Risk Level 10^{-6} per year: up to 9.3 meters.

C.3. Survey Distance:

C.3.1 Risk Level 10^{-8} per year: up to 52.6 meters.

C.4. These Risk Distances are based on the results of a Quantitative Risk Assessment for Natural Gas System installations.

C.5. The safety distances are defined for public exposure to the risk, such as the presence of residential housing. Nearby the installation are no public exposure and there is no affect on land use program.

C.6. **All safety distances are close to the natural gas installations, the risk levels are limited to chemical industry area no risk to public or population**.

Quantitative Risk Assessment

Beer Tuvia City Gate

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Report: 415-17-001B

File: 415-17-001B P1 BTuviaCG_RA.docx

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1. Introduction

1.1 General

Negev Natural Gas Ltd is installing Beer Tuvia City Gate, part of Beer Tuvia Natural Gas Distribution Section, at industrial zone.

A. The Quantitative Risk Assessment was carried out for the sake of external safety of the Natural Gas Station - Beer Tuvia City Gate that might influence land use around the installations.

B. The work is examining the risk level and influence from the operation of Beer Tuvia City Gate in order to ensure maximum safety in operation of the system. This examination includes mutual influnece from and to natural gas system form nearby facilities or infrastructures.

1.2 Scope

A. The Quantitative Risk Assessment covers the potential for gas releases and fires arising at the Beer Tuvia City Gate, part of Beer Tuvia Natural Gas Distribution Section – Negev Natural Gas Ltd.

B. Safety Distances are calculated for gas release and potential ignition for the following Natural gas station components.

C. Beer Tuvia City Gate – Beer Tuvia Natural Gas Distribution Section

C.1. Inlet pipeline

C.1.1	Diameter:	6".
C.1.2	Operation Pressure:	4.5 – 10.0 barg.
C.1.3	Flow rate:	6,000 Sm³/hr

C.2. Outlet pipeline To Plants

C.2.1	Diameter:	8".
C.2.2	Operation Pressure:	2.0 barg.

1.3 Approach to the Analysis

A. The Risk Assessment was performed on detailed consequence calculations using models for the release and dispersion of flammable gas and for the heat radiation distances.

B. The calculation of effect distances focuses on the Gas Installation - Beer Tuvia City Gate, part of Beer Tuvia Natural Gas Distribution Section.

C. Basic principles and concepts were chosen for the calculation of effect distances focuses on the natural gas installations. The risk assessment was carried out according to Natural Gas Ordinance and based on the Dutch guidelines "Purple Book" – CPR-18E.

1.3.1 Risk Assessment Requirements

A. In general a Quantitative Risk Assessment for a natural gas installation is carried out in the following five chapters:

A.1. Function of the Natural Gas Supply System and its components.

A.2. The Natural Gas Supply System installation surroundings.

A.3. Risk scenarios and their analysis.

A.4. Determining the risk levels, restriction and safety distances.

A.5. Proposal for safety measures to reduce the risk, if it is needed.

B. The Quantitative Risk Assessment calculation has been carried out by using QRA Pro® Software that is developed for accident consequences calculation. The software allows different models to be used, and use of database for failure rates.

C. For Natural Gas station installation a typical safety assessment consists of the following steps:

C.1. Determining the failure of the operation that may lead to gas outflow.

C.2. Identifying and quantifying the involved parameters.

C.3. Determining the types of consequences.

C.4. Calculating the consequences as effect distances.

C.5. Interpretation of the effect distances in order to set up safety distances.

1.4 References

a) CPR 18E — Guidelines for Quantitative Risk Assessment "*Purple Book*"- Committee for Prevention of Disasters, The Hague, The Netherlands, First edition 1999.

b) NFPA — Fire Protection Engineering Handbook, NFPA, Third edition, 2001.

c) UK HSE — Reducing Risk, Protecting People, 2002.

d) CCPS — Chemical Process Quantitative Risk Analysis, 2002

e) CONCAWE — Pipeline release frequencies 1998-2002

f) J R Taylor — Release frequencies for process plant, Edition 6, Taylor Associates 2004

g) J R Taylor — A Review of Hazardous Materials Consequence Modeling, and the Effect on Risk Assessment, 2005

2. Conclusions and Recommendations

2.1 Conclusions

The Quantitative Risk Assessment calculation results of the risk levels from the activities of the Beer Tuvia City Gate installations – are all in the acceptable risk level.

A. **Individual Risk** levels the distances are – in the vicinity of the fence line of the Supply System installations. Individual Risk Distances are based on the results of a Quantitative Risk Assessment for each gas installation. These are the Building Distances for the site.

A.1. Beer Tuvia City Gate

A.1.1 Pressure: Press. = 10.0 barg

A.1.2 Installation Diameter: Dia. = 6".

A.2. Proximity/ Building Distances

A.2.1 The Building distance coincides with the 10^{-6} iso-risk contour.

A.2.2 Risk Level 10^{-6} per year – at distance of up to 9.3 meters.

A.2.3 The Individual Risk level is within the acceptable region.

A.3. Survey Distance

A.3.1 The survey distance coincides with the 10^{-8} iso-risk contour (below which the individual risk is considered negligible):

A.3.2 Risk Level 10^{-8} per year – at distance of up to 52.6 meters.

B. **Societal Risk** levels up to 10^{-8} per year is calculated to be in the acceptable range, in the risk level where there is no population density that might be exposed to risk. These are the Survey Distances for the site.

B.1. Risk Level 10^{-8} per year: up to 52.6 meters

B.1.1 The 10^{-8} per year iso-risk contour is at the vicinity of the installation, close to the plant fence line.

B.2. Natural Gas System installations are in the plant vicinity, at industrial area.

B.2.1 There are no population nor public exposure in this area.

B.2.2 At the risk distance from the Supply System installations there is no major human activities and no affected population assemblage.

B.2.3 The risk levels are acceptable, no public or population exposure.

2.1.1 Individual Risk - IR

A. The Individual Risk contours, for 10^{-6} per year, are in the vicinity of each gas installation.

B. For risk levels lower than 10^{-8} per year, the individual risk is account as non- significant risk, in the close vicinity of the gas installations.

C. Risk Level 10^{-6} per year – at distance of up to 9.3 meters.

D. **The Individual Risk is in the acceptance level, all distances are in the vicinity of plant fence line**.

2.1.2 Societal Risk

A. The Societal Risk contours, for 10^{-8} per year, are close vicinity of the plant installation – where permanent population does not exist.

B. The 10^{-8} risk contours are at the vicinity of the installation. At this area there is no population at risk from the installation.

C. Risk Level 10^{-8} per year – at distance of up to 52.6 meters.

D. **The Societal Risk is acceptable**.

E. **All risk curves are in the vicinity of the gas installation, no pubnlic exposure**.

2.1.3 Mutual Influence

The Mutual effect is calclated for heat radiation of 35 Kw/m².

A. For Natural gas installation it is limited to the vicinity of the installation, less than 5.0 meters.

B. Mutual influences, domino effect on and from nearby facilities, are limited to acceptable level of industry risk level.

2.2 Recommendations

A. Hereafter are recommendations in order to keep a high safety level. The risk assessment is based on probabilistic data for scenarios based on international databases of natural gas systems. The requirement is to equal the design level to one of the best safety levels.

2.2.1 Natural Gas Station

A. Location of main valve installation in the vicinity of fence line.

B. Ensure all above ground installations and pipeworks are protected by mechanical barrier, from trucks, forklifts and cars.

C. Each aboveground portion of gas piping shall be electrical continuous and bonded to an effective ground-fault current path. Gas piping shall not be used as grounding conductor or electrode.

2.2.2 Electrical apparatus

A. Area classification in accordance to Israeli and international standards for Electrical apparatus for explosive atmospheres.

B. All electrical apparatus near and around gas installation should be classified.
Refer to Hazardous Area Classification report for safety distances

C. Natural gas definition:

C.1. Methane – CH_4

C.2. Explosive group: – IA (MIE< 260μJ)

C.3. Max surface temperature: – T1 (Temperature < 450°C).

C.4. Flammable level: – LEL – 4.0%; UEL – 16.5% vol.

2.2.3 Safety Measures

A. Preparation of emergency and safety procedures for emergency response situation.

B. Preparation of periodic audit of all critical and safety systems and for Gas pipe components should be performed.

3. System description

3.1 General

A. **Negev Natural Gas Ltd** is installing Beer Tuvia City Gate, as part of Beer Tuvia Natural Gas Distribution Section.

B. The Natural Gas Distribution System is delivering low and very low-pressure gas to consumers' plants in the region.

3.2 Data

3.2.1 Natural Gas Properties

A. Substance Natural Gas, based on Methane (CH_4)

B. Phase: Gas

C. Flammability: LEL 4.0 %, UEL 16.5%

D. Toxicity: No, only due to oxygen displacement

3.2.2 Meteorological Data

A. The following are meteorological data for gas plume modelling, in accordance with risk assessment methodology (CPR-18E).

A.1. Air temperature 25°C

A.2. Humidity 70%

A.3. The six representative weather classes:

No.	Atmospheric Stability		Wind speed	
	Class	Stability	[m/s]	
(1)	B	Unstable	4.0	Medium
(2)	D	Neutral	1.5	Low
(3)	D	Neutral	4.0	Medium
(4)	D	Neutral	8.5	High
(5)	E	Slightly stable	4.0	Medium
(6)	F	Stable	1.5	Low

A.4. <u>High wind speeds</u>

1) Wind speed: 20 m/s Atm. Stability: D (Neutral)

2) Wind speed: 14 m/s Atm. Stability: D (Neutral)

3.3 Human Activities

A. Beer Tuvia City Gate is in industrial area.

B. At the vicinity of the Natural Gas facilities there are:

B.1. Populations:

B.1.1 No population density at the installation vicinity.

B.2. Human activities:

B.2.1 No activities and no permanent public in the installation vicinity.

B.2.2 Non-permanent employees might work close, employees of industry facilities and plant workers may work. Industrial workers are not part of the public; they are well safety trained and use personal protection equipment.

B.3. Environmental:

B.3.1 No consideration.

3.4 Natural Gas System

A. Beer Tuvia City Gate is part of Beer Tuvia Natural Gas Distribution Section to supply natural gas to consumers' plant in the area.

B. **Beer Tuvia City Gate – Operation Conditions**

B.1. Inlet Conditions

B.1.1.	Pipe diameter:	6"
B.1.2.	Operation pressure:	4.5 – 10.0 barg.
B.1.3.	Operation temperature:	10 – 20°C.
B.1.4.	Flow rate:	6,000 Sm^3/hr.

B.2. Outlet Conditions

B.2.1.	Pipe diameter:	8"
B.2.2.	Operation pressure:	2.0 barg.
B.2.3.	Operation temperature:	10 – 20°C..

3.4.1 Reference drawings

A. Beer Tuvia City Gate

Drawing	Rev.	Description	
1) 4H-16806806-001	A	Beer Tuvia CG Twin PRS	P&ID
2) 4H-16086806-002	A	Beer Tuvia CG Twin PRS	General Layout

4. Hazard Identification

4.1 Failure scenarios

A. Quantitative Risk Assessment are based on gas release scenarios, for consequence outcome calculation and probabilities for each scenario.

B. Main scenarios for natural gas station.

B.1. Scenario 1: Gas release to the atmosphere.

This scenario calculates release of the entire gas quantity between the block valves, along the gas system installation. The released gas quantity is dependent on the pipe diameter and pressure.

The calculation based on light gas plume dispersion, 50% LEL concentration limit. The calculations consider extreme meteorological state, atmospheric stability D and 20m/s wind speed

B.2. Scenario 2: Ignition of released gas plume.

This scenario calculates the state of immediate ignition of the gas plume.

The calculation based on models for heat radiation intensity and heat flux, which are the result of a fire. The results presented as heat radiation level, which occurs at various distances from risk source.

C. Failure scenarios for consequences calculation.

C.1. The Loss of Containment (LOC) for pipes cover all types of process pipes and inter-unit pipelines above ground of an establishment.

C.2. Natural gas release.

C.3. Gas plume dispersion.

C.4. Light gas plume dispersion.

C.5. Gas plume ignition and fire.

C.6. Jet fire heat radiation.

D. Gas release size:

D.1. Full bore rupture: 100% pipe diameter.

D.2. Leakage: 10% pipe diameter (Max 50 mm.).

4.2 Release Frequencies

4.2.1 Natural Gas System

A. At the NG installations are sources of gas release. Most leakages are small, due to failure of flange seal, seal ring, valve stem or instrumentation connections. Large leaks might occur as result of pipe rupture. The release consequence is dependent on operation pressure, location and leak direction.

B. Loss of Containment (LOC) for pipes:

B.1. Full bore rupture (G.1): outflow is from both sides of the full-bore rupture (2x 100% pipe diameter).

B.2. Leak (G.2): outflow is from a leak with an effective diameter of 10% of the nominal diameter, a maximum of 50 mm (10% pipe diameter).

C. The LOC's for pipes covers all type of process pipes and inter-unit pipelines in an establishment.

D. Table 4.1: Frequencies of Loss of Containment for pipes

Installation (part)	G.1 Full bore rupture	G.2 Leak
	$m^{-1}\ y^{-1}$	$m^{-1}\ y^{-1}$
Pipeline < 3" nominal diameter < 75 mm	1.0E-06	5.0E-06
Pipeline 3" ≤ Dia. ≤ 6" 75 mm ≤ nominal diameter ≤150	3.0E-07	2.0E-06
Pipeline > 6" nominal diameter > 150 mm	1.0E-07	5.0E-07

Ref. "Purple Book" CPR 18E, Table 3.7

E. Notes

E.1. The LOCs for pipes cover all types of process pipes and fittings and inter-unit pipelines.

E.2. It should be noted that safety measures, such as emergency shut off valves, are considered, even if their shut off time may have some influence on risk to human.

4.2.2 Ignition Probability

A. Ignition probabilities mainly depend upon the size and composition of a release and the number of potential ignition sources surrounded by it.

Potential ignition sources in the natural gas system are limited. Electrical equipment at hazardous area in gas processing installation are designed and installed according to Hazardous Area Classification codes. Only a combination of serious faults would have to be present in an item of equipment before it became a potential ignition source.

B. Other potential ignition sources are hot surfaces and sparks caused by mechanical impact. Sparks caused by mechanical impact, for example when maintenance personnel move or drop items of equipment are unlikely to cause ignition unless a hazardous atmosphere is already present. All maintenance equipment and tools have to be spark free.

C. For NG pipelines and installations, far away from other process equipment and traffic, the ignition probability is determined by:

C.1. Electrostatic ignition from the flow itself

C.2. Ignition by sparks from blown sand and stones (relevant only for fairly large jet release from underground installations).

C.3. Accidental ignition by emergency teams during shutdown attempts.

C.4. Ignition by passing vehicles near the installation.

C.5. Lighting and electric equipment, especially broken lights or damage apparatus.

C.6. Operators or maintenance staff.

C.7. Lightning.

D. The frequency for ignition in the Natural Gas installation area based on estimation and accepted data:

D.1. Due to system failure in the plant area – 10%

D.2. Failure of electrical line and gas plume crossing – 10%

D.3. Due to lightning – 10%

5. Risk Assessment

5.1 Determining The Types Of Consequences

5.1.1 General

A. The Natural Gas installations will be installed in areas, which are considered as open, unconfined areas. Natural gas clouds in unconfined spaces are not likely to explode when ignited, especially not when immediate ignition takes place after the beginning of release. When released, natural gas will rise up in the air, gas clouds will therefore disperse quite quickly and large clouds will not exist. Due to the low laminar burning velocity of natural gas clouds in unconfined spaces, explosion is not to be expected when the cloud is ignited. Ignition of the gas released will lead to a jet fire.

B. Gas is released either in case of a planned operation or in an incident. If the released gas is ignited immediately, it will result in a large jet fire that will be fed by the ongoing gas flow. Immediate ignition will generate the largest heat radiation levels, because then the gas outflow is highest. Of course, the flame will set fire to structures that will be impinged by it, if these are flammable, and will damage them in any case. Structures that are not in the immediate vicinity of the flame will suffer only from the heat radiation. The same applies for people who are exposed to the fire in the open. They should retreat from the fire to areas with lower heat radiation levels or they should hide in or behind buildings. This will shelter them from the heat, thus lowering the dose of radiation and lowering the probability of injury.

5.1.2 Safety Concept and Criteria

A. The requirements are applied to plan, design, and the installation of the system. For safe operation, the system is equipped with vents, some additional measures should be taken and a safety concept had been developed.

B. To establish a meaningful safety concept, the level of acceptable risk or acceptable hazard should be defined. In this report, acceptable hazard criterion is proposed: "*No casualties and no damage should occur because of normal operation of the gas system installations*."

5.1.3 Effect on Persons

A. The effects of heat radiation on persons are given in the following table. The actual effect depends on the period of exposure. For small jet fires it is possible to run away within a few seconds.

B. The actual influence of heat radiation is dependant on exposure time. For a small fire flame it is possible to run away in seconds. For a big natural gas fire, based on evidence from accidents, it is difficult to run away.

C. Heat radiation flux of 5.0 kW/m² has been used as the criterion for fatality, invidual risk for exposed person with for medium and large releases and ruptures. For small releases the criterion used is actual presence in the fireball or jet fire.

5.1.4 Fire Damage

A. Fire damage estimates are based upon correction with recorded incident radiation flux and damage levels. The radiation or incident flux is related to the levels of damage; the table below is based on observations of large fires.

Table 5.1: Damage Caused at Different Level of Thermal Radiation.

Heat Flux kW/m^2	Damage to humans	Damage to equipment
1.6	Cause no discomfort for long exposure. No burn or blister.	No damage to equipment.
5.0	High harm to people. Cause pain if duration exceeds 20 sec. Blistering is unlikely.	No damage to equipment.
12.5	1% lethal for exposure of 60 sec. Causing first degree burns within 10 sec.	Minimum energy to ignite wood with a flame; melts plastic tubing.
25.0	100% lethal in 60 seconds. Significant injury within 10 sec.	Minimum energy to ignite wood at indefinitely long exposure without a flame.
35.0	100% lethal in 60 seconds. 1% lethality in 10 sec.	Damage to process equipment.

Ref. SFPE Handbook of Fire Protection Engineering, Table 5-12.3.

5.2 Consequence Calculation Method

5.2.1 Type of Consequence

A. The types of consequence to be assessed determine the concept needed. The assessed consequences are related to incidents with fire because of ignited gas outflow out of the system into the atmosphere. Apart from impingement, heat radiation is the main hazard from gas jet fire, as hazardous level of heat radiation can exist at quite some distances from the gas fire.

5.2.2 Quantitative Risk Criterion

A. Some accidents potentially have very large effect distances. In that case a risk approach should be encountered, otherwise no hazardous material industries could be operated anywhere. An example of this is rupture of a pipe at a gas installation. Although the probability that it will happen is very small, the effects can be tremendous.

B. The results present the **Individual Risk - IR**, the probability of fatality to an exposed person; the **Social Risk - SR**, the probability of fatalities to a group.

5.2.3 Individual Risk - IR

A. The Individual Risk is defined as the fatality rate [per year] of a person, not benefiting from protection of any kind and being permanently present at a spot near the gas containing system, due to an incident with that system.

B. Individual risk is defined and accepted per the Dutch standard criteria.

C. The Individual Risk criterion is 10^{-6} per year, the frequency per year that a hypothetic person will be lethally affected by the consequences of possible accident during an activity involved hazardous materials. The Individual risk is a function between the exposed person and the activity, regardless whether actually people live in the area.

D. Risk levels, which are lower than 10^{-8} per year, are considered negligible.

5.2.4 Societal Risk - SR

A. The Societal Risk, the cumulative frequency that a minimum number of off-site people simultaneous will be lethally affected by the consequences of possible accident during an activity involved hazardous materials. The actual presence of people in the surroundings is considered.

5.3 Safety Distances

A. For the probabilistic approach, risk levels and population spread, are defined as follows by the requirements for Quantitative Risk Assessment (Natural gas building committee).

B. Proximity / Building Distance

B.1. The Proximity / Building Safety Distance is defined as the shortest horizontal distance between natural gas installations, the periphery of the containment system, and residential buildings or special structures which need to be considered.

B.2. The Building Distance coincides with the **10^{-6} Iso-risk contour** (maximum permissible individual risk).

C. Survey Distances

C.1. The Survey Safety Distance is defined as the distance measured on both sides from the centre of the pipeline (for installations, the periphery of the containment system) within which a survey is made to identify the presence of residential housing, special structures and recreational or industrial areas, for the purposes of determining the location classification and land use near the pipeline.

C.2. The Survey Distance coincides with the **10^{-8} Iso-risk contour** (below which the individual risk is considered negligible).

D. Wide Spread Human Activities

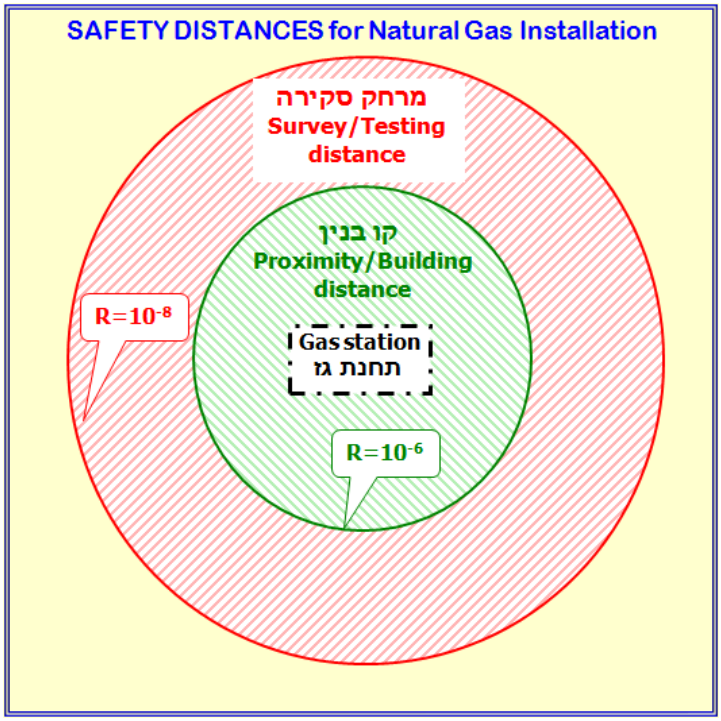
Wide Spread Human Activities are performed in buildings or centres, as defined by the standard:

D.1. Schools, Geriatric centres, Old people home, hospitals, clinics, shopping centres and malls.

D.2. Hotels, guest houses, Synagogues, public building that occupy more than 50 people, swimming pools, sport, and recreation centres.

D.3. Industrial zones, control and command centres, buildings, and facilities with high risk, such as warehouse or vessels contain of flammable or explosive materials.

Fig. 5.1: Iso-risk curves for Proximity and survey distances.



5.4 Mutual Influence

A. The actual gas flame from a vertically directed high pressure jet is calculated to "lift off" from the location of the hole, which reduces the heat impact, nevertheless, from a large flame, the radiation heat input alone is very large. Liquid in any neighbouring piping would vaporize, and if a vapour lock formed, the steel would then heat up very fast, and eventually rupture.

B. The mutual influence between the Natural Gas system and nearby installation was calculated for damage of metal structure, pipelines or vessels based on heat radiation 35 kW/m².

B.1. The "Purple book" defined the threshold for building/structure ignition as heat radiation level of 35 kW/m².

B.2. Mutual influence from nearby unit installation, flammable materials that might cause fire, is based on heat radiation 35 kW/m2.

B.3. At heat radiation level of 12 kW/m² the influence on metal structure or building is for burning period over one hour, assumed that the fire brigade will extinguish the fire in shorter time.

6. Findings

6.1 Risk Level To People

6.1.1 Individual Risk – IR

A. Building Distance:

A.1. Risk Level 10^{-6} per year: up to 9.3 meters.

A.2. Natural Gas installation Press. = 10.0 barg, dia. = 6"

A.3. Individual Risk Distances are based on the results of a quantified risk assessment for each gas installation.

B. Definition

B.1. Individual Risk, the risk experienced by an individual person, usually the most exposed person.

B.2. The criterion for individual risk is $1*10^{-6}$ per year, the yearly probability for a human fatality as a result of a probable accident of hazardous materials activities.

6.1.2 Societal Risk – SR

A. Survey Distance:

A.1. Risk Level 10^{-6} per year: up to 52.6 meters.

A.2. Natural Gas installation Press. = 10.0 barg, dia. = 6"

A.3. Societal Risk Distances are based on the results of a quantified risk assessment for each gas installation.

B. Definition

B.1. Societal risk is defined as the risk of fatality to a number of persons. Usually expressed as a function of the group size.

B.2. The accumulated probability that a number of people outside of the site will be fatality affected as a result of a probable accident of hazardous materials activities.

B.3. The criterion for societal risk hazardous material in establishments (as defined in Dutch regulation).

6.2 Mutual Influence

A. Beer Tuvia City Gate natural gas installation is located at open area.

B. The natural gas installations are in the same area.

B.1. The mutual influence from one station to the other are in the same level

B.2. The risk level due to mutual influence, to and from nearby natural gas facilities, is in the range of industrial plant risk level: $1*10^{-6}$ per year.

B.3. All installations are in the same kind of risk and the same overall risk level. As the NG facilities are located fence to fence there is mutual influence it between. In case of an event in one facility there will be a shut off to all three facilities.

B.4. All operators in the gas facilities are exposed to the same risk level, and as will to risk from the adjust of both companies, distribution and facilities operators are exposed to the same level of risk, form their company gas facilities and the nearby facilities.

B.5. These gas facilities are unmanned, and operators are audit and work from time to time.

C. Near the Natural Gas installation, there are no facilities or infrastructures.

C.1. There are no facilities or infrastructures that are influenced from or to the Natural Gas installations.

C.2. The risk level is in the gas station facilities vicinities.

C.3. There are no hazardous materials, flammable substances, which might influence the natural gas system.